# Administration Guide - HP-UX File System *i*DataAgent TABLE OF CONTENTS

## OVERVIEW

### Introduction

**Key Features** 

Simplified Data Management Point-In-Time Recovery SnapProtect Backup Backup and Recovery Failovers Efficient Job Management and Reporting Block Level Deduplication

#### Add-On Components

SRM for Unix File System 1-Touch Add-On Archiver Content Indexing and Search Desktop Browse

#### Terminology

## SYSTEM REQUIREMENTS

## SUPPORTED FEATURES

## **GETTING STARTED**

## **GETTING STARTED - DEPLOYMENT**

Where to Install Method 1: Interactive Install Method 2: Install Software from CommCell Console

## GETTING STARTED - DEPLOYMENT ON A CLUSTER

Where to Install Installing the HP-UX File System *i*DataAgent - Clustered Environment

## GETTING STARTED - DEPLOYMENT ON A VERITAS CLUSTER

Where to Install Installing the HP-UX File System *i*DataAgent - Veritas Clustered Environment

## **GETTING STARTED CONFIGURATION**

#### GETTING STARTED BACKUP

Perform a Backup

## GETTING STARTED RESTORE

Perform a Restore

## ADVANCED

## ADVANCED CONFIGURATION

#### Understanding the CommCell Console

**Configuring User Defined Backup Sets** Creating a Backup Set for On Demand Backups Creating a Backup Set for Wild Card Support

#### Configuring User Defined Subclients Creating a Subclient to Backup Specific Files

Page 1 of 249

Creating a Subclient to Backup Symbolic Links Creating a Subclient to Backup Raw Devices

#### **Configuring Backups for Hard Links**

#### **Configuring Backups of NFS-Mounted File Systems**

#### Configuring Backups for Locked Files

Excluding Locked Files in NFS Mounted File Systems

#### Configuring Backups for Macintosh Files

## Excluding Job Results Folder from Backups

**Including Skipped File Systems in Backups** Enabling Backups for Skipped File Systems Adding the Skipped File System to Subclient Content

#### **Configuring Filters for Backups**

Filtering Files from a Backup Configuring Exclusions to Filters Deleting a Filter

#### Configuring the Scan Method for Detecting Changed Files

#### **Configuring the Kernel Parameters**

#### **Configuring Multiple Streams for Backups**

Setting the Maximum Number of Data readers

#### Configuring the Index for Backups

Creating a New Index on a Full Backup Converting to a Full Backup on Indexing Failures

#### Configuring Incremental/Differential Backups using Ctime and Mtime

#### **Configuring Pre/Post Processing for Backups**

Setting Up Pre/Post Processes Setting Up Post Processes To Run During Failures Tips for Creating Scripts

Configuring Sparse Files for Restores

## Modifying an Agent, Backup Set or Subclient

Deleting an Agent, Backup Set or Subclient

### ADVANCED BACKUP

## Full Backups

**Incremental Backups** 

#### **Differential Backups**

Synthetic Full Backups

Running Synthetic Full Backups Running an Incremental Backup Before or After a Synthetic Full Backup Verifying Synthetic Full Backups Ignoring Errors in Synthetic Full Backups

#### Accelerated Synthetic Full Backups (DASH Full)

#### Backing up Mount Points

#### Scheduling A Backup

#### Performing an On Demand Backup

#### **Managing Jobs**

Restarting Jobs

Controlling Jobs

## Additional Options

## **ADVANCED RESTORE**

## Performing a Direct Restore

Restoring Data Using Regular Expressions Supported Wildcards in Regular Expressions

#### Performing an Out-of-Place Restore

Restoring to Different Folder on the Same Client Restoring data to a Different Client

#### Performing a Cross-Platform Restore

#### **Restoring to NFS-Mounted File System**

#### **Renaming Files on Restore**

## **Overwriting Data During Restores**

## Restoring Data Only If It Exists on the Destination

**Restoring by Jobs** 

Restoring all the data backed up During a Job Restoring Specific Data Backed up during a Job

#### Restoring From a Failed or Killed Job

#### **Resubmitting a Restore Job**

Filtering Data from Restores

#### Supported Wildcards in Filters

#### Restoring Data Using a Map File

Adding Files and Folders with Unicode Characters to a Map File Restoring Using a MAP File

Combining Browse and Restore with the MAP File Restore

## **Restoring Deleted Files**

#### Setting Up Pre-Post Processes

#### **Restoring Sparse Files**

**Restoring Raw Devices** 

Restoring Raw Device Files as Regular Files

**Restoring Macintosh Files** Setting Up Resource Fork Data Restore for all Macintosh Files Restoring Resource Fork Data for a Specific Job

#### **Excluding ACLs from Restores**

#### **Browsing Data**

Latest Data Data Before a Specified Time Data Between a Specified Time

#### Listing Media

Listing Media for a Subclient Listing Media for a Backup Set

## Scheduling a Restore

Manage Restore Jobs Restarting Jobs Controlling Jobs

### Additional Restore Options

## DATA AGING

#### **DISASTER RECOVERY**

Planning for a Disaster Recovery Disaster Recovery of the HP-UX File System

## ADDITIONAL OPERATIONS

Audit Trail Storage Policy Subclient Policy Schedule Policy Auxiliary Copy Operation Window Operating System and Application Upgrades Global Filters Erase Backup Data Uninstalling Components Online Help Links

## **BEST PRACTICES**

# FREQUENTLY ASKED QUESTIONS

# TROUBLESHOOTING

Backups Restores

## - - -

# ADD-ON COMPONENTS

# ERASE BACKED UP DATA

1-TOUCH FOR HP-UX	
Deployment	
Deployment Configuration	
Recovery	
Troubleshooting	
ONEPASS AGENT	
Doployment	

Deployment Configuration Archive Recover Advanced Configuration Advanced Archive Advanced Recover Troubleshooting FAQs

## DESKTOP BROWSE

User Administrator

# **ADVANCED REPORTING**

# AGENTLESS SRM Overview Pre-Requisites Configuration Reports supported by Agentless SRM Summaries displayed for Agentless SRM Considerations Registry Keys for Agentless SRM

## SRM FOR UNIX FILE SYSTEM

Overview Configuration Generate SRM Reports Send a Notification when an SRM Report Has Run Getting Started with Unix File System Reports Report Features Available Columns Cost History and Usage Reports Filter Administration Guide - HP-UX File System iDataAgent

File Level Analytics Summaries

# **Overview - Unix/Linux File System iDataAgents**

# TABLE OF CONTENTS

#### Introduction

Key Features Simplified Data Management Point-In-Time Recovery SnapProtect Backup Backup and Recovery Failovers Efficient Job Management and Reporting Block Level Deduplication

#### **Add-On Components**

SRM for Unix File System 1-Touch OnePass Agent Content Indexing and Search Desktop Browse

Terminology

## WHERE TO GO NEXT

## Linux

Walks you through the process of installing and configuring the File System *i*DataAgent for Linux.

#### AIX

Walks you through the process of installing and configuring the File System *i*DataAgent for AIX

#### FreeBSD

Walks you through the process of installing and configuring the File System *i*DataAgent for FreeBSD.

#### HPUX

Walks you through the process of installing and configuring the File System  $i{\rm DataAgent}$  for HPUX.

### Solaris

Walks you through the process of installing and configuring the File System  $i{\rm DataAgent}$  for Solaris.

#### Tru64

Walks you through the process of installing and configuring the File System  $i{\rm DataAgent}$  for Tru64.

# INTRODUCTION

Calypso software provides a simplified end-to-end protection of file system data residing on all the Unix computers in your enterprise. In addition to complete protection of file system data for disaster recovery, it also provides a robust and comprehensive backup and recovery solution with significant speed performance and efficient use of disk and tape drives. It also assists you in full system rebuilds and eliminates recovery failures.

# **KEY FEATURES**

The Unix File System iDataAgents offers the following key features:

## SIMPLIFIED DATA MANAGEMENT

The Unix File System *i*DataAgents enables easy management of all the UNIX systems in your environment, by providing a singular approach to manage the data using the same unified console and infrastructure.

## POINT-IN-TIME RECOVERY

In the event of a serious system failure, such as the breakdown of hardware, software, or operating systems, the Unix File System *i*DataAgent provides point-in-time recovery of files at any given time.

## SNAPPROTECT BACKUP

SnapProtect backup enables you to create a point-in-time snapshot by temporarily quiescing the data, taking a snapshot, and then resuming live operations. SnapProtect backup works in conjunction with hardware snapshot engines.

## BACKUP AND RECOVERY FAILOVERS

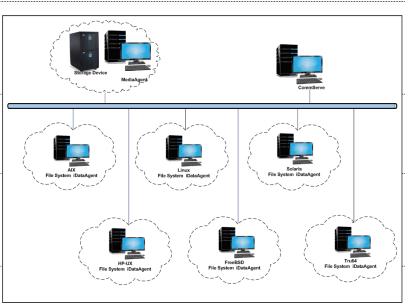
In the event that a MediaAgent used for the backup or recovery operation fails, it is automatically resumed on alternate MediaAgents.

In such cases, the backup or restore job will not restart from the beginning, but will resume from the point of failure. This is especially useful for backups and restores of large amount of file system data.

In the event, that a network goes down, the backup and recovery jobs are resumed on alternate data paths. Similarly, in the event of a device failure, the jobs are automatically switched to alternate disk and tape drives.

## EFFICIENT JOB MANAGEMENT AND REPORTING

You can view and verify the status of backup and recovery operations from the Job Controller and Event Viewer windows within the CommCell Console. You can also track the status of the jobs using Reports, which can be saved and easily distributed. Reports can be generated for different aspects of data management.



You also have the flexibility to customize the reports to display only the required data and save them to any specified location in different formats. For example, you can create a backup job summary report to view at-a-glance the completed backup jobs.

In addition, you can also schedule these reports to be generated and send them on email without user intervention.

#### **BLOCK LEVEL DEDUPLICATION**

Deduplication provides a smarter way of storing data by identifying and eliminating the duplicate items in a data protection operation.

Deduplication at the data block level compares blocks of data against each other. If an object (file, database, etc.) contains blocks of data that are identical to each other, then block level deduplication eliminates storing the redundant data and reduces the size of the object in storage. This way dramatically reduces the backup data copies on both the disk and tapes.

# **ADD-ON COMPONENTS**

## SRM FOR UNIX FILE SYSTEM

SRM is integrated with UNIX File System iDataAgent to provide several advanced reporting capabilities for your backups. When enabled, backup jobs collect details on the file systems currently being used or not used, the memory and hardware resources consumed, storage usage, and granular file-level analytics.

SRM reports include detailed information on the state of your file system data, including free space, used space, file count, file sizes, directory structure, and many other useful statistics.

In addition, **SRM summaries** provide a graphical, real-time representation of usage information such as memory and CPU utilization. Optional file-level analytics provides even more granular details at the file-level for optimizing your storage resources.

SRM integration with UNIX File System iDataAgent can be easily enabled with your backups to take advantage of these features.

## 1-TOUCH

1-Touch recovery helps to recover a crashed system in the least amount of time. By automatically rebuilding the operating system, you can recover systems with defective components such as inaccessible volumes or crashed disks. You don't need to reinstall the individual software packages or operating systems manually.

## **ONEPASS AGENT**

The OnePass Agent is an integrated File System agent which backs up and archives the qualified data. It reclaims backup storage space when files and stubs are deleted on the primary storage.

## CONTENT INDEXING AND SEARCH

Content Indexing and Search enables users to content index their data and later search the data from a user-friendly web interface. The users can also perform restore operations or other advanced actions on the searched data.

## **DESKTOP BROWSE**

Desktop Browse enables users to browse and restore data from a Web Browser, which provides the facility to access and restore data from anywhere.

## TERMINOLOGY

The Unix File System documentation uses the following terminology:

CLIENT	The computer in which the <i>i</i> DataAgent is installed and contains the data to be secured.
BACKUP SET	A group of subclients which includes all of the data backed up by the <i>i</i> DataAgent.
SUBCLIENT	The Unix file system data to be backed up.

Back to Top

# System Requirements - HP-UX File System iDataAgent

AIX HP-UX FreeBSD Linux Solaris Tru64 Supported Features

The following are the requirements for HP-UX File System *i*DataAgent:

## **OPERATING SYSTEM**

OFLINA		T ROCESSOR	
HP-UX	HP-UX 11i v3 (11.31)	PA-RISC	
	HP-UX 11i v3 (11.31)	Itanium	
	HP-UX 11i v2 (11.23)	Itanium	
	HP-UX 11i v2 (11.23)	PA-RISC	
	HP-UX 11i v1 (11.11) 64-bit with a minimum of OS patch level of December 2008 patch bundle or higher (contact Hewlett Packard to obtain the patch)	PA-RISC	

PROCESSOR

## **CLUSTER - SUPPORT**

The software can be installed on a Cluster if clustering is supported by the above-mentioned operating systems.

For information on supported cluster types, see Clustering - Support.

# HARD DRIVE

750 MB minimum of hard disk space for software

100 MB of additional hard disk space for log file growth

500 MB of reserved hard disk space for the Job Results directory

1 GB of temp space required for install or upgrade (where the temp folder resides)

For information on space requirements to install/upgrade the File System and service pack, see Service Pack - System Requirements.

## MEMORY

16 MB RAM minimum required beyond the requirements of the operating system and running applications

Swap space = 2\*RAM size

# PERIPHERALS

DVD-ROM drive Network Interface Card

# **MISCELLANEOUS**

**NETWORK** TCP/IP Services configured on the computer.

## **SUPPORTED FILE SYSTEMS**

The HP-UX File System iDataAgent supports the following file systems:

Hierarchical File System (HFS) Journal File System (JFS) Unix File System (UFS) VERITAS File System (VxFS) VERITAS Cluster File System (VxCFS)

# **VOLUME MANAGERS**

Veritas Volume Manager (VxVM) 5.0 or higher

Logical Volume Manager (LVM)

#### DISCLAIMER

Minor revisions and/or service packs that are released by application and operating system vendors are supported by our software but may not be individually listed in our System Requirements. We will provide information on any known caveat for the revisions and/or service packs. In some cases, these revisions and/or service packs affect the working of our software. Changes to the behavior of our software resulting from an application or operating system revision/service pack may be beyond our control. The older releases of our software may not support the platforms supported in the current release. However, we will make every effort to correct the behavior in the current or future releases when necessary. Please contact your Software Provider for any problem with a specific application or operating system.

Additional considerations regarding minimum requirements and End of Life policies from application and operating system vendors are also applicable

# Supported Features - Unix File System iDataAgent

AIX HP-UX FreeBSD Linux Solaris Tru64 Supported Features

The following table lists the features that are supported by this Agent.

FEATURE	SUB-FEATURE	SUPPORT	COMMENTS
	Data tab - Catalog	~	
ADVANCED BACKUP/ARCHIVE OPTIONS	Data tab - Create New Index	~	
	Data tab - Verify Synthetic Full Job Retry tab	~	
	Media tab - Allow other Schedule to	<ul> <li>Image: A start of the start of</li></ul>	
	use Media Set		
	Media tab - Mark Media Full on Success	~	
	Media tab - Reserve Resources Before Scan	~	
	Media tab - Start New Media	~	
	Startup tab	>	
	VaultTracking tab	~	
	Comments	~	Additional option in the <b>Data tab</b> : • Follow Mount Points
ADVANCED FILE SYSTEM IDATAAGENT OPTIONS	Automatic File System Multi- Streaming	~	
	On Demand Data Protection Operation	~	
	Restore by Jobs	~	
	Restore Data Using a Map File	~	
	Comments	×	On Demand Backup Set is not supported for SnapProtect Backup.
ALERTS AND MONITORING	Global Alerts	~	
	Job-Based Alerts*	~	
	Comments Automatic Updates	~	
AUTOMATIC UPDATES		•	
	Comments		
	Differential Backup	~	
BACKUP/ARCHIVE OPTIONS	Full Backup	~	
	Incremental Backup		
	Other Backup Types		
	Synthetic Full Backup	~	
	Comments	<ul> <li>✓</li> </ul>	SnapProtect Backup
BACKWARD COMPATIBILITY	Version 7	~	
	Version 8	>	
	Version 9		
	Comments		
BROWSE	Browse from Copy Precedence	~	
	Browse the Latest Data Exclude Data Before	~	
	Find		
	Full Backup Transparent Browse	~	
	Image Browse	~	
	No Image Browse	~	
	Page Size	<ul> <li>Image: A second s</li></ul>	
	Specify Browse Path	<ul> <li>V</li> </ul>	
	Specify Browse Time	~	
	Subclient Browse	~	
	Use MediaAgent	~	
	View All Versions	✓	

	Comments		
CLUSTERING	Netware cluster		
	Unix Cluster	<ul> <li>Image: A start of the start of</li></ul>	
	Windows - Microsoft Cluster		
	(MSCS)		
	Windows - Non-Microsoft Cluster		
	Comments	~	AIX, HP-UX, Linux and Solaris support VERITAS Cluster
COMMAND LINE INTERFACE	Command Line Interface	~	
	Comments		
COMMAND LINE INTERFACE - SPECIFIC COMMANDS	Qcreate - Backup set/SubClient	~	
	Qcreate - Instance		
	Qdelete - Backup set/Subclient		
	Qdelete - Client/Agent		
	Qlist globalfilter	✓	
	Qmodify - instance	~	
	Qoperation - Backup	•	
	Qoperation - move Qoperation - Restore	~	
	Comments	•	
	CommCell Migration	~	
COMMCELL MIGRATION		-	
	Comments	~	CommCell Migration is not supported for Unix Tru64 32-bit File System and for SnapProtect backups using Data Replicator storage arrays. CommCell Migration supports Browse and Restore,
			and recall of stubs but no new backups for OnePass.
CONTENT INDEXING	Offline Content Indexing	~	
	Comments		
	Basic Retention Rules	~	
DATA AGING			
	Extended Retention Rules	✓	
	Unique Data Aging Rules		
	Comments	~	
DATA CLASSIFICATION ENABLER	Data Classification Enabler	•	
	Comments		
	Client Compression	✓	
DATA COMPRESSION	Hardware Compression	~	
	Hardware Compression MediaAgent Compression		
	Comments		
	Data Encryption Support	~	
DATA ENCRYPTION			
	Third-party Command Line		
	Encryption Support		
	Comments	~	
DATA MULTIPLEXING	Multiplexing	•	
	Comments		
	MediaAgent Deduplication	~	
DEDUPLICATION	Source Doduction	~	
	Source Deduplication	•	
	Comments Erase Data by Browsing	~	
ERASE BACKUP/ARCHIVED DATA		-	
	Erase Stubs		
	Comments	✓	See Unix File System for more information.
	Global Filters	<ul> <li>Image: A set of the set of the</li></ul>	
GLOBAL FILTERS	Commonts		
	Comments	~	
INSTALLATION	Custom Package	•	
	Decoupled Install	✓	
	Remote Install	✓	
	Restore Only Agents	~	
	Restore only rigents	~	

	Comments		
NSTALLING 22-BIT COMPONENTS ON A	Install 32-bit On x64		
NSTALLING 32-BIT COMPONENTS ON A 4ICROSOFT WINDOWS X64 PLATFORM			
	Comments		
	Not Restartable		
OB RESTART - DATA PROTECTION	Postarta from the Paginning		
	Restarts from the Beginning Restarts from the Beginning of the		
	Database		
	Restarts from the Point-of-Failure	✓	
	Comments		
JOB RESTART - DATA RECOVERY	Not Restartable		
OB RESTART - DATA RECOVERT	Restarts from the Beginning		
	Restarts from the Beginning of the		
	Database		
	Restarts from the Point-of-Failure	~	
	Comments		
LIST MEDIA	List Media Associated with a Specific Backup Set or Instance	~	
	List Media Associated with Index	~	
	List Media Associated with Index	~	
	Files and/or Folders		
	List Media Associated with Specific	✓	
	Jobs		
	Comments Multi Instance	~	
MULTI INSTANCING	Multi Instance	•	
	Comments	~	Multi Instancing is not supported for SnapProtect
			Backup.
PRE/POST PROCESSES	Pre/Post Process with Data Protection and Recovery	~	
	Comments		
	Cross-Application Restores		
RESTORE/RECOVER/RETRIEVE	(Different Application version)		
DESTINATIONS		~	
	Cross-Platform Restores - Different Operating System	•	
	Cross-Platform Restores - Same	✓	
	Operating System - Different		
	Version		
	In-place Restore - Same path/ destination - Same Client	~	
	Out-of-place Restore - Different	~	
	path/ destination		
	Out-of-place Restore - Same path/	✓	
	destination - Different Client		
	Restore Data Using a Map File	<u> </u>	
	Restore to Network Drive /NFS- Mounted File System	•	
	Comments	✓	See Advanced - Linux File System Restore.
	Automatic Detection of Regular	~	
RESTORE/RECOVER/RETRIEVE OPTIONS	Expressions		
	Filter Data From Recover Operations	~	
	Rename/ Redirect Files on Restore	~	
	Restore Data Using Wildcard		
	Expressions		
	Restore Data with Pre/Post	~	
	Processes		
	Restore from Copies	<u> </u>	
	Skip Errors and Continue Use Exact Index		
	Use MediaAgent		
	Comments	-	
	Overwrite Files	✓	
RESTORE/RECOVER/RETRIEVE OVERWRITE			
OPTIONS	Overwrite if file on media is newer	~	
	Overwrite if file on media is newer Restore only if target exists		
	Unconditional Overwrite	~	

	target is a DataArchiver stub		
	Comments		
SCHEDULE POLICY	Agent Specific Data Protection Schedule Policy	~	
	All Agent Types Schedule Policy	<ul> <li>✓</li> </ul>	
	Comments		
STORAGE POLICIES	Incremental Storage Policy*	~	
	Standard Storage Policies	✓	
	Comments		
STORAGE POLICY COPIES	Data Verification	~	
	Job Based Pruning	~	
	Manual Retention	~	
	Mark Job Disabled	~	
	Selective Copy	<ul> <li>✓</li> </ul>	
	Comments		
SUBCLIENT POLICIES	SubClient Policy	~	
	Comments		
UPGRADE	Netware - Local		
	Unix - Remote (Push)		
	Unix/Linux/Macintosh - Local	~	
	Unix/Linux/Macintosh - Silent	~	
	Upgrade from CommCell Console	~	
	Windows - Local		
	Windows - Remote (Push)		
	Windows - Silent		
	Comments		
JSER ADMINISTRATION AND SECURITY	Backup Set/Archive Set	~	
	Subclient	<ul> <li>✓</li> </ul>	
	Comments		

Additional features are listed below:

Activity Control	Auxiliary Copy	
CommCell Console	Deconfiguring Agents	
GridStor	Languages	
Log Files	MediaAgent	
Operation window	QR Volume Creation Options	
Robust Network Layer	Scheduling	
SnapProtect Backup	Snapshot Engines	
VaultTracker Enterprise	VaultTracker	
Report Output Options	Restore/Recover/Retrieve - Other Options	
Cloud Storage	Job Restart - Data Collection	

# **Getting Started - HP-UX File System Deployment**

Use the following steps to install the File System iDataAgent on a HP-UX computer.

# WHERE TO INSTALL

Install the software directly on the computer you wish to protect.

Make sure the computer satisfies the minimum requirements specified in the System Requirements.

## INSTALLATION

The software can be installed using one of the following methods:

#### **METHOD 1: INTERACTIVE INSTALL**

Use this procedure to directly install the software from the installation package or a network drive.

### METHOD 2: INSTALL SOFTWARE FROM COMMCELL CONSOLE

Use this procedure to remotely install the software on a client computer.

# **METHOD 1: INTERACTIVE INSTALL**

- 1. Logon to the client computer as **root** or as a sudo user.
  - If you are installing the software using a sudo user account, make sure that sudo user account is configured on this computer. For more information, see FAQ Install.
- 2. If you are installing the software from CD, run the following command to mount the CD. Refer Mount the Software Installation Disk for more information:

mount /<mount\_point>

Run the following command from the Software Installation Package or mount point:

If your computer is 64-bit, see Install Unix Agents on 64-bit Platform for step-by-step

./cvpkgadd

- 3. The product banner and other information is displayed.
  - Press Enter.
- 4. Read the license agreement. Type **y** and press **Enter**.

If your computer is 32-bit, press Enter.

5. Press Enter.



**Download Software Packages** Download the latest software package to perform the install.

## System Requirements

Verify that the computer in which you wish to install the software satisfies the System Requirements.

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

- 1) Install data protection agents on this computer
- 2) Advance options
- 3) Exit this menu
- Your choice: [1]

32 or 64?

- This machine supports both 32 bit and 64 bit binaries. By default, we will install 32 bit binary set that has full support for all the modules included in this package. Please note that 64 bit binary set currently only support limited modules.
- 1) 32 bit
- 2) 64 bit

Your choice: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "failover" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

You now have a choice of performing a regular Calypso install on the physical host or installing Calypso on a

7. Press Enter.

procedure.

6.



here. 1) Install on a physical machine 2) Install on a virtual machine 3) Exit Your choice: [1] We found one network interface available on your machine. 8. If you have only one network interface, press Enter to accept the default network We will associate it with the physical machine being installed, and it will also be used by the CommServe to interface name and continue. connect to the physical machine. Note that you will be If you have multiple network interfaces, enter the interface name that you wish to use able to additionally customize Datapipe Interface Pairs used for the backup data traffic later in the Calypso Java as default, and then press Enter. GUT. The interface names and IP addresses depend on the computer in which the software is installed and may be different from the example shown. Please check the interface name below, and make connections if necessary: Physical Machine Host Name: [angel.company.com] Press Enter. 9. Please specify the client name for this machine. It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe. Physical Machine Client name: [angel] 10. Type the number associated with the Unix File System iDataAgent and press Install Calypso on physical machine angel Enter. Please select the Calypso module(s) that you would like to install. [ ] 1) MediaAgent [1301] [CVGxMA] [ ] 2) UNIX File System iDataAgent [1101] [CVGxIDA] [a=all n=none r=reverse q=quit d=done >=next <=previous ? =help] Enter number(s)/one of "a,n,r,q,d,>,<,?" here:2</pre> A confirmation screen will mark your choice with an "X". 11. Install Calypso on physical machine angel Type d for Done, and press Enter. Please select the Calypso module(s) that you would like to install. [ ] 1) MediaAgent [1301] [CVGxMA] [X] 2) UNIX File System iDataAgent [1101] [CVGxIDA] [a=all n=none r=reverse q=quit d=done >=next <=previous ? =help] Enter number(s)/one of "a,n,r,q,d,>,<,?" here:d

#### 12. Press Enter.

13. Type the appropriate number to install the latest software scripts and press Enter.

- Select **Download from the software provider website** to download the latest software scripts. Make sure you have internet access.
- Select **Use the one in the installation media** to install the software scripts from the package or share from which the installation is currently being performed.
- Select **Use the copy I already have by entering its unix path**, to specify the path if you have the software script in an alternate location.
- 14. Press Enter.

It is recommended to download the latest Service pack(s). Type **Yes** and press **Enter** to automatically install the available updates during installation.

Do you want to use the agents for restore only without consuming licenses?  $\left[ \text{no} \right]$ 

virtual machine for operation within a cluster. Most users should select "Install on a physical machine"

Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.

If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media

3) Use the copy I already have by entering its unix path

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

Please specify where you want us to install Calypso binaries.

**15.** Press **Enter** to accept the default path.

- If you want to specify a different path, type the path and then press Enter.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press **Enter**.

In order to make sure that the client computer has read/write access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&\*():/?\

- 16. Press Enter to accept the default location.
  - Enter a path to modify the default location and press Enter.
  - All the modules installed on the computer will store the log files in this directory.
- 17. Type Yes and press Enter.

Type the Group name and press Enter.
 Press Enter again.

**19.** Type a network TCP port number for the Communications Service (CVD) and press **Enter**.

Type a network TCP port number for the Client Event Manager Service (EvMgrC) and press **Enter**.

20. If you do not wish to configure the firewall services, press Enter.

If this computer is separated from the CommServe by firewall(s), type  ${\bf Yes}$  and then press  ${\bf Enter}.$ 

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

**21.** Type the fully qualified CommServe host name and press **Enter**.

Ensure that the CommServe is accessible before typing the name; otherwise the installation will fail.

22. Press Enter.

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 176MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log\_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log\_Files".

Log Directory: [/var/log]

Installation Directory: [/opt]

Most of Software processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "dba" group.

We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later.

If you're planning to backup Oracle DB you should use "dba" group.

Would you like to assign a specific group to Software? [yes]

Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run.

In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "dba" group here.

Group name: sky1

REMINDER

If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "skyl".

Press <ENTER> to continue ...

Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.

The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.

Please enter the port numbers.

Port Number for CVD : [8400]

Port Number for EvMgrC: [8402]

Is there a firewall between this client and the CommServe? [no]

Please specify hostname of the CommServe below. Make sure the hostname is fully qualified, resolvable by the name services configured on this machine.

CommServe Host Name: mycommserve.company.com

Commcell Level Global Filters are set through Calypso GUI's Control Panel in order to filter out certain directories or files from backup Commcell-widely. If you turn on the Global filters, they will be effective to the default subclient. There are three options you can choose to set the filters.

1) Use Cell level policy

You may not be prompted for user input.

Type 3 and press Enter.

23.

24.

25.

- 2) Always use Global filters
- 3) Do not use Global filters

Please select how to set the Global Filters for the default subclient?  $\left[1\right]$ 

Please select one storage policy for this IDA from the list below:

1) SP\_StandAloneLibrary2\_2

2) SP\_Library3\_3

SP\_MagLibrary4\_4

Storage Policy: [1]

There seem to be no Storage Policies configured on the CommServe. Before you can run any backups of this IDA, you will need to install a MediaAgent, create a Storage Policy and assign it to all subclients.

Adjusting modes and permissions of files

Successfully installed Calypso

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

Currently you have Calypso installed on physical node angel.company.com.

Now you have a choice of either adding another package to the existing installation or configure Calypso on a virtual machine for use in a cluster.

1) Add another package to angel.company.com

2) Install Calypso on a virtual machine

3) Exit

Your choice: [3]

If you already selected a storage policy in step 23, proceed to the Configuration section.

Enter the number associated with the storage policy you want use and press Enter.

If you have not created a storage policy, this message will be displayed.

You can create the Storage Policy later in step 25.

If you do not have Storage Policy created, follow the procedure given below.

- 1. From the CommCell Browser, navigate to Policies.
- 2. Right-click the Storage Policies and then click New Storage Policy.
- 3. Follow the prompts displayed in the Storage Policy Wizard. The required options are mentioned below:
  - Select the Storage Policy type as Data Protection and Archiving and click Next.
  - Enter the name in the Storage Policy Name box and click Next.
  - From the Library list, click the name of a disk library to which the primary copy should be associated and then click Next.

Ensure that you select a library attached to a MediaAgent operating in the current release.

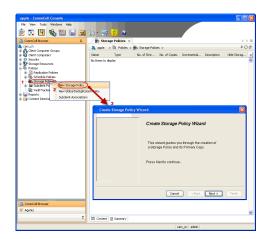
- From the MediaAgent list, click the name of a MediaAgent that will be used to create the primary copy and then click Next.
- $\circ\;$  For the device streams and the retention criteria information, click Next to accept default values.
- Select **Yes** to enable deduplication for the primary copy.
- From the **MediaAgent** list, click the name of the MediaAgent that will be used to store the Deduplication store.

Type the name of the folder in which the deduplication database must be located in the Deduplication Store Location or click the Browse button to select the folder and then click **Next**.

• Review the details and click **Finish** to create the Storage Policy.

## METHOD 2: INSTALL SOFTWARE FROM COMMCELL CONSOLE

For sudo users, Service Pack 4B (or higher) must be available in the CommServe cache before performing the install. See Configure Download Software for step-by-step instruction on downloading the latest software or updates.



1. From the CommCell Browser, select **Tools** menu, point to **Add/Remove Software**, and then click **Install Software**.

2. Click Next.

3. Select Unix and Linux, and then click Next.

4. Select Manually Select Computers ,and then click Next.

e				
murphy - CommCell Cons File View Tools				
Summary				
CommCel		murphy × 🔝 Jo	b Controller ×	4 0 00
🚵 murphy 🛛 🛖 💷 📖		rphy >		۹O3
Comm Scheduler Comm Client C C Event Viewer Client C Reports		8		•
E Control Panel		nNet Client Computer	Client Computers	Security
🕫 💱 Storage 🖀 Service Contr	ol Manager	Groups		
B Report		- P		~
Conten Data Classific		Install Updates		pintent
~	R	Remove Updates	3	irector
	(	Install Software		
		Upgrade Software Download Software		_
		Copy Software		
		Add/Remove Softwa	re Configuration	
CommCell Browser				
	÷			
		member admin		
		murphy admin		
Installer				
motottor				
< Back	Save As	Script Finish	Cancel	Heb
Installer				
Windows	's operating system	2		
2 < Back	Save As	Script   Finish	Cancel	(Help
	Save As	Soript Pinish	Cancel	Etelp
< Back Wex				
< Back				
	er the computers i	for installing the		
< Back Back Back Installer Select how to discov O Manually select compt Software will be instal	er the computers a uters alled only on the selected	for installing the		
<                            	ter the computers of uters alled only on the selected or computers	for installing the		
< <u>Gack</u> <u>Back</u> <u></u>	er the computers a uters alled only on the selected	for installing the		
< <u>Gack</u> <u>Back</u> <u></u>	ter the computers of uters alled only on the selected or computers	for installing the		
< <u>Gack</u> <u>Back</u> <u></u>	ter the computers of uters alled only on the selected or computers	for installing the		
< <u>Gack</u> <u>Back</u> <u></u>	ter the computers of uters alled only on the selected or computers	for installing the		
C Back Ber Installer           Select how to discov           O Manually select comprise           Software will be instally           Automatically discover	ter the computers of uters alled only on the selected or computers	for installing the		
C Back Ber Installer           Select how to discov           O Manually select comprise           Software will be instally           Automatically discover	ter the computers of uters alled only on the selected or computers	for installing the		
C Back Ber Installer           Select how to discov           O Manually select comprise           Software will be instally           Automatically discover	ter the computers of uters alled only on the selected or computers	for installing the		
C Back Ber Installer           Select how to discov           O Manually select comprise           Software will be instally           Automatically discover	ter the computers of uters alled only on the selected or computers	for installing the		
C Back Ber Installer           Select how to discov           O Manually select comprise           Software will be instally           Automatically discover	ter the computers of uters alled only on the selected or computers	for installing the		
C Back Ber Installer           Select how to discov           O Manually select comprise           Software will be instally           Automatically discover	ter the computers of uters alled only on the selected or computers	for installing the		
C Back Ber Installer           Select how to discov           O Manually select comprise           Software will be instally           Automatically discover	ter the computers of uters alled only on the selected or computers	for installing the		
<                                                                                              	er the computers i uters alled only on the selected covered when the job nut	for installing the	: software	

5. Enter the fully qualified domain name of the computer in which you wish to install. For example: apple.domain.company.com

The **Unix File System** *i***DataAgent** will be installed on this client computer. Click **Next**. 6. Click Next.

7. Type the User Name and Password of client computer who has administrator or sudo privileges.

#### Click Next.

- If a SUDO user has been created for root access then use visudo to change /etc/sudoers, so that this user can SUDO into ssh without being prompted for the password. Change the /etc/sudoers by commenting the following lines.
- For Sudo users with restricted privileges, in order to gain privilege to install the software remotely, you need to have **/bin/sh** added to the permission section in the sudoers file.

On SuSE Linux:

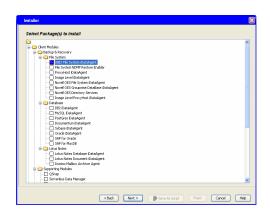
- Defaults targetpw # ask for the password of the target user i.e. root
- ALL ALL=(ALL) ALL # WARNING! Only use this together with 'Defaults targetpw'!

On Red Hat Enterprise Linux/CentOS:

• Defaults requiretty

8. Select Unix File System iDataAgent.

#### Click Next.



<Back Next > Save As Script Finish

Cancel Help

9. • Select Client Group from Available and click Add.

ise enter the host names of the computers, one per line (apple.domain.company.com) Import from File Import From Active Directory Select from existing clients <Back Next > Save As Script Finish Cancel Help Select Software Cache To use current Client or Client Group Software Cache settings, click Next. To Override Software Cache and select the Software Cache to be used. erride Software Cache settings ched Override Software Cache < Back Next > ₽ Cancel Help Account Information The specified account should have root level access and SSH login p multiple clients, the user should have access to all clients. on. If you are installing User Name Example:username(root or Administrator) Password: Confirm Pa

Enter the host names of the computers

Do not add more than one Client Group.

• Select a **Storage Policy** from the drop-down list. Click **Next**.

Select the **Configure for Laptop or Desktop Backup** option to install **Backup Monitor** utility. This utility allows you to view the backup job summary from the client computer without opening the CommCell Console. See Monitor - Laptop User for more information.

10. Click Next.

11. Select Immediate. Click Next.

12. Click Finish.

Installer
Enter Recommended Settings for the selected Software
Recommended Settings
Client Groups
Available: Selected:
Ladoo Add > Ladoo Group Cadoo
Laptop Group Laptop_Group
Add All >>
< <remove all<="" td=""></remove>
Global Filters Use Cell level policy
Configure For Laptop Backups
Storage Policy to use
Subclent Policy to use
< Back Next > Save As Script Finish Cancel Help
Installer
Enter Additional Install Options
😑 Installer Flags
✓ Install Updates
Reboot (Frequired)
Kill Browser Processes (if required)
Ignore Running Jobs
Stop Oracle Services (F required)
Skp clerks that are already part of the CommCell component Advanced Options
Delete Packages After Instal
Listen only on the network interface used as hostname
Do not load WA driver in to kernel this time
Number Of Streams
Unix Group Access permissions for other users o
1.2
Ignore Client/Host Name Conflict
Install Agents For Restore Only
Optional Settings
G Job Result Directory
Path
CVD Port 8400
Evengre Port 8402
Instal Directory
Commiserve Host Name
< Back Mext >
Installer 🛛 🔀
Please Select When To Run The Job
Job Initiation
( Immediate
Run this job now
Configure Schedule Pattern Configure
< Back Next > Save As Script Finish Cancel Help
<back (next="">) Save As Script Finish Cancel Help</back>

- Summary

  Base only life his stands group and did Prach to schools the play or did Save A6 Stopt to save the play optimum of the school group and did Prach to schools the play or did Save A6 Stopt to save the play optimum of the school group and the school group of Override Software Cache: No Select Type Of Installation: Copy packages to remote machine Components Selected Components To Install: UNIX File System iDstaAgent <Back Next > Save As Script Phish Cancel Help 
   Aub Controller ×

   Aub Controller

   In. Job ID

   Operation
   Clerk Co... Agent Type Subclerk 3bb Typer <sup>1</sup> Phase Storage ... Media/gent Status Progress Dirors K
   H Pause Printing Runnin
   Force Henner
   Severt Henner
   Severt Henner
   Severt Henner
   200 D010100101 000 Computer Event Code Der 0 4:345 4:345 35:254 08/31/2010 11:45:07 CVD 08/31/2010 11:45:07 CVD 08/31/2010 11:45:07 CVD 08/31/2010 11:41:39 EvMar5 apple apple apple Installation of [Virtual Server -Installation of [Windows File S User [advin] has logged on. 226 225 224 II Pause Floring Information, Neor, Hajor, Critical, Maximum events shows: 200 Previous Next >
- **13.** You can track the progress of the job from the **Job Controller** or **Event Viewer** window.

# Getting Started - HP-UX File System - Deployment on a Cluster

Previous Next >

# SKIP THIS PAGE IF YOU ARE NOT INSTALLING THIS AGENT ON A CLUSTER.

Click Next > to continue with the deployment.

# WHERE TO INSTALL

Install the software from the active node in the cluster group. Make sure the cluster group satisfies the minimum requirements specified in the System Requirements.

Follow the steps given below to install the File System iDataAgent in a Clustered Environment.

## **BEFORE YOU BEGIN**

#### Download Software Packages

Download the latest software package to perform the install.

**System Requirements** Verify that the computer in which you wish to install the software satisfies the System Requirements.

Logon to the client computer as root or as a sudo user.

If you are installing the software using a sudo user account, make sure that sudo user account is configured on this computer. For more information, see FAQ - Install.

2. If you are installing the software from CD, run the following command to mount the CD. Refer Mount the Software Installation Disk for more information:

#### mount /<mount\_point>

Run the following command from the Software Installation Package or mount point:

If your computer is 64-bit, see Install Unix Agents on 64-bit Platform for step-by-step

#### ./cvpkgadd

3. The product banner and other information is displayed.

#### Press Enter.

4. Read the license agreement. Type y and press Enter.

If your computer is 32-bit, press Enter.

5. Press Enter.

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

- 2) Advance options
- 3) Exit this menu

Your choice: [1]

32 or 64?

This machine supports both 32 bit and 64 bit binaries. By default, we will install 32 bit binary set that has full support for all the modules included in this package. Please note that 64 bit binary set currently only support limited modules.

1) 32 bit

2) 64 bit Your choice: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "failover" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

You now have a choice of performing a regular Calypso install on the physical host or installing Calypso on a virtual machine for operation within a cluster.

Most users should select "Install on a physical machine" here.

- 1) Install on a physical machine
- 2) Install on a virtual machine
- 3) Exit

procedure.

6.

8.	If you have only one network interface, press <b>Enter</b> to accept the default network
	interface name and continue.

If you have multiple network interfaces, enter the interface name that you wish to use as default, and then press  ${\bf Enter}.$ 

The interface names and IP addresses depend on the computer in which the software is installed and may be different from the example shown.

- 9. Press Enter.
- **10.** Type the number associated with the **Unix File System** *i***DataAgent** and press **Enter**.
- A confirmation screen will mark your choice with an "X".
   Type d for Done, and press Enter.

#### 12. Press Enter.

13. Type the appropriate number to install the latest software scripts and press **Enter**.

- Select Download from the software provider website to download the latest software scripts. Make sure you have internet access.
- Select Use the one in the installation media to install the software scripts from the package or share from which the installation is currently being performed.
- Select Use the copy I already have by entering its unix path, to specify the path if you have the software script in an alternate location.
- 14. Press Enter.

It is recommended to download the latest Service pack(s). Type **Yes** and press **Enter** to automatically install the available updates during installation.

#### 15.

Press Enter to accept the default path.

- If you want to specify a different path, type the path and then press **Enter**.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press Enter.

In order to make sure that the client computer has  ${\tt read/write}$  access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:  $100 \pm 60 \times (100 \pm 100)$ 

!@#\$%^&\*():/?\

#### Your choice: [1]

We found one network interface available on your machine. We will associate it with the physical machine being installed, and it will also be used by the CommServe to connect to the physical machine. Note that you will be able to additionally customize Datapipe Interface Pairs used for the backup data traffic later in the Calypso Java GUI.

Please check the interface name below, and make connections if necessary:

Physical Machine Host Name: [angel.company.com]

Please specify the client name for this machine.

It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe.

Physical Machine Client name: [angel]

Install Calypso on physical machine angel

Please select the Calypso module(s) that you would like to install.

[ ] 1) MediaAgent [1301] [CVGxMA]

[ ] 2) UNIX File System iDataAgent [1101] [CVGxIDA]

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:2

Install Calypso on physical machine angel

Please select the Calypso module(s) that you would like to install.

[ ] 1) MediaAgent [1301] [CVGxMA]

[X] 2) UNIX File System iDataAgent [1101] [CVGxIDA]

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:d</pre>

Do you want to use the agents for restore only without consuming licenses? [no]

Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.

If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media  $% \left( {{{\left[ {{{\left[ {{{\left[ {{{c_{{\rm{s}}}}} \right]}}} \right]}}}} \right]$ 

3) Use the copy I already have by entering its unix path  $% \left( {{{\boldsymbol{x}}_{i}}} \right)$ 

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

Installation Directory: [/opt]

#### **16.** Press **Enter** to accept the default location.

- Enter a path to modify the default location and press **Enter**.
- All the modules installed on the computer will store the log files in this directory.
- 17. Press Enter.

# Type the Group name and press Enter. Press Enter again.

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log\_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log\_Files".

Log Directory: [/var/log]

Most of Software processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "dba" group.

We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later.

If you're planning to backup Oracle DB you should use "dba" group.

Would you like to assign a specific group to Software? [yes]

Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run.

In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "dba" group here.

Group name: skyl

REMINDER

If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "skyl".

Press <ENTER> to continue ...

Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.

The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.

Please enter the port numbers.

Port Number for CVD : [8400]

Port Number for EvMgrC: [8402]

Is there a firewall between this client and the CommServe? [no]

20. If you do not wish to configure the firewall services, press Enter.

If this computer is separated from the CommServe by firewall(s), type **Yes** and then press **Enter**.

Type a network TCP port number for the Communications Service (CVD) and press

Type a network TCP port number for the Client Event Manager Service (EvMgrC) and

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

**21.** Type the fully qualified CommServe host name and press **Enter**.

Ensure that the CommServe is accessible before typing the name; otherwise the installation will fail.

22. Press Enter.

19.

Enter.

press Enter.

Please specify hostname of the CommServe below. Make sure the hostname is fully qualified, resolvable by the name services configured on this machine.

CommServe Host Name: mycommserve.company.com

Commcell Level Global Filters are set through Calypso GUI's Control Panel in order to filter out certain directories or files from backup Commcell-widely. If you turn on the Global filters, they will be effective to the default subclient. There are three options you can choose to set the filters.

1) Use Cell level policy

2) Always use Global filters

3) Do not use Global filters

Please select how to set the Global Filters for the default subclient? [1]

23. Type the appropriate number to select the **Client Group** and press **Enter**.

This screen will be displayed only if Client Groups are configured for the CommCell  $% \left( \mathcal{A}^{(n)}_{n}\right) =0$ 

Client Group(s) is currently configured on CommServe mycommserve.company.com. Please choose the group(s) that you want to add this client angel.company.com to. The selected group(s) will be marked (X) and can be deselected if you enter the same number again. After you are finished with the selection, select "Done with the Selection".

[ ] 1) Unix []2) DR [a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]s Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 2 Client Group(s) is currently configured on CommServe 24. A confirmation screen will mark your choice with an "X". cs.company.com. Please choose the group(s) that you want to add this client client.company.com to. The selected Type d for Done, and press Enter. group(s) will be marked (X) and can be deselected if you enter the same number again. After you are finished with the selection, select "Done with the Selection". [] 1) Unix [X] 2) DR [a=all n=none r=reverse q=quit d=done >=next <=previous ? =helpls Enter number(s)/one of "a,n,r,q,d,>,<,?" here: d</pre> Please select one storage policy for this IDA from the 25. Enter the number associated with the storage policy you want use and press Enter. list below: 1) SP StandAloneLibrary2 2 2) SP Library3 3 3) SP MagLibrary4 4 Storage Policy: [1] There seem to be no Storage Policies configured on the CommServe. Before you can run any backups of this IDA, you If you do not have Storage Policy created, this message will be displayed. You may not be prompted for user input. will need to install a MediaAgent, create a Storage Policy and assign it to all subclients .. You can create the Storage Policy later in step 36. Adjusting modes and permissions of files Successfully installed Calypso Cluster Support 26. Type 2 to install Unix File System iDataAgent on a Virtual machine , and press Enter. Certain Calvpso packages can be associated with a virtual or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "failover" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server. Currently you have Calypso installed on physical node angel.company.com. Now you have a choice of either adding another package to existing installation or configure Calypso on a virtual machine for use in a cluster. 1) Add another package to angel.company.com 2) Install Calypso on a virtual machine 3) Exit Your choice: [2] If you have only one network interface, press Enter to accept the default network Virtual Machine Host Name 27. interface name and continue. Please enter the hostname or IP address of the virtual machine being installed. It can be either short or long; the only requirement is that it must be resolvable by the If you have multiple network interfaces, enter the interface name that you wish to use as default, and then press Enter. name services configured on this machine WARNING: You should follow this path ONLY if this host The interface names and IP addresses depend on the computer in which participates in a cluster and you really want to install Calypso on the virtual machine. This is the software is installed and may be different from the example shown. NOT how most people will use Calypso. The name to be entered will be used by certain Calypso CommServe to talk to this virtual machine. Datapipe Interface Pairs used for the backup data traffic can be customized later in the Calypso Java GUT. If you got into this screen by mistake, hit ^C and restart cvpkgadd. Virtual Machine Host Name: stone.company.com Type the Virtual Machine Client Name, and press Enter. 28. Virtual Machine Client Name Please specify the client name for this machine. It does not have to be the network host name: you can

It does not have to be the network host name: you can enter any word here without spaces. The only requirement

		is that it must be unique on the CommServe.
		Virtual Machine Client Name: [stone]
29.	Type the number associated with the Unix File System iDataAgent and press	Install Calypso on virtual machine stone
	Enter.	Please select the Calypso module(s) that you would like to install.
		[ ] 1) MediaAgent [1301] [CVGxMA]
		[ ] 2) UNIX File System iDataAgent [1101] [CVGxIDA]
		>) >>>>>>> NEXT PAGE >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
		[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]
		<pre>Enter number(s)/one of "a,n,r,q,d,&gt;,&lt;,?" here:2</pre>
30.	A confirmation screen will mark your choice with an "X".	Install Calypso on virtual machine stone
	Type <b>d</b> for <b>Done</b> , and press <b>Enter</b> .	Please select the Calypso module(s) that you would like to install.
		[ ] 1) MediaAgent [1301] [CVGxMA]
		[X ] 2) UNIX File System iDataAgent [1101] [CVGxIDA]
		>) >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
		[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]
		<pre>Enter number(s)/one of "a,n,r,q,d,&gt;,&lt;,?" here:d</pre>
31.	Press <b>Enter</b> .	Do you want to use the agents for restore only without consuming licenses? [no]
32.	Specify the path for the Job Results directory, and press Enter	Calypso Job Results Directory Please specify the name for
		the JobResults directory.Since you are installing Calypso on a virtual machine, the JobResults directory must reside
	If Job Results directory does not exist, it prompts you to create it. Type <b>Yes</b> to create it.	on a shared disk and should have at least 20MB of free space available. The directory will be used to store intermediate data that should be passed from one backup phase to another.
		JobResults Directory:
33.	Enter the number associated with the storage policy you want use and press Enter.	Please select one storage policy for this IDA from the
		list below:
		<ol> <li>SP_StandAloneLibrary2_2</li> </ol>
		2) SP_Library3_3
		3) SP_MagLibrary4_4
		Storage Policy: [1]
	If you do not have Storage Policy created, this message will be displayed. You may not be prompted for user input.	There seem to be no Storage Policies configured on the CommServe. Before you can run any backups of this IDA, you will need to install a MediaAgent, create a Storage Policy
	You can create the Storage Policy as shown in step 36.	and assign it to all subclients
		Adjusting modes and permissions of files
		Successfully installed Calypso
34.	Type <b>4</b> to the <b>Exit</b> option and press <b>Enter</b> .	Calypso is currently configured on the following
	The installation is now complete.	virtual/physical machines.
		Now you have an option of either installing certain Calypso on another virtual machine
		or adding a new package to the existing installations.1) Add a new package to PM angel(angel.mycompany.loc)
		<ol><li>Add a new package to VM stone (stone.company.com)</li></ol>
		3) Install Calypsopackages on a new virtual machine
		4) Exit this menu
		Your choice: [1] 4
35.	Type <b>3</b> to the <b>Exit</b> option, and press <b>Enter</b> .	Install a new Instance?
		Calypso now supports the concept of instances, each of which can be installed to a separate CommServe and be totally independent of others. Instances are not the same as the virtual machines on a cluster, in fact, you will be given a choice to configure one or more virtual machines later. Contrary to previous releases of Calypso (6.1 and older), all virtual machines installed on the same host now share the same set of binaries and the same set of services.
		Instances, on the other hand, have unique set of binaries

Instances, on the other hand, have unique set of binaries and services and one situation where it is useful is when you want to back up the same host to several CommServes.

is that it must be unique on the CommServe.

You already have one instance configured.

- 1) Add agents to existing Instance001 going to CS mycommserve.company.com
- 2) Create a new instance of Calypso
- 3) Exit this menu
- Your choice: 3



36.

If you already selected a storage policy in step 33, proceed to the Configuration section.

If you do not have Storage Policy created, follow the procedure given below.

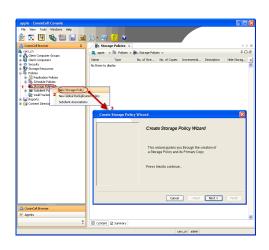
- 1. From the CommCell Browser, navigate to Policies.
- 2. Right-click the Storage Policies and then click New Storage Policy.
- 3. Follow the prompts displayed in the Storage Policy Wizard. The required options are mentioned below:
  - Select the Storage Policy type as Data Protection and Archiving and click Next.
  - Enter the name in the Storage Policy Name box and click Next.
  - From the **Library** list, click the name of a disk library to which the primary copy should be associated and then click **Next**.

Ensure that you select a library attached to a MediaAgent operating in the current release.

- From the MediaAgent list, click the name of a MediaAgent that will be used to create the primary copy and then click Next.
- $\circ\;$  For the device streams and the retention criteria information, click Next to accept default values.
- $\circ~$  Select Yes to enable deduplication for the primary copy.
- From the **MediaAgent** list, click the name of the MediaAgent that will be used to store the Deduplication store.

Type the name of the folder in which the deduplication database must be located in the Deduplication Store Location or click the Browse button to select the folder and then click **Next**.

• Review the details and click **Finish** to create the Storage Policy.



< Previous Next >

# Getting Started - HP-UX File System - Deployment on a Veritas Cluster

< Previous Next >

# SKIP THIS PAGE IF YOU ARE NOT INSTALLING THIS AGENT ON A VERITAS CLUSTER.

Click Next > to begin Configuration

# WHERE TO INSTALL

Install the software on the HP-UX computer where you have application data and is part of Veritas Cluster.

Follow the steps given below to install the File System *i*DataAgent in a Veritas Clustered Environment.

## **RELATED TOPICS**

**Download Software Packages** Download the latest software package to perform the install.

System Requirements

Verify that the computer in which you wish to install the software satisfies the System Requirements.

Firewall

Provides comprehensive information on firewall.

# **INSTALLING THE HP-UX FILE SYSTEM IDATAAGENT - VERITAS CLUSTERED ENVIRONMENT**

1. Logon to the client computer as **root** or as a sudo user.

If you are installing the software using a sudo user account, make sure that sudo user account is configured on this computer. For more information, see FAQ - Install.

2. If you are installing the software from CD, run the following command to mount the CD. Refer Mount the Software Installation Disk for more information:

mount /<mount\_point>

Run the following command from the Software Installation Package or mount point:

Type the number associated with the Veritas Cluster Agents and press Enter.

./cvpkgadd

- The product banner and other information is displayed. Press Enter.
- 4. Read the license agreement. Type **y** and press **Enter**.
- 5. Type 2 and press Enter.

6.

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

2) Advance options

3) Exit this menu

Your choice: [1]

Please select a setup task you want to perform from the list below:

```
[Record and Play]
1) Create a recording of user selections (Record Mode
2) Play a recorded install on this computer
[Custom Package Creator]
3) Create a custom install package
[De-coupled Installer]
4) Pre-install software Components [De-couple Mode]
[Integrated File Archiver]
5) File System iDataAgent with Archiving Enabler
[Customized Cluster Agents]
6) Veritas Cluster Agents
[Third Party Connector]
7) Symantec NetBackup Agent
8) NetApp Snap Manager for Oracle
9) NetApp Snap Manager for SAP/Oracle
[Done]
10) Exit this menu
Your choice: [1] 6
```

This machine supports both 32 bit and 64 bit binaries. By

Please note that 64 bit binary set currently only support

default, we will install 32 bit binary set that has full support for all the modules included in this package.

- 7. Enter the number corresponding to the binaries that you wish to install.
  - Select 32 bit when installing on a 32-bit computer.
  - When installing on a 64-bit computer, if this is the first package, determine whether you want to install 32-bit binaries or 64 bit

1) All platforms (32 bit)

limited modules.

binaries.       2) FS and Ma only (64 bit)         You can determine this by verifying whether all the components that you wish to install in this computer are supported in 64-bit in System. Requirements.       Support the support of the first component is installed using 64-bit binares, you cannot subsequently install another component using 32-bit. (Or vice-versa.)       Please select one service group from the list below: 1) AIXVCS         8.       Type the number corresponding to the VCS service group and press Enter.       Please select one service group from the list below: 1) AIXVCS         9.       Type 2 and press Enter.       Please select one service group from the list below: 1) AIXVCS         10.       Type appropriate number to select client host name and press Enter.       Please select thysical or virtual machine to install: 1) Install Calypso on a bysical machine dIXVCS (2) Install Calypso on a virtual machine dIXVCS (2) Install Calypso on a virtual machine AIXVCS (2) Install Calypso on a virtual machine of IP address below. (1) aixfoluster mydomain.mycompany.com         10.       Type the number associated with the Unix File System /DataAgent and press Enter.       Please select the client host name or IP address below. (1) aixfoluster mydomain.mycompany.com         11.       Type the number associated with the Unix File System /DataAgent and press Enter.       Install Calypso on physical machine client.company.com         11.       Type the number associated with the Unix File System /DataAgent and press       Install Calypso on physical machine client.company.com         11.       Type the number associated with the			
You can determine this by verifying whether all the components that you wish to install in this computer are supported in 64-bit in System Requirements.       Your choice: [1] >>> User answer was "1"         8. Type the number corresponding to the VCS service group and press Enter.       Please select one service group from the list below: 1) ATWCS         9. Type 2 and press Enter.       Please select one service group from the list below: 1) ATWCS         10. Type appropriate number to select client host name and press Enter.       Please select the client host name and press Enter.         11. Type the number associated with the Unix File System //DataAgent and press Enter.       Please select the client host name and press Enter.         11. Type the number associated with the Unix File System //DataAgent and press Enter.       Please select the client host name and press Enter.         11. Type the number associated with the Unix File System //DataAgent and press Enter.       Please aslect the client host name client.company.com Interface number: [1] >>> User answer was "1".         12. Type the number associated with the Unix File System //DataAgent and press Enter.       Install Calypso on physical machine client.company.com Select the Calypso module that you would like to install [1] the dia Agent [10] [CVGMAM] [2] UNIX FileSystem [20] [CVGMAM] [2] UNIX Fil		hinarios	2) FS and MA only (64 bit)
you cannot subsequently install another component using 32-bit. (Or vice-versa.)         8.       Type the number corresponding to the VCS service group and press Enter.         Please select one service group from the list below:         1       AIXVCS         2)       ClusterService         Service Group:       [1]         9.       Type 2 and press Enter.         Please select physical or virtual machine to install:         1       Install Calypso on a virtual machine AIXVCS         3)       Exit this menu         Your choice:       [1] >>> User answer was "2"         10.       Type appropriate number to select client host name and press Enter.       Please select the client hostname or IP address below.         1)       aixfolcluster.mydomain.mycompany.com       Interface number:       [1] >>> User answer was "1".         11.       Type the number associated with the Unix File System /DataAgent and press Enter.       Install Calypso on physical machine client.company.com         Interface number:       [1] >>> User answer was "1".       Install Calypso module that you would like to install         [1]       Image:       Image:       Install Calypso module that you would like to install         [1]       Image:       Image:       Image:         [2]       UNIX FileSystem IntraAgent       [1010] [CVCxIDA] <t< th=""><th></th><th>You can determine this by verifying whether all the components that you wish to install in this computer are supported in 64-bit in System</th><th>Your choice: [1] &gt;&gt;&gt; User answer was "1"</th></t<>		You can determine this by verifying whether all the components that you wish to install in this computer are supported in 64-bit in System	Your choice: [1] >>> User answer was "1"
<ul> <li>Flease select one service group from the list below:</li> <li>ATXVCS</li> <li>ClusterService</li> <li>ClusterService</li> <li>Service Group: [1]</li> <li>Type 2 and press Enter.</li> <li>Please select physical or virtual machine to install:</li> <li>Install Calypso on a physical machine ibmaix21</li> <li>Install Calypso on a virtual machine ATXVCS</li> <li>Exit this menu</li> <li>Your choice: [1] &gt;&gt;&gt; User answer was "2"</li> <li>Type the number to select client host name and press Enter.</li> <li>Aixfoluster.mydomain.mycompany.com</li> <li>Interface number; [1] &gt;&gt;&gt; User answer was "1".</li> <li>Install Calypso module that you would like to install</li> <li>Media Agent [101] [CVGxHA]</li> <li>WHX FileSystem (DataAgent and press [1 - 2) UNIX FileSystem (DataAgent [101] [CVGxHA]</li> <li>UNIX FileSystem (DataAgent [101] [CVGxHA]</li> </ul>		you cannot subsequently install another component using 32-bit. (Or	
<ul> <li>1) AIXVCS         <ul> <li>2) ClusterService</li> <li>Service Group: [1]</li> </ul> </li> <li>9. Type 2 and press Enter.         <ul> <li>Please select physical or virtual machine to install:                 <ul> <li>1) Install Calypso on a physical machine ibmaix21</li> <li>2) Install Calypso on a virtual machine AIXVCS</li> <li>3) Exit this menu</li></ul></li></ul></li></ul>	8.	Type the number corresponding to the VCS service group and press <b>Enter</b> .	
<ul> <li>9. Type 2 and press Enter.</li> <li>9. Install Calypso on a physical machine ibmaix21</li> <li>9. Install Calypso on a virtual machine AIXVCS</li> <li>3) Exit this menu</li> <li>Your choice: [1] &gt;&gt;&gt; User answer was "2"</li> <li>9. Type the number to select client host name and press Enter.</li> <li>9. Type the number associated with the Unix File System iDataAgent and press</li> <li>11. Type the number associated with the Unix File System iDataAgent and press</li> <li>Enter.</li> <li>9. Install Calypso on physical machine client.company.com</li> <li>Install Calypso on physical machine client.company.com</li> <li>Select the Calypso module that you would like to install</li> <li>1) Media Agent [1301] [CVGxMA]</li> <li>1) UNIX FileSystem iDataAgent [1101] [CVGxIDA]</li> <li>&gt;&gt;&gt;&gt;&gt; NEXT PACE &gt;&gt;&gt;&gt;&gt;&gt;</li> </ul>			
<ul> <li>Service Group: [1]</li> <li>9. Type 2 and press Enter.</li> <li>Please select physical or virtual machine to install: <ol> <li>Install Calypso on a physical machine ibmaix21</li> <li>Install Calypso on a virtual machine AIXVCS</li> <li>Exit this menu</li> <li>Your choice: [1] &gt;&gt;&gt; User answer was "2"</li> </ol> </li> <li>10. Type appropriate number to select client host name and press Enter.</li> <li>Please select the client hostname or IP address below. <ol> <li>aix61cluster.mydomain.mycompany.com</li> <li>Interface number: [1] &gt;&gt;&gt; User answer was "1".</li> </ol> </li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>Install Calypso on physical machine client.company.com Select the Calypso module that you would like to install <ol> <li>1 Media Agent</li> <li>UNIX FileSystem iDataAgent</li> <li>UNIX FileSystem iDataAgent</li></ol></li></ul>			
<ul> <li>9. Type 2 and press Enter.</li> <li>9. Type 2 and press Enter.</li> <li>9. Please select physical or virtual machine to install: <ol> <li>10. Type appropriate number to select client host name and press Enter.</li> <li>10. Type the number associated with the Unix File System iDataAgent and press Enter.</li> </ol> </li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>12. Install Calypso on physical machine client.company.com Select the Calypso module that you would like to install <ol> <li>11. Media Agent</li> <li>12. UNIX FileSystem iDataAgent</li> <li>13. Type the number associated with the Unix File System iDataAgent and press</li> </ol> </li> </ul>			
<ul> <li>1) Install Calypso on a physical machine ibmaix21</li> <li>2) Install Calypso on a virtual machine AIXVCS</li> <li>3) Exit this menu</li> <li>Your choice: [1] &gt;&gt;&gt; User answer was "2"</li> <li>10. Type appropriate number to select client host name and press Enter.</li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>12. Unix FileSystem iDataAgent [1301] [CVGxIDA]</li> <li>&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;</li></ul>	0	Type 2 and proce Enter	-
<ul> <li>2) Install Calypso on a virtual machine AIXVCS</li> <li>3) Exit this menu Your choice: [1] &gt;&gt;&gt; User answer was "2"</li> <li>10. Type appropriate number to select client host name and press Enter.</li> <li>Please select the client hostname or IP address below.</li> <li>1) aix61cluster.mydomain.mycompany.com Interface number: [1] &gt;&gt;&gt; User answer was "1".</li> <li>11. Type the number associated with the Unix File System /DataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System /DataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System /DataAgent and press Enter.</li> <li>12. UNIX File System iDataAgent [1301] [CVGxMA] [1 1) Media Agent [1301] [CVGxMA] [1 2) UNIX FileSystem [DataAgent [1101] [CVGxIDA] &gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;</li></ul>	9.	Type <b>z</b> and press <b>Enter</b> .	
<ul> <li>3) Exit this menu Your choice: [1] &gt;&gt;&gt; User answer was "2"</li> <li>10. Type appropriate number to select client host name and press Enter.</li> <li>Please select the client hostname or IP address below.</li> <li>1) aix6lcluster.mydomain.mycompany.com Interface number: [1] &gt;&gt;&gt; User answer was "1".</li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System iDataAgent and press Enter.</li> <li>12. UNIX FileSystem iDataAgent [1301] [CVGxMA]</li> <li>13. UNIX FileSystem iDataAgent [1101] [CVGxIDA]</li> <li>13. With the Unix File System iDataAgent and press</li> </ul>			
<ul> <li>Your choice: [1] &gt;&gt;&gt; User answer was "2"</li> <li>Type appropriate number to select client host name and press Enter.</li> <li>Type the number associated with the Unix File System <i>i</i>DataAgent and press Enter.</li> <li>Type the number associated with the Unix File System <i>i</i>DataAgent and press Enter.</li> <li>Install Calypso on physical machine client.company.com Select the Calypso module that you would like to install</li> <li>[ ] 1) Media Agent [1301] [CVGxMA]</li> <li>[ ] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA]</li> <li>&gt;&gt;&gt;&gt;&gt;&gt; NEXT PAGE &gt;&gt;&gt;&gt;&gt;&gt;</li> </ul>			
<ul> <li>10. Type appropriate number to select client host name and press Enter.</li> <li>1) aix6lcluster.mydomain.mycompany.com Interface number: [1] &gt;&gt;&gt; User answer was "1".</li> <li>11. Type the number associated with the Unix File System <i>i</i>DataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System <i>i</i>DataAgent and press Enter.</li> <li>11. Type the number associated with the Unix File System <i>i</i>DataAgent and press Enter.</li> <li>12. Unix File System <i>i</i>DataAgent [1301] [CVGxMA] [ ] 2. UNIX FileSystem <i>i</i>DataAgent [1101] [CVGxIDA] &gt;) &gt;&gt;&gt;&gt; NEXT PAGE &gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;&gt;</li></ul>			-,
1) aix6lcluster.mydomain.mycompany.com Interface number: [1] >>> User answer was "1". Install Calypso on physical machine client.company.com Select the Calypso module that you would like to install [] 1) Media Agent [1301] [CVGxMA] [] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA] >) >>>>> NEXT PAGE >>>>>> [a=all n=none r=reverse q=quit d=done >=next <=previous ?	10	The second state of the se	
11. Type the number associated with the Unix File System iDataAgent and press Enter. Install Calypso on physical machine client.company.com Select the Calypso module that you would like to install [] 1) Media Agent [1301] [CVGxMA] [] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA] >>>>> NEXT PAGE >>>>>> [a=all n=none r=reverse q=quit d=done >=next <=previous ?	10.	Type appropriate number to select client nost name and press <b>Enter</b> .	
11. Type the number associated with the Unix File System <i>i</i> DataAgent and press Enter. Install Calypso on physical machine client.company.com Select the Calypso module that you would like to install [] 1) Media Agent [1301] [CVGxMA] [] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA] >>>>> NEXT PAGE >>>>>> [a=all n=none r=reverse q=quit d=done >=next <=previous ?			
Enter. Select the Calypso module that you would like to install [ ] 1) Media Agent [1301] [CVGxMA] [ ] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA] >) >>>>> NEXT PAGE >>>>>> [a=all n=none r=reverse q=quit d=done >=next <=previous ?			interface number: [1] >>> User answer was "1".
Select the Calypso module that you would like to install [ ] 1) Media Agent [1301] [CVGxMA] [ ] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA] >) >>>>> NEXT PAGE >>>>>> [a=all n=none r=reverse q=quit d=done >=next <=previous ?	11.		
<pre>[ ] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA]</pre>			
			[ ] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA]
Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 2			<pre>Enter number(s)/one of "a,n,r,q,d,&gt;,&lt;,?" here: 2</pre>
12. A confirmation screen will mark your choice with an "X". Install Calypso on physical machine client.company.com	12.	A confirmation screen will mark your choice with an "X".	Install Calypso on physical machine client.company.com
Type d for Done, and press Enter. Select the Calypso module that you would like to install		Type <b>d</b> for <b>Done</b> , and press <b>Enter</b> .	Select the Calypso module that you would like to install
<pre>[ ] 1) Media Agent [1301] [CVGxMA] [X] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA] &gt;) &gt;&gt;&gt;&gt;&gt; NEXT PAGE &gt;&gt;&gt;&gt;&gt;&gt;</pre>			[X] 2) UNIX FileSystem iDataAgent [1101] [CVGxIDA]
[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]			
<pre>Enter number(s)/one of "a,n,r,q,d,&gt;,&lt;,?" here: d</pre>			<pre>Enter number(s)/one of "a,n,r,q,d,&gt;,&lt;,?" here: d</pre>
13. Press Enter.       Do you want to use the agents for restore only without consuming licenses? [no]	13.	Press <b>Enter</b> .	
14. Type the appropriate number to install the latest software scripts and press Enter. Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.	14.		latest support and fix performed during setup time. Please
<ul> <li>Select Download from the software provider website to download the latest software scripts. Make sure you have internet access.</li> <li>Select Use the one in the installation media to install the software scripts from the package or share from which the installation is</li> </ul>		<ul><li>the latest software scripts. Make sure you have internet access.</li><li>Select Use the one in the installation media to install the software</li></ul>	If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet
currently being performed.			-
<ul> <li>Select Use the copy I already have by entering its unix path, to specify the path if you have the software script in an alternate</li> <li>2) Use the one in the installation media</li> </ul>			-
location. 3) Use the copy I already have by entering its unix path			3) Use the copy I already have by entering its unix path
Your choice: [1] 2			Your choice: [1] 2
15. Press Enter. Keep Your Install Up to Date - Latest Service Pack	15.	Press <b>Enter</b> .	Keep Your Install Up to Date - Latest Service Pack
It is recommended to download the latest Service pack(s). Type Yes and Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install.		It is recommended to download the latest Service pack(s). Type <b>Yes</b> and	

It is recommended to download the latest Service pack(s). Type **Yes** and press **Enter** to automatically install the available updates during installation.

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

1	6	
л,	0	

#### Press **Enter** to accept the default path.

- If you want to specify a different path, type the path and then press Enter.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press Enter.

In order to make sure that the client computer has  ${\tt read/write}$  access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&\*():/?\

#### 17. Press Enter to accept the default location.

- Enter a path to modify the default location and press **Enter**.
- All the modules installed on the computer will store the log files in this directory.

#### 18. Type Yes and press Enter.

19. Type the Group name and press Enter.

Press Enter again.

**20.** Type a network TCP port number for the Communications Service (CVD) and press **Enter**.

Type a network TCP port number for the Client Event Manager Service (EvMgrC) and press **Enter**.

**21.** If you do not wish to configure the firewall services, press **Enter**.

If this computer is separated from the CommServe by firewall(s), type  $\ensuremath{\text{Yes}}$  and then press  $\ensuremath{\text{Enter}}.$ 

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

22. Type the fully qualified CommServe host name and press Enter.

Ensure that the CommServe is accessible before typing the name; otherwise the installation will fail.

23. Type path for the Job Results Directory and press **Enter**.

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

Installation Directory: [/opt]

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log\_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log\_Files".

Log Directory: [/var/log]

Most of Software processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "dba" group.

We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later.

If you're planning to backup Oracle DB you should use "dba" group.

Would you like to assign a specific group to Software? [yes]

Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run.

In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "dba" group here.

Group name: skyl

REMINDER

If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "sky1".

Press <ENTER> to continue ...

Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.

The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.

Please enter the port numbers.

Port Number for CVD : [8400]

Port Number for EvMgrC: [8402]

Is there a firewall between this client and the CommServe?  $\left[\text{no}\right]$ 

Please specify hostname of the CommServe below. Make sure the hostname is fully qualified, resolvable by the name services configured on this machine.

CommServe Host Name: mycommserve.company.com

Please specify the name for the JobResults directory.

Since you are installing Calypso on a virtual machine, the JobResults directory must reside on a shared disk and should have at least 20MB of free space available. The directory will be used to store intermediate data that

Press Enter. 24.

Type the number of a Client Group and press Enter. 25. A confirmation screen will mark your choice with an "X".

Type **d** for done with the selection, and press **Enter** to continue.

This screen will be displayed only if Client Groups are configured for the CommCell.

Enter the number corresponding to the storage policy through which you want to back Please select one storage policy for this IDA from the 26. up the File System iDataAgent and then press Enter.

If you do not have Storage Policy created, this message will be displayed. You may not be prompted for user input.

You can create the Storage Policy later in step 28.

Type 3 to the Exit option and press Enter. 27. The installation is now complete.

should be passed from one backup phase to another.

JobResults Directory:

Commcell Level Global Filters are set through Calypso GUI's Control Panel in order to filter out certain directories or files from backup Commcell-widely. If you turn on the Global filters, they will be effective to the default subclient. There are three options you can choose to set the filters.

1) Use Cell level policy

2) Always use Global filters

3) Do not use Global filters

Please select how to set the Global Filters for the default subclient? [1]

Client Group(s) is currently configured on CommServe cs.company.com. Please choose the group(s) that you want to add this client client.company.com to. The selected group(s) will be marked (X) and can be deselected if you enter the same number again. After you are finished with the selection, select "Done with the Selection".

[ ] 1) Unix []2) DR

[] 3) DKS

[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]

Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 2</pre>

list below:

- 1) SP StandAloneLibrarv2 2
- SP\_Library3\_3
   SP\_MagLibrary4\_4
- 4) fornax\_fornax\_HWCmp
- 5) ranger\_ranger\_HWCmp
  6) fornax\_fornax\_ClntCmp
- 7) fornax\_fornax\_MACmp 8) fornax\_fornax\_NoCmp

Storage Policy: [1]

There seem to be no Storage Policies configured on the CommServe. Before you can run any backups of this IDA, you will need to install a MediaAgent, create a Storage Policy

and assign it to all subclients..

Adjusting modes and permissions of files

Successfully installed Calypso

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

Currently you have Calypso installed on physical node client.company.com.

Now you have a choice of either adding another package to the existing installation or configure Calypso on a virtual machine for use in a cluster.

1) Add another package to client.company.com

2) Install Calvpso on a virtual machine

3) Exit

Your choice: [1]

If you already have a storage policy selected in step 26, you can proceed to the Configuration section.

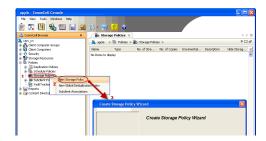
If you do not have Storage Policy created, follow the procedure given below.



28.

1. From the CommCell Browser, navigate to Policies.

- 2. Right-click the Storage Policies and then click New Storage Policy.
- Follow the prompts displayed in the Storage Policy Wizard. The required options 3. are mentioned below:
  - o Select the Storage Policy type as Data Protection and Archiving and click Next.
  - Enter the name in the Storage Policy Name box and click Next.
  - $\circ~$  From the  ${\bf Library}$  list, click the name of a disk library to which the primary



copy should be associated and then click Next.

Ensure that you select a library attached to a MediaAgent operating in the current release.

- From the MediaAgent list, click the name of a MediaAgent that will be used to create the primary copy and then click Next.
- $\,\circ\,$  For the device streams and the retention criteria information, click  ${\bf Next}$  to accept default values.
- $\circ~$  Select Yes to enable deduplication for the primary copy.
- From the **MediaAgent** list, click the name of the MediaAgent that will be used to store the Deduplication store.

Type the name of the folder in which the deduplication database must be located in the Deduplication Store Location or click the Browse button to select the folder and then click  ${\bf Next}.$ 

• Review the details and click **Finish** to create the Storage Policy.

Previous Next >

# **Getting Started - HP-UX File System Configuration**

< Previous ) Next >

## **CONFIGURATION**

1.

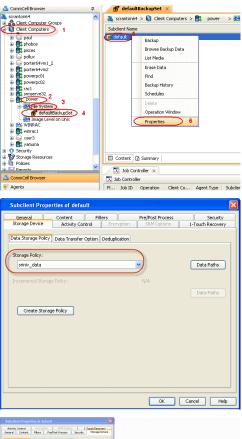
2.

з.

Once installed, follow the steps given below to assign a storage policy with the default subclient.

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | defaultBackupSet.
  - Right-click the default subclient and then click Properties.

In the Storage Policy box, select a Storage Policy name.





• Click the Storage Device tab.

Click Next > to continue.

• Click OK.

storage policy.

#### 1. Click Create Storage Policy.

2. Follow the prompts displayed in the Storage Policy Wizard. The required options are mentioned below:

If you do not have Storage Policy created, follow the step given below to create a

- Select the Storage Policy type as Data Protection and Archiving and click Next.
- Enter the name in the Storage Policy Name box and click Next.
- From the **Library** list, click the name of a disk library to which the primary copy should be associated and then click **Next**.

Ensure that you select a library attached to a MediaAgent operating in the current release.

- From the MediaAgent list, click the name of a MediaAgent that will be used to create the primary copy and then click Next.
- $\circ\;$  For the device streams and the retention criteria information, click Next to accept default values.
- $\circ~$  Select Yes to enable deduplication for the primary copy.
- From the **MediaAgent** list, click the name of the MediaAgent that will be used to store the Deduplication store.

Type the name of the folder in which the deduplication database must be located in the Deduplication Store Location or click the Browse button to select the folder and then click **Next**.

 $\circ~$  Review the details and click Finish to create the Storage Policy.

< Previous Next >

# **Getting Started - HP-UX File System Backup**

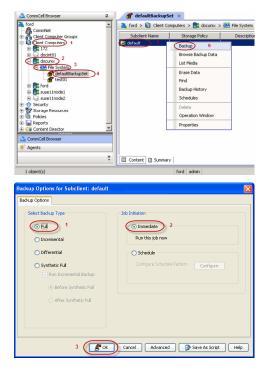
WHAT GETS BACKED UP	WHAT DOES NOT GET BACKED UP
FILE SYSTEMS	By default, the following file systems are automatically skipped during backups:
Hierarchical File System (HFS)	• nfs
Journal File System (JFS)	• nfs3
Unix File System (UFS)	<ul> <li>floppy</li> <li>cdfs</li> </ul>
VERITAS File System (VxFS)	• proc
VERITAS Cluster File System (VxCFS)	autofs
Extended attributes in the VxFS and UFS file systems	• lofs
VOLUME MANAGERS	<ul> <li>ctfs</li> <li>tmpfs</li> </ul>
Veritas Volume Manager (VxVM) 5.0 or higher	
Logical Volume Manager (LVM)	
FILE SYSTEM ELEMENTS	Files with mandatory locks - these files are not backed up by default. See Configuring Backups For Locked Files to backup files with mandatory locks.
Files with holes	Files for which the file path or file name contains more than 1024 characters
Files with Advisory Locks	
Raw device files	
A maximum path level of 10 symbolic links pointing to each raw device	
Files with names containing non-ASCII characters as long as the appropriate locales are set	
Symbolic links that are browsed or manually added to the data contents	
Shares with Macintosh File System data	

# **PERFORM A BACKUP**

Once the storage policy is configured, you are ready to perform your first backup.

The following section provides step-by-step instructions for performing your first backup:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System | defaultBackupSet.
  - Right-click the default subclient and click **Backup**.



- Click **Full** as backup type and then click **Immediate**.
  - Click OK.

3. You can track the progress of the job from the **Job Controller** window of the

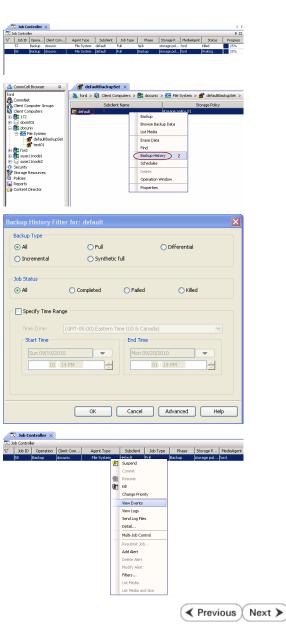
( Previous ) Next > )

CommCell console.

4. Once the job is complete, view the job details from the **Backup History**. Right-click the **Subclient** and select **Backup History**.

5. Click **OK**.

- 6. You can view the following details about the job by right-clicking the job:
  - Items that failed during the job
  - Items that succeeded during the job
  - Details of the job
  - Events of the job
  - Log files of the job
  - Media associated with the job



# **Getting Started - HP-UX File System Restore**



## **PERFORM A RESTORE**

It is recommended that you perform a restore operation immediately after your first full backup to understand the process. The following section explains how to restore the **etc** folder to a new location.

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System | defaultBackupSet
  - Right-click the default subclient and then click **Browse Backup Data**.
- 2. Click OK.

- Expand the **defaultBackupSet** and navigate to **etc** folder.
- Select the etc folder.
- Click Recover All Selected.

4.

5.

• Clear the **Overwrite Files** and **Restore to same folder** options.

• Specify the destination path by clicking **Browse** button. This will ensure that the existing files are not overwritten.

• Click OK.

CommCell Browser	•		ackupSet ×		
superway Client Computer Groups			Client Computers	> 🚉 subway >	DA File System >
Clent Computers 1		Subdient Name			
OK Ele System     System     GefaultBackup	iSet 4		Backup		
Security				ormance Test	
Storage Resources			List Med	ackup Data 6	
Reports			Find		-
Content Director			Backup H		
-			Schedule	5	-
				n Window	
			Propertie		
					-
Browse Options					
<ul> <li>Browse the</li> </ul>	Latest Data				
C Specify Brow	use Time				
Browse Data	Before:				
Tue 02	/01/2011	-	01 : 11 AM	1	
Time Zo	one: (G	MT+05:30) Cher	nnai, Kolkata, Mu	mbai, N ⊻	
Client Computer:	doclocalvm				~
Use MediaAgent	<any media<="" td=""><td>AGENT&gt;</td><td></td><td></td><td>~</td></any>	AGENT>			~
Show Deleted					
Show Deleted	Items				
Page Size: 1	000 ÷				
ОК	Cance	al Adva	anced List	: Media	Help
ОК	Cance	el Adva	anced List	Media	Help
💣 teg x 😭 Client: realmas	drid_CN(L ×	el Adva	anced List	Media	Help
💣 test × 😭 Client: realmas	drid_CN(L ×	el Adva	anced List	Media	
्रि test ×ेंद्रि Client: realmac द्वि Client: realmadrid_CN ( Latest Data ) Current: Selected: Jate	drid_CN ( L ×	Size	<sup>√1</sup> Type	Modified	4 6 B 9 0 D 8
for x x <sup>™</sup> to the state of the system     Gent: realmadid_OL (Latest Data)     Current Selected: /stc     Gent Fe System     Gent Markachuptet	drid_CN ( L ×	State 708.19 KB 933.55 KB	<sup>∀⊥</sup> Type Pile File	Modified 703/06 6-86 AM	4 ⊳ II 9 ⊡ 8
test x → B Clientz realmac Clientz realmachd_CN (Latest Data) Currer Selected: Jac Dia Flo System Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Cont	drid_CN ( L ×	State 708.19 KB 393.55 KB 291.3 KB 90.62 KB	V <sup>1</sup> Type Pile File File	Modified 7/13(b6 6-48 AM 2/23(b6 6-39 PM 2/3)(1 4:04 AM 5/29(07 5-40 PM	4 6 B 9 0 D 8
test x	arid_CN ( L × S Name Terrcop Services prelif-cache Mutric Sersors.corf Id.so.cache	52ae 700.19 K0 293.355 K0 291.3 K0 90.62 K0 63.16 K5 51.44 K0	V <sup>I</sup> Type File File File File File	Modified 7/13/06 6-48 AM 2/23/06 6-39 PM 2/23/11 4/94 AM 5/29/07 5:40 PM 1/20/10 4-43 PM 1/25/11 6-24 PM	4 6 B 9 0 D 8
for x ≥ 1     fig. (Linear treatmands)     (1) (Line	drid_CN ( L × S Name C terrcop P services P relificache Sensors.corf I di ao.cache P opp.ini	State 7780.19 Kt0 353.55 Kt6 291.3185 90.62 K8 651.16 K6 51.141 K8 41.02 K8	VA Type Pile Pile Pile Pile	Modified 7/13/06 6-48 AM 2/23/06 6-59 PM 2/3/11 4:04 AM 5/29/07 5-40 PM 1/26/10 4:43 PM	4 > 10 7 - 2 <sup>2</sup> × 4
tes: X By Cleant realman dig Cleant realmaded; (A) (Laste Day, dig Cleant realmaded; (A) (Laste Day, dig Te System dig Te System dis System dig Te Sy	And _CN ( L × SName Terrcop Services Prelivicache Sersors.corf dia.o.cache Sersors.corf dia.o.cache Services Provini Modes.conf Benedari Benedari	Sbe 778.19 KD 355.55 KB 291.3 KB 59.6 KB 50.6 KB 51.41 KB 51.41 KB 51.41 KB 51.41 KB 51.41 KB 51.41 KB 51.41 KB	V <sup>1</sup> Type Pile Pile Pile Pile Pile Pile Pile Pil	Modified 7733006-458.0M 2223006-659.PM 223307-540.PM 125715-40-PM 125715-624.PM 125715-624.PM 10531026-1042.PM 10531026-1042.PM	4 6 B 9 0 D 8
ten X      Contraction     The transmission     Contraction     The transmission     Contraction     The transmission     Contraction     The transmission     Contraction     Contrel     Contraction     Contraction     Contraction	SNorme SNorme Services Services Services Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Servic	500 770.19.00 935.35.16 90.62.13 51.41.13 44.02.18 14.02.05.11 14.02.05.11 14.12 14.12 14.12 14.12 14.12	V <sup>1</sup> Type Pile Pile Pile Pile Pile Pile Pile Pil	Modified 7/13/06 6-48 AM 2/23/06 6-48 AM 2/23/11 4-09 AM 5/23/07 5-40 PM 1/23/07 5-40 PM 1/23/07 4-43 PM 1/5/11 6-22 PM 1/14/10 11:42 PM	4 > 10 7 - 2 <sup>2</sup> × 4
Cleant readous Cleant	SNorme SNorme Services Services Services Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Servic	500 770.19.00 935.35.16 90.62.13 51.41.13 44.02.18 14.02.05.11 14.02.05.11 14.12 14.12 14.12 14.12 14.12	V <sup>1</sup> Type Pile Pile Pile Pile Pile Pile Pile Pil	Modified 7733006-458.0M 2223006-659.PM 223307-540.PM 125715-40-PM 125715-624.PM 125715-624.PM 10531026-1042.PM 10531026-1042.PM	4 > 10 7 - 2 <sup>2</sup> × 4
ten X      Contraction     The transmission     Contraction     The transmission     Contraction     The transmission     Contraction     The transmission     Contraction     Contrel     Contraction     Contraction     Contraction	SNorme SNorme Services Services Services Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Servic	Ston 7705, 19 400 503, 555 76 29 1, 3 15 50, 6 16 51, 4 16 51, 4 14 51, 4 15 51, 4 1551, 4 15 51, 4 1	V <sup>1</sup> Type Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Prior Pr	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	(↓ )
Cleant realmaint Cleant realm	SNorme SNorme Services Services Services Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Servic	Ston 7705, 19 400 503, 555 76 29 1, 3 15 50, 6 16 51, 4 16 51, 4 14 51, 4 15 51, 4 1551, 4 15 51, 4 1	<sup>11</sup> Type Pile Pile Pile Pile Pile Pile Pile Pil	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	4 b H 9 c d × × × v v v turbodified ×
Cleant reached Clean	SNorme SNorme Services Services Services Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Mattice Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Services Servic	Ston 7705, 19 400 503, 555 76 29 1, 3 15 50, 6 16 51, 4 16 51, 4 14 51, 4 15 51, 4 1551, 4 15 51, 4 1	V Type The The The The The The The Th	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	4 > 0 9 0 0 8 4 8
ter * * * Cleant realmand     Cleant real	kid_On(1 × SNone tempo tempo oralistication oralistication of the second oralistication of the second oralistication oralistication of the second oralistication of the second oralistication of the second oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralistication oralist	500 1700-1910 293-159 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559 303-559	11.5 ppie Pie Pie Pie Pie Pie Pie Pie P	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	4 b H 9 c d × × × v v v turbodified ×
tex *      Cent realman     Cent realman     Cent realmands(.01 (Lane Dea)     Cent realmands(.01 (Lane	And Cr (L × ) Company	500 770-19-03 593-59-19 593-19-19 50-19-19 50-19-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19 51-19	11 Types Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Tele Te	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	4 b H 9 c d × × × v v v turbodified ×
ter * * * Cleant realmand     Cleant real	And Cr (L × ) Company	See         700-1913           700-1913         50-518           700-1913         50-518           700-1913         50-518           90-018         51-618           90-018         51-618           90-018         51-618           90-018         50-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018         51-618           90-018 </td <td>11 Type The The The The The The The Th</td> <td>Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-</td> <td>4 b H 9 c d × × × v v v turbodified ×</td>	11 Type The The The The The The The Th	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	4 b H 9 c d × × × v v v turbodified ×
tex *      Cent realman     Cent realman     Cent realmands(.01 (Lane Dea)     Cent realmands(.01 (Lane	And Cr (L × Company Company C	200 705,1910 293,516 202,116 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 202,213 2	11 mar The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The The	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	4 b H 9 c d × × × v v v turbodified ×
tex      Contractions	S. Nore Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap T	505 505.510 505.510 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.100 502.100 50	11 Type: The The The The The The The The	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	4 b H 9 c d × × × v v v turbodified ×
ter	S. Nore Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap Terrap T	See 770-39-00 202-30-0 90-22-30-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-22-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-20-0 90-0 9	11 Type The The The The The The The Th	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	4 b H 9 c d × × × v v v turbodified ×
tra	And Dr (L. X S. Name Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop Thermop	505 505.510 505.510 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.130 502.100 502.100 50	11 Type The The The The The The The Th	Modified 70:3006-010 AM 2020306-0309 PM 2020314-0340 PM 202014-0340 PM 202014-0340 PM 105/010-1432 PM 105/00-1432 PM 105/00-	4 b H 9 c d × × × v v v turbodified ×
tex *      Cent readward:	And Co (L × )	388         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755 <td>11 Type The The The The The The The Th</td> <td>Hoofing Hoofing &amp; Hoofing &amp; Hoofing</td> <td>4 5 B 9 C O 3 X X X X X X X X X X X X X X</td>	11 Type The The The The The The The Th	Hoofing Hoofing & Hoofing	4 5 B 9 C O 3 X X X X X X X X X X X X X X
ter          Contraction         Contract	And Co (L × )	388         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755 <td>11 Types Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tr</td> <td>Hoofing Hoofing &amp; Hoofing &amp; Hoofing</td> <td>4 5 8 9 ⊂ 0<sup>3</sup> 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3</td>	11 Types Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tr	Hoofing Hoofing & Hoofing	4 5 8 9 ⊂ 0 <sup>3</sup> 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
tex *      Cent readward:	And Dr (L × ) S. Name Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo	388         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755 <td>11 Types Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tr</td> <td>Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notifi</td> <td>4 5 8 9 C 0<sup>3</sup> 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5</td>	11 Types Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tr	Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notifi	4 5 8 9 C 0 <sup>3</sup> 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5
ter          Contraction         Contract	And Dr (L × ) S. Name Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo	388         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755         755 <td>11 Types Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tr</td> <td>Hoofing Hoofing &amp; Hoofing &amp; Hoofing</td> <td>4 5 8 9 C 0<sup>3</sup> 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5</td>	11 Types Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tr	Hoofing Hoofing & Hoofing	4 5 8 9 C 0 <sup>3</sup> 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5
tra:	And Dr (L × ) S. Name Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo Tempo	See         35:3178           35:3178         35:3178           35:3178         36:3178           90:21:38         36:218           90:21:38         36:218           44:02:02         36:278           30:27:03         36:278           30:27:03         36:278           30:27:03         36:278           30:27:04         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278	11 Types Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tria Tr	Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notifi	4 5 8 9 C 0 <sup>3</sup> 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5
ter	A server and a server at exists	201 293,510 293,318 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,60,40,40 90,60,40,40 90,60,40,40,40 90,60,40,40,40,40,40,40,40,40,40,40,40,40,40	11 Inper Re Re Re Re Re Re Re Re Re Re Re Re Re	Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notifi	4 5 8 9 C 0 <sup>3</sup> 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5
tra:	A server and a server at exists	See         35:3178           35:3178         35:3178           35:3178         36:3178           90:21:38         36:218           90:21:38         36:218           44:02:02         36:278           30:27:03         36:278           30:27:03         36:278           30:27:03         36:278           30:27:04         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:27:05         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278           30:278         36:278	11 Inper Re Re Re Re Re Re Re Re Re Re Re Re Re	Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notifi	4 5 8 9 C 0 <sup>3</sup> 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5
ter          Construction         Terrer         Construction	A server of target is not the server of a set to the server of target is not the server of target is not target is	201 293,510 293,318 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,62,40 90,60,40,40 90,60,40,40 90,60,40,40,40 90,60,40,40,40,40,40,40,40,40,40,40,40,40,40	11 sper re re re re re re re re re	Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notifi	4 5 8 9 C 0 <sup>3</sup> 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5
ter      Contraction	and CR (L ×	a DataArchiver	11 sper re re re re re re re re re	Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notifi	4 5 8 9 C 0 <sup>3</sup> 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5
ter      Contraction	ind CP (L ×   interced interc	a DataArchiver	11 Type 12	Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notified Notifi	4 5 8 0 0 0 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5

- Click the Job Initiation tab.
  - Select Immediate to run the job immediately.
  - Click OK.

- You can monitor the progress of the restore job in the Job Controller window of the 6. CommCell Console.
- 7. Once the restore job has completed, right-click the  ${\it defaultBackupSet}$  , point to View and then click Restore History.

Click OK. 8.

9.

• View Restore Items

• View Events of the restore job.

• View Job Details

Restore Options for	All Selected Items	X
General Job Initiation		
Job Initiation		_
⊙ Immediate		
Run this job nov	4	
🔿 Schedule		
Configure Scher	dule Pattern Configure	
Cance	Advanced 🔗 Save As Script Hel	<u> </u>
3ab Controller ×		
Job Controller	Agent Type Subclent Job Type Phase Storage P NedaAgent Satur 5 Tel System Burring Burring	Togress
p superway Restore subway	Ne System Restore Running	5%
A complet frames	A Jalan Mandan Cak y	
CommCell Browser 0	defaultBackupSet ×      tai doint01 > 00 Client Computers > 00 SUN > 00 File System > 00 defaultBackup	upSet >
Client Computers	Subclent Name Storage Policy	
Clent Computers     Compu		
	Backup History	
Security Storage Resources Policies	iles 3 (Restore History) Schedules	
Reports     Content Director		
	Content D Summary	
	Job Controller ×     Job Controller	
	Fl         Job ID         Operation         Client Co         Agent Type         Subclient ^ 1         Job Type           41         Backup         SUN         Solaris File System         default         Full	Phase Scan
Restore History Fi	lter for: defaultBackupSet	×
Destination Client Compu	uter:	
All Clients	✓	
- Specify Time Bape		_
Specify Time Rang		
Time Zone:	(UTC-05:00) Eastern Time (US & Canada) 🛛 💽	
Start Time	End Time	
/ed 03/09/2011	🗢 nu 03/10/2011 🗨	
07 : 10 AM	- 07 : 10 AM -	
	······································	
Job Type		
Recovery/Retriev	ve 🔽 Shub Recall	
<ul> <li>Accordity/retriev</li> </ul>		
Job Status		
	Completed 🔿 Failed 🔿 Killed	
ОК	Cancel Advanced Help	
💣 defaul/Backupčet x 😵 Restore Job History o	4 de., ×	4 0 0
the second secon	Time No. of Objects Destination Client User Name Error Code Description (12/21.12/20.33) 3 2/2/4 edition	8
Joo D         Salua         Salua         Salua         End           42         Ø Gongleted         2010/12/21 12:22:24         2010           29         Ø Faled         2010/12/21 11:10:33         2010	(12)21 11:10:41 0 SLN admin (24:64)	
Total records found: 2		×

• View Log files of the restore job Once the File System is restored, verify that the restored files/folders are available in [parc02] # 1s /.metacity 10. the restore destination provided during step 4.

You can view the following details about the job by right-clicking the job:

You can view them as Successful, Failed, Skipped or All.

etc

# CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the **Advanced** sections of this documentation.

Previous Next >

# **Advanced - HP-UX File System Configuration**

# **TABLE OF CONTENTS**

Understanding the CommCell Console	Command Line Operations
Configuring User Defined Backup Sets	Log on to the CommServe
Creating a Backup Set for On Demand Backups	Configure Subclients List Schedule Policy Association
Configuring User Defined Subclients	
Creating a Subclient to Backup Specific Files	
Creating a Subclient to Backup Symbolic Links Creating a Subclient to Backup Raw Devices	
Configuring Backups for Hard Links	
Configuring Backups for NFS-Mounted File Systems	
Configuring Backups for Locked Files Enabling Backups of Locked Files	
Configuring Backups for Macintosh Files	
Configuring the Locale for Non-ASCII Characters	
Configuring Backups for Automatically Skipped File Systems	
Enabling Backups for Skipped File Systems	
Adding the Skipped File System to Subclient Content	
Configuring Filters for Backups Filtering Files from a Backup	
Configuring Exclusions to Filters	
Deleting a Filter	
Configuring the Scan Method for Detecting Changed Files	
Configuring the Kernel Parameters	
Configuring Multi-Streaming for Backups	
Configuring the Index for Backups	
Creating a New Index on a Full Backup	
Converting to a Full Backup on Indexing Failures	
Configuring Incremental/Differential Backups using Ctime and Mtime	
Configuring Pre/Post Processing for Backups	
Setting Up Pre/Post Processes Setting Up Post Processes To Run During Failures	
Configuring Sparse Files for Restores	
Modifying an Agent, Backup Set or Subclient	
Deleting an Agent, Backup Set or Subclient	

# UNDERSTANDING THE COMMCELL CONSOLE

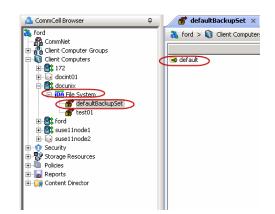
The File System *i*DataAgent uses the following entities to manage backup and restore operations from the CommCell Console.

# Subclient

A logical entity that uniquely defines a unit of data on a client computer.

### Backup Set

A group of subclients which includes all the data backed up by the *i*DataAgent.



# CONFIGURING USER DEFINED BACKUP SETS

You can create user defined backup sets to group a set of selected data that you need to backup. A user-defined backup set will contain its own default subclient.

# CREATING A BACKUP SET FOR ON DEMAND BACKUPS

On Demand backups allow content to be specified as an external input at the time of initiating a backup. Whereas traditional backups are performed using subclients, which contain fixed content configured prior to performing the operation, On Demand backups allow you to specify content each time you perform a backup.

Content for On Demand backups is defined through two entities:

- a **Content File**, which is a text file that defines the location of the data that you want to protect. Each Content File contains the fully qualified paths from the root directory to files, links, and devices to be backed up.
- a **Directive File**, which is a text file that defines where each Content File is located. The Directive File contains the fully qualified paths from the root directory to one or more Content Files. Only one Directive File is needed for a single On Demand backup.

Once these entities are defined, an On Demand Backup Set is then created. Backups run from this Backup Set will provide the facility to select the Content and Directive Files to be included.

### FORMATTING CONTENT AND DIRECTIVE FILES

Content File entries should be in the following format with no filters, wildcards, or regular expressions included:

\\client1\shares\ondemand\_content\test1.txt

/usr/datafile

/usr/textfile

/etc/docfile

Similarly, Directive File entries should be in the following format with no filters, wildcards, regular expressions, or blank lines:

/usr/ContentFile1

### CONFIGURING ON DEMAND BACKUP SETS

Create one or more Content Files defining the content to be backed up.

- 1. From the CommCell Browser, navigate to Client Computers | < Client >.
- 2. Right-click the File System, point to All Tasks and then click New On Demand Backup Set.
- 3. In the **New Backup Set Name** box, type a name (up to 32 characters).
- 4. Click OK.

Create a Directive File defining the locations of each Content File.

Once an On Demand Backup Set has been created, it cannot be changed into a traditional backup set.

Create new On I	)emand Backup Set 🛛 🛛 🔀				
Client Computer:	doclocalvm				
iDataAgent:	File System				
New Backup Set Name:					
Storage Policy:	SP1 💌				
Subclient content may contain wild card entries					
C	OK Cancel Help				

### ADDING FILES AND FOLDERS WITH UNICODE CHARACTERS TO CONTENT FILES

If the path or the filename contains Unicode characters, the Content File must be converted to a format that can be used by the data protection operation. The Unicode Conversion utility must be used to convert the Content File to a format that can be provided as input.

- 1. Using a text editor, create a file that contains a list of files/folders with Unicode characters. Make sure to save the file as a Unicode text file.
- 2. From the Command Line, navigate to the <software install folder>/base folder and type the following:

cvconvertunicode <source file> <destination file>

Where:

<source file> is the full path and name of the file created in Step 1.

<destination file> is the full path and name of the destination file. The file will automatically be created by the utility.

3. Use the destination file as the content file to perform an On-Demand backup.

### PREVENTING DUPLICATE BACKUPS OF FILES

On-Demand Backups explicitly backs up the files listed in the Content File. If the Content file has two entries for the file, the file can be backed up twice.

For example, consider a Content File that lists the following entries:

/usr/

/usr/textfile

In this scenario, a backup operation will back up the contents of all data residing in the textfile folder twice as the Content File already has the entry for the

parent folder to be backed up.

It is recommended that Content Files do not include such duplicate entries. If you are not able to avoid duplicate entries, use the following steps to prevent the duplication of data.

### CONFIGURING CONTENT FILE TO EXCLUDE DUPLICATE ENTRIES

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the <*Client*> in which you want to add the registry key, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name field, type OnDemand\_AutoExpandDir.
- 6. In the Location list, type FileSystemAgent.
- 7. In the Type list, select Value.
- 8. In the Value field, type 0.
- 9. Click OK.

Client Computer	Properties	6				×
General Version Encryption Adva		vity Control It Indexing	Groups F Registry Ke	irewall Configura y Settings	tion Job C Client Side De	Configuration eduplication
Name	Location	Туре	V	alue	Enabled	*
	Add Registry Ke	u co Ileia (				
	onde		utoExpan	dDir		
	i licoy.	stemAger	nt		×	
Ту	Talato				······································	
Va	lue 0					
			ОК	Cancel	Help	
						×
		Add	Edit Dele	te		
				ОК	Cancel	Help

# **CONFIGURING USER DEFINED SUBCLIENTS**

You can create user-defined subclients to protect specific portions of the client data. For example, you may need to frequently backup a specific directory or a set of directories. You can create a subclient for such directories and schedule frequent backups for that subclient.

By default, the content of the Default Subclient contains the entire file system.

When you create a user-defined Subclient, the contents of the user-defined Subclient will be excluded from the Default Subclient.

# CREATING A SUBCLIENT TO BACKUP SPECIFIC FILES

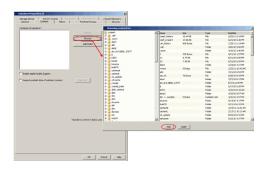
You can create a user-defined subclient to manage and backup specific data files.

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System | Backup Set.
- 2. Right-click the Backup Set, point to All Tasks and then click New Subclient.
- 3. In the Subclient Name box, type a name.
- 4. Click the Storage Device tab.
- 5. In the Storage Policy list, click a storage policy name.
- 6. Click the **Content** tab.
- 7. Click Browse.
- 8. Select the directory or file to be backed up and click **Add**.
- Repeat this step to include all the files and directories to be backed up.
- 9. Click Close.
- 10. Click **OK**.

# CREATING A SUBCLIENT TO BACKUP SYMBOLIC LINKS

A symbolic link is a file that points to another file. By default, the symbolic link file will be included in the subclient content. However, use the following procedure to expand and backup the path in the symbolic link.

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System.
- 2. Right-click the Backup Set, point to All Tasks and then click New Subclient.
- 3. In the Subclient Name box, type a name.



- 4. Click the **Storage Device** tab.
- 5. In the Storage Policy list, click a storage policy name.
- 6. Click the **Content** tab.
- 7. Select the **Expand symbolic links of subclient content** check box and then click **Discover**.

The data paths to which the symbolic links in the data contents are pointing will be displayed in contents of subclient.

8. Click **OK**.



### ENABLING BACKUP OF SYMBOLIC LINK CONTENTS ON A SUBCLIENT

Backup of content pointed by the symbolic links can be enabled at the subclient level.

Use the following steps to follow the symbolic links under a subclient and include the content pointed by these links for backup:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System | Backup Set.
- 2. Right-click the *Subclient>* and then click **Properties**.
- 3. Click the **Content** tab.
- 4. Click Browse.
- Select the directory or file to be backed up and click Add.
   Repeat this step to include all the files and directories to be backed up.
- 6. Click Close.
- 7. Select the **Expand symbolic links of subclient content** check box and then click **Discover**.

The data paths to which the symbolic links in the data contents are pointing will be displayed in contents of subclient.

8. Click OK.

Subclient Properties of default		
Storage Device Activity Control	Encryption 1-T Pre/Post Process	ouch Recovery Security
Contents of subclient:	-	
/home/user	Delete	
	Browse	1
	Add Paths	1
T Enable Agple Double Support Expand symbolic links of subclient content	Discover	
	OK Cano	el Help

## ENABLING BACKUP OF SYMBOLIC LINK CONTENTS ON A CLIENT

Symbolic links are backed up by default when they are part of subclient content. In addition to symbolic links, you can enable back up of data pointed by symbolic links that are present under the subclient content path but reside outside the content path.

For example, consider a subclient with content as /home/user having symbolic links under this directory:

/home/user/lib->/usr/lib/

/home/user/commonProfile.rc->/etc/commonProfile.rc

When you enable the option, symbolic links as well as the data they are pointing to will be backed up, i.e., the data content of the directories, /user/lib and /etc/commonProfile.rc is backed up.

Note that data will be backed up unless there is another subclient with content covering the path the symbolic link is pointing to; if the other subclient is not scheduled for backup, loss of data due to user error will occur.

Use the following steps to enable backup of data pointed by symbolic links:

- 1. From the CommCell Console, navigate to Client Computers.
- 2. Right-click the <*Client*> and click Properties.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the Name field, type nBackupSymLinkData.

- 6. In the Location field, type FileSystemAgent.
- 7. In the **Type** list, select **VALUE**.
- 8. In the **Value** field, type 1 to enable following symbolic links and back up data.
- 9. Click **OK**.

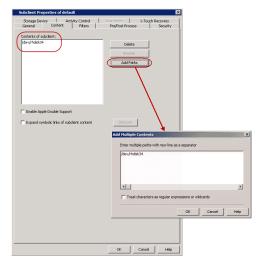
Duplicate links and certain kinds of circular links (e.g.,  $/a/b/c/d \rightarrow /a/b$ ) are excluded from the subclient content automatically.

General Policies	Version Sec Job Configura		Control   G tion   Adva		wall Configuration ent Indexing	Network Thre Registry Key Set	
Na	ame	Location	Тур	e	Value	Enabled	
	Add Reg Name Location Type Value	j <mark>istry Key on Ul</mark> nBackupSymLini FileSystemAger VALUE 1	kData1 nt			X	
					<u></u> Help		

# CREATING A SUBCLIENT TO BACKUP RAW DEVICES

You can create subclients to backup block and character raw devices. You can include raw device files referenced by one or more symbolic links in the subclient content. The following should be noted:

- Use character device files instead of block device files for achieving better backup and restore performance.
- Raw devices are backed up using Full Backups.
- Raw device backups are not restartable. Hence, it is recommended to run these backups under high priority.
- Number of bytes backed up is always displayed as 0 on the CommCell Console even for a successful backup. However, the correct number of backed-up bytes is displayed in the Job History.
- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System.
- 2. Right-click the Backup Set, point to All Tasks and then click New Subclient.
- 3. In the Subclient Name box, type a name.
- 4. Click the Storage Device tab.
- 5. In the **Storage Policy** list, click a storage policy name.
- 6. Click the **Content** tab.
- 7. Click Add Paths.
- 8. Type the raw device path (e.g., /dev/rhdisk34).
- 9. Click OK.
- 10. Click **OK** to close the **Subclient Properties** dialog box.



# **CONFIGURING BACKUPS FOR HARD LINKS**

Data can be linked to two or more files using hard links. By default, the hard links are backed up twice. Use the following steps to prevent duplicate backups of hard links.

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the <*Client*>, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name field, type HLINK.
- 6. In the Location list, type FileSystemAgent.
- 7. In the **Type** list, select **value**.

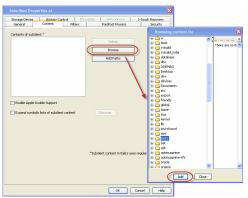
General Vers		ctivity Control	Groups Firewal Config		
Encryption	Advanced Con	tent Indexing	Registry Key Settings	Client Side Dedupli	cation
Name	Location	Type	Value	Enabled	
	Add Registry	Key on Unix (	lient	X	
	Add Registry	Key on Unix C	lient	×	

- 8. In the **Value** field, type  $\mathbf{y}$ .
- 9. Click OK.

# **CONFIGURING BACKUPS FOR NFS-MOUNTED FILE SYSTEMS**

By default, NFS mounted file systems are not included in the default subclient. You can include NFS mounted file systems to an existing subclient using the following steps:

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System | BackupSet.
- 2. Right-click the *Subclient>* in the right pane, and then click **Properties**.
- 3. Click the **Content** tab.
- 4. Click Browse.
- 5. Select the NFS mount point to be included in the backup.
- 6. Click Add.
- 7. Click Close.
- 8. Click **OK**.



# **CONFIGURING BACKUPS FOR LOCKED FILES**

Files with advisory locks are backed up by default. However, files with mandatory locks are skipped during backups. Use the following methods to configure the backups of files with mandatory locks.

# ENABLING BACKUPS OF LOCKED FILES

You can ignore the file lock detection and backup the files with mandatory locks using the following steps:

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the *<Client>*, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the **Name** field, type **sskiplockf**.
- 6. In the Location list, type FileSystemAgent.
- 7. In the **Type** list, select **value**.
- 8. In the Value field, type Y.
- 9. Click OK.

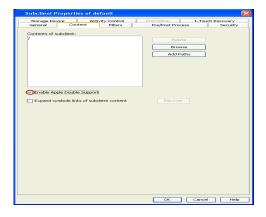
Seneral Ver Encryption	sion Securi Advanced	ty Activity Control Content Indexing	Groups Firewall Confi Registry Key Settings		Configuration
Vame	Locati	on Type	Value	Enabled	
		gistry Key on Unix	Client		
	Name	SSKIPLOCKF			
	Location	FileSystemAger	nt	×	
	Туре	Value		· · · · · · · · · · · · · · · · · · ·	
	Value	Y			
			OK Cancel	Help	
		Add	Edit Delete		

# **CONFIGURING BACKUPS FOR MACINTOSH FILES**

By default, the File System *i*DataAgent backs up Macintosh files on a shared mount point. During these backups, if the data on the Macintosh file system share are Apple Double formatted files, they are backed up as two separate files.

Use the following steps to backup the Apple Double formatted Macintosh files as a single file:

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System | Backup Set.
- 2. Right-click the *Subclient>* in the right pane and click **Properties**.
- 3. Click the Content tab.
- 4. Select the Enable Apple Double Support check box.
- 5. Click OK.



# **CONFIGURING THE LOCALE FOR NON-ASCII CHARACTERS**

To backup and restore files containing non-ASCII (international) characters appropriate locale has to be configured in the server. Once configured, these settings enable you to:

- Back up files with names containing non-ASCII characters.
- Restore file names containing non-ASCII characters without distortion.
- Properly display files with non-ASCII characters when browsing subclient content or backup data

The following steps use the example of KOI-8R character encoding scheme to store the files with Russian names.

- 1. Logon to the client as **root** and stop the Services.
- 2. Run the **locale** command (with no options) to determine which locale is currently set on the server. A sample output is shown in the example.

Use the  ${\tt LC}$   ${\tt CTYPE}$  environment variable to set the desired locale.

Run the locale command. A sample output is shown in the example.

### Calypso stop

Example: LANG=en\_US.iso885915 LC\_CTYPE="en\_US.iso885915" LC\_TIME="en\_US.iso885915" LC\_TIME="en\_US.iso885915" LC\_COLLATE="en\_US.iso885915" LC\_MONETARY="en\_US.iso885915" LC\_MESAGES="en\_US.iso885915" LC\_ALL=

This output shows that the <code>en\_US.iso885915</code> locale for the LANG environment variable is currently set.

Example:

### LC\_CTYPE=ru.koi8-r

export LC\_CTYPE

### Example:

Calypso start

LANG= en\_US.iso885915 LC\_CTYPE="ru.koi8-r" LC\_NUMERIC="ru.koi8-r" LC\_TIME="ru.koi8-r" LC\_COLLATE="ru.koi8-r" LC\_MONETARY="ru.koi8-r" LC\_MESAGES="ru.koi8-r" LC\_ALL=

### 6. Start the Services

Export the locale.

A properly configured system will have the correct locale set in one of the operating system startup scripts (e.g., /etc/profile). In case you do not want to change the locale for the entire system, you may make the changes to the Calypso startup scripts by editing the /opt/calypso/galaxy\_vm file

Example: LC\_CTYPE=ru.koi8-r export LC\_CTYPE

3.

4.

5.

To update the CRC consistency checking, include the following command as **root** from the Base directory:

/updatecrc32 galaxy/Base/Galaxy

Restart the server to allow the *i*DataAgent to start with the correct locale settings.

# **CONFIGURING BACKUPS FOR AUTOMATICALLY SKIPPED FILE SYSTEMS**

By default, the following file systems are automatically skipped during backups:

- nfs
- nfs3
- floppy
- cdfs
- proc
- autofs
- lofs
- ctfs
- tmpfs

However, you can include them in the backups using one of the following methods:

# ENABLING BACKUPS FOR SKIPPED FILE SYSTEMS

By default, the default subclient includes all the data in the client. However, the above mentioned file systems are not included in the backups. Use the following procedure to include the skipped file systems in the default subclient.

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the <*Client*>, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the **Name** box, type ignoreFStype.
- 6. In the Location list, type FileSystemAgent.
- 7. In the **Type** list, select **value**.
- 8. In the **Value** box, type ::.
- 9. Click **OK**.

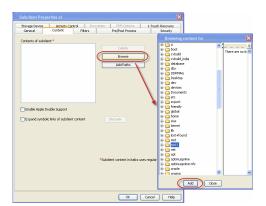
Seneral Ver Encryption		vity Control Grou ntent Indexing	ps Firewall Configuration Registry Key Settings	Policies Job Con Client Side Dedup	iguration ication
Name	Location	Туре	Value	Enabled	8
		y Key on Unix Cl	ient SUN		
		eFStype			
		stemAgent		×	
	Type VALL	E		~	
	Value ::				
		(	OK Cancel	Help	

# ADDING THE SKIPPED FILE SYSTEM TO SUBCLIENT CONTENT

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System.
- 2. Right-click the Backup Set, point to All Tasks, and then click New Subclient.
- 3. In the **Subclient Name** box, type a name.
- 4. Click the Storage Device tab.
- 5. In the **Storage Policy** list, select a Storage Policy name.
- 6. Click the **Content** tab.
- 7. Click Browse.
- 8. Select the skipped file system data to be backed up and click Add.
- 9. Click Close.
- 10. Click OK.

# **CONFIGURING FILTERS FOR BACKUPS**

You can set filters to prevent specific data from being backed up. Typically, you can use filters to exclude certain system-related files and database application files which consistently fail during a backup operation.



# FILTERING FILES FROM A BACKUP

Subclient-level backup filters are available for the File System iDataAgent to exclude specified directories and files from being backed up. Follow the steps given below to configure filters on a subclient:

- From the CommCell Browser, navigate to Client Computers | <Client> | File 1. System | Backup Set.
- Right-click the Subclient in the right pane and then click Properties. 2.
- 3. Click the Filters tab.
- 4. Under Exclude these files/folders/patterns, click Browse.
- Click the file, folder, or directory that you want to exclude from backup operations 5. and click Add.
- 6. Optionally, click Add under Exclude these files/folders/patterns and type the path to files and folders that you want to exclude. You can also enter patterns of files or folders using wild cards.

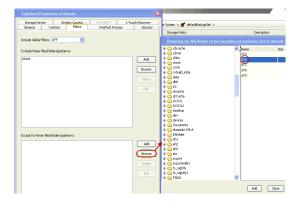
You cannot enter Escape sequence to specify the path or file name.

- 7. Click Close.
- 8. Click OK.

# CONFIGURING EXCLUSIONS TO FILTERS

Once you set the filters, you can also provide exceptions for the filters. The files or folders added to the exception list will be included in the backup operations. For example, if you want to exclude from your back up operation all the files in the /Ops directory except the Maintenance file. You can add a subclient filter to exclude the /Ops directory from being backed up and also provide an exception to allow the Maintenance file to be backed up.

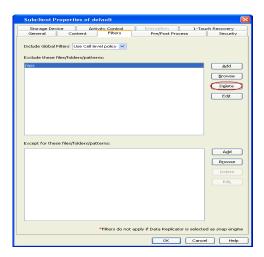
- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System | Backup set.
- Right-click the **<Subclient>** in the right pane and click **Properties**. 2.
- 3. Click the Filters tab.
- Under Except for these files/folders/patterns, click Browse. 4.
- Click the file, folder, or directory that you want to include in the backups and then 5. click Add.
- Click Close. 6.
- 7. Click **OK**.



# DELETING A FILTER

You can remove a filter by deleting it from the exclusion list.

- From the CommCell Browser, navigate to Client Computers | <Client> | File 1. System | Backup set.
- 2. Right-click the *Subclient* in the right pane, and then click **Properties**.
- 3. Click the Filters tab.
- 4. Under Exclude these files/folders/patterns, select the filter that you want to delete.
- 5. Click Delete.
- Click OK. 6.



# **CONFIGURING THE SCAN METHOD FOR DETECTING CHANGED FILES**

|--|

6.14 × 147 B

Activity Control Bilters

By default Classic File Scan is selected as the method for scanning files to determine which files have changed and/or have been backed up. However, you can also select Data Classification Enabler as the preferred method of scanning files. If you want to use Data Classification Enabler , see Data Classification.

Classic File Scan is always used when files or file level wildcards are used in the subclient content.

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System.
- 2. Right-click the **Backup set** in the right pane, and then click **Properties**.
- 3. Under **Job Options**, select the scan method.
- 4. Click **OK**.

General       Security         Client Name:       cvxpert         Billing Department:       Not Defined/Not Defined         DataAgent:       File System         Backup Set:       jdefaultBackupSet         On Demand:       no         If Make this the Default backup set:       Subclent content may contain wild Card entries         Subclent Policy: <none>         Vabo Options          Use Classification          Description          Description          OK       Cancel</none>	Backup Set Properties	
Billing Department:       Not Defined/Not Defined         DataAgent:       File System         Backup Set:       JefaultBackupSet         On Demand:       no         Make this the Default backup set:       Subclient content may contain wild card entries         Subclient Policy: <none>         Job Options       © Use Classic File Scan         Preserve File Access Time       © Use Data Classification         Description      </none>	General Security	
DataAgent: File System Badup Set: jefaultBadupSet On Demand: no Make this the Default badup set: Subclient content may contain wild card entries Subclient Policy: <none> Dob Options © Use Classification Description </none>	Client Name:	cvxpert
Badup Set: [defaultBadupSet] On Demand: no Make this the Default badup set: Subclient content may contain wild card entries Subclient Policy: <none> Dob Options Use Classific File Scan Preserve File Access Time Use Data Classification Description</none>	Billing Department:	Not Defined/Not Defined
On Demand:       no         Make: this the Default backup set:         Subclient content may contain wild card entries         Subclient Policy: <none>         Job Options         © Use Classic File Scan         Preserve File Access Time         © Use Data Classification</none>	iDataAgent:	File System
<ul> <li>Make this the Default backup set:</li> <li>Subclient content may contain wild card entries</li> <li>Subclient Policy: <a href="mailto:vno.symbol">vno.symbol</a></li> <li>Job Options         <ul> <li>Use Classic File Scan</li> <li>Preserve File Access Time</li> <li>Use Data Classification</li> </ul> </li> </ul>	Backup Set:	þefaultBackupSet
Subclient content may contain wild card entries Subclient Policy: <none>  Subclient Classic File Scan  Preserve File Access Time Use Data Classification  Description</none>	On Demand:	no
Subclient Policy: <none> Tob Options Use Classic File Scan Preserve File Access Time Use Data Classification Description</none>	Make this the Default bac	dkup set
Job Options  Use Classic File Scan  Preserve File Access Time Use Data Classification  Description	Subclient content may cor	ntain wild card entries
Use Classic File Scan     Preserve File Access Time     Use Data Classification	Subclient Policy:	<none></none>
Use Classic File Scan     Preserve File Access Time     Use Data Classification	Job Ontions	
Preserve File Access Time  Use Data Classification  Description		
Description		ess Time
	C Use Data Classification	n )
	<u> </u>	
OK Cancel Help	Description	
OK Cancel Help		
OK Cancel Help		
OK Cancel Help		
OK Cancel Help	Ľ.	
		OK Cancel Help

# **CONFIGURING THE KERNEL PARAMETERS**

The File System iDataAgent uses the operating system's kernel resources, such as shared memory, semaphores, etc., to perform data protection and recovery operations. If you are using an earlier version of the operating system, you can optimize the usage of these resources by setting the kernel parameter values.

The following table displays the possible range of values for each parameter:

If "\*" appears after the parameter name, this indicates that you can increment the value of the parameter based on the number of desired streams by using the formula

parameter value = 64 \* number of desired streams

as long as the "high-end" value of the range for the parameter is not exceeded.

PARAMETERS	DESCRIPTION	POSSIBLE RANGE OF VALUES
SEMMNI*	Defines the maximum number of semaphore sets in the entire system.	1 - 65535
SEMMAP	Defines the maximum number of semaphore map entries.	1 - 65535 (SEMMNI + 2)
SEMMNS*	Defines the maximum semaphores in the system	1 - 2147483647 [MAXINT] (Default value 128 is too low.)
SEMVMX	Defines the maximum value of a semaphore	32768
SHMMNI*	Defines the maximum number of shared memory segments in the entire system	1 - 2147483647 [MAXINT]
SHMMAX	Defines the maximum allowable size of one shared memory segment	0 – 4294967295 (Available physical memory); recommended value is 2147483648
SHMSEG*	Defines the maximum number of shared memory segments that one process can attach	0 - 32767
SEMMNU	Defines the maximum number of System V IPC system-wide processes that can have "undo" operations pending at any given time.	1 - (nproc-4) [256]; preferred value: 1024

Use the following steps to modify the kernel parameters with System Administrator Menu (SAM) for HP-UX File System:

- 1. From the unix prompt, enter the command to open the System Administrator Menu #sam (SAM).
- 2. In the SAM utility window, double-click the **Kernel Configuration** icon.
- Double-click the Configurable Parameters icon. SAM will display a screen containing a list of configurable parameters, including current and pending values.
- 4. Double-click on the parameter you wish to change.
- 5. Click **New Formula/Value** option and type the recommended value.

- Click OK. 6.
- 7. Restart the computer to allow the changes to take effect.

System Management Homepage (SMH) is the new tool introduced to manage HP-UX. Use the following steps to modify the kernel parameters using System Management Homepage (SMH) since the System Administration Manager (SAM) is deprecated in the current releases of HP-UX:

- 1. From the unix prompt, enter the command to open the System #smh Management Homepage (SMH) window.
- DISPLAY variable is not set. Starting the Text User Interface. 2. In the SMH Text User Interface, select **k** -Kernel Configuration and Please wait... HP-UX System Management Homepage (Text User Interface) press Enter. SMH

-----

- a Auditing and Securityc Auditing and Security Attributes Configuration(new)
- d Peripheral Devices
- e Resource Management
- f Disks and File Systems
- g Display k Kernel Configuration
- l Printers and Plotters(new)
  m Event Monitoring Service
- n Networking and Communications
- p Printers and Plotters
- Software Management
- u Accounts for Users and Groups \_\_\_\_\_

x-Exit smh w-WebLaunch 1-Help

ENTER-Launch Functional Area v-SAM Log Viewer

#### SMH->Kernel Configuration

\_\_\_\_\_

- t Tunables View or modify kernel tunables
  m Modules View or modify kernel modules and drivers
- a Alarms View or modify alarms for kernel tunables
   l Log Viewer View the changes made to kernel tunables or modules
- U Usage View usage of kernel tunables
   c Manage Configuration View the options available to manage configuration
- b Restore Previous Boot Values Restores Previous Boot Values for Tunable

----->

x-Exit smh ENTER-Select ESC-Back 1-Help

#### Select the parameter you wish to change and press Enter. For 4. Example, select semmni parameter.

3. Select the t - Tunables to view a list of configurable parameters,

including current and pending values and press Enter.

SMH->Kernel	Configuration->Tunables	(All)

Tunable	Tuning Capability	Current Value	Next Boot Value	t Default Value	Usage	Module
======================================	Static	16384	16384	16384 1	_	pm usync
semmni	Static	2048	2048	2048	1.4%	pm usync
semmns	Static	4096	4096	4096	3.7%	pm usync
semmnu	Static	256	256	256	-	pm usync
semmsl	Dynamic	2048	2048	2048	-	pm_usync
semume	Static	100	100	100	-	pm usync
semvmx	Static	32767	32767	32767	-	pm_usync
shmmax	Dynamic	1073741824	1073741824	1073741824	3.1%	vm asi
shmmni	Dynamic	400	400	400	2.2%	vm asi
shmseg	Dynamic	300	300	300	-	vm asi

x-Exit smh ESC-Back p-Pending b-Restore Previous Boot Values 2-kctune Manpage /-Search

ENTER-Details m-Modify d-Dynamic 1-Help 3-Tunable Manpage

Press **m** to modify the selected parameter. 5

Use the following formula to calculate the value for the parameter: parameter value = current value + (64 \* number of desired streams)

- If the client is configured as *i*DataAgent, be sure to allocate 10 streams per each affected parameter. If the client is configured as a MediaAgent, be sure to allocate at least 100 additional streams per each affected parameter.
- If the system is configured as both an iDataAgent and a MediaAgent, be sure to consider the sum of the respective parameter values for this purpose.

### 6. • Type the new parameter value in **New setting** [Expression/value]

- Type the new evaluated value for expression if needed in New setting [evaluated] or select Recalculate and press Enter.
- Select **Yes** to backup the current configuration before applying the change.
- Type the reason for modification in Reason for Change.
- Select Modify and press Enter.

#### SMH->Kernel Configuration->Tunables (All)->Details Details : semmni \_\_\_\_\_

Tunable	semmni

	Description Maximum number of semaphore sets on the system
	Dynamic no
	Subsystem pm_usync
;	Default Value 2048
	Current Value 2048
	Planned Value 2048
	Last Boot Value 2048
	Constraints semmni >= 2
	Constraints semmni <= 32767
	Constraints semmni <= semmns
	Auto Tuning Not Supported
	Current Usage 28
	x-Exit smh m-Modify

ESC-Back 1-Tunable Help

### SMH->Kernel Configuration->Tunables (All)->Details->Modify

Tunable semmni Description Maximum number of semaphore sets on the system Module pm\_usync Current Value 2048 [Default] Value at Next Boot 2048 [Default] Value at Last Boot 2048 Default Value 2048 Constraints semmni >= 2 semmni <= 32767

7.	A Confirmation window will be displayed warning you that the	<pre>semmni &lt;= semmns Can Change At Next Boot Only NOTE: If the new Value is specified as Default, the next boot value will be default value for the tunable as recomended by HP. However, if the tunable is being autotuned then the value assigned will be determined dynamically by kernel during run-time. New setting[Expression/Value]:</pre>
	requested changes have been saved and will take effect at next boot. Press <b>Enter</b> to continue.	<pre>mount: ignoring incomplete/incorrect entry for /dev/dsk/c0t0d0 in /etc/fstab NOTE: The requested changes could not be applied to the currently running system, for the following reasons: - The tunable 'semmni' cannot be changed without a reboot. * The requested changes have been saved, and will take effect at next boot. Tunable Value Expression semmni (now) 2048 Default (next boot) 2048 2048 mount: ignoring incomplete/incorrect entry for /dev/dsk/c0t0d0 in /etc/fstab Command Successful press Enter Key to continue</pre>

8. Restart the computer.

# **CONFIGURING MULTI-STREAMING FOR BACKUPS**

File System Multi-Streaming employs multiple data streams per subclient for data protection operations. This enables the subclient's contents to be distributed to all the streams, transmitting them in parallel to the storage media. Hence a subclient whose data is secured using three data streams, utilizes more of the available network resources, and can complete in as little as one third the time that the same data would require using a single stream. You can allocate a maximum of 63 streams for a subclient.

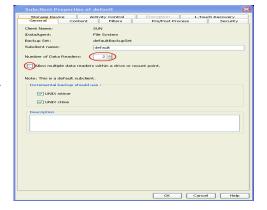
Note that, you do not have to enable multi-streaming if you have multiple mount points pointing to the same physical drive. Do not use multiple streams if you have added UNC paths to the subclient content.

Before enabling multi streaming, ensure that you can use multi-streaming when you restore the data and create an auxiliary copy.

Follow the steps given below to configure multi-streaming.

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System | Backup Set.
- 2. Right-click the *Subclient>* in the right pane and click **Properties**.
- 3. In the **Number of Data Readers** box type or select the number of data streams.
- 4. Select the Allow multiple data readers within a drive or mount point checkbox.
- 5. Click the Storage Device tab.
- 6. In the Storage Policy list, click a storage policy name.
- 7. Click **OK**.

The number of streams configured in the Storage Policy should be equal to, or greater than the specified **Number of Data Readers**.



# **CONFIGURING THE INDEX FOR BACKUPS**

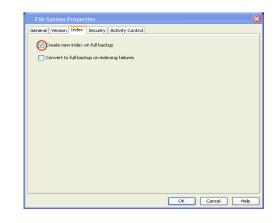
# CREATING A NEW INDEX ON A FULL BACKUP

This option accelerates Full or On Demand backups and is enabled by default. Subsequently, when you perform a browse and restore operation, the default browse displays data up to the most recent full backup. To browse and restore older data you have to use the options to browse before or between specific dates.

When disabled, Full or On Demand backups may be slower. However, the default browse displays all data in the entire retention period; not just one full backup cycle.

Use the following steps to configure this option for all subclients. This option can also be set for the individual backups when initiating the job.

- 3. Click the Index tab.
- 4. Select the Create new index on Full Backup check box.
- 5. Click OK.



# CONVERTING TO A FULL BACKUP ON INDEXING FAILURE

Use this option to ensure that the backup does not fail if the index is irretrievable. When disabled, the backup will fail if the index is irretrievable.

- 3. Click the **Index** tab.
- 4. Select the Convert to full backup on indexing failures check box.
- 5. Click OK.

File System Properties	×
General Version Index Security Activity Control	
Create new index on full backup	
Convert to full backup on indexing failures	
	OK Cancel Help

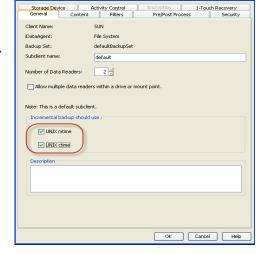
# **CONFIGURING INCREMENTAL/DIFFERENTIAL BACKUPS USING CTIME AND MTIME**

Incremental and differential backups can be configured depending on the changed time. The changed time can include ctime (changes in the file properties) or mtime (changes to the data in the file). You can use ctime to include the files with their properties changed since last backup/last full backup. Similarly, you can use mtime to include the files with their data changed since last backup/last full backup.

The ctime and mtime will be applicable only for the volumes which are scanned by the Classic File Scan. When the Data Classification is used for scanning the volumes, ctime and mtime will not be taken into account.

Follow the steps given below to configure an incremental backup using ctime and mtime options.

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System | Backup Set.
- 2. Right-click the *Subclient* in the right pane, and then click **Properties**.
- 3. Under Incremental backups should use, select the change time (ctime or mtime).
- 4. Click OK.



nt Properties of defa

# **CONFIGURING PRE/POST PROCESSING FOR BACKUPS**

# SETTING UP PRE/POST PROCESSES

You can add and modify Pre/Post processes for a subclient. These are batch files or shell scripts that you can run before or after certain job phases. For example, you can use an echo command to check the level of a backup. Similarly, you can include a case statement within a script to run specific operations based on the level of the backup job.

A Save As Script file can also be run as a pre/post process, if you include the absolute path of the associated input file in the script file.

The first line of the script must execute a command that is designed to call in the pre/post program. Ensure that you have included the appropriate command in the first line of the script.

The following is an example of a typical pre/post script:

#!/bin/bash base='basename \$0' echo \$0, 'date' > /extra/aah/RESULTS/\$base.out exit 0

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System | BackupSet.
- 2. Right-click the <**Subclient**> in the right pane, and then click **Properties**.
- 3. Click the Pre/Post Process tab.
- 4. Depending on the process you want to set up, click the corresponding **Browse** button.
- 5. Select the process and then click **OK**.

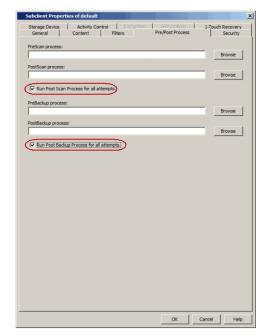
Subclient Properties of default		
Storage Device Activity Control General Content Filters (	Encryption Pre/Post Proce	1-Touch Recovery 555555555555555555555555555555555555
PreScan process: PostScan process:		Browse
Run Post Scan Process for all attempts.		Browse
PreBackup process:		Browse
Run Post Backup Process for all attempts.		Browse
		Cancel Help

### SETTING UP POST PROCESSES TO RUN DURING FAILURES

By default, a specified post process command is executed only on successful completion of the scan or backup operation or if the job is killed.

Use the following steps to run a post process even if the scan or backup operation did not complete successfully. For example, this may be useful to bring a database online or release a snapshot.

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System | BackupSet.
- 2. Right-click the <**Subclient**> in the right pane, and then click **Properties**.
- 3. Click the Pre/Post Process tab.
- 4. Select the Run Post Scan Process for all attempts check box.
- 5. Select the Run Post Backup Process for all attempts check box.
- 6. Click OK.



# **CONFIGURING SPARSE FILES FOR RESTORES**

The sparse files are restored by default as flat files, wherein the holes are restored as data. This will increase the disk usage. Use the following steps to restore the holes as genuine holes which will considerably reduce the disk usage.

- 1. From the CommCell Browser, navigate to **Client Computers**.
- 2. Right-click the <*Client*> in which you wish to perform the restore, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name field, type OptimizeRunLengths.
- 6. In the Location list, select or type iDataAgent.
- 7. In the Type list, select value.
- 8. In the **Value** field, type the value which should be greater than or equal to -1.
- 9. Click OK.

Name Location Type Value Enabled	General Vers Encryption	sion Security Advanced C	Activity Control ontent Indexing	Groups Firewall Configu Registry Key Settings	ration Job Config Client Side Dedupli	
Add Registry Key on Unix Client       Name     Optimiz eRunLengths       Location     iDataAgent       Type     Value       Value     V	Name	Location	Туре	Value	Enabled	
Value 1		Name Op Location iDa	tim iz eRunLen t aAgent			
OK Cancel Help			ue			
				OK Cancel	Help	

# **COMMAND LINE OPERATIONS**

You can add, modify or delete several configurable properties for the File System iDataAgent from command line.

Command line configuration enables you to:

- configure the same properties across multiple clients simultaneously.
- reuse the same configurations for additional entities.

The following sections describe the available command line configurations:

# LOG ON TO THE COMMSERVE

To run command line operations you must first login to the CommServe as follows:

From Command prompt, navigate to <Software\_Installation\_Directory>/Base and run the following command:

```
qlogin -cs <commserve name> -u <user name>
```

• For example, to log on to CommServe 'server1' with username 'user1':

qlogin -cs server1 -u user1

### **CONFIGURE SUBCLIENTS**

### CREATE SUBCLIENT

- 1. Download the create\_subclient\_template.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software\_Installation\_Directory>/Base folder after substituting the parameter values.

qoperation execute -af create\_subclient\_template.xml -appName 'File System' -clientName xxxxx -backupsetName xxxxx subclientName xxxxx -contentOperationType ADD -content/path 'xxxxx'

### GET SUBCLIENT PROPERTIES

- 1. Download the get\_subclient\_properties\_template.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software\_Installation\_Directory>/Base folder after substituting the parameter values.

qoperation execute -af get\_subclient\_properties\_template.xml -appName 'File System' -clientName xxxxx -backupsetName
xxxxx -subclientName xxxxx

### MODIFY SUBCLIENT

- 1. Download the update\_subclient\_add\_template.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software\_Installation\_Directory>/Base folder after substituting the parameter values.

qoperation execute -af update\_subclient\_add\_template.xml -appName 'File System' -clientName xxxxx -backupsetName xxxxx -subclientName xxxxx -contentOperationType xxxxx -content/path 'xxxxx'

### **RENAMING A SUBCLIENT**

- 1. Download the update\_subclient\_add\_template.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software\_Installation\_Directory>/Base folder after substituting the parameter values.

qoperation execute -af update\_subclient\_add\_template.xml -appName 'File System' -clientName xxxxx -backupSetName xxxxx -subclientName xxxxx -newName xxxxx

### DELETE SUBCLIENT

- 1. Download the delete\_subclient\_template.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software\_Installation\_Directory>/Base folder after substituting the parameter values.

qoperation execute -af delete\_subclient\_template.xml -appName 'File System' -clientName xxxxx -backupsetName xxxxx subclientName xxxxx

### **AVAILABLE PARAMETERS FOR SUBCLIENTS**

The following table displays all the parameters you can use with the commands mentioned in the above sections. To add a parameter to your command, use the following syntax: (Some examples are provided at the end of the table.)

PARAMETER	DESCRIPTION OF PARAMETER VALUES
clientName	Name of the client computer.
backupsetname	Name of the backup set. If the backup set name is not specified in the command query, the default backup set is used by default.
appName	Name of the application. In this case it would be 'File System'.
subclientname	Name of the subclient.
newName	New name of the subclient.
enableBackup	Option to enable/disable backup.
	Valid values are True/False.
encryptionFlag	Option to set the encryption points during backups. Valid values are:
	• ENC_MEDIA_ONLY, to encrypt the backup data after transmission and prior to storage on the media.
	• ENC_NETWORK_AND_MEDIA, to encrypt the backup data before transmission. The data is stored encrypted on the media.
	<ul> <li>ENC_NETWORK_ONLY, to encrypt the backup data for transmission and then decrypt the data prior to storage on the media.</li> </ul>
	ENC_NONE, to disable data encryption.
networkAgents	Number of Network Agents.
softwareCompression	Option to enable compression on the Client or MediaAgent computer. Valid values are:
	ON_CLIENT, to enable software compression on the client.
	<ul> <li>ON_MEDIAAGENT, to enable software compression on the MediaAgent.</li> </ul>
	OFF, to disable software compression.
throttleNetworkBandwidth	Enhancing backup performance by reducing network bandwidth overhead.
	Valid values are 0/1.
enableDeduplication	Option to enable deduplication on subclient.
	Valid values are True/False.
generateSignature	A component of deduplication performed on the client or MediaAgent computer. Valid values are:
	ON_CLIENT, to enable signature generation on the client.
	ON_MEDIA_AGENT, to enable signature generation on the MediaAgent.
	OFF, to disable signature generation.
storagePolicyName	Name of the Storage Policy to be associated for backup.
useGlobalFilters	Option to enable the use of global filters. Valid values are:
	ON, to enable global filters for the subclient.
	<ul> <li>USE_CELL_LEVEL_POLICY, to enable the use of global filters if the Use Global Filters on All Subclients option is enabled on the Control Panel (Global Filters) dialog. If the option is disabled, USE_CELL_LEVEL_POLICY will disable global filters for the subclient.</li> </ul>
	OFF, to disable global filters.
useVSS	Option to enable/disable VSS for backing up the file system data.
	Valid values are True/False.
useVSSForSystemState	Option to enable/disable VSS for backing up the system state.

qoperation execute -af <template XML file> -<parameter name> <value>

1	
	Valid values are True/False.
backupSystemState	Option to enable/disable back up of the system state.
	Valid values are True/False.
postBackupCommand	Path to the post process script that will be run after the backup.
postScanCommand	Path to the post process script that will be run after the scan phase
preBackupCommand	Path to the pre process script that will be run before the backup.
preScanCommand	Path to the pre process script that will be run before the scan phase
runAs	Option to specify the user name who has permissions to run the pre/post process scripts. Valid values are:
	• USE_IMPERSONATION, to specify a user with enough privileges to run the scripts. When using this value, you also need to provide the user credentials:
	-prepostUserName/userName <user name=""> -prepostUserName/password <password></password></user>
	<ul> <li>USE_LOCAL_SYS_ADMIN, to use the administrator account to run the scripts.</li> </ul>
content/path	Location of the content to be backed up. This parameter must be used along with the contentOperationType parameter, for example:
	-contentOperationType <value> -content/path '<path value="">'</path></value>
content/excludepath	Location of the content to be excluded from backup. This parameter must be used along with the contentOperationType parameter, for example:
	-contentOperationType <value> -content/excludepath '<path value="">'</path></value>
content/includepath	Location of the content to be included in the backup from the excluded list. This parameter must be used along with the contentOperationType parameter, for example:
	-contentOperationType <value> -content/includepath '<path value="">'</path></value>
contentOperationType	Modification type. Valid values are
	ADD, to add content to the subclient
	OVERWRITE, to overwrite contents to the subclient.
	DELETE, to delete the contents from the subclient.

# The following examples show how to add a parameter for a command:

Adding Content	To update the location for the subclient content, add the 'path' parameter to the following command:
	<pre>qoperation execute -af update_subclient_add_template.xml -appName 'File System' -clientName client1 -backupSetName backupSet1 -subclientName subclient1 -contentOperationType ADD - content/path '/etc'</pre>
Setting a Storage Policy	To assign a storage policy to a subclient, add the 'storagePolicyName' parameter to the following command:
	<pre>qoperation execute -af update_subclient_add_template.xml -appName 'File System' -clientName client1 -backupSetName backupset1 -subclientName subclient1 -storagePolicyName sp1</pre>

For detailed information on the Subclient parameters see Subclient Properties.

# LIST SCHEDULE POLICY ASSOCIATION

- 1. Download the sched\_policy\_association\_template.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software\_Installation\_Directory>/Base folder after substituting the parameter values.

qoperation execute -af sched\_policy\_association\_template.xml -taskName mypolicy

PARAMETER	DESCRIPTION OF PARAMETER VALUES
taskName	Name of the Schedule Policy to be associated.

# MODIFYING AN AGENT, BACKUP SET OR SUBCLIENT

The following table describes the properties that can be configured from the agent, backup set and subclient levels.

OPTION	DESCRIPTION	RELATED TOPICS
Preserving the File Access Time	This option allows you to prevent the file access time from being changed as a result of running data protection operations on the client. When this option is selected, the file access time will be preserved.	
	1. From the CommCell Browser, right-click the backup set, and then click <b>Properties.</b>	
	2. Select the <b>Preserve File Access Time</b> check box.	
	3. Click <b>OK</b> .	
Change Storage Policies	<ul> <li>You can modify the storage policies in any of the following situations.</li> <li>To include a different media for the backup operation.</li> <li>To use a storage policy with a different retention criteria.</li> </ul>	Refer to Storage Policies.
	You can change the storage policies from the subclient level.	

I		I
	1. From the CommCell Browser, navigate to Client Computers   <client>   File System   <backup set=""></backup></client>	
	2. Right-click the <b><i>user-defined Subclient</i></b> in the right pane, and then click <b>Properties</b> .	
	3. Click the <b>Storage Device</b> tab.	
	4. Select the <b>Storage policy</b> from the drop-down list.	
	5. Click <b>OK</b> .	
Rename a Backup Set or	You can rename backup sets and subclients.	
Subclient	Renaming BackupSet:	
	1. From the CommCell Bowser, navigate to <b>Client Computers</b>   <b><i>Client</i></b>   <b>File System</b> .	
	<ol> <li>Right-click the <i>Backup Set&gt;</i>, and then click <b>Properties</b>.</li> </ol>	
	3. In the <b>Backup Set</b> box, type a name.	
	4. Click <b>OK</b> .	
	Renaming subclient:	
	1. From the CommCell Browser, navigate to <b>Client Computers</b>   <i><client></client></i>   <b>File System</b>   <i>&lt;</i> Backup Set>.	
	2. Right-click the <i><user-defined subclient=""></user-defined></i> , and then click <b>Properties.</b>	
	3. In the <b>Storage Policy</b> list, click a storage policy name.	
	4. Click <b>OK</b> .	
Data Transfer Options	You can efficiently configure the available resources for transferring data secured by data protection operations from the subclient level. This includes the following:	Refer to Data Compression and Network Bandwidth Throttling.
	• Enable or disable <b>Data Compression</b> either on the client or the MediaAgent.	
	<ul> <li>Configure the transfer of data in the network using the options for Network Bandwidth Throttling and Network Agents.</li> </ul>	
	You can configure the data transfer options.	
	1. From the CommCell Browser, navigate to Client Computers   < <i>Client</i> >   File System   BackupSet.	
	2. Right-click the <b>Subclient</b> in the right pane, and then click <b>Properties</b> .	
	3. Click the <b>Storage Device</b> tab.	
	4. Click the <b>Data Transfer Option</b> tab.	
	5. Choose the appropriate software compression option for this subclient.	
	6. Select the <b>Throttle Network Bandwidth</b> check box, and set the required bandwidth.	
	7. Click <b>OK.</b>	
View Data Paths	You can view the data paths associated with the primary storage policy copy of the selected storage policy or incremental storage policy. You can also modify the data paths including their priority from the subclient level.	
	1. From the CommCell Browser, navigate to Client Computers   <client>   File System   BackupSet.</client>	
	2. Right-click the <b>Subclient</b> > in the right pane, and then click <b>Properties</b> .	
	3. Click the <b>Storage Device</b> tab.	
	4. In the <b>Storage Policy</b> list, click a storage policy name.	
	5. Click Data Paths.	
Configure Activity Control	You can enable backup and restore operations from the agent and subclient level. However, you can enable restore operations only from the agent level.	Refer to Activity Control.
	1. From the CommCell Browser, navigate to <b>Client Computers</b>   <b><i>Client</i></b>	
	2. Right-click the < <i>Client</i> > or < <i>Subclient</i> > in the right pane, and then click <b>Properties</b> .	
	3. Click the <b>Activity Control</b> tab and select or clear option(s) as desired.	
	4. Click <b>OK</b> .	
Configure User Security	You can configure user security from the agent or subclient level.	Refer to User Administration
	You can perform the following functions:	and Security.
	• Identify the user groups to which this CommCell object is associated.	
	Associate this object with a user group.	
	Disassociate this object from a user group.	
	1. From the CommCell Browser, right-click the subclient.	
	2. Click Properties.	
	3. Click the <b>Security</b> tab.	

	<ol> <li>Select the appropriate user groups to which you want to associate to the CommCell object from the Available Groups pane, and then move the user group to the Associated Groups pane.</li> <li>Click OK.</li> </ol>	
Enable/Disable Data Encryption	You can enable data encryption from the subclient level. Encryption must be enabled at the client level prior to configuring any instances residing on that client.	Refer to Data Encryption.
	1. From the CommCell browser, navigate to Client Computers   <client>   File System   <backup set=""></backup></client>	
	2. Right-click the < <b>Subclient</b> > in the right pane, and then click <b>Properties</b> .	
	3. Click the <b>Encryption</b> tab and select the desired encryption.	
	4. Click <b>OK</b> .	
View Software Version and Installed Updates	The <b>Version</b> tab, at the Agent level displays the software version and post-release service packs and updates installed for the component.	
	1. From the CommCell Browser, navigate to Client Computers	
	2. Right-click the < <i>Client</i> > for which you want to view the version and the click <b>Properties</b> .	
	3. Click the <b>Version</b> tab.	
	4. Click <b>OK.</b>	
CommCell Configuration Report	The CommCell Configuration Report provides the properties of the CommServe, MediaAgents, clients, agents, SRM agents, subclients, and storage policies within the CommCell based on the selected filter criteria.	Refer to CommCell Configuration.
	1. From the CommCell Browser, double-click <b>Reports</b> icon.	
	2. Select CommCell Configuration.	
	3. Click Run.	

# **DELETING AN AGENT, BACKUP SET OR SUBCLIENT**

When you delete an instance or backupset, the associated data is logically deleted and you can no longer access the corresponding data from CommCell Console for recovery purposes.

Refer to the troubleshooting article on Recovering Data Associated with Deleted Clients and Storage Policies for information on how to recover data if you accidentally delete an entity.

# DELETING AN AGENT

You need to uninstall or DeConfigure the agent software from the client computer before deleting from CommCell Browser. After you delete the client software, you can either leave the corresponding data intact for appropriate action or you can remove the data immediately. If you choose to remove the data immediately, you must delete the agent from the CommCell Browser. If you delete the agent, all of the agent's data is irretrievably lost.

- You cannot delete an agent while operations for that agent are running.
- 1. From the CommCell Browser, navigate to Client Computers | < Client >.
- 2. Right-click the *Agent*, and then click **Delete**.
- 3. A confirmation message is displayed with the following message:

This operation will permanently delete the data backed up from this level and it cannot be restored.

4. Click **OK** to continue with the deletion operation., or click **No** to abort the deletion.

## **DELETING A BACKUP SET**

Consider the following before deleting a Backup Set:

- You cannot delete a default Backup Set.
- Schedules associated with the Backup Set are also automatically deleted.
- 1. From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the <Backup Set>, and then click Delete.
- 3. A confirmation message is displayed, asking if you want to delete the Backup Set.

Click No to cancel the deletion and retain the Backupset, or click Yes to continue the deletion.

# DELETING A SUBCLIENT

Consider the following before deleting a subclient:

- You cannot delete a default subclient.
- Schedules associated with the subclient are also automatically deleted.
- 1. From the CommCell Browser, navigate to Client Computers | < Client> | < Agent> | < Backup Set>.
- 2. Right-click the *<subclient>* that you want to delete, and then click **Delete**.
- 3. A confirmation message is displayed, asking if you want to delete the subclient.

Click  ${\bf No}$  to cancel the deletion and retain the subclient, or click  ${\bf Yes}$  to continue the deletion.

Back to Top

### KEYWORDS

Apple Double Encoded Support, Classic Scan, Ctime, Hard Links, Hole, Locale for Non-ASCII character, Locked File, NFS Mount, mount point, Mtime, Raw device, Sparse File, Symbolic Link

# Advanced - HP-UX File System Backup

# TABLE OF CONTENTS

Full Backups	Command Line Backups
Incremental Backups	Log on to the CommServe
Differential Backups	Perform the Backup Generate the Command Line Script from the CommCell Console
Synthetic Full Backups Running Synthetic Full Backups Running an Incremental Backup Before or After a Synthetic Full Backup Verifying Synthetic Full Backups Ignoring Errors in Synthetic Full Backups Accelerated Synthetic Full Backups (DASH Full)	
Backing up Mount Points	
Disabling System Errors during Backups	
Scheduling A Backup	
Scheduling A Backup	
Performing an On Demand Backup	
Managing Jobs Restarting Jobs Controlling Jobs	
Additional Options	

# FULL BACKUPS

Full backups provide the most comprehensive protection of data.

- 1. From the CommCell Browser, navigate to **<Client>** | **File System** | **defaultBackupSet**.
- 2. Right click the *Subclient* and click **Backup**.
- 3. Select Full as backup type and Immediate to run the job immediately.
- 4. Click OK.

You can track the progress of the job from the **Job Controller** or **Event Viewer** window. When the backup has completed, the Job Controller displays **Completed**.

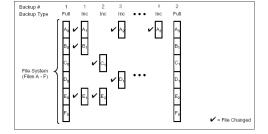


# **INCREMENTAL BACKUPS**

An incremental backup contains only data that is new or has changed since the last backup, regardless of the type. On average, incremental backups consume less media and use less resources than full backups.

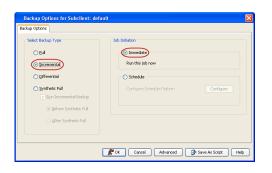
The illustration on the right clarifies the nature of full and incremental backups.

Follow steps given below to perform an incremental backup:



- 1. From the CommCell Browser, navigate to **<Client>** | **File System** | **defaultBackupSet**.
- 2. Right click the *Subclient* and click **Backup**.
- 3. Select Incremental as backup type and Immediate to run the job immediately.
- 4. Click OK.

You can track the progress of the job from the **Job Controller**. When the backup has completed, the **Job Controller** displays **Completed**.



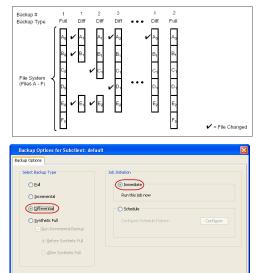
# **DIFFERENTIAL BACKUPS**

A differential backup contains only the data that is new or has changed since the last full backup. Like incremental backups, differential backups also consume less media and use less resources than full backups. Differential backups are cumulative. This means that each differential backup contains all changes accumulated since the last full backup. Each successive differential backup contains all the changes from the previous differential backup.

The illustration on the right demonstrates the nature of differential backups. For simplicity, assume there is a file system that contains six files as represented in the figure.

- From the CommCell Browser, navigate to <*Client*> | File System | defaultBackupSet.
- 2. Right click the *Subclient* and click **Backup**.
- 3. Select **Differential** as a backup type and **Immediate** to run the job immediately.
- 4. Click OK.

You can track the progress of the backup job from the **Job Controller**. When the backup has completed, the **Job Controller** displays **Completed**.



BOK Cancel Advanced Save As Script Help

# SYNTHETIC FULL BACKUPS

A synthetic full backup is a synthesized backup, created from the most recent full backup and subsequent incremental and/or differential backups. The resulting synthetic full backup is identical to a full backup for the subclient.

Unlike full, incremental, and differential backups, a synthetic full backup does not actually transfer data from a client computer to the backup media. Therefore, they do not use any resources on the client computer.

Synthetic full backups are media-based; they read backup data from one media and simultaneously write (restore) the result to the new active media within the same media group. As a result, synthetic full backups require that at least two media drives for the same storage policy be available at the time the job is started. Synthetic full backups cannot be performed on subclients where the storage policy is associated with a stand-alone drive.

# RUNNING SYNTHETIC FULL BACKUPS

Synthetic full backups can either be started manually or scheduled to occur at regular intervals. Do not concurrently run more than one synthetic full backup, especially synthetic full backups with multiple streams.

- From the CommCell Browser, navigate to <Client> | File System | defaultBackupSet.
- 2. Right click the *Subclient* and click **Backup**.
- 3. From the Backup Options window, select Synthetic Full for Backup Type.
- 4. Select Immediate for Job Initiation.
- 5. Click **OK**.

You can track the progress of the backup job from the **Job Controller**. When the backup has completed, the **Job Controller** displays **Completed**.



# RUNNING AN INCREMENTAL BACKUP BEFORE OR AFTER A SYNTHETIC FULL BACKUP

An incremental backup can be run either before or after a synthetic full backup.

- Running an incremental backup before the synthetic full ensures that any new or recently changed data is included in the synthetic full.
- Running an incremental backup after the synthetic full ensures that any new or recently changed data since the backup that occurred prior to the synthetic full, but was not included in the synthetic full, is backed up by the incremental.

The sections below describe the steps to run an incremental backup before or after a synthetic full backup:

- From the CommCell Browser, navigate to <*Client*> | File System | defaultBackupSet.
- 2. Right click the <**Subclient**> and click **Backup**.
- 3. From the Backup Options window, select Synthetic Full for Backup Type.
- Select Run Incremental Backup and then select Before Synthetic Full or After Synthetic Full options.
- 5. Select Immediate for Job Initiation.
- 6. Click OK.

You can track the progress of the backup job from the **Job Controller**. When the backup has completed, the **Job Controller** displays **Completed**.

Backup Options for Subclient: defa	ult
Backup Options	
Select Backup Type Ful Incremental Otherential Servitetes: Full Deferensist Deferensist Deferensist Deferensist Deferensist After Synthetic Full	Sub Initiation     O Immediate     Run this job now     Schedule     Contigure Schedule Platem     Conflue:
E «	Cancel Advanced Drave As Script Help

# VERIFYING SYNTHETIC FULL BACKUPS

This option ensures that files that have not backed up by incremental jobs since the last full backup are backed up by the next incremental.

For example: If you perform the conventional full backup only once for a given subclient and then perform incremental (or differential) backups and periodic synthetic full backups. After the conventional full backup, a file is added to the subclient and the file has a time stamp older than the time of full backup. In such scenario, the file will never get backed up. Eventually, such files may be pruned and no backup of such files will be available.

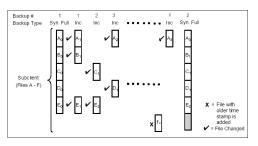
The illustration on the right explains the necessity of verifying synthetic full backups.

In order to overcome this problem, it is recommended to verify the synthetic full backups job periodically as follows:

- From the CommCell Browser, navigate to <*Client*> | File System | defaultBackupSet.
- 2. Right click the <**Subclient**> and click **Backup**.
- 3. From the Backup Options dialog box, select Synthetic Full.
- 4. Click Advanced.
- 5. In the Advanced Backup Options dialog box, click the Data tab.
- 6. Select **Verify Synthetic Full**. Click **OK** to continue.
- 7. Click **OK**.

### **IGNORING ERRORS IN SYNTHETIC FULL BACKUPS**

Errors encountered in synthetic full backups can be ignored, even if backup media is partially corrupted. Errors such as inability to read data (bad tape, files missing on disk media, etc.) will be ignored when this option is enabled.





- From the CommCell Browser, navigate to <Client> | File System | defaultBackupSet.
- 2. Right click the subclient and click Backup.
- 3. From the Backup Options dialog box, select Synthetic Full.
- 4. Click Advanced.
- 5. In the Advanced Backup Options dialog box, click the Data tab.
- 6. Select Verify Synthetic Full and then select Ignore Error in Synthetic Full.
- 7. Click **OK** to close the **Advanced Backup Options** dialog box.
- 8. Click **OK** .

# ACCELERATED SYNTHETIC FULL BACKUPS (DASH FULL)

When a storage policy copy is deduplicated, synthetic full backups can be created in an accelerated mode to significantly reduce the copy duration. This is done by identifying and transferring the data signatures (instead of the data itself) to the target wherever possible.

Learn more...

# **BACKING UP MOUNT POINTS**

Backups follow mount points by default, backing up both the configuration and the data on the mounted volume. You can use another subclient to backup the data on the mounted volume. In such case, you can exclude the data on the mounted volume from the default backup.

- 1. From the CommCell Browser, navigate to *Client* | **File System** |**defaultBackupSet**.
- 2. Right click the default <**Subclient**> and click **Backup**.
- 3. Select Full as backup type and Immediate to run the job immediately.
- 4. Click Advanced and select the Advanced Backup Options dialog box.
- 5. In the Advanced Backup Options dialog box, click the Data tab.
- Select (or clear) Follow Mount Points to include (or exclude) mount point data from the subclient.
- 7. Click **OK**.

Depending upon your selection, the mount point data will be included or excluded from the default subclient backup.

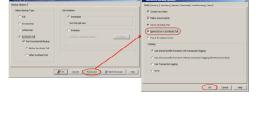
When backups are run from multiple nodes on clustered file systems, the same content is backed up multiple times. Backups should be run on only one node to avoid such duplicate content backups. However, the other nodes can also be configured to run backups but make sure that the clustered file system mount point is added to the file system exclusion list of the physical machine's subclients.

For VERITAS Cluster File System, the clustered file system mount point is added automatically to the file system exclusion list when backup is run for the first time on the virtual node/s.

# **DISABLING SYSTEM ERRORS DURING BACKUPS**

By default, system errors are displayed during backup operations; for example, file not found. Use the following steps to ignore such specific system errors:

- 1. From the CommCell Console, navigate to **Client Computers**.
- 2. Right-click the <*Client*>, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name field, type backupDoNotReportFileError.
- 6. In the Location list, type FileSystemAgent.
- 7. In the Type list, select Value.
- In the Value field, type <errcode1, errcode2, errcode3...> where errcode1, errcode2, errcode3 are error codes to ignore.
- For example, 65521.
- 9. Click OK.





General Versio Job Configuration		ity Control Groups Fi anced Content Indexing	rewall Configuration Registry Key Settings	Network Throttle Client Side Dedup	Polici Icati
A 1 Name	Location	Туре	Value	Enabled	
	Name Location Type	stry Key on Unix Client fi backupDoNotReportFleErro FleSystemAgent VALUE 65521 OK Car			

# **COMMAND LINE BACKUPS**

You can perform backups of file system data from the command line interface.

Command line backups enable you to perform backup operation on multiple clients simultaneously. In order to run the backups from command line, you need an input xml file which contains the parameters for configuring the backup options. This input xml file can be obtained from one of the following ways:

- Download the input xml file template and save it on the computer from where the backup will be performed.
- Generate the input xml file from the CommCell Console and save it on the computer from where the backup will be performed.

### LOG ON TO THE COMMSERVE

To run command line operations you must first login to the CommServe as follows:

• From Command prompt, navigate to <Software\_Installation\_Directory>/Base and run the following command:

```
qlogin -cs <commserve name> -u <user name>
```

• For example, to log on to CommServe 'server1' with username 'user1':

```
qlogin -cs server1 -u user1
```

# PERFORM THE BACKUP

- 1. Download the backup\_template.xml file and save it on the computer from where the command will be executed.
- 2. Execute the saved .xml script using qoperation execute command.

qoperation execute -af backup\_template.xml -appName 'File System' -clientName xxxxx -backupsetName xxxxx subclientName xxxxx -backupLevel FULL

3. Verify the status of the job using the following command:

qlist job -j JOBID

4. Once the job completes, logout from the CommServe using the qlogout command.

qlogout [-cs commserver] [-all] [-tf tokenfile] [-tk token] [-h]

# EXAMPLES

	qoperation execute -af backup_template.xml -appName 'File System' -clientName client1 - backupsetName backupset1 -subclientName subclient1 -backupLevel FULL
Performing an Incremental	qoperation execute -af backup_template.xml -appName 'File System' -clientName client1 -
Backup	backupsetName backupset1 -subclientName subclient1 -backupLevel INCREMENTAL

### GENERATE THE COMMAND LINE SCRIPT FROM THE COMMCELL CONSOLE

In addition to the parameters provided in the template xml file, if you want to include additional options for the backup, you can do so by selecting the required

options from the CommCell Console and generate the command line xml script for the backup.

Follow the steps given below to generate a script which you can use to perform a backup from the command line interface:

- 1. From the CommCell Console, navigate to *Client>* | **File System** | **defaultBackupSet**.
- 2. Right click the default subclient and click **Backup**.
- 3. Select the required backup options which you want to execute using the script.
- 4. Click Save as Script.
- 5. Enter the location where you want to save the script or click **Browse** and navigate to the location.

The script will be saved as a .xml file and a .bat file is created.

If a file with the same name already exists in the specified location, the .xml file will be created with a timestamp. However, the .bat file will overwrite the existing file.

Enter the username and password for the user account which you want to use to perform the backup.

By default, the user account which you have used to login to CommCell console is used for performing the backup. However, if the user account does not have access to any application or database, click **Use a different account**.

7. Click **OK**.

1.

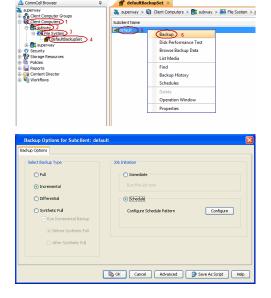
Backup Options f	or Subelient: def	fault 🛛 🔛
ckup Options		
Select Backup Type		Job Initiation
⊙ Full		
		<ul> <li>Immediate</li> </ul>
<ul> <li>Incremental</li> </ul>		Run this job now
<ul> <li>Differential</li> </ul>		O Schedule
Synthetic Ful		-
	emental Backup	Configure Schedule Patterr
Befor	e Synthetic Full	
After	Synthetic Full	
🖉 ок	Cancel Ad	dvanced Grave As Script Help
Save As Script		
outer to campe	1.1	
lient achai64		
ashai64		•
- the		
Path		Browse
Mode		
Asynchronous		<ul> <li>Synchronous</li> </ul>
Asynchronous		Synchronous
Specify user account	t to run the script	
I lee the curre	ntly logged in user ac	count
Solution Carre	nuy logged in user de	count
User Name:	a desta	
ober Humer	admin	
O Use a differer	nt user account	
-		
User Name:		
Password:		
Confirm Passw	ord:	
000000000000000000000000000000000000000		
		OK Cancel Help

# SCHEDULING A BACKUP

- From the CommCell Browser, navigate to <*Client*> | File System | defaultBackupSet.
  - Right-click the Subclient and click Backup.

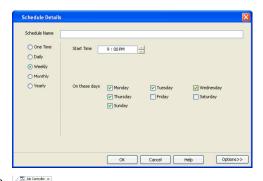
• Select the **Backup type**.

- Click Schedule.
- Click the **Configure** button.



3. Select the appropriate scheduling options.

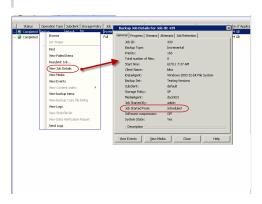
- For example, use the following steps to create a weekly schedule:
- Type a name for the schedule in the **Schedule Name** box.
- Click Weekly.
- In the **Start Time** box type or select the schedule start time.
- Click and select the days to run the schedule.
- Click OK.



n... Agent Type Subdient Job Type Phase Storage P... MediaAgent Stat

Job ID Operation

- 4. When the schedule is run, the **Job Controller** window will display the job as shown in the sample image.
- 5. Once the job is complete, you can view the job details from the Backup History.
  Right-click the Subclient and select View Job Details.



See Scheduling for a comprehensive information on scheduling jobs.

# **PERFORMING AN ON DEMAND BACKUP**

- From the CommCell Browser, navigate to <*Client*> | File System |<*On Demand Backup Set*>.
- 2. Right click the <**Subclient**> and click **Backup**.
- 3. Click Browse.
- 4. Navigate to the Directive file or Content file that you want to use.
- 5. Click OK.
- 6. Select Immediate to run the job immediately.
- 7. Click OK.

You can track the progress of the backup job from the **Job Controller**. When the backup has completed, the **Job Controller** displays **Completed**.

# **MANAGING JOBS**

Jobs can be managed in a number of ways. See Job Management for a comprehensive information on managing jobs.

The following sections provide information on the different job management options available:

# **RESTARTING JOBS**

Jobs that fail to complete successfully are automatically restarted based on the job restartability configuration set in the Control Panel. Keep in mind that changes made to this configuration will affect all jobs in the entire CommCell.

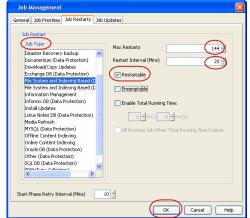
To Configure the job restartability for a specific job, you can modify the retry settings for the job. This will override the setting in the Control Panel. It is also possible to override the default CommServe configuration for individual jobs by configuring retry settings when initiating the job. This configuration, however, will apply only to the specific job.

Backup jobs for this Agent are resumed from the point-of-failure.



### CONFIGURE JOB RESTARTABILITY AT THE COMMSERVE LEVEL

- 1. From the CommCell Browser, click Control Panel icon.
- 2. Select Job Management.
- 3. Click Job Restarts tab and select a Job Type.
  - Select **Restartable** to make the job restartable.
  - Change the value for **Max Restarts** to change the maximum number of times the Job Manager will try to restart a job.
  - Change the value for Restart Interval (Mins) to change the time interval between attempts for the Job Manager to restart the job.
- 4. Click OK.



## CONFIGURE JOB RESTARTABILITY FOR AN INDIVIDUAL JOB

- 1. From the CommCell Browser, navigate to <Client> | File System.
- 2. Right-click the *Subclient*>and select **Backup**.
- 3. Click Advanced.
- 4. In the Advanced Backup Options dialog box, click the Job Retry tab.
- 5. Select **Enable Total Running Time** and specify the maximum elapsed time before a job can be restarted or killed.

Select **Kill Running Jobs When Total Running Time Expires** to kill the job after reaching the maximum elapsed time.

6. Select Enable Number Of Retries and specify the number of retries.



### **CONTROLLING JOBS**

The following controls are available for running jobs in the Job Controller window:

Temporarily stops a job. A suspended job is not terminated; it can be restarted at a later time. SUSPEND	
	Resumes a job and returns the status to Waiting, Pending, Queued, or Running. The status depends on the availability of resources, the state of the Operation Windows, or the Activity Control setting.
KILL	Terminates a job.

### SUSPENDING A JOB

- 1. From the Job Controller of the CommCell Console, right-click the job and select Suspend.
- 2. The job status may change to Suspend Pending for a few moments while the operation completes. The job status then changes to Suspended.

### **RESUMING A JOB**

- 1. From the Job Controller of the CommCell Console, right-click the job and select Resume.
- 2. As the Job Manager attempts to restart the job, the job status changes to Waiting, Pending, or Running.

### **KILLING A JOB**

- 1. From the Job Controller of the CommCell Console, right-click the job and select Kill.
- Click Yes when the confirmation prompt appears if you are sure you want to kill the job. The job status may change to Kill Pending for a few moments while the operation completes. Once completed, the job status will change to Killed and it will be removed from the Job Controller window after five minutes.

# **ADDITIONAL OPTIONS**

The following table describes the available additional options to further refine your backup operations:

	OPTION	DESCRIPTION	RELATED TOPICS
- r			



Startup Options	The Startup Options are used by the Job Manager to set priority for resource allocation. This is useful to give higher priority to certain jobs. You can set the priority as follows:	Refer to Job Priority and Priority Precedence.
	1. From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client>	
	2. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	
	3. Click <b>Advanced</b> and click <b>Startup</b> tab.	
	4. Select the <b>Change Priority</b> checkbox.	
	5. Enter a priority number - 0 is the highest priority and 999 is the lowest priority.	
	6. Select the <b>Start up in suspended State</b> check box to start the job in a suspended state.	
	<ul> <li>7. Click <b>OK</b>.</li> </ul>	
lerts	This option enables users or user groups to get automatic notification on the status of the data protection job. Follow the steps given below to set up the criteria to raise notifications/alerts:	Refer to Alerts.
	1. From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client>	
	2. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	
	3. Click <b>Advanced</b> and select the <b>Alert</b> tab.	
	4. Click Add Alert.	
	<ol> <li>From the Add Alert Wizard dialog box, select the required threshold and notification criteria and click Next.</li> </ol>	
	6. Select the required notification types and click <b>Next</b> .	
	7. Select the recipients and click <b>Next</b> .	
	8. Click <b>Finish</b> .	
	9. Click <b>OK</b> .	
ommand Line Backups	Command Line Interface enables you to perform backups or restore from the command line. The commands can be executed from the command line or can be integrated into scripts.	Refer to Command Line Interface.
	You can also generate command line scripts for specific operations from the CommCell Browser using the <b>Save As Script</b> option.	
ata Path Options	Data Protection operations use a default Library, MediaAgent, Drive Pool, and Drive as the Data Path. You can use this option to change the data path if the default data path is not available. Follow the steps given below to change the default data path:	Refer Change Data Path.
	1. From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client>	
	2. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	
	3. Click <b>Advanced</b> and select the <b>Data Path</b> tab.	
	4. Select the <b>MediaAgent</b> and <b>Library</b> .	
	5. Select the <b>Drive Pool</b> and <b>Drive</b> for optical and tape libraries.	
	6. Click <b>OK</b> .	
ndex Cache Server	Index Cache Server provides the facility to automatically continue data protection operations when there are job failures due to loss of connectivity to the index. You can configure the	Refer to Index Cache Server for more information.
	Index Cache Server as follows:	
	1. From the CommCell Browser, navigate to <b>Storage Resources   MediaAgent</b> .	
	2. Right-click the < <b>MediaAgent</b> > and click <b>Properties</b> .	
	3. Click the <b>Catalog</b> tab and ensure that the <b>Index Cache Server</b> is configured.	
	4. From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client>	
	5. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	
	6. Click Advanced.	
	7. Make sure that the <b>Use shared profile if present with transaction logging</b> option is selected.	
	8. Click OK.	
reate New Index	This option accelerates Full or On Demand backups and is enabled by default. When you perform a browse and restore operation, the default browse displays data up to the most recent full backup. To browse and restore older data you have to use the options to browse before or between specific dates.	Refer to Index.
	When disabled, Full or On Demand backups may be slower. However the default browse displays all data in the entire retention period; not just one full backup cycle. Use the following steps to configure this option for specific Full or On Demand backups. This option can also be	
	configured for all subclients at the <i>i</i> DataAgent level.	

	Backup Set.	
	<ol> <li>Right-click the Subclient in the right pane and click Backup.</li> </ol>	
	3. Select <b>Full</b> as a backup type and click <b>Advanced</b> .	
	<ol> <li>Select the Create new index check box.</li> </ol>	
	5. Click <b>OK</b> .	
Start New Media	The Start New Media option enables you to start the data protection operation on a new media.	Refer to Start New Media.
	This feature provides control over where the data physically resides. Use the following steps to start the data protection operation on a new media:	
	1. From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client>	
	2. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	
	3. Click Advanced and select the Media tab.	
	4. Select the <b>Start New Media</b> check box.	
	5. Click <b>OK</b> .	
Mark Media Full	This option marks the media as full, two minutes after the successful completion of the data protection job. This option prevents another job from writing to this media. Follow the steps aiven below:	Refer to Export Media.
	1. From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client>	
	2. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	
	3. Click <b>Advanced</b> and select <b>Media</b> tab.	
	<ol> <li>Select the Mark Media Full on Success check box.</li> </ol>	
	5. Click <b>OK</b> .	
Allow other Schedules to	The Allow Other Schedules to use Media Set option allows jobs that are part of the schedule or	Refer to Creating an
ıse Media Set	schedule policy and using the specific storage policy to start a new media. It also prevents other jobs from writing to the same set of media.	Exportable Media Set.
	1. From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client>	
	2. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	
	3. Click Advanced and select the Media tab.	
	4. Select the Allow Other Schedules To Use Media Set check box.	
	5. Click <b>OK</b> .	
Reserve Resources Before Scan	Media is reserved for a job when the job is ready to write data. You can use this option to reserve the media during the initial phase of the job. Follow the steps given below to reserve media:	
	<ol> <li>From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client></li> </ol>	
	2. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	
	3. Click Advanced and select the Media tab.	
	4. Select the <b>Reserve Resources before Scan</b> check box.	
	5. Click <b>OK</b> .	
Extended Data Retention	This option allows you to extend the expiration date of a specific job. This will override the default retention set at the corresponding storage policy copy. Follow the steps given below to extend the expiration date:	Refer to Extended Retention Rules.
	1. From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client>	
	2. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	
	3. Click Advanced and select the Media tab.	
	4. Select one of the following options:	
	• Infinite - Select this option to extend the expiration date by infinite number of days	
	<ul> <li>Number of day - Select this option to specify the number of days to extend the expiration date and then enter the number of days.</li> </ul>	
	5. Click <b>OK</b> .	
Vault Tracker	This feature provides the facility to manage media that is removed from a library and stored in offsite locations. Depending on your VaultTracker setup, select the required options. Use the following steps to access and select the VaultTracker options.	Refer to VaultTracker or VaultTracker Enterprise.
	<ol> <li>From the CommCell Browser, navigate to Client Computers   <client>   File System   Backup Set.</client></li> </ol>	
	2. Right-click the <b>Subclient</b> in the right pane and click <b>Backup</b> .	

	3. Click Advanced and select the VaultTracking tab.	
	4. Select the required options.	
	5. Click <b>OK</b> .	
CommCell Readiness Report	The CommCell Readiness Report provides you with vital information, such as connectivity and readiness of the Client, MediaAgent and CommServe. It is useful to run this report before performing the data protection or recovery job. Follow the steps given below to generate the report:	Refer to CommCell Readiness Report.
	1. From the <b>Tools</b> menu in the CommCell Console, click <b>Reports</b> .	
	2. Navigate to Reports   CommServe   CommCell Readiness.	
	3. Click the <b>Client</b> tab and click the <b>Modify</b> button.	
	4. In the Select Computers dialog box, clear the Include All Client Computers and All Client Groups check box.	
	5. Select the client from the <b>Exclude</b> list.	
	6. Click the <b>Include &gt;</b> button.	
	7. Click <b>OK</b> .	
	8. Click the <b>MediaAgent</b> tab.	
	9. Clear the Include All MediaAgents checkbox.	
	10. Select the MediaAgent from the <b>Exclude</b> list.	
	11. Click Include >.	
	12. Click <b>Run</b> .	
	The generated report is displayed.	
Backup Job Summary Report	The Backup Job Summary Report provides you with information about all the backup jobs that are run in last 24 hrs for a specific subclient. You can get information such as status, time, data size etc. for each backup job. It is useful to run this report after performing the backup. Follow the steps given below to generate the report:	Refer to Backup Job Summary Report.
	1. From the <b>Tools</b> menu in the CommCell Console, click <b>Reports</b> .	
	2. Navigate to Reports   Jobs   Job Summary.	
	3. Click Data Management on the General tab in the right pane.	
	4. Select the Computers tab.	
	5. Click <b>Subclient</b> and select the <b>Edit</b> tab.	
	6. Navigate to Client Computers   <client>   File System   Backup Set   Subclient.</client>	
	7. Click Run.	

# KEYWORDS

Mount point, Full backup, Incremental backup, Differential backup, Synthetic full backup, Dash full, On demand backup

Back to Top

# **Advanced - HP-UX File System Restore**

# TABLE OF CONTENTS

Г

Performing a Direct Restore	Command Line Restores
Restoring Data Using Regular Expressions Supported Wildcards in Regular Expressions	Log on to the CommServe Perform the Restore
Performing an Out-of-Place Restore	Generate the Command Line Script from the CommCell Console
Restoring to Different Folder on the Same Client Restoring Data to a Different Client	
Performing a Cross-Platform Restore	
Restoring to NFS-Mounted File System	
Renaming Files on Restore	
Overwriting Data During Restores	
Restoring Only When Data Exists on the Destination	
Restoring by Jobs	
Restoring All the Data Backed Up During a Job Restoring Specific Data Backed Up During a Job	
Restoring From a Failed or Killed Job	
Resubmitting a Restore Job	
Filtering Data from Restores Supported Wildcards in Filters	
Restoring Data Using a Map File Creating a Map File Adding Files and Folders with Unicode Characters to a Map File Partial File Restore using a Map File Restoring Using a Map File Combining Browse and Restore with the Map File Restore	
Restoring Deleted Files	
Setting Up Pre-Post Processes	
Restoring Sparse Files	
Restoring Raw Devices Restoring Raw Device Files as Regular Files	
Restoring Macintosh Files	
Enabling a Global Option to Restore Resource Fork Data Restoring Resource Fork Data for a Specific Job	
Excluding ACLs from Restores	
Browsing Data	
Latest Data Data Before a Specified Time Data Between a Specified Time	
Reviewing the Size Distribution	
Listing Media Listing Media for a Subclient Listing Media for a Backup Set Listing Media and Size For a Backup Set	
Scheduling a Restore	
Managing Restore Jobs Restarting Jobs Controlling Jobs	
Additional Restore Options	

Τ

Perform a direct restore in the following scenarios:

- You know the path to the data that you want to restore
- The data that you want to restore is from a single volume

If you want to restore data from multiple volumes, perform a browse and restore.

Follow the steps given below to perform a direct restore:

- From the CommCell Browser, navigate to Client Computers | <Client> | File System.
  - Right-click the **defaultBackupSet** and then click **All Tasks | Restore**.
- 2. Enter the starting path of the data that you want to restore.

You can use wildcard characters to specify the patterns for files and folders to be included in the restore. For example: If you want to restore all the files starting with the word file, then specify <code>file\*.\*</code>

- In the Destination Client list, select the name of the client computer.
  - If you want to add more data for restore, click **Advanced**.

CommCell Browser P		What's new? × 😫 Client: subway (Li	
Clent Computer Groups		ers > 🎆 subway > 🔛 File System > 🍵	
Client Computers	Subclient Name		Storage Policy
E The System	🗃 default		DiskLibrary1(superway)_(1)
	Backup All Subclients		
R SIDERWAY View	Browee Backup Data		
Dif File Syste     Properties     defaultopacrop.ex	Find		
A Sacatha	Restore 3		
Storage Resources Policies	Restore by Jobs		
Reports	Operation Window		
Content Director	New Subclient		
Restore			X
Rescore			
Disconstruction the			the second second
Please provide th	e scarcing pact or	the data you want	to restore.
		OK	Cancel
Restore Options for All Selecte	d Items		×
General ] Job Initiation			
annorar   100 Initiation			
_			
Restore ACLs			
Data in device node			
1 Data in device node			
Unconditionally overwrite o	nly if target is a DataArchiver st	ub	
	.,		
Verwrite Files			
C Overwrite if file on media	is newer	Overwrite	
Restore only if target exi	ete		
, noncoro only a carget exi			
Restore Destination			
Destination client	02		
limage_b:	02		)
Restore to same folder			
Specify destination path			
			Browse
,			
Preserve Source Paths			
Preserve	1 x level from end of the	source path	
C Remove	0 z level from beginning o		
C Remove			
	<b>Р</b> ок Cano		
	Canc	el Advanced 🔗 S	iave As Script Help
Advanced Restore Opti	ons		×
General Startup	Pre/Post	Copy Precedence	Data Path
		Map D Brown	Options Alast
	Job Retry	Map Browse	opuons   Alert
Modify Paths/Filters			
. sony rousy neds			
Source Item			
usr\test\*.txt			
			Add



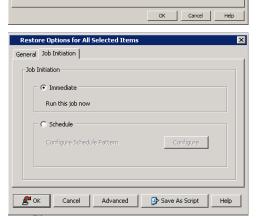
• Click **Add** for **Source Item** list and enter the additional data paths.

If you want to use wildcard characters to specify a file name pattern, you must express complete paths (e.g. usr\test\\*.txt).

• Click OK.

During restores, if the complete destination path specified does not exist on the destination computer then the missing directories that are not selected for restore are created automatically with permission set to 0700 and ownership set to the Calypso process.

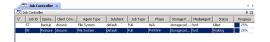
- **5.** Click the **Job Initiation** tab.
  - Select Immediate from the Job Initiation tab.
  - Click OK.



Filter Item

Delete

Add Delete You can track the progress of the job from the **Job Controller**.



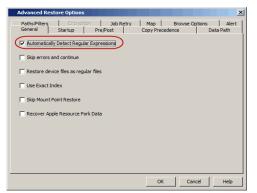
# **RESTORING DATA USING REGULAR EXPRESSIONS**

By default you can use wildcard characters to specify the patterns for files and folders to be included in the restore.

Use the following steps to define wildcard characters as regular expressions:

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System.
- 2. Right-click the defaultBackupSet and then click All Tasks | Restore.
- 3. Enter the source path that contains regular expressions and/or wild cards.
- 4. In the Restore Options for All Selected Items dialog box, click Advanced.
- 5. Clear Automatically Detect Regular Expressions and click OK.

This option is selected by default for direct restore operations. For Browse and Restore operations, the option cannot be enabled as you are selecting definitive paths to restore.



6. Click OK.

# SUPPORTED WILDCARDS IN REGULAR EXPRESSIONS

If enabled, the following wildcards can be automatically detected in regular expressions when restoring data.

WILDCARD	DEFINITION	EXAMPLE
*	Any number of characters.	<pre>doc* will find any directory or file name that begins with "doc" (e.g., document, documentation)</pre>
**	Any number of characters across any number of path levels.	<pre>/**/move will find the directory or file named move located at any level under the c: drive (e.g., /info/com/move)</pre>
?	Any one character.	access? will find any directory or file name that begins with "access" followed by any one character (e.g., access1, access5)
[]	Any range of characters.	<pre>[ei]nsure will find any directory or file name that ends with "nsure" and begins either "e" or "i". (e.g., ensure, insure)</pre>
		<pre>[a-z]nsure will find any directory or file name that ends with "nsure" and begins with any letter from "a" through "z". (e.g., ansure, bnsure, cnsure, etc.)</pre>
![] or ^[]	Any range of characters.	<pre>![a] or ^[a] will exclude any directory or file name that begins with "a". (e.g., applications)</pre>

You can use a combination of wildcards in a single expression (e.g.,  $access?.h^*$ ).

# **PERFORMING AN OUT-OF-PLACE RESTORE**

You can restore the data to following locations:

- Different folder on the same computer from which the data was backed up
- Different computer

Keep in mind that the destination computer must reside in the same CommCell as the client whose data was backed up.

During restores, if the complete destination path specified does not exist on the destination computer then the missing directories that are not selected for restore are created automatically with permission set to 0700 and ownership set to the Calypso process.

# RESTORING TO DIFFERENT FOLDER ON THE SAME CLIENT

Follow the steps given below to restore data to a different folder on the same client from which data is backed up:

1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System | <*Backup Set*>.

- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click OK.
- 4. Select the data that you want to restore and click Recover All Selected.
- 5. Clear the Restore to same folder check box and click Browse.
- 6. Click OK.
- 7. Use the options in the **Preserve Source Paths** area to exclude folders (and its contents) from the source path.

For Example: If the selected data is /Documents/Memos/Sales, and you want to restore data only from the Sales folder, set the **Preserve <n>** level from end of source path option to 1.

If the selected data is <code>/Documents/Memos/Sales</code>, and you want to restore the data from <code>Memos</code> and <code>Sales</code> folders, set the **Remove <n> level** from beginning of source path option to 2.

8. Click **OK**.

#### **RESTORING DATA TO A DIFFERENT CLIENT**

Follow the steps given below to restore data to a different client:

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click OK
- 4. Select the data that you want to restore and click Recover All Selected.
- 5. In the **Destination Client** list, select the client. You can select any client that is in the same CommCell as that of the client from which the data was backed up.
- 6. Click OK.

If you do not clear **Restore to same folder** check box, the data will be restored to the same folder on the destination client. All the existing data in that folder will be overwritten during the restore operation.

## **PERFORMING A CROSS-PLATFORM RESTORE**

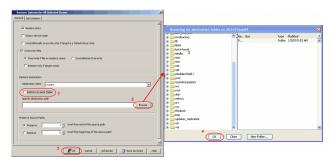
You can perform the following cross-platform restores :

- Restores across all the supported versions of Unix.
- Restores from Unix to all the supported versions of Windows.

Follow the steps given below to perform a cross-platform restore:

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- Right-click the *Subclient>* in the right pane and then click **Browse Backup** Data.
- 3. Click OK.
- 4. Select the data that you want to restore and click Recover All Selected.
- 5. In the **Destination Client** list, select the client. You can select any client that is in the same CommCell as that of the client from which the data was backed up.
- 6. Clear the Restore to same folder check box and click Browse.
- 7. Select the destination folder and click **OK**.
- 8. Click OK.

## **RESTORING TO NFS-MOUNTED FILE SYSTEM**





eneral Jo	b Initiation		
			1
🗹 Re	astore ACLs		
Da	ata in device node		
	conditionally overwrite only if target is a DataArchiver stub		
	conditionally overwrite only if target is a DataArchiver stub		
Ove	erwrite Files		
00	Overwrite if file on media is newer Ounconditional Overwrite		
_			
	Restore only if target exists		
Restore	Provide the second s		
	e Destination		
Constin			
Destin	nation client sunsign		
$\sim$			
R I	ination clent <mark>sunsign</mark> Restore to same folder		
R I	ination client sunsign		
R I	ination clent <mark>sunsign</mark> Restore to same folder	Browse	
R I	ination clent <mark>sunsign</mark> Restore to same folder	Browse	
Specil	ination clent <mark>sunsign</mark> Restore to same folder	Browse	
Special Special Preserve	enation clent (anson lectore to same folder fy destination path	Browse	
Special Special Preserve	nation clent (zunson Nectore to same Folder fy destination path	Browse	
Special Special Preserve	Institut dent auson Restore to same folder Fry destination path Source Paths Preserve		
Special Special Preserve	enation clent (anson lectore to same folder fy destination path	Erowse	qt

You can restore data to an NFS-mounted file system.

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click **OK**.
- 4. Select the data that you want to restore and click Recover All Selected.
- 5. In the **Destination Client** list, click the client computer that hosts the mounted file system.
- 6. Clear the Restore to same folder check box.
- 7. In the Specify Destination Path, enter the network share or click Browse.
- In the Browsing for destination folder on <client> dialog box, select the destination folder and click OK.

For example: /yamun/mnt1/upd

9. Click OK.

#### **RENAMING FILES ON RESTORE**

If you do not want to overwrite the existing files during restores, you can append a suffix to the filenames and restore them as new files. (This suffix is appended to the filename before the extension.)

Follow the steps given below to rename files during the restore:

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient* in the right pane and then click **Browse Backup Data**.
- 3. Click OK.
- 4. Select the data that you want to restore and click **Recover All Selected**.
- 5. In the Destination Client list, select the client.
- 6. Click Advanced.
- 7. In the Advanced Restore Options dialog box, select the Map tab.
- Enter the desired string that you want to append as a suffix to the filenames in Rename all restore files with suffix and click OK. For Example: Enter the string temp will rename file.txt to filetemp.txt.
- 9. Click OK.
- 10. Click **OK** to start the restore.

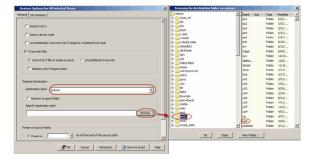
## **OVERWRITING DATA DURING RESTORES**

By default, the data in the destination is overwritten when the restored version is newer than the one in the destination.

Use the following steps to overwrite data irrespective of the destination version:

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click OK.
- 4. Select the data that you want to restore and click **Recover All Selected**.
- 5. Ensure that the **Overwrite Files** check box is selected.
- 6. Click Unconditional Overwrite.
- 7. Click **OK**.

Clear the **Overwrite Files** check box when restoring to a computer that has different hardware and different software device drivers.



General	Startup	Pre/F		Copy Prec			Path
Paths/Filters	Encrypt	ion	Job Retry	Map	Browse Op	otions	Ale
Use map fi	-						
Use map ri	9						
Ma	p File Path				Broy	vse	
	L						
	Restore unm	apped file	IS				
		_					
Rename all resto	re files with suf	tix					
C							
				0	< Car		F

eral   Job Initiation			
Restore ACLs			
🔽 Data in device r	rode		
Unconditionally	overwrite only if ta	rget is a DataArchiver stub	
Verwrite Files			
C Overwrite if f	ile on media is newe	er (• Unconditional Overwrite)	
Restore only	if target exists		
Restore Destination			
Destination dient			
	cvxpert		*
Restore to sar			
Specify destination	i path		
1			Browse
Preserve Source Path	8		
Preserve	1 *	level from end of the source path	
	_		
C Remove	0 *	even non beginning of the source path	

## **RESTORING ONLY WHEN DATA EXISTS ON THE DESTINATION**

Follow the steps given below to restore the only data that already exists in the destination computer. This ensures any data removed from the destination computer is not reintroduced by the data recovery.

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click OK.
- 4. Select the data that you want to restore and click **Recover All Selected**.
- 5. Ensure that the **Overwrite Files** check box is selected. (If it is not selected, only those files that do not exist on the destination will be restored.)
- 6. Select the Restore only if target exists check box.
- 7. Click **OK**.

	or All Selected Item:	5					
eral ] Job Initiation	1						
Restore ACLs							
Data in device	t node						
Unconditional	ly overwrite only if targ	jet is a DataAr	chiver stub				
Overwrite Files							
C Overwrite i	f file on media is newer	Uncor	nditional Overw	rite			
E Frankriger	ly if target exists						
Nestore on	y in target exists						
Restore Destination	n						
Destination clien	t directdv3						-
	Junectory						<u> </u>
Restore to s							
Specify destinati	on path						_
C:\abc						Brows	e
Preserve Source Pa	uths						
Preserve		level from en	d of the source	path			
C Remove	0 2	level from be	ginning of the :	source path			
	[	ይ ок	Cancel	Advanced	9	Save As Script	Help
	-						

## **RESTORING BY JOBS**

You can select a specific backup job for a restore. This method of restoring data is faster and useful in the following scenarios:

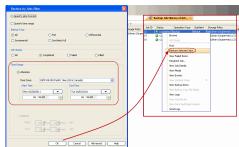
- To restore point-in-time data associated with a specific backup job
- To restore multiplexed data from the same client

Avoid running restores by jobs for jobs associated with the default backup set, if you do not want to restore the operating system files or directories. The entire content of the backed up client will be restored and the client where you are restoring might run out of space.

#### RESTORING ALL THE DATA BACKED UP DURING A JOB

Follow the steps to restore all the data backed up during the selected job:

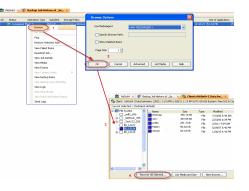
- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System.
- 2. Right-click the **<Backup Set>** and select **All Tasks | Restore by Jobs**.
- 3. Enter the **Start Time** and **End Time** and click **OK**. The list of backup jobs, completed in the specified time period is displayed.
- 4. Right click the job you wish to restore and select Restore Selected Jobs.
- 5. Click OK.



#### RESTORING SPECIFIC DATA BACKED UP DURING A JOB

You can restore specific files and folders from the data backed up during the selected job. Follow the steps given below to restore specific files and folders from the selected backup job:

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System.
- 2. Right-click the <Backup Set> and select All Tasks | Restore by Jobs.
- 3. Enter the **Start Time** and **End Time** and click **OK**. The list of backup jobs, completed in the specified time period is displayed.
- 4. Right click the job you wish to restore and select Browse.
- 5. Click OK in the Browse Options dialog box.
- 6. Select data that you want to restore and click Recover All Selected.
- 7. Click **OK**.



## **RESTORING FROM A FAILED OR KILLED JOB**

You can restore from a failed or killed job. When restoring from a failed or killed job, the data backed up to the point of failure will be restored.

Failed or killed backup jobs are immediately aged regardless of their defined retention rules, therefore, these jobs can only be restored if the media is not yet overwritten. You can restore aged data from tape media but cannot restore from disk libraries.

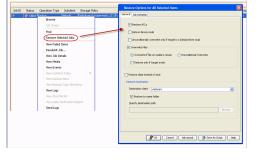
- From the CommCell Browser, navigate to Client Computers | <Client> | File System.
- 2. Right-click the <Backup Set> and select All Tasks | Restore by Jobs.
- 3. Select Failed or Killed in the Job Status area of the Restore by Jobs Filter dialog box.
- 4. Enter the **Start Time** and **End Time** to specify the time period in which the job was failed or killed.
- 5. Click Advanced.
- 6. Select the Include Aged Data check box and click OK.
- 7. Click **OK** on the **Restore Jobs Filter** dialog box. The list of backup jobs, completed in the specified time period is displayed. The list also includes Failed or Killed jobs.
- 8. Right click the job you wish to restore and click Restore Selected Jobs.
- 9. Click OK.

## **RESUBMITTING A RESTORE JOB**

You can rerun a failed or completed restore job. This is useful when you want to use all the options and settings configured for the original job.

Follow the steps given below to rerun a restore job:

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the **<Client>** and click **View | Job History**.
- 3. Select Data Recovery.
- 4. Select the Restore check box and clear all other check boxes.
- 5. Right-click the restore job that you want to resubmit from the **Data Recovery Job History** tab and click **Resubmit Job**.
- 6. Click **OK** in the **Restore Options for All Selected Items** dialog box.



Job History Filter for: startrek	
O Data Management	
🗹 Backup	Quick Recovery Agent Volume Creation
Archive/Compliance Archive	Recovery Point Creation
Online Content Indexing	SRM Data Collection
Data Recovery Operations	
Restore	Quick Recovery Agent Volume Recovery
Recovery/Retrieve	Stub Recall
Time Zone: (GMT-08:00) Pacific Time	e (US & Canada)
Sket Time           Thu 02/17/2011           08 : 17 AM	End Time Fri 02/18/2011
Job Status All Completed	◯ Failed ◯ Killed
ОК	Cancel Advanced Help

## FILTERING DATA FROM RESTORES

During a restore operation, you can specify the files, directories, and file name patterns that you want to filter and exclude from restoring.

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click OK.
- 4. Select the data that you want to restore and click Recover All Selected.
- 5. In the Recover Options for All Selected Items dialog box, click Advanced.
- 6. Select the **Paths/Filters** tab.
- If you want to remove any files or folders from restore operation, click Add for Filter Item list and enter the path of the data. Wildcard entries must be expressed as complete paths.

You can also click **Delete** to remove existing source or filter items.

- 8. In the Advanced Recover Options dialog box, click OK.
- 9. In the Recover Options for All Selected Items dialog box, click OK.

## General Startup Pre/Post Copy Precedence Data Path Paths/Filters Encryption Job Retry Map Browse Options Alert Modify Paths/Filters Source Item Usr\test\\*.bat Add Delete Eliter Item Add Delete OK Cancel Help

## SUPPORTED WILDCARDS IN FILTERS

The following wildcards can be used in filters to include or exclude data when restoring data.

WILDCARD	DEFINITION	EXAMPLE
*	Any number of characters.	<pre>doc* will find any directory or file name that begins with "doc" (e.g., document, documentation)</pre>
**	Any number of characters across any number of path levels.	<pre>/**/move will find the directory or file named move located at any level under the c: drive (e.g., /info/com/move)</pre>
?	Any one character.	access? will find any directory or file name that begins with "access" followed by any one character (e.g., access1, access5)
[]	Any range of characters.	<pre>[ei]nsure will find any directory or file name that ends with "nsure" and begins either "e" or "i". (e.g., ensure, insure)</pre>
		<pre>[a-z]nsure will find any directory or file name that ends with "nsure" and begins with any letter from "a" through "z". (e.g., ansure, bnsure, cnsure, etc.)</pre>
![] or ^[]	Any range of characters.	<pre>![a] or ^[a] will exclude any directory or file name that begins with "a". (e.g., applications)</pre>

You can use a combination of wildcards in a single expression (e.g., access?.h\*).

## **RESTORING DATA USING A MAP FILE**

You can restore individual files and folders to different locations using a map file containing a list of files to be restored, with their corresponding restore paths. If you are restoring hard-linked file backed up with HLINK registry key set to Y, make sure that all the associated hard links are also included in the map file. This will allow you to preserve the hard links.

#### CREATING A MAP FILE

The map file is a text file in the CSV (Command Separated Value) format. Follow the steps given below to create a map file:

- 1. Create a text file on the client computer where you want to restore the data.
- 2. Add the mapping information in the file in the following format:
  - "<source path>","<destination path>"
  - If the specified destination folder is not available, the necessary destination folder will be created during the restore.

The specified paths for both the source and destination should be absolute paths within the same client computer.

You can provide following information in a map file:

INFORMATION	EXAMPLE
File to File Mapping	"/dir1/file1.txt","/dir2/file1.txt"

Folder to folder mappings	"/dir2/info/","/dir4/info/"
Drive to drive mappings	"/"(root),"/mnt","/usr"
Rename files/folder during restore	"/dir4/file2.txt","/dir5/file3.txt"
Filter certain files	"/dir5",""

#### ADDING FILES AND FOLDERS WITH UNICODE CHARACTERS TO A MAP FILE

If the path or the filename contains Unicode characters, the Map File must be converted to a format that can be used by the data protection operation. The Unicode Conversion utility must be used to convert the Map File to a format that can be provided as input.

- 1. Using a text editor, create a file that contains a list of files/folders with Unicode characters. Make sure to save the file as a Unicode text file.
- 2. From the Command Line, navigate to the <software install folder>/base folder and type the following:

cvconvertunicode <source file> <destination file>

Where:

<source file> is the full path and name of the file created in Step 1.

<destination file> is the full path and name of the destination file. The file will automatically be created by the utility.

3. Use the destination file as the Map File to perform the restore.

#### PARTIAL FILE RESTORE USING A MAP FILE

Files can be restored partially using a Map file. Multiple files can be added in the Map file for partial restores with specific start/ stop offset values. These restores can be run from the CommCell GUI or from the command line. Partial file restores are supported for:

- Index restores
- Index Free Restore Restore By Job
- 1. Using a text editor, create a text file on the client computer where you want to restore the data.
- 2. Add the mapping information in the file using the following syntax:

"<source file path>","<destination file path>",<start offset>,<stop offset>

Where:

<start offset> and <stop offset> are values in bytes

For example: "/path1/data1/SRC", "/path2/data2/DEST", 100, 1000

The partial file restore behavior with different mapping options is given below:

MAPPING	BEHAVIOR
File in map, no start offset and no stop offset	File will be restored fully
File in map, only start offset provided	File will be restored from < <i>start offset</i> > till the end of the file
File in map, start and stop offsets provided	File will be restored from < <i>start offset</i> > to < <i>stop offset</i> >
File in map, start offset provided in invalid format (not a number)	Restore will start from the beginning of the file
File in map, stop offset provided in invalid format (not a number)	Restores till the end of the file
File in map, stop offset value is less than start offset	Restores till the end of the file
Map file having duplicate source file entry with different destination location	Only the first source file entry will be honored
Map file with folder path, start and stop offsets provided	All the files under the folder will honor the start and stop offsets

#### **RESTORING USING A MAP FILE**

Use the following procedure to restore a list of files and folders from a computer and each of these files have a different destination.

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click OK.
- 4. Select the data that you want to restore and click **Recover All Selected**.
- 5. Click Advanced.
- 6. Select the Map tab.
- 7. Select the Use map file check box and click Browse to navigate to the map file.
- 8. Clear the **Restore unmapped file** check box.
- 9. In the Advanced Recover Options dialog box, click OK.

10. Click **OK** to start the restore.

Advanced Restore Options General Startup Pre/Post		
General Startup Pre/Post Paths/Filters Encryption Job Retry	Copy Precedence Map Browse	Data Path Options Alert
✓ Use map file Map File Path		Browse
Restore unmapped files		
Rename all restore files with suffix		
	ок с	ancel Help

 Startup
 Pre/Post
 Copy Precedence
 Data Path

 Encryption
 Job Retry
 Map
 Browse Options
 Aler

Browse

OK Cancel Help

d Restore Opti

Restore unmapped files

Rename all restore files with suffix

ieral hs/Filters

Use map file
Map File Path

#### COMBINING BROWSE AND RESTORE WITH THE MAP FILE RESTORE

Use the following procedure to restore a set of files to a specified location with some files within that set to different destinations.

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click **OK**.
- 4. Select the data that you want to restore and click Recover All Selected.
- 5. Click Advanced.
- 6. Select the Map tab.
- 7. Select the **Use map file** check box and click **Browse** to navigate to the map file.
- 8. Select the Restore unmapped file check box.
- 9. In the Advanced Recover Options dialog box, click OK.
- 10. In the Recover Options for All Selected Items dialog box, click OK.

## **RESTORING DELETED FILES**

Follow the steps given below to restore deleted files:

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System | <*Backup Set*>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click OK.
- 4. Select the data that you want to restore and click Recover All Selected.
- 5. Click Advanced.
- 6. Select the Browse Options tab.
- 7. Select the **Restore deleted items** check box and then select the **Specify Time Range** check box.
- 8. Select the time range to restore the files, deleted in that period of time.
- 9. In the Advanced Recover Options dialog box, click OK.
- 10. In the Recover Options for All Selected Items dialog box, click OK.



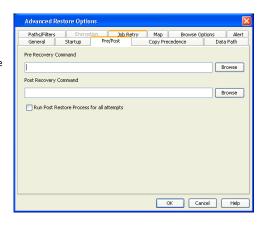
General	Startup	Pre/Post		Copy Prece	edence	Data	a Path
Paths/Filters	Encrypt	tion Job R	letry	Map	Browse Op	tions	Alert
Restore delete Specify T Time Zon Sun 02	ime Range e: (GM	IT-08:00) Pacific T		End Time on 02/28/2	D11		
					K Car		Нер

#### SETTING UP PRE-POST PROCESSES

You can run batch files or shell scripts before and/or after restore jobs. Follow the steps given below to setup a process before or after the restore job

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click **OK**.
- 4. Select the data that you want to restore and click Recover All Selected.

- 5. Click Advanced.
- 6. Click the Pre/Post tab.
- 7. If you want perform a process before the restore job, enter the path for the batch file in the **Pre Recovery Command** box or click **Browse** to select the batch file.
- 8. If you want perform a process after the restore job, enter the path for the batch file in the **Post Recovery Command** box or click **Browse** to select the batch file.
- 9. Click **OK**.
- 10. Click **OK** to start the restore.



## SETTING UP A PRE/POST PROCESS TO RUN AFTER EACH ATTEMPT

By default, a specified post process command is executed only on successful completion of the restore operation.

Use the following steps to run a post process even if the restore operation did not complete successfully. For example, this may be useful to bring a database online or release a snapshot.

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | <Backup Set>.
- 2. Right-click the *Subclient* in the right pane and then click **Browse Backup Data**.
- 3. Click **OK**.
- 4. Select the data that you want to restore and click Recover All Selected.
- 5. Click Advanced and then click the Pre/Post tab.
- Enter the path for the batch file in the Post Recovery Command box or click Browse to select the batch file.
- 7. Select the Run Post Process for all attempts check box.
- 8. Click **OK**.
- 9. Click **OK** to start the restore.

## **RESTORING SPARSE FILES**

The sparse files are restored by default as flat files, wherein the holes are restored as data. This will increase the disk usage. Use the following steps to restore the holes as genuine holes which will considerably reduce the disk usage.

- 1. From the CommCell Browser, navigate to Client Computers.
- Right-click the <*Client*> in which you wish to perform the restore, and then click Properties.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name field, type OptimizeRunLengths.
- 6. In the Location list, select or type iDataAgent.
- 7. In the Type list, select value.
- 8. In the Value field, type the value which should be greater than or equal to -1.
- 9. Click OK.

							×
General Ver Encryption	sion Secur Advanced	ty Activity C Content Ind	ontrol .	Groups Registry	Firewall Config Key Settings		b Configuration
Name	Locati	on	Туре		Value	Enable	d ×
							•
		gistry Key or				×	۱ I
	Name	lO ptim iz eR	unLength	ns			
	Location	iDat aAgent				~	
	Туре	Value				~	
	Value	1					
			C	ок	Cancel	Help	
		Ad	d Ed	R D	elete		
					ОК	Cance	I Help

## **RESTORING RAW DEVICES**

Raw device files, including block and character, can be restored either in-place or out-of-place. The entire raw device or individual files can be restored. Use character device files instead of block device files for achieving better restore performance.

Advanced Res	tore Option:				
Paths/Filters General	Encryptio	Job R Pre/Post	etry Map Copy Pre	Browse Opti cedence	ons Alert Data Path
Pre Recovery Cor	nmand				
1					Browse
Post Recovery Co	mmand				
					Browse
Run Post Res	tore Process fo	all attempts			
				K Cance	el Help

- 1. From the CommCell Browser, navigate to **Client Computers | <***Client>* **| File System**.
- Right-click the *Backup Set>*, point to All Tasks and then click Browse Backup Data.
- 3. Click **OK**.
- 4. Select the raw device data that you want to restore and click Recover All Selected.
- 5. Select Data in device node.
- 6. Select Overwrite files and then click Unconditional Overwrite.
- 7. Select the name of the client computer from the **Destination Client** list and click **OK**.
- 8. Click the Job Initiation tab and click Immediate.
- 9. Click **OK**.

You can track the progress of the job from the Job Controller.

## **RESTORING RAW DEVICE FILES AS REGULAR FILES**

You can restore the actual data in the device node file of the raw partition as a regular file system file.

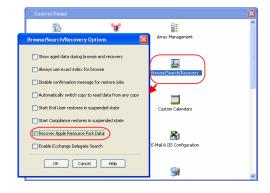
- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System.
- Right-click the *Backup Set>*, point to All Tasks and then click Browse Backup Data.
- 3. Click OK.
- 4. Select the raw device data that you want to restore and click Recover All Selected.
- 5. Click Data in device node.
- 6. Select **Overwrite files** and then click **Unconditional Overwrite**.
- 7. Select the name of the client computer from the  $\ensuremath{\text{Destination Client}}$  list and click  $\ensuremath{\text{OK}}$  .
- 8. Click Advanced.
- 9. Select Restore device files as regular files check box.
- 10. Click OK.

## **RESTORING MACINTOSH FILES**

You can restore Apple Double formatted Macintosh files that contain resource fork data.

#### ENABLING A GLOBAL OPTION TO RESTORE RESOURCE FORK DATA

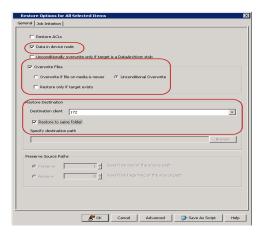
- 1. From the CommCell Console, click **Control Panel** button in the toolbar.
- 2. Double-click the Browse/Search/Recovery icon.
- 3. Select Recover Apple Resource Fork Data check box.
- 4. Click **OK**.



#### **RESTORING RESOURCE FORK DATA FOR A SPECIFIC JOB**

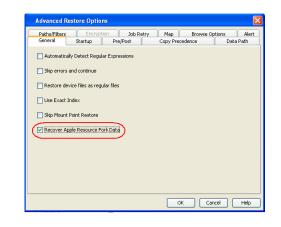
Use the following steps to recover Apple resource fork data of selective Macintosh files.

- 1. From the CommCell Browser, navigate to **Client Computers | <***Client>* **| File System**.
- Right-click the *Backup Set*>, point to All Tasks and then click Browse Backup Data.



Restore Options for All Selected Benns	Advanced Restore Options
Terrer Bane III	Before         Table of the local control of the local contro

- 3. Click **OK**.
- Select the MAC File System data that you want to restore and click Recover All Selected.
- 5. Click Advanced.
- 6. Select Recover Apple Resource Fork Data check box.
- 7. Click **OK**.



## **EXCLUDING ACLS FROM RESTORES**

The ACLs and the data are restored by default when you restore the data . Use the following procedure to exclude the ACLs from the restore.

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System | Backup Set
- 2. Right-click the subclient in the right pane and then click **Browse Backup Data**.
- 3. Click OK.
- 4. Select the data that you want to restore and click **Recover All Selected**.
- 5. Click to clear the Restore ACLs check box.
- 6. Click **OK.**

ral Job Initiatio	d			
Restore ACL				
🔲 Data in devi	e node			
	lly overwrite only if target	is a DataArchiver stub		
🔽 Overwrite Fil	s			
C Overwrite	if file on media is newer	Unconditional Over	rwrite	
Restore o	ly if target exists			
				-
	perfilnux03			<u>*</u>
Destination dien	perfilnux03 same folder			•
	perfilnux03 same folder			Browse
Destination clien	perfilnux03 same folder			
Destination clien	perfilmux03 same folder ion path			

## **BROWSING DATA**

The option to browse the backup data provides the facility to view and selectively restore/recover the data that was backed up. The following sections explain how to browse the backup data.

## LATEST DATA

Follow the steps given below to view the latest data backed up by a backup set:

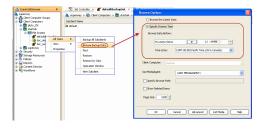
- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System
- 2. Right-click a Backup Set and click All Tasks | Browse/Browse Backup Data.
- 3. Click **OK**.

The latest data backed up by all the subclients is displayed in the **Client Browse** tab.



#### DATA BEFORE A SPECIFIED TIME

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System
- 2. Right-click a Backup Set and click All Tasks | Browse/Browse Backup Data.
- 3. Select Specify Browse Time.
- 4. Select a date and time to Browse Data Before it.
- 5. Click **OK**.



#### DATA BETWEEN A SPECIFIED TIME

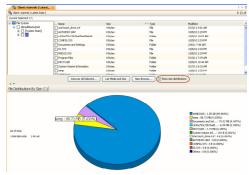
- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System
- 2. Right-click a Backup Set and click All Tasks | Browse/Browse Backup Data.
- 3. Select Specify Browse Time.
- 4. Select a date and time to Browse Data Before it.
- 5. Click Advanced.
- 6. In the Advanced Browse Options dialog box, select Exclude Data Before.
- 7. Select the date and time to exclude the data before it from the browse operation.
- 8. Click **OK** in the **Advanced Browse Options** dialog box .
- 9. Click OK in the Browse Options dialog box.

## **REVIEWING THE SIZE DISTRIBUTION**

Before restoring any drive, you can quickly review the data size distribution of various folders on that drive. Follow the steps given below to view the size distribution:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System
- 2. Right-click a Backup Set and click All Tasks | Browse/Browse Backup Data.
- 3. Select the required options on the Browse Options dialog box and click OK.
- 4. Select the drive or folder that you want to restore.
- 5. Ensure that the Show size distributions check box is selected.

A pie chart of size distribution is displayed in the right pane of the CommCell Browser. You can also review the size distribution of the data in a subclient.



## LISTING MEDIA

List media option is useful to predict media required for the following operations:

- To restore data associated with a specific backup set or subclient.
- To restore the index required to browse data associated with a specific backup set or subclient.
- To restore a specific file (or specific files and folders).
- To restore data associated with a specific job.

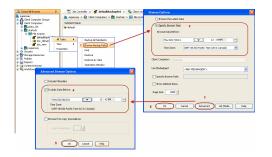
The List Media feature can also be used in a number of other capacities. Refer to the List Media documentation for a complete overview of this feature.

The list media operation can be performed for backup sets and subclients. The following sections describe each of these methods.

#### LISTING MEDIA FOR A SUBCLIENT

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | File System | Backup Set.
- 2. Right-click the subclient for which you wish to list media in the right pane and then click List Media.
- 3. From the List Media dialog box choose one of the following options:
  - Click Media For the Latest Data to list media associated with the most recent data protection cycle.
  - Click **Specify Time Range** to list media associated with data protection operations up to the specified date and time range. Use the **Data Before** box to specify the end date and time.





• Click Advanced and then click Exclude Data Before to list media associated with data protection operations after the specified date and time.

Note that you can use the Specify Browse Time and Exclude Data Before options to list media between a specified date and time range.

4. Click **OK**.

The appropriate media is listed in the **Media** dialog box.

#### LISTING MEDIA FOR A BACKUP SET

- 1. From the CommCell Browser, navigate to **Client Computers | <***Client***> | File System**.
- 2. Right-click the backup set for which you wish to list media, point to All Tasks and then click Browse.
- 3. From the Browse Options dialog box, if required, select the following options:
  - o Click Browse the Latest Data to list media associated with the most recent data protection cycle.
  - Click **Specify Browse Time** to list media associated with data protection operations up to the specified date and time range. Use the **Browse Data Before** box to specify the end date and time.
  - Click Advanced and then click Exclude Data Before and then select the date and time from which you wish to list media associated with data protection operations.

Note that you can use the Specify Browse Time and Exclude Data Before options to list media between a specified date and time range.

- 4. Click List Media.
- 5. From the List Media dialog box, click List Media for restore within specified time range.
- 6. Click **OK**.

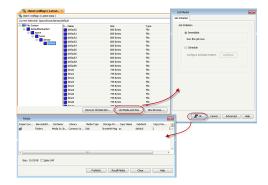
The appropriate media is listed in the Media dialog box.

#### LISTING MEDIA AND SIZE FOR A BACKUP SET

Before restoring any file or folder, you can review all the media that is associated with the selected data. Use this option to ensure that the media required to restore the selected data is available. You can also predict the total size of the data that you want to restore. Follow the steps given below to display the media and the size:

- 1. From the CommCell Browser, navigate to **Client Computers | <***Client>* **| File System**.
- 2. Right-click a Backup Set and click All Tasks | Browse Backup Data.
- 3. From the Browse Options dialog box, if required, click Browse the Latest Data.
- 4. Click OK.
- 5. Select the data that you want to restore and click List Media and Size.
- 6. Click OK.

The media associated with the selected data is displayed. If required, you can recall the required media from the export location.



## **COMMAND LINE RESTORES**

You can restore file system data from the command line interface.

Command line restores enable you to perform restore operations on multiple clients at the same time. It also allows you to reuse the command line scripts for additional restores.

When performing command line restores, note that backups taken from the CommCell Console can be restored using Command Line and vice versa. However, backups taken from a previous version of the CommCell Console can be restored only from the Command Line.

In order to run the restores from command line, you need an input xml file which contains the parameters for configuring the restore options. This input xml file can be obtained using one of the following ways:

- Download the input xml file template and save it on the computer from where the restore will be performed.
- Generate the input xml file from the CommCell Console and save it on the computer from where the restore will be performed.

#### LOG ON TO THE COMMSERVE

To run command line operations you must first login to the CommServe as follows:

• From Command prompt, navigate to <Software\_Installation\_Directory>/Base and run the following command:

qlogin -cs <commserve name> -u <user name>

• For example, to log on to CommServe 'server1' with username 'user1':

qlogin -cs server1 -u user1

#### PERFORM THE RESTORE

- 1. Download the restore\_template.xml file and save it on the computer from where the command will be executed.
- 2. Execute the saved xml script using goperation execute command.

qoperation execute -af restore\_template.xml -appName 'File System' -clientName xxxxx -backupsetName xxxxx -destPath
'xxxxx' -sourceItem 'xxxxx'

3. Verify the status of the job using the following command:

qlist job -j JOBID

- 4. Once the job completes, logout from the CommServe using the qlogout command.
  - qlogout [-cs commserver] [-all] [-tf tokenfile] [-tk token] [-h]

#### EXAMPLES

Restoring from a Current Backup	<pre>qoperation execute -af restore_template.xml -appName 'File System' -clientName client1 - backupsetName backupset1 -destPath '/etc' -sourceItem '/etc4'</pre>
Restoring Files to a Point in Time (date)	qoperation execute -af restore_template.xml -appName 'File System' -clientName client1 - backupsetName backupset1 -destPath '/etc' -sourceItem '/etc4' -toTimeValue 2011-11-28
Restoring Files to a Point in Time (date and time)	<pre>qoperation execute -af restore_template.xml -appName 'File System' -clientName client1 - backupsetName backupset1 -destPath '/etc' -sourceItem '/etc4' -toTimeValue 2011-11-28 15:40:00</pre>
Restoring by Jobs	qoperation execute -af restore_by_job_template.xml -jobids 52 -sourceItem 2:52 -striplevel 1
	where:
	• jobids is the backup job ID
	• sourceItem is the CommCell D and the backup job ID separated by a colon (':'). By default, the CommCell ID is 2.
	• striplevel is the number of folder levels to exclude from the source path. This parameter is optional.
	For example, if you have a directory structure (source path) as $/a/b/c$ and you select strip level 2, the data will be restored from folder $c$ , while folders $a$ and $b$ are excluded. Ensure that the strip level is always less than the source path level.

#### GENERATE THE COMMAND LINE SCRIPT FROM THE COMMCELL CONSOLE

In addition to the parameters provided in the template xml file, if you want to include additional options for the restore, you can do so by selecting the required options from the CommCell Console and generate the command line xml script for the restore operation.

Follow the steps given below to generate a script which you can use to perform a restore from the command line interface:

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | File System | <*Backup Set*>.
- 2. Right-click the *Subclient>* in the right pane and then click **Browse Backup Data**.
- 3. Click **OK**.
- 4. In the right pane of the Browse window, select the data that you want to restore and click **Recover All Selected**.
- 5. Select the required restore options which you want to execute using the script.
- 6. Click **Save as Script**.

Restore Options for All Selected Items
General Job Initiation
Restore ACLs      Data in device node      Unconditionally overwrite only if larget is a Datakirchiver stub      Overwrite Files      Overwrite Files      Overwrite Files      Restore only if larget exists
Restore Destination Destination dent image_bx02
Browse
Preserve Source Paths
Preserve     1      evel from end of the source path
C Remove 0 d level from beginning of the source path
Cancel Advanced Save As Script Help

7. Enter the location where you want to save the script or click **Browse** and navigate to the location.

The script will be saved as a .xml file and a .bat file is created.

If a file with the same name already exists in the specified location, the .xml file will be created with a timestamp. However, the .bat file will overwrite the existing file.

8. Enter the username and password for the user account which you want to use to perform the restore.

By default, the user account which you have used to login to CommCell console is used for performing the restore. However, if the user account does not have access to application and database, click **Use a different account**.

9. Click **OK**.

## X Save As Script Client ashai64 • Path Browse Mode Synchronous Asynchronous Specify user account to run the script O Use the currently logged in user account User Name: admin Use a different user account User Name: Password: Confirm Pas OK Cancel Help

### **S**CHEDULING A RESTORE

- From the CommCell Console, navigate to Client Computers | <client> | File System.
  - Right-click an backupset and click All Tasks | Browse Backup Data.
  - Click OK.

Browse Options X
Browse the Latest Data
O Specify Browse Time
Browse Data Before:
Fri 03/04/2011 03 : 36 PM +
Time Zone: (UTC-05:00) Eastern Time (US & Canada)
Client Computer: miller64
Use MediaAgent
Specify Browse Path:
Show Deleted Items
Page Size: 1000
OK Cancel Advanced List Media Help

Select a file to restore.

2.

• Click Recover All Selected.

 Select the name of the client computer from the Destination Client list. Click OK.

- 4. Click Job Initiation tab and click Schedule.
  - Click Configure.

- **5.** Select the appropriate scheduling options. For example:
  - Click Weekly.
  - Check the days you want the run the restore job.
  - Change the Start Time to 9:00 PM
  - Click **OK** to close the Schedule Details dialog
  - Click **OK** to close the Restore Options dialog

The restore job will execute as per the schedule.

💣 defaultBackupSet 兴	😭 Client: rhSupd1 ( Late	st ×			
Current Selected: /data (Subcle	nt:default)				
E III File System	Selected Name     bin	Size 0 Bytes	Type Folder	Modified 12/16/08 5: 19 PM	
	E boot	98.72 MB 0 Bytes	Mount Point Folder	12/16/08 5:02 PM 5/4/09 8:57 PM	
	cache	3.4 GB 2.31 GB	Mount Point Mount Point	5/5/09 12:19 AM 3/12/09 9:14 PM	
	cdrom	0 Bytes	Folder	5/8/09 5:58 AM	
	cvbuild	0 Bytes 96.83 MB	Folder Mount Point	10/20/10 6:08 PM 4/24/09 10:04 AM	
	deta dev etc	0 Bytes 0 Bytes	Folder	11/14/10 11:43 PM 11/14/10 11:43 PM	
	- initrd	0 Bytes	Folder	8/12/04 1:02 PM	
	Reco	ver All Selected List Media an	nd Size New Browse		
Restore Options for	All Selected Items			×	
General Job Initiation				1	
Restore ACLs					
Data in device n	ode				
Unconditionally	overwrite only if target is	a DataArchiver stub			
Overwrite Files					
	le on media is newer	C			
		<ul> <li>Unconditional Overwrite</li> </ul>			
Restore only i	f target exists				
Restore Destination					
Destination client	image_fbx02			· · · · ·	
Restore to san	e folder				
Specify destination					
				Browse	
Preserve Source Path					
@ Preserve		el from end of the source path			
C Remove	0 × lev	el from beginning of the source	path		
<u> </u>					
	4	OK Cancel Ad	vanced 🛛 🤣 Save A	s Script Help	
Restore Op	tions for All S	elected Items			
General Job Ini	tiation				
donordi					
Job Initiation	n				
🔿 Imr	nediate				
Kun	Run this job now				
COST	adula				
- 💿 <u>5</u> ct	euule				
Conf	igure Schedule Pa	attern	Configure		
Com	igaro pareduie Po		Connigure		
L					
🛯 🐚 ок	Cancel	Advanced	🚱 Save As Script	Help	
ug UK		Muvanceu	Dave As puript		
Schedule Details				X	
Schedule Name					
One Time	Start Time	9:00PM			
O Daily					
Weekly					
Monthly					
Yearly	On these days				
Tearly	on these days		Jesday 🔽 We		
		Thursday Fr	iday 📃 Sab	urday	
		Sunday			
		OK Cance	Help	Options>>	

See Scheduling for a comprehensive information on scheduling jobs.

## **MANAGING RESTORE JOBS**

Once you initiate the restore operation, a restore job is generated in the Job Controller. Jobs can be managed in a number of ways. See Job Management for a comprehensive information on managing jobs.

The following sections provide information on the different job management options available:

.....

#### **RESTARTING JOBS**

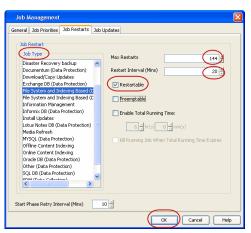
Jobs that fail to complete successfully are automatically restarted based on the job restartability configuration set in the Control Panel. Keep in mind that changes made to this configuration will affect all jobs in the entire CommCell.

To Configure the job restartability for a specific job, you can modify the retry settings for the job. This will override the setting in the Control Panel. It is also possible to override the default CommServe configuration for individual jobs by configuring retry settings when initiating the job. This configuration, however, will apply only to the specific job.

Backup jobs for this Agent are resumed from the point-of-failure.

#### CONFIGURE JOB RESTARTABILITY AT THE COMMSERVE LEVEL

- 1. From the CommCell Browser, click Control Panel icon.
- 2. Select Job Management.
- 3. Click Job Restarts tab and select a Job Type.
  - Select **Restartable** to make the job restartable.
  - Change the value for **Max Restarts** to change the maximum number of times the Job Manager will try to restart a job.
  - Change the value for **Restart Interval (Mins)** to change the time interval between attempts for the Job Manager to restart the job.
- 4. Click OK.



#### CONFIGURE JOB RESTARTABILITY FOR AN INDIVIDUAL JOB

- 1. From the CommCell Browser, navigate to *Client>* | **File System** | **Backup Set.**
- 2. Right-click the Subclient and select Backup.
- 3. Click Advanced.
- 4. In the Advanced Backup Options dialog box, click the Job Retry tab.
- Select Enable Total Running Time and specify the maximum elapsed time before a job can be restarted or killed.

Select **Kill Running Jobs When Total Running Time Expires** to kill the job after reaching the maximum elapsed time.

- 6. Select Enable Number Of Retries and specify the number of retries.
- 7. Click OK.

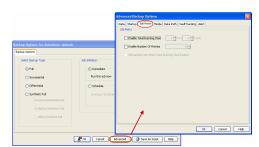
#### CONTROLLING JOBS

The following controls are available for running jobs in the Job Controller window:

SUSPEND	Temporarily stops a job. A suspended job is not terminated; it can be restarted at a later time.
	Resumes a job and returns the status to Waiting, Pending, Queued, or Running. The status depends on the availability of resources, the state of the Operation Windows, or the Activity Control setting.
KILL	Terminates a job.

#### SUSPENDING A JOB

1. From the Job Controller of the CommCell Console, right-click the job and select **Suspend**.



2. The job status may change to Suspend Pending for a few moments while the operation completes. The job status then changes to Suspended.

#### **RESUMING A JOB**

- 1. From the Job Controller of the CommCell Console, right-click the job and select Resume.
- 2. As the Job Manager attempts to restart the job, the job status changes to Waiting, Pending, or Running.

#### **KILLING A JOB**

- 1. From the Job Controller of the CommCell Console, right-click the job and select Kill.
- Click Yes when the confirmation prompt appears if you are sure you want to kill the job. The job status may change to Kill Pending for a few moments while the operation completes. Once completed, the job status will change to Killed and it will be removed from the Job Controller window after five minutes.

## **ADDITIONAL RESTORE OPTIONS**

Several additional options are available to further refine your restore operations. The following table describes these options, as well as the steps to implement them.

Be sure to read the overview material referenced for each feature prior to using them.

OPTION	DESCRIPTION	RELATED TOPIC
Skip Errors and Continue	This option allows a restore job to continue regardless of media errors and outputs a file that lists the full path names of the files that failed to get restored.	
	1. From the CommCell Browser, navigate to <b>Client Computers</b>   File System.	
	<ol> <li>Right-click the <backup set=""> that contains the data you want to restore, point to All Tasks and then click Browse Backup Data.</backup></li> </ol>	
	3. In the <b>Browse Options</b> dialog box, click <b>OK</b> .	
	4. In the <b>Client Browse</b> tab, select the data to be restored and click <b>Recover all Selected.</b>	
	5. In the Restore Options for All Selected Items dialog box, click Advanced.	
	6. In the <b>Advanced Restore Options</b> dialog box, select <b>Skip errors and continue</b> check box.	
	7. Click <b>OK</b>	
Use Exact index	This option allows you to associate the media with the most recent index available in the CommCell.	
	1. From the CommCell Browser, navigate to <b>Client Computers</b>   <b>File System</b> .	
	<ol> <li>Right-click the <backup set=""> that contains the data you want to restore, point to All Tasks and then click Browse Backup Data.</backup></li> </ol>	
	3. In the <b>Browse Options</b> dialog box, click <b>OK</b> .	
	4. In the <b>Client Browse</b> tab, select the data to be restored and click <b>Recover all Selected.</b>	
	5. In the <b>Restore Options for All Selected Items</b> dialog box, click <b>Advanced</b> .	
	6. From the Advanced Restore Options , select Use Exact Index check box.	
	7. Click <b>OK</b> .	
Startup Options	The Startup Options are used by the Job Manager to set priority for resource allocation. This is useful to give higher priority to certain jobs. You can set the priority as follows:	Refer to Job Priority and Priority Precedence.
	1. From the CommCell Browser, navigate to <b>Client Computers</b>   <b>File System</b> .	
	<ol> <li>Right-click the <b><backup set=""></backup></b> that contains the data you want to restore, point to <b>All</b> Tasks and then click <b>Browse Backup Data</b>.</li> </ol>	
	3. In the <b>Browse Options</b> dialog box, click <b>OK</b> .	
	4. In the <b>Client Browse</b> tab, select the data to be restored and click <b>Recover all Selected.</b>	
	5. In the Restore Options for All Selected Items dialog box, click Advanced.	
	6. In the Advanced Restore Options dialog box, click Startup.	
	7. In the <b>Startup</b> tab, select <b>Change Priority</b> .	
	8. Enter a priority number. 0 is the highest priority and 999 is the lowest priority.	
	9. Select the <b>Start up in suspended State</b> check box to start the job in a suspended state.	
	10. Click <b>OK</b> .	
Copy Precedence	By default, the system retrieves data from the storage policy copy with the lowest copy	Refer to Recovering Data Fron

	precedence. If the data was pruned from the primary copy, the system automatically retrieves Copies. data from the other copies of the storage policy in the lowest copy precedence to highest copy precedence order. Once the data is found, it is retrieved, and no further copies are checked.
	You can retrieve data from a specific storage policy copy (Synchronous Copy or Selective Copy). If data does not exist in the specified copy, the data retrieve operation fails even if the data exists in another copy of the same storage policy. Follow the steps given below to retrieve the data from a specific storage policy copy:
	1. From the CommCell Browser, navigate to <b>Client Computers</b>   File System.
	<ol> <li>Right-click the <backup set=""> that contains the data you want to restore, point to All Tasks and then click Browse Backup Data.</backup></li> </ol>
	3. In the <b>Browse Options</b> dialog box, click <b>OK</b> .
	<ol> <li>In the Client Browse tab, select the data to be restored and click Recover all Selected.</li> </ol>
	5. In the <b>Restore Options for All Selected Items</b> dialog box, click <b>Advanced</b> .
	6. In the <b>Advanced Restore Options</b> dialog box, click <b>Copy Precedence</b> .
	7. On the <b>Copy Precedence</b> tab, select the <b>Restore from copy precedence</b> check box.
	8. Enter the copy precedence number.
	9. Click <b>OK</b> .
Data Path Options	The data recovery operations use a default Library, MediaAgent, Drive Pool, and Drive as the Refer to Change Data Path. Data Path. You can use this option to change the data path if the default data path is not available. Follow the steps given below to change the default data path:
	1. From the CommCell Browser, navigate to <b>Client Computers</b>   File System.
	<ol> <li>Right-click the <backup set=""> that contains the data you want to restore, point to All Tasks and then click Browse Backup Data.</backup></li> </ol>
	3. In the <b>Browse Options</b> dialog box, click <b>OK</b> .
	4. In the <b>Client Browse</b> tab, select the data to be restored and click <b>Recover all Selected.</b>
	5. In the <b>Restore Options for All Selected Items</b> dialog box, click <b>Advanced</b> .
	6. In the <b>Advanced Restore Options</b> dialog box, click <b>Data Path</b> .
	7. On the <b>Data Path</b> tab, select the <b>MediaAgent</b> and <b>Library</b> .
	8. Select the <b>Drive Pool</b> and <b>Drive</b> for optical and tape libraries.
	9. Select the name of the <b>Proxy</b> server if you wish to restore using a proxy server.
	You can select the Proxy server only when you are restoring from a snapshot. This option is not available for a regular restore.
Encryption	10. Click OK. Refer to Data Encryption.
	If the client's data is encrypted with a pass phrase, you must enter the pass-phrase to start the data recovery operation. Follow the steps given below to enter the pass-phrase:
	1. From the CommCell Browser, click <b>Client Computers</b>   <b>File System</b> .
	<ol> <li>Right-click the <backup set=""> that contains the data you want to restore, point to All Tasks and then click Browse Backup Data.</backup></li> </ol>
	3. In the <b>Browse Options</b> dialog box, click <b>OK</b> .
	4. In the <b>Client Browse</b> tab, select the data to be restored and click <b>Recover all Selected.</b>
	5. In the <b>Restore Options for All Selected Items</b> dialog box, click <b>Advanced</b> .
	6. In the <b>Advanced Restore Options</b> dialog box, click <b>Encryption</b> .
	7. Enter the Pass Phrase.
Vorte	8. Click OK. Refer to Alert.
Alerts	This option enables users or user groups to get automatic notification on the status of the data recovery job. Follow the steps given below to set up the criteria to raise notifications/alerts:
	1. From the CommCell Browser, click <b>Client Computers</b>   <b>File System</b> .
	<ol> <li>Right-click the <backup set=""> that contains the data you want to restore, point to All Tasks and then click Browse Backup Data.</backup></li> </ol>
	3. In the <b>Browse Options</b> dialog box, click <b>OK</b> .
	<ol> <li>In the Client Browse tab, select the data to be restored and click Recover all Selected.</li> </ol>
	5. In the <b>Restore Options for All Selected Items</b> dialog box, click <b>Advanced</b> .
	6. In the <b>Advanced Restore Options</b> dialog box, click <b>Alerts</b> .

	7. Click Add Alert.	
	<ol> <li>From the Add Alert Wizard dialog box, select the required threshold and notification criteria and click Next.</li> </ol>	
	9. Select the required notification types and click <b>Next</b> .	
	10. Select the recipients and click <b>Next</b> .	
	11. Click Finish.	
	12. Click <b>OK</b> .	
Command Line Restores	Command Line Interface enables you to perform backups or restore from the command line. The commands can be executed from the command line or can be integrated into scripts.	Refer to Command Line Interface.
	You can also generate command line scripts for specific operations from the CommCell Browser using the <b>Save As Script</b> option.	
CommCell Readiness Report	The CommCell Readiness Report provides you with vital information, such as connectivity and readiness of the Client, MediaAgent and CommServe. It is useful to run this report before performing the data protection or recovery job. Follow the steps given below to generate the report:	
	1. From the <b>Tools</b> menu in the CommCell Console, click <b>Reports</b> .	
	2. Navigate to Reports   CommServe   CommCell Readiness.	
	3. Click the <b>Client</b> tab and click the <b>Modify</b> button.	
	4. In the Select Computers dialog box, clear the Include All Client Computers and All Client Groups check box.	
	5. Select the client from the <b>Exclude</b> list.	
	6. Click the <b>Include &gt;</b> button.	
	7. Click <b>OK</b> .	
	8. Click the <b>MediaAgent</b> tab.	
	9. Clear the Include All MediaAgents checkbox.	
	10. Select the MediaAgent from the <b>Exclude</b> list.	
	11. Click <b>Include &gt;</b> .	
	12. Click <b>Run</b> .	
	The generated report is displayed.	
Restore Job Summary Report	The Restore Job Summary Report provides you with information about all the data recovery jobs that are run in last 24 hours for a specific client and agent. You can get information such as failure reason, failed objects, job options etc. It is useful to run this report after performing the restore. Follow the steps given below to generate the report:	Refer to Restore Job Summary Report.
	1. From the <b>Tools</b> menu in the CommCell Console, click <b>Reports</b> .	
	2. Navigate to Reports   Jobs   Job Summary.	
	3. Click <b>Data Recovery</b> on the <b>General tab</b> in the right pane.	
	4. On the <b>Computers</b> tab, select the client and the agent for which you want to run the report.	
	5. Click Run.	

Back to Top

# Data Aging - HP-UX File System *i*DataAgent

## TABLE OF CONTENTS

### Getting Started Extended Retention Rules

## **GETTING STARTED**

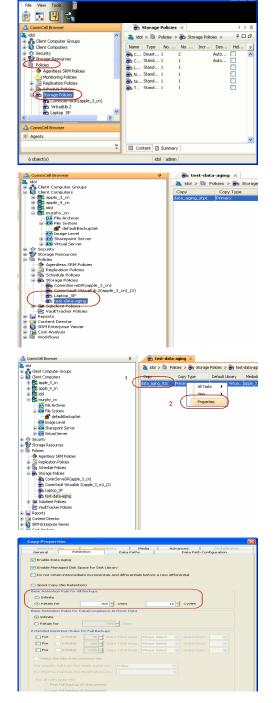
Data Aging is the process of removing old data from secondary storage to allow the associated media to be reused for future backups.

By default, all backup data is retained infinitely. However, you should change the retention of your data based on your needs. Note that if you continue to have infinite retention, you will also need infinite storage capacity.

1. From the CommCell Browser, navigate to **Policies | Storage Policies**.

2. Highlight the Storage Policy.

3. From the right pane, right-click the **Storage Policy Copy** and click the **Properties**.



- 4. Click the **Retention** tab.
  - Click the Retain For in the Basic Retention Rules for All Backups area.
  - Enter number of days to retain the data.
  - Enter number of cycles to retain the data.
  - Click OK.

- 5.
- From the CommCell Browser, click the Reports icon.

6. Expand Reports and select Data Retention Forecast and Compliance.

7. Click Run.

8. The report will display the data to be pruned when a data aging job is run.

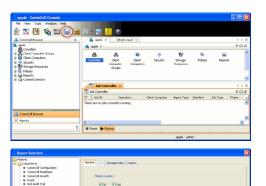
To ensure only data intended for aging is actually aged, it is important to identify the data that will be aged based on the retention rules you have configured. Hence, ensure this report includes only the data you intend to age.

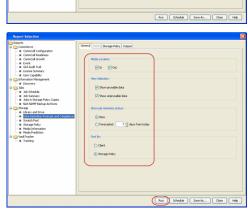
If necessary, fine-tune your rules so that only the intended data is aged.

Once you run a data aging job, the data will be lost.



Data Aging Options	
Job Initiation	
Job Initiation	
⊙ Immediate	
Run this job now	





Ode



• and frank d • Indefands • Indefands

Report 9.00(SULD64) g CommCrit ID. FFFFFFFF CommCrit ver2k1

Page 93 of 249

- 9. From the CommCell Console, right click the CommServe icon and click All Tasks | Data Aging.
- 10. Select Immediate in the Job Initiation section and click OK.

You can track the progress of the job from the Job Controller window. When the job has completed, the Job Controller displays Completed.
 Make sure that the job completes successfully. If the job did not complete successfully, re-run the job.

	xà Caritra													0 E	
۳٤		Operation	Client Computer	Agent Type	Subclevit1	Job Type	Phase	Storage Policy	NedaAgent	Status	Progress	Errors	Delay Reason	Description	4
	é4	Cota Aging					144			Congleted	500%				

## **EXTENDED RETENTION RULES**

Extended retention rules allow you to keep specific full (or synthetic full) backups for longer periods of time.

Extended retention rules can be used in the following circumstances:

- If you have a single drive tape library
- If you want to create a hierarchical retention scheme (grandfather-father-son tape rotation)

In all other cases, it is recommended that the Auxiliary Copy feature be used for extended storage as it actually creates another physical copy of the data, thereby reducing the risk of data loss due to media failure.

#### UNDERSTANDING EXTENDED RETENTION RULES

Extended retention allows you to retain a specific full (or synthetic full) backup for an additional period of time. For example, you may want to retain your monthly full backups for 90 days.

Extended retention rules allow you to define three additional "extended" retention periods for full (or synthetic full) backups. For example:

- You may want to retain your weekly full backups for 30 days.
- You may want to retain your monthly full backup for 90 days.
- You may want to retain your yearly full backup for 365 days.

A backup job will be selected for extended retention based on its start time. For example: If a backup job starts at 11:55 pm on August 31st and ends at 1 am on September 1st, then it will be selected as the last full backup for the month of August and will be picked up for extended retention.

#### SETTING UP EXTENDED RETENTION RULES

Use the following steps for setting up the extended retention rules:

- 1. Right-click the storage policy copy and click **Properties**.
- 2. Click the Retention tab.
- 3. Set the basic retention rules by clicking **Retain for** and entering the number of days and cycles appropriate for your organization.
- 4. Set the extended retention rules as follows:

Click the For button.

Enter the number of **Days Total** to retain the backup.

Click the **Keep** drop-down list, and select the desired backup criteria (e.g., Monthly Full).

Click the Grace Days drop-down list and select the number of days (e.g., 2).

- 5. Repeat Step 4 to configure additional extended retention.
- 6. Click **OK**.

Selective Cop			Media	Advanced	Deduplication
General	Retention	Data Paths		Data Path C	Configuration
Do not retain	ged Disk Space for Disk		is before a nev	e differential	
O Infinite					
Ŭ			_	- I-I	
<ul> <li>Retain for</li> </ul>		0 Days		1 Cycles	
Basic Retention	Rules for Data/Complia	ince Archiver Data			
🔵 Infinite					
<ul> <li>Retain for</li> </ul>		365 ÷ Days			
Extended Reten	tion Rules for Full Back	ups			
For 🗌	Infinite/ 30	Days Total Keep	Weekly Full	Grace Day	s 🔽
🗸 For 🗌	Infinite/ 90 ÷	Days Total Keep	Monthly Full	Grace Day	s 💌
For 🗆	Infinite/ 365	Days Total Keep	Yearly Full	Grace Day	• 💽 🖯 🛛
Select the j	obs from previous tier				
For Weekly Fu	ll Rule the Week starts	on: Friday		~	
For Monthly Fu	ll Rule the Month start	son: 1		*	
For all rules ke	ep the:				
🔵 First fr	Il backup of time perio	d			
💿 Last fu	Il backup of time perio	d			
				ОК	Cancel Help

Copy Properties

## **ADVANCED TOPICS**

#### **Data Aging - Advanced**

Provides comprehensive information on additional Data Aging capabilities.

# **Disaster Recovery - HP-UX File System**

## **TABLE OF CONTENTS**

Planning for a Disaster Recovery Rebuilding the Operating System Restoring the HP-UX File System

## **PLANNING FOR A DISASTER RECOVERY**

Before you begin a disaster recovery, make sure to do the following:

- Perform regular backups of the HP-UX file system. These backups can be scheduled to run at convenient intervals.
- Ensure that the destination client is same as source client while performing a disaster recovery.
- Make sure to Install the HP-UX Operating System on the system that you want to restore. Make sure to install the Operating System exactly as it existed
  prior to a hardware or software corruption problem.
- The client computer must have a default install partition with the HP-UX File System iDataAgent installed on it. Make sure to enable the Networking option.
   The TCP/IP, hostname, and domain name settings of the default install must match those of the system that you are restoring.
- A standalone tape device needs to be attached to the HP-UX computer to save the HP-UX File System iDataAgent software and other processing software.
- Use Hewlett Packard's Ignite-UX make\_recovery utility software to restore HP-UX file system. This software is available free of charge at https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=IGNITEUXB. This software ensures that the appropriate HP-UX File System iDataAgent software configuration is preserved which eliminates the need to mount file systems that have been lost. This software also handles potential problems with the Volume Manager associated with HP-UX systems (e.g., decreasing file space).
- Install the HP-UX File System iDataAgent software within the Root Volume Group to facilitate HP-UX restores.

## **REBUILDING THE OPERATING SYSTEM**

- Download Hewlett Packard's Ignite-UX make\_recovery utility software and install it on HP-UX computer. Be sure to follow the instructions provided at Hewlett Packard's web site.
- 2. Install the HP-UX File System *i*DataAgent software within the Root Volume Group.
- **3.** Edit the /var/opt/ignite/recovery/makrec.append file to include the directory where the HP-UX File System *i*DataAgent was installed.
- 4. Type the the appropriate command to execute a proper make\_recovery utility per your system's processor.

If your system has an Itanium processor, issue the following command:

make\_tape\_recovery -va <tape device>

If your system has a processor other than an Itanium processor, issue the following command:

make\_recovery -Cv -d <tape device>

This command transfers the the HP-UX File System *i*DataAgent software and the other required processing software to the "make\_recovery" tape.

- 5. Turn the computer on and use the maintenance menus to place the "make\_recovery" tape into the bootable tape drive and boot from the tape.
- 6. Select **N** to put your system in interactive mode.
- 7. Exit and Restart your computer. Your HP-UX computer will now be restored with HP-UX File System.

## **RESTORING THE HP-UX FILE SYSTEM**

1.

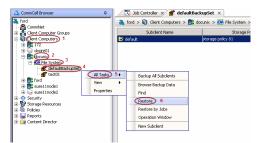
- From the CommCell Browser, navigate to Client Computers | <Client> | File System.
  - Right-click the defaultBackupSet and then click All Tasks | Restore.

For example:

make\_tape\_recovery -va /dev/rmt/0mn

For example:

make\_recovery -Cv -d /dev/rmt/0mn



- Enter the HP-UX file system path to the data you wish to restore. You can type "/" as 2. Restore X the path to restore the entire content. Please provide the starting path of the data you want to restore. OK Cancel Select the name of the client computer from the **Destination Client** list. If you are Restore Options for All Se 3. neral | Job Initiation | mounting the new root file system at /mnt, type or accept "/mnt" as the restore destination. Do not select Restore to same folder checkbox. Restore ACLs Click OK. Data in device node Unconditionally overwrite only if target is a DataArchiver stub Do not select Unconditional Overwrite from the 🔽 Overwrite Files Advanced Options. Overwrite if file on media is newer C Unconditional Ov Restored data retains its original permissions. The ACLs Restore only if target exists are restored after the permissions are restored. store Destination Destination client docunix ¥ Restore to same folder Specify destination path Preserve Source Paths Preserve 1 -Remove 1 Cancel Advanced 🦻 Save As Script Help 4. Restore Options for All Selected Items • Select Immediate from the Job Initiation tab. General Job Initiation • Click OK. Job Initiation Immediate Run this job now C Schedule 🗗 ОК Advanced 🚱 Save As Script Cancel Help
- 5. You can monitor the progress of the restore job in the **Job Controller** or **Event Viewer** window of the CommCell Console.

6. Exit and reboot the computer.

If you have installed to a new server where the mount points may be different, be sure to edit the fstab and mtab files in the restored /etc directory to match the new server. Also, be sure to edit the /boot/grub/menu.lst file to match the new configuration. If there are hardware changes, be sure to reboot to single user first so that you can add new drivers to the operating system if needed.

Back to Top

Al Job Controller
 Volum Annual Elle Control Agent Type Subclent Job Type Phase Storage Pr., MedaAgent Return
 Control Advant Elle Storage Annual Advant Full MA storage col., ford Killed

# Additional Operations - HP-UX File System

## **TABLE OF CONTENTS**

Audit Trail Storage Policy Subclient Policy Schedule Policy Auxiliary Copy Operation Window Operating System and Application Upgrades Global Filters Erase Backup Data Uninstalling Components Online Help Links

## **AUDIT TRAIL**

The Audit Trail feature allows you to track the operations of users who have access to the CommCell. This capability is useful if a detrimental operation was performed in the CommCell and the source of that operation needs to be determined.

Audit Trail tracks operations according to four severity levels:

- Critical: This level records operations that will result in imminent loss of data.
- High: This level records operations that may result in loss of data.
- Medium: This level records changes to the general configuration of one or more entities. Such changes may produce unintended results when operations
  are performed.
- Low: This level records changes to status, addition of entities, and other operations that have minimal impact on existing CommCell functions.

To set Audit Trail retention periods:

- 1. From the Tools menu in the CommCell Console, click Control Panel, and then select Audit Trail.
- 2. From the Audit Trail dialog box, select the desired retention time (in days) for each severity level.
- 3. Click OK.

## STORAGE POLICY

A Storage policy defines the data lifecycle management rules for protected data. Storage policies map data from its original location to a physical storage media and determine its retention period.

- 1. Expand the Policies node, right-click Storage Policies, and select New Storage Policy.
- 2. Click Next.
- 3. Select Data Protection and Archiving to create a regular storage policy or CommServe Disaster Recovery Backup to backup the CommServe database and click Next.

#### 4. Click Next.

- 5. Enter the name of storage policy and click Next.
- 6. Enter the name of the primary copy and click **Next**.
- 7. From the drop down box, select the default library for the primary copy and click Next.
- 8. From the drop down box, select the MediaAgent and click Next.
- 9. Enter number of data streams and set the retention period for the policy and click Next.
- 10. Click Next.
- 11. Click Browse, browse to your designated deduplication store location and click Next.
- 12. Confirm your selections and click **Finish**.

#### SUBCLIENT POLICY

Subclient policies allow you to configure multiple subclients within a CommCell from a centralized template. This alleviates the need to manually configure each subclient that shares a similar configuration.

- 1. Expand the Policies node, right-click Subclient Policies and click New Subclient Policy.
- 2. Enter policy name in the Name entry field, then select the appropriate file system type from the iDataAgent drop-down list.
- 3. In the Subclient pane, assign a storage policy for each subclient template by clicking in the drop down box under the Storage Policy column.
- 4. Click **OK**.

## SCHEDULE POLICY

A schedule policy is a defined schedule or group of schedules for specific operations to be performed on associated objects within the CommCell. When the schedules from a policy are run, the specified operations, (e.g., auxiliary copy, backup, etc.,) will be performed on the associated CommCell objects.

- 1. Expand the Policies node, right-click Schedule Policies and click Add.
- 2. Type the Name of the schedule policy.
- 3. Select the **Type** of schedule policy.
- 4. Select the Agent Type.
- 5. Type a description of the schedule policy.
- 6. Click Add.
- 7. Enter a Schedule Name in the Schedule Pattern tab.
- 8. Click **OK**.
- 9. On the Associations tab, select the objects to be associated with the schedule policy.
- 10. Click OK.

## **AUXILIARY COPY**

An auxiliary copy operation allows you to create secondary copies of data associated with data protection operations, independent of the original copy.

- 1. Expand the Policies node, right-click storage policy for which you want to perform an auxiliary copy, click All Tasks, and then click Run Auxiliary Copy.
- 2. If you are starting the auxiliary copy operation from the CommServe level, select the storage policy for which you wish to perform the auxiliary copy.

If you are starting the auxiliary copy operation from the Storage Policy level, the Storage Policy field is already populated with the name of the Storage Policy you selected.

- 3. If the source copy is configured with a shared library, select the Source MediaAgent for the auxiliary copy.
- 4. Click **OK** to start the auxiliary copy operation. A progress bar displays the progress of the operation.

## **OPERATION WINDOW**

By default, all operations in the CommCell can run for 24 hours. To prevent certain operations from running during certain periods of the day, you can define operation rules so that these operations are disabled during those times.

When operation rules are configured, operations that are started within the time window specified will go to a queued (as opposed to pending) state. Once the time window specified in the operation rule has elapsed, these queued or running operations will resume automatically.

- 1. In the CommCell Browser, right-click the appropriate entity, click All Tasks, and then click Operation Window.
- 2. Click Add.
- 3. From the **Operation Window** dialog box:
  - $\,\circ\,$  Enter the name of the rule in the Name field.
  - o Select either an administration, data protection (either full or non-full), and/or a data recovery operation from the Operations pane.
- 4. Click **OK**.

## **OPERATING SYSTEM AND APPLICATION UPGRADES**

Operating system upgrades are only supported when upgrading from one version of an OS to a different version of the same OS (e.g., Win2003 to Win2008). The two methods of upgrading are:

• Seamless Upgrade - This involves uninstalling the Agent software, upgrading the operating system, and then re-installing the Agent software.

• Full OS Replacement - This involves performing a clean install of a new version of the OS, re-installing any application software, then re-installing the CommServe, MediaAgent, and/or Agent software.

For Full OS Replacement, the client computer must be configured to have the CommServe, MediaAgent, and/or Client software re-installed to the same location, the same Fully Qualified Domain Name or short domain name, the same partitions, disk drive format (FAT, NTFS, et. al.), and IP configuration as previously.

If it is necessary to remove Agent software to facilitate an operating system or application upgrade, do not delete the icon for the Agent from the CommCell Console, or all associated backed up data will be lost.

Use the following strategy to upgrade the operating system software:

- Identify the computers you want to upgrade and the CommCell components installed on each of these computers.
- Choose the type of upgrade procedure you want to use on each computer: seamless or full replacement.
- CommServe, MediaAgent, and Client computers can be upgraded in any order.

## **GLOBAL FILTERS**

Global Filters are exclusions that filter data from backups across all Agents in a CommCell that support the feature. Global Filters serve as a template for files, folders, and entities that should always be excluded from all (or most) backups in a CommCell, such as temporary data a computer does not retain or data that is recoverable by means other than a restore. This saves space on media and enhances backup performance.

By default, filters configured for a particular subclient override any Global Filters configured for the CommCell. You can, however, configure subclients to include global filters along with any filters already configured for the subclient.

#### **CONFIGURE GLOBAL FILTERS**

- 1. From the CommCell Browser, right-click the CommServe, click Control Panel, and then click Global Filters.
- 2. Select Use Global Filters on All Subclients.
- 3. Click Browse to locate the files or folders to be excluded from backups and click OK.
- 4. Click **OK** to save your changes.

#### ENABLE/DISABLE GLOBAL FILTERS FOR A SUBCLIENT

- 1. From the CommCell Browser, right-click the subclient for which you want to enable Global Filters and click Properties.
- 2. Click the **Filters** tab.
- 3. Select one of the following values from the Include Global Filters list:
  - **ON** to enable Global Filters for this subclient.
  - **OFF** to disable Global Filters for this subclient.
- 4. Click **OK**.

## **ERASE BACKUP DATA**

The Erase Data feature allows you to permanently erase any data that can be backed up.

#### CONFIGURING ERASE DATA

To erase data, you need to first assign a Filter Storage Policy for Erasing Data. Follow the steps given below to assign a Filter Storage Policy:

- 1. From the CommCell Browser, right-click the storage policy that you want to use as a filter storage policy, then click Properties.
- 2. From the General tab of the Storage Policy Properties dialog box, select the Allow Erase Data check box.
- 3. Click OK.
- 4. From the CommCell Browser, right-click the File System agent icon and then click Properties.
- 5. From the Storage Device tab of the agent Properties dialog box, select a filter storage policy from the Filter Storage Policy list.
- 6. Click **OK**.

#### **RUNNING AN ERASE DATA JOB**

After the configuration has been completed, you can now browse and erase data.

1. From the CommCell Browser, right-click the File System agent, select All Tasks and then click Erase Data By Browsing.

- 2. You are warned that the data will be permanently removed. Click Yes to continue.
- 3. From the Erase Data by Browsing dialog box, click Browse.
- 4. In the Browse Options dialog box, select a browse time range and any advanced browse options, and click OK.
- 5. From the browse selection window, select the data objects that you want to erase, and click **OK**.
- 6. In the Job Initiation tab, select Immediate to run the job immediately.

You can track the progress of the job from the **Job Controller** or **Event Viewer**.

### **UNINSTALLING COMPONENTS**

You can uninstall the components using one of the following methods:

Method 1: Uninstall Components Using the CommCell Console

Method 2: Uninstall Components at the Client

### METHOD 1: UNINSTALL COMPONENTS USING THE COMMCELL CONSOLE

1. From the CommCell Browser, right-click the desired Client Computer and click All Tasks -> Add/Remove Programs and click Uninstall Software.

- 2. Uninstall Software Options dialog will appear.
- 3. In the Uninstall Software tab, select Uninstall All to uninstall all the software packages.
- 4. In the Job Initiation tab, select Immediate to run the job immediately.

You can track the progress of the job from the Job Controller or Event Viewer.

### METHOD 2: UNINSTALL COMPONENTS AT THE CLIENT

You can uninstall the unix components using the cvpkgrm utility.

The following table lists the File System components and their corresponding titles within the uninstall program's selection menu:

COMPONENT	COMPONENT TITLE IN UNINSTALL PROGRAM'S SELECTION MENU
File System iDataAgent	CVGxIDA
MediaAgent	CVGxMA
Base Module	CVGxBase

When uninstalling a component on a client computer, the following sequence must be used:

1. Uninstall all application components and updates.

- 2. Uninstall the MediaAgent (if one exists).
- 3. Uninstall the Base software.

## **ONLINE HELP LINKS**

Use the following links to view the online help for the corresponding tabs in the CommCell Console:

OPERATIONS	ENTITY	ONLINE HELP LINKS	SUB LINKS
CONFICURATION	Agent	Agent Properties (General)	
CONFIGURATION		Agent Properties (Version)	
		Agent Properties (Index)	
		Agent Properties (Security)	
		Agent Properties (Activity Control)	
		Agent Properties (Storage device)	
	Subclient	Subclient Properties (General)	
		Subclient Properties (Content)	Add Multiple Contents
		Subclient Properties (Filters)	
		Subclient Properties (Pre/Post Process)	
		Subclient Properties (Encryption)	
		Subclient Properties (Storage Device)	
		Subclient Properties (Activity Control)	

	Backup Set	Subclient Properties (1-Touch Recovery) Subclient Properties (SRM Options) Subclient Properties (Security) Subclient Properties (SnapProtect) Backup Set (General) Backup Set (Security)	
BACKUP	Backup Options	Backup Options	Save As Script Command Line XML Options
	Advanced Backup Options	Advanced Backup Options (Data) Advanced Backup Options (Startup) Advanced Backup Options (Job Retry) Advanced Backup Options (Media) Advanced Backup Options (Data Path) Advanced Backup Options (VaultTracking) Advanced Backup Options (Alert)	
RESTORE	Restore Options	Restore Options Job Initiation	Save As Script
	Advanced Restore Options	Advanced Restore Options (General) Advanced Restore Options (Startup) Advanced Restore Options (Pre/Post) Advanced Restore Options (Copy Precedence) Advanced Restore Options (Data Path) Advanced Restore Options (Paths/Filters) Advanced Restore Options (Encryption) Advanced Restore Options (Job Retry) Advanced Restore Options (Map) Advanced Restore Options (Browse Options) Advanced Restore Options (Alert)	Command Line XML Options

## **ADVANCED TOPICS**

Provides comprehensive information on additional capabilities for the following features:

- Audit Trail
- Storage Policies
- Storage Policy CopiesSubclient Policies
- Schedule Policy
- Auxiliary Copy
- Operation Window
- Erase Backup Data
- Uninstalling Components

Back to Top

# **Best Practices - HP-UX File System**

#### ELIMINATING BACKUP FAILURES

You can use filters to exclude items which consistently fail and that are not integral to the operation of the system or applications. Some items fail because they are locked by the operating system or application and cannot be opened at the time of the data protection operation. This often occurs with certain system-related files and database application files. Also, keep in mind that you will need to run a full backup after adding failed files to the filter in order to remove them.

#### AVOIDING DUPLICATE CONTENT BACKUPS ON CLUSTERED FILE SYSTEMS

When backups are run from multiple nodes on clustered file systems, the same content is backed up multiple times. Backups should be run on only one node to avoid such duplicate content backups. However, the other nodes can also be configured to run backups but make sure that the clustered file system mount point is added to the file system exclusion list of the physical machine's subclients.

For VERITAS Cluster File System, the clustered file system mount point is added automatically to the file system exclusion list when backup is run for the first time on the virtual node/s.

### RE-CONFIGURING DEFAULT SUBCLIENT CONTENT

We recommend that you do not re-configure the content of a default subclient because this would disable its capability to serve as a catch-all entity for client data. As a result, some data will not get backed up or scanned.

#### **RESTORE BY JOB**

Avoid running restores by jobs for jobs associated with the default backup set, if you do not want to restore the operating system files or directories. The entire content of the backed up client will be restored and the client where you are restoring might run out of space.

#### **OPTIMIZING THE CPU USAGE ON PRODUCTION SERVERS**

In virtualized environments (e.g., LPAR, WPAR, Solaris Zones etc.,) where dedicated CPUs are not allocated, backup jobs may result in high CPU usage on production servers. The following measures can be taken to optimize the CPU usage:

- Set the appropriate priority for the backup jobs using the dNICEVALUE registry key to restrict allocation of all the available CPU resources to a specific backup job. Use the following steps to set the registry key:
  - 1. From the CommCell Console, navigate to Client Computers.
  - 2. Right-click the <*Client*>, and then click **Properties**.
  - 3. Click the **Registry Key Settings** tab.
  - 4. Click Add.
  - 5. In the Name field, type dNICEVALUE.
  - 6. In the **Location** list, type Base.
  - 7. In the **Type** list, select **Value**.
  - 8. In the Value field, type <**NICE value**>.
  - 9. Click OK.

Restart the services on the client after setting this key.

Seneral Vers Encryption	sion Security Advanced	Activity Control Grou Content Indexing	Registry Key Settings	Policies Job Con Client Side Dedup	
Name	Location	Туре	Value	Enabled	
		istry Key on Unix Cl	lient phobos		
		dNICEVALUE			
		Base		~	
		VALUE		×	
	Value	1			
			OK Cancel	Help	
		Add	dit Delete		
		Add	dic Delete		

- Client side compression, encryption, and deduplication operations also consume considerable CPU resources. Moving these operations from the client to the MediaAgent will help reduce the additional CPU load.
- Using a proxy server for SnapProtect operations will move the CPU load onto the proxy thereby decreasing the overhead on the production servers further.

## **Frequently Asked Questions - HP-UX File System**

#### WHAT PERMISSIONS DOES THE RESTORED DATA ACQUIRE AFTER THE RESTORES?

When performing restore operations (other than in-place restores), the restored data assumes the rights (i.e., permissions) of the parent directory.

#### HOW ARE CASE-SENSITIVE FILES RESTORED FROM UNIX TO WINDOWS CLIENTS?

Windows operating system does not maintain case-sensitivity of the file names. Hence, when you perform a cross-platform restore from a Unix client to a Window Client, if there are two case-sensitive files with same name, the case sensitivity of the files are ignored and the files are overwritten. For example, if you are trying to restore files named SAMPLE and sample from Unix to Windows, the file which is restored last will overwrite the first one that was restored.

#### HOW ARE FILE NAMES WITH \ CHARACTER HANDLED WHEN RESTORING FROM UNIX TO WINDOWS CLIENTS?

When you restore a file with a \ character in its name (for example, file\.dat) to a Windows client computer, Windows interprets the \ as a delimiter in the path name and creates a folder on the Windows computer named file, which will contain a file named .dat. However, the contents of the files file\.dat and .dat are identical.

#### WHEN DOES A NON-FULL BACKUP AUTOMATICALLY GET CONVERTED TO A FULL BACKUP?

A non-full backup is automatically converted to a full backup in the following situations:

- First backup of the subclient.
- Re-associating a subclient to another storage policy.
- Promote a secondary storage policy copy that is not synchronized with a primary copy (for all the subclients of a storage policy).
- If a backup job within the most recent backup cycle is pruned or disabled from a primary copy.
- Adding a new content path to the subclient.
- If you switch from a SnapProtect backup to a traditional backup or vice versa.
- CommCell Migration operation.

#### WHAT ARE THE TWO TYPES OF FILE LOCKS AND HOW ARE THEY BACKED UP?

The Unix file system uses two types of file locks: Advisory locks and Mandatory locks. Files with an advisory locks are available to multiple users and applications. Files with mandatory locks cannot be used by any other user or application other than the current user.

Files with advisory locks are included in the backups by default. On the other hand, files with mandatory locks are skipped during the backup process and their file names and paths are logged to the Backup Job History log. You can use the CommCell Console to examine this log to determine if any files were skipped. The system automatically attempts to obtain any skipped files in the next backup.

For comprehensive information on configuring backups for files with mandatory locks, see Configuring Backups for Locked Files for step-by-step instructions.

#### HOW DO WE IDENTIFY AND EXCLUDE FILE SYSTEM TYPES WITHOUT A NAME FROM BACKUPS?

File system types that do not have a corresponding name can be identified by their numeric value. The numeric value of such file systems can be found printed in the FileScan.log log file located in the /var/log/calypso/Log Files/ directory, as shown below.

#### For example:

Find::GetFsType() - add fstype '391' for '/home' to cache (st dev:17)

Find::GetFsType() - add fstype 'ext3' for '/testData/uxpermissions' to cache (st\_dev:FC08)

This numeric value of file system type from above example can be used in conjunction with the *ignoreFStype* registry key to skip the file system type from backups.

#### For example,

ignoreFStype :391:.

#### WHY IS THE COMPRESSION RATIO HUGE WHEN USING SOFTWARE COMPRESSION FOR BACKUPS?

When using software compression, if the backup includes files with holes, the compression ratio becomes huge.

# Troubleshooting - HP-UX File System Backup

Backup Restore

The following section provides information on some of the troubleshooting scenarios related to backup:

## **BACKUP FAILURES**

Backup fails	The subclient content might have remote scripts with one or more blank lines at the top.					
	Ensure that you delete the blank lines at the top of any remote scripts.					
Backup hangs indefinitely	Ensure that there are no stale NFS mounts on the server included in the backup.					
	If there are stale NFS mounts on the server, backups hang indefinitely. This can be avoided by either adding the mounted directory to the exclusion filter of the subclient or ensuring that the NFS mount points are available for backups.					
Error while loading shared	On Linux clients, the below error appears when we run any process or service:					
libraries	<process name="">: error while loading shared libraries: <lib>.so: cannot enable executable stack as shared object requires: Permission denied</lib></process>					
	For example,					
	<pre>#./ifind -getmnt -all ./ifind: error while loading shared libraries: libCvOnTap.so: cannot enable executable stack as shared object requires: Permission denied</pre>					
	As a workaround, do the following steps:					
	1. Check if ASL (Atomic Secured Linux) is configured on client.					
	#uname -r 2.6.32.59-17.art.i686.PAE					
	.art indicates that ASL is configured on the client.					
	2. Check for the presence of the below logs in /var/log/messages file.					
	May 24 22:01:08 rhel6 kernel: Aborting core May 24 22:01:08 rhel6 kernel: PAX: execution attempt in: <anonymous mapping="">, bfc46000-bfc5b000 bffeb000 May 24 22:01:08 rhel6 kernel: PAX: terminating task: /usr/libexec/paxtest/mprotstack (mprotstack):13201, uid/euid: 0/0, PC: bfc5acf4, SP: bfc5acdc May 24 22:01:08 rhel6 kernel: PAX: bytes at PC: c3 1a a3 ae 2b ac 9f ae f4 0f 9f ae 00 00 00 00 f4 0f 9f ae</anonymous>					
	3. Run the following command.					
	<pre>chpax -ps/iDataAgent/<process service=""></process></pre>					
	E.g.: #chpax -ps /opt/calypso/iDataAgent/ifind					

## **PRIORITY OF CALYPSO PROCESSES**

By default, Calypso processes runs at default priority on the client computers. If there are available CPU cycles, then Calypso processes will use the available CPU for backup and restore operations. If the CPU is being used by other application or system processes, Calypso processes will not preempt them. In such cases, if you want to give higher priority to other application or system processes, which are running at the default priority, you can modify the priority of Calypso process using the following steps:

- 1. From the CommCell Console, navigate to Client Computers.
- 2. Right-click the <*Client*>, and then click **Properties**.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the Name field, type dNICEVALUE.
- 6. In the **Location** list, type Base.
- 7. In the **Type** list, select **Value**.
- 8. In the Value field, type <**NICE value**>.
- 9. Click OK.

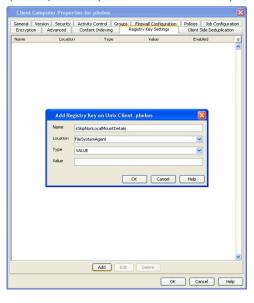
Restart the services on the client after setting this key.

Seneral Ver Encryption	sion Security Advanced	Activity Control Content Indexin		all Configuration Key Settings		Job Configur e Deduplicati
Name	Location	Тур	pe	Value	Enable	ed .
	Add Reg	sistry Key on U	nix Client pho	bos	×	1
	Name	dNICEVALUE				
	Location	Base			~	
	Туре	VALUE			~	
	Value	1				
			ОК	Cancel	Help	

## **EXCLUDING THE SCAN PHASE OF NON-LOCAL MOUNT POINTS**

During default backups, the scan phase determines the size of all mount points even though they are not backed up by default. However, if some of the nonlocal mount points become unavailable, the scan phase stops processing. Use the following steps to skip the scan phase of all non-local mount points.

- 1. From the CommCell Console, navigate to Client Computers.
- 2. Right-click the <*Client*>, and then click **Properties**.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the Name field, type sSkipNonLocalMountDetails.
- 6. In the Location list, type FileSystemAgent.
- 7. In the **Type** list, select **Value**.
- 8. Click **OK**.



## **COMPLETED WITH ONE OR MORE ERRORS**

By default the backup jobs from HP-UX File System *i*DataAgent complete without any error messages.

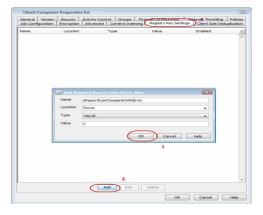
In the Scan phase files that cannot be accessed will be populated in scan\_failures.cvf, in the following scenarios:

- Stat failed.
- If a file is deleted or renamed.
- Unable to open a directory during scan

To view the "Completed w/ one or more errors" message in the Job History in the Scan phase, follow the steps given below:

- 1. From the CommCell Console, navigate to Client Computers.
- 2. Right-click the <Client> and click Properties.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the **Name** field, type sReportScanCompleteWithError.

- 6. In the Location field, type FileSystemAgent.
- 7. In the **Type** list, select **VALUE**.
- In the Value field, type 'y' or 'Y' to enable the error message display or 'n' or 'N' to disable the error message display.
- 9. Click **OK**.



During backups the jobs will be marked partial success and reported into Failures.cvf, in the following scenarios:

- Stat failure on a backup file (moved/accessed, etc).
- Unable to open a directory.
- Error to get the file attributes.
- If File is locked.
- Path is a symbolic link and you are unable to read the symbolic link path.
- Critical error while reading extended attributes or ACLs of the file or directory.
- Size of the extended attributes or ACLs buffer exceeded the backup buffer size (default pipeline buffer size is 63kb).

To view the "Completed w/ one or more errors" message in the Job History after a backup, follow the steps given below:

- 1. From the CommCell Console, navigate to Client Computers.
- 2. Right-click the *<Client>* and click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the **Name** field, type sReportBackupCompleteWithError.
- 6. In the Location field, type FileSystemAgent.
- 7. In the Type list, select VALUE.
- 8. In the **Value** field, type '**y**' or '**Y**' to enable the error message display or '**n**' or '**N**' to disable the error message display.
- 9. Click **OK**.

# Image: Section of the close black New Image: Section of the section

## **TROUBLESHOOTING PERFORMANCE ISSUES**

If you are experiencing performance issues during backup, you can troubleshoot them by enabling logging of performance details in the log files. These performance counters contain information that help in resolving the performance related issues during backups.

The performance counters printed in the log files include:

FileRead	Average time spent in system call to read the file.
CheckFileHole	Average time spent to verify if buffer read from the disk is a hole.
Close File	Average time spent in system call to close the file.
AllocBuffer	Average time spent waiting for the network buffer.
WriteBuffer	Average time spent in sending the network buffer to the network.
Disk Read	Average speed of reading from the disk.
Write	Average speed of writing to the network.

#### DISPLAYING PERFORMANCE DETAILS OF A BACKUP JOB

Use the following steps to display the performance details for a specific backup job:

- 1. From the CommCell Console, navigate to **Client Computers**.
- 2. Right-click the *<Client>*, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.

- 5. In the Name field, type clBackupChild\_PERF.
- 6. In the Location list, select or type EventManager.
- 7. In the Type list, select Value.
- 8. In the Value field, type Y.
- 9. Click **OK**.

General         Version         Security         Archity Control         Groups         Freeval Confrauation           Network Throtting         Policies         Job Configuration         Advanced         Context Indexing         Registry Ner Settin           Name         Location         Type         Value         Enabled	8 × 1
Name Location Type Value Enabled	
	*
Add Registry Key on Units Client sbhishekt     X       Nome     -EBodupChid_PEBF       Location     EventManager       Type     VALUE       Value     V       Value     V	
	×
Add Defete OK Cancel Help	,

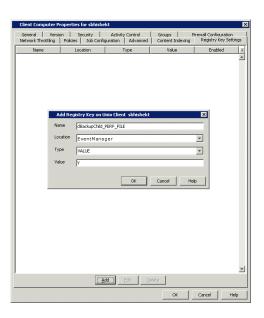
#### DISPLAYING PERFORMANCE DETAILS FOR EACH FILE IN A BACKUP JOB

In addition to viewing the performance details for a backup job, you can also view the performance details of each file in the backup job. This enables you to identity the specific file causing the performance issues.

Use the following steps to display performance details for each file in a backup job:

- 1. From the CommCell Console, navigate to **Client Computers**.
- 2. Right-click the <*Client*>, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name field, type clBackupChild\_PERF\_FILE.
- 6. In the Location list, select or type EventManager.
- 7. In the **Type** list, select Value.
- 8. In the Value field, type Y.
- 9. Click **OK**.

This key should be used in conjunction with the clBackupChild\_PERF registry key.



## SHARED MEMORY ERROR

#### Issue:

The backup failed because the shared memory on the HP-UX PA-RISC client has not been configured per operational guidelines.

#### Resolution:

Add the DisableIPC\_GLOBAL file in the /apps/simpana/Base directory on the client where the backup failed.

- 1. Stop the Calypso software.
- 2. Create an empty file called **DisableIPC\_GLOBAL** in the **/apps/simpana/Base** directory. From the command line, enter the following:

touch /apps/simpana/Base/DisableIPC\_Global

3. Restart the Calypso software.

Back to Top

# Troubleshooting - HP-UX File System Restore

## Backup Restore

The following section provides information on some of the troubleshooting scenarios related to restore:

## **RESTORE FAILURES**

Some of the files included in	You may be performing the restore of user-defined subclient along with the restore of default subclient.
the user-defined subclient are not restored.	When you are recovering data backed up by the default subclient, you cannot recover the data backed up by a user- defined subclient.
Browse from default subclient	Ensure that you do not include the root directory (/) as the subclient content.
displays No Backup at Time error	When performing point-in-time restore from the default subclient, include the data/folders under the root directory as the subclient content.
Restore fails when trying to perform an out-of-place restore.	Ensure that the file name along with the directory path to which the file is restored does not exceed 1024 characters.
Restore fails when trying to restore to a Unix FAT32	You may be restoring the full contents of a Unix directory that contains more than 32,767 files to a single Unix FAT32 directory.
directory	The number of entries in a single FAT32 directory cannot exceed 32,767.
Error while loading shared	On Linux clients, the below error appears when we run any process or service:
libraries	<process name="">: error while loading shared libraries: <lib>.so: cannot enable executable stack as shared object requires: Permission denied</lib></process>
	For example,
	<pre>#./ifind -getmnt -all ./ifind: error while loading shared libraries: libCvOnTap.so: cannot enable executable stack as shared object requires: Permission denied</pre>
	As a workaround, do the following steps:
	1. Check if ASL (Atomic Secured Linux) is configured on client.
	#uname −r 2.6.32.59-17.art.i686.PAE
	.art indicates that ASL is configured on the client.
	2. Check for the presence of the below logs in /var/log/messages file.
	May 24 22:01:08 rhel6 kernel: Aborting core May 24 22:01:08 rhel6 kernel: PAX: execution attempt in: <anonymous mapping="">, bfc46000-bfc5b000 bffeb000</anonymous>
	May 24 22:01:08 rhel6 kernel: PAX: terminating task: /usr/libexec/paxtest/mprotstack (mprotstack):13201, uid/euid: 0/0, PC: bfc5acf4, SP: bfc5acdc May 24 22:01:08 rhel6 kernel: PAX: bytes at PC: c3 1a a3 ae 2b ac 9f ae f4 0f 9f ae 00 00 00 00 f4 0f 9f ae
	3. Run the following command.
	chpax -ps/iDataAgent/ <process service=""></process>
	E.g.: #chpax -ps /opt/calypso/iDataAgent/ifind

## **TROUBLESHOOTING SLOW PERFORMANCE WHEN RESTORING TO VXFS**

Use these steps to resolve the slowness when restoring to VxFS:

- If the data transfer on the network is slow or you have a low bandwidth network environment, then verify network throughput using the NetworkTestTool utility. If network throughput is low then enable the nNumPipelineBuffers additional setting to increase the data transfer throughput from the client. See Increasing Data Transfer Throughput from Client for more information.
- 2. Tune these kernel parameters using kctune (1M):

a. Set fcache\_fb\_policy value to 1

b. Set max\_diskq value to 800 - 1000MB

Additionally, you can tune the write\_pref\_io and write\_throttle parameters. For more information about HP-UX VxFS tunable parameters, refer to http://h20000.www2.hp.com/bc/docs/support/SupportManual/c01919408/c01919408.pdf.

## **RECOVERING DATA ASSOCIATED WITH DELETED CLIENTS AND STORAGE POLICIES**

The following procedure describes the steps involved in recovering data associated with the following entities:

- Deleted Storage Policy
- Deleted Client, Agent, Backup Set or Instance

### **BEFORE YOU BEGIN**

This procedure can be performed when the following are available:

- You have a Disaster Recovery Backup which contains information on the entity that you are trying to restore. For example, if you wish to recover a storage policy (and the data associated with the storage policy) that was accidentally deleted, you must have a copy of the disaster recovery backup which was performed before deleting the storage policy.
- Media containing the data you wish to recover is available and not overwritten.
- If a CommCell Migration license was available in the CommServe when the disaster recovery backup was performed, no additional licenses are required. If
  not, obtain the following licenses:
  - IP Address Change license

CommCell Migration license

See License Administration for more details.

• A standby computer, which will be used temporarily to build a CommServe.

### RECOVERING DELETED DATA

- 1. Locate the latest Disaster Recovery Backup which contains the information on the entity (Storage Policy, Client, Agent, Backup Set or Instance) that you are trying to restore.
  - You can check the Phase 1 destination for the DR Set or use Restore by Jobs for CommServe DR Data to restore the data.
  - If the job was pruned and you know the media containing the Disaster Recovery Backup, you can move the media in the Overwrite Protect Media Pool. See Accessing Aged Data for more information. You can then restore the appropriate DR Set associated with the job as described in Restore by Jobs for CommServe DR Data.
  - o If the job is pruned and you do not know the media containing the Disaster Recovery Backup, you can do one of the following:

If you regularly run and have copies of the Data on Media and Aging Forecast report you can check them to see if the appropriate media is available.

- 2. On a standby computer, install the CommServe software. For more information on installing the CommServe, see CommServe Deployment.
- 3. Restore the CommServe database using the CommServe Disaster Recovery Tool from the Disaster Recovery Backup described in Step 1. (See Restore a Disaster Recovery Backup for step-by-step instructions.)
- 4. Verify and ensure that the Bull Calypso Client Event Manager Bull Calypso Communications Service (EvMgrS) is running.
- 5. If you did not have a CommCell Migration license available in the CommServe when the disaster recovery backup was performed, apply the IP Address Change license and the CommCell Migration license on the standby CommServe. See Activate Licenses for step-by-step instructions.
- 6. Export the data associated with the affected clients from the standby CommServe as described in Export Data from the Source CommCell.

When you start the Command Line Interface to capture data, use the name of the standby CommServe in the - commcell argument.

7. Import the exported data to the main CommServe as described in Import Data on the Destination CommCell.

This will bring back the entity in the CommServe database and the entity will now be visible in the CommCell Browser. (Press F5 to refresh the CommCell Browser if the entity is not displayed after a successful merge.)

- 8. If you have additional data that was backed up after the disaster recovery backup and before the deletion of the entity, use the procedure described in Import Metadata from a Tape or Optical Media to obtain the necessary information.
- 9. You can now browse and restore the data from the appropriate entity.

As a precaution, mark media (tape and optical media) associated with the source CommCell as READ ONLY before performing a data recovery operation in the destination CommCell.

# Erase Backed Up Data - Unix File System iDataAgent

# **TABLE OF CONTENTS**

#### Overview

#### Prerequisites

#### **Configuring Erase Data**

Assign a Filter Storage Policy Enable Erase Data in Storage Policy

## Running an Erase Data Job

#### Using Find to Erase Data

Viewing Erased Data Admin Job History View Erased Data in a Log File View Erased Data in an Erased Data Job Summary Report

#### Viewing Job History

# **OVERVIEW**

# The Erase Data feature allows you to permanently erase any data that was backed up. This is useful if you want to erase data so that it cannot be restored again. For example, you may want to erase data for legal purposes or compliance regulations.

Keep in mind that the erase data operation only erases the backup data - the source data will remain on the local hard drive. Therefore, it is recommended to delete the data from the source first so that it will not be backed up again.

The Erase Data operation makes the data inaccessible for browsing and recovery - the data will remain on the media and take up space until it is aged off according to the retention rules set for the data. Data will not be recoverable using any data recovery methods. If the backup job is already content indexed, the data being erased will be removed from the index.

Using Erase Data, you can erase data such as Linux, HP-UX, AIX, Solaris, and IRIX files.

## PREREQUISITES

The Erase Data feature requires:

- An Erase Data license to permanently erase data.
- The Allow Erase Data option needs to be enabled in the Storage Policy Properties dialog box as explained in the Configuring Erase Data.
- The MediaAgent must be installed on the CommServe.

## **CONFIGURING ERASE DATA**

To erase data, you need to first configure the following:

- Assign a Filter Storage Policy for Erasing Data
- Enable Erase Data in Storage Policy

## ASSIGN A FILTER STORAGE POLICY

To erase data, a filter storage policy needs to be associated with the Agent. Ensure that the filter storage policy that you associate with the agent has retention criteria that is greater than or equal to the retention criteria of the storage policy for the data to be erased.

1. From the CommCell Browser, right-click the appropriate agent icon and then click **Properties**.

#### NOTES

• Your screen may look different from the example shown.



 From the Storage Device tab of the agent Properties dialog box, select a filter storage policy from the Filter Storage Policy list.

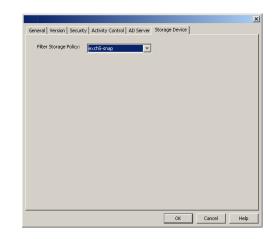
# **RELATED TOPICS**

#### Support

The list of Agents that support erasing data.

### How Do I

The most common procedures for erasing data.



3. Click OK.

2.

### ENABLE ERASE DATA IN STORAGE POLICY

Allow Erase Data check box.

To erase data, the storage policy assigned to the subclient where data will be erased needs permission to allow the erasing of data. Ensure that the retention criteria of the storage policy for the data to be erased is equal or greater to the filter storage policy that is associated with the agent.

 From the CommCell Browser, right-click the storage policy you want to allow for the erasing of data, then click **Properties**.

From the General tab of the Storage Policy Properties dialog box, select the

💼 dsStorag	ePolicy				
exc -	All Tasks	•			
- 🚡 jia_	View	•			
E Leo	Properties				
	erties: exch5-snap				X
General Copy Preceder		ients   Snap	shot   Security	Advanced	
Storage Policy Name:	exch5-snap	1		-	
Storage Policy Type:	, .				
No. Of Copies:	2				
Device Streams:	1 =				
🔲 Enable Stream Rat	ndomization				
🥅 Hide Storage Polic	У				
Description					I
Automatically Mo	dified - CommCellC	lone			
🔲 Incremental Stor	age Policy				*
Erase Data					
NOTE: Selecting this opt of the media.	tion will disable Media E	xplorer from	n cataloging an	d restoring con	ents
			ОК	Cancel	Help

3. Click OK.

# **RUNNING AN ERASE DATA JOB**

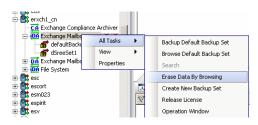
After the configuration has been completed, you can now browse and erase data.

## RUN OR SCHEDULE ERASE DATA JOB

1. From the CommCell Browser, right-click the agent or instance that contains the data which you want to erase, select **All Tasks** and then click **Erase Data By Browsing**.

## NOTES

• Your screen may look different from the example shown.



2. You are warned that the data will be permanently removed. Click **Yes** to continue.

3

4

5

	×
	The data selected will be permanently removed from the backup and will not be available for recovery. Are you sure you want to proceed?
From the Erase Data by Browsing dialog box, click Browse.	General Job Initiation
When a path is selected and a browse time is specified,	Selected Paths:
all data that matches the path will be erased even if the data was not backed up in the specified time range.	Malbox Folder Sender Receiver Subject X Delete
	Cancel Advanced 🕑 Save As Script Help
In the Browse Options dialog box, select a browse time range and any advanced	Browse Options
browse options, and click <b>OK</b> .	C Browse the Latest Data
	C Specify Browse Time
	Browse Data Before:
	Wed 05/19/2010 11:09 AM
	Time Zone; (UTC-05:00) Eastern Time (US & Canada)
	Client Computer: erxch1_cn 💌
	Use MediaAgent <any mediaagent=""></any>
	Page Size: 1000
	OK Cancel Advanced Help
From the browse selection window, select the data objects that you want to erase,	Mailbox (Latest Data )
and click <b>OK</b> .	Current Selected: All Malboxes
If you need to erase data from a specific folder that is not visible in the current browse selection, you need to browse to a point in time to a backup that included the folder. Then, you can select the data under that folder to be erased.	□ @@ Exchange Malox     Name     ¥       □ @ Exchange Malox     defaultBackupSet     defaultBackupSet       □ @ @ dreeSet1     GreeSet1
	OK Cancel
. Optionally, you can click <b>Advanced</b> to configure an alert for this job.	

- 6.
- 7. Click Job Initiation if you would like to run this job immediately or schedule it.
  - Click Immediate and then OK to run the job now. When the job is done, Job Controller displays Completed.
  - If **Schedule** is selected, click **Configure** to create a schedule for this operation. Your Erase Data by Browsing operation will execute according to the specified schedule. See Create a Job Schedule for more information.

# **USING FIND TO ERASE DATA**

The Find feature allows you to search and locate data such as files, directories, and messages in a backup. Once located, this data can be erased. After erasing the data, it can no longer be browsed or restored. However, the data will remain on the media and take up space until it is aged off according to the retention rules set for the data.

Keep in mind that the erase data operation only erases the backup data - the source data will remain on the local hard drive. Therefore, it is recommended to delete the data from the source first so that it will not be backed up again.

1. From the CommCell Browser, navigate to Client Computers |<Client>| <Agent>. Right-click Backup Set or Subclient, click All Tasks | Find.

 Enter search criteria. For example, you can type a file name in Name/Pattern to narrow the search. You can search for partial words without the need for wildcard characters at the beginning and/or end of the search string.

These wildcards, or a combination of these wildcards, are supported:

- \* for any number of characters e.g., Accounting\*.
- ? for any one character e.g., user\_group?.
- [] for a range of characters e.g., [a-k]Lee.
- [!] for a negation of a range of characters e.g., [!a-k] Lee.

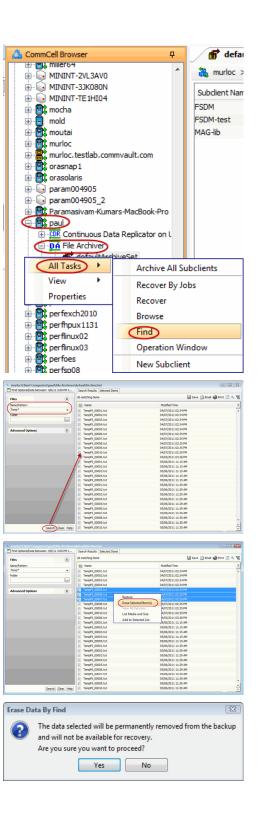
Click **Search**. The data that matches the criteria are displayed in Search Results.

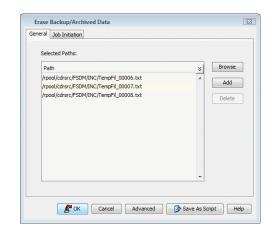
3. Select one or more items.

Right-click the items and select Erase Selected Item(s).

You can also erase data when it has been moved to Selected Items.

- 4. Click Yes.
- Optionally, modify what will be erased by selecting either Browse, Add, or Delete.
   Confirm the data to be erased and click OK.





## VIEWING ERASED DATA

These features are available to view the data erased.

## ADMIN JOB HISTORY

You can view detailed, historical information about the Erase Data jobs in the Admin Job History Filter dialog box.

- To view admin job history:
- 1. From the CommCell Browser, right-click the CommServe, click View, and then click Admin Job History.
- 2. From the Admin Job History Filter dialog box, select the filter options that you want to apply and click OK.
- 3. The Admin Job History dialog box displays with the specified filter options.
- 4. Click Close.

## VIEW ERASED DATA IN A LOG FILE

The files have been erased can be viewed in the SelDelete.log file. For example, TempFil 00008.txt is a file that had been erased:

4836 17a4 10/15 14:37:10 1106 ::main() - 1: '/ext3/fsdm/HW\_1/erasedata/TempFil\_00008.txt'

- To view the log files of a CommServe, MediaAgent, or client computer.
- 1. From the CommCell Browser, right-click a CommServe, MediaAgent, or client computer, click View, and then click Log Files. The Select the Log File to Open window displays.
- To see a specific log file, either select the log file name from the list or type the name of the log file in the field provided. (In the Files of type field, Log Files (\*.log) is displayed by default.) Click Open. The contents of the log file are displayed.

#### VIEW ERASED DATA IN AN ERASED DATA JOB SUMMARY REPORT

An Administrative Job Summary Report provides details of all the Erase Data jobs.

- To create an Erase Data Job Summary report:
- 1. From the CommCell Browser, click the **Reports** icon.
- 2. Select Job Summary from the Reports pane of the Report Selection dialog box.
- 3. From the General tab, select Administrative Jobs and then select Erase Backup/Archived Data.
- Select the filter criteria to include in the Erase Backup/Archived Data Job Summary Report from the various tabs (e.g., Computers, Selection, Options, Time Range).
- 5. From the Output tab, select the output format and/or save options for the report.
- Click one of the following: Run to generate the report immediately, Schedule to schedule the reports for specific times, Save Template to save the report filter options into the My Reports node, or Close to exit the window.

See Erase Backup/Archived Data Job Summary Report for details.

## **VIEWING JOB HISTORY**

Once an erase data job has completed, it may be useful to view specific historical information about the job, such as the following:

- Items that failed during the job
- Items that succeeded during the job
- Details of the job
- Media associated with the job
- Events of the job
- Log files of the job.

This information can be viewed in the Job History window. The history provided depends on the entity from which the job history is viewed. For example, viewing job history from the subclient level will yield information for the jobs performed for that subclient. Conversely, viewing job history from the instance level will yield information for jobs run from all subclients within that instance.

To view the backup job history:

- 1. From the CommCell Browser, right-click the entity (client computer, *i*DataAgent, instance, or subclient) whose backup history you want to view, click **View**, and then click **View Job History.**
- 2. From the Job History filter window select the filter options, if any, that you want to apply, and then click OK. The system displays the Job History window.
- 3. Once you have chosen your filter options, they are displayed in the **Job History** window.

To view the additional options discussed above, right-click the desired job choose the appropriate option.

4. Click **OK**.

Back to Top

# **Deployment - 1-Touch for HP-UX**

Deployment Configuration Recovery FAQ

1-Touch Recovery allows you to recover the entire computer system without installing the Operating system or any other software.

# INSTALLATION

To perform the 1-Touch Recovery, you must install the following:

• 1-TOUCH SERVER

Interactive Install - 1-Touch Server Software

1-TOUCH CLIENT

Install Unix File System *i*DataAgent on the computer that satisfies the minimum system requirements. The computer is referred to as the Client computer in this install procedure.

- The software can be installed using one of the following methods:
- Method 1: Interactive Install Unix File System iDataAgent to install directly on client computer.
- Method 2: Install Software from CommCell Console to install remotely on a client computer.

# **1-TOUCH SERVER**

#### **INSTALL THE 1-TOUCH SERVER SOFTWARE**

- 1. Place the **Software Installation Disc** on a HP-UX computer that satisfies the minimum System Requirements.
- 2. Run the following command from the Software Installation Disc:
- ./cvpkgadd
- The product banner and other information is displayed.
   Press Enter.
- 4. Read the license agreement. Type y and press Enter.
- Press Enter.

Press Enter.

# BEFORE YOU BEGIN

#### **Download Software Packages**

Download the latest software package to perform the install.

# System Requirements for 1-Touch Server and Client

Verify that the computer in which you wish to install the 1-Touch Server Software satisfies the System Requirements.

#### Overview

Provides comprehensive information about 1-Touch feature

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

- 2) Advance options
- 3) Exit this menu
- Your choice: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

You now have a choice of performing a regular Calypso install on the physical host or installing Calypso on a virtual machine for operation within a cluster.

Most users should select "Install on a physical machine" here.

- 1) Install on a physical machine
- 2) Install on a virtual machine

3) Exit

Your choice: [1]

7. If you have only one network interface, press **Enter** to accept the default network interface name and continue.

If you have multiple network interfaces, enter the interface name that you wish to use as default, and then press **Enter**.

We found one network interface available on your machine. We will associate it with the physical machine being installed, and it will also be used by the CommServe to connect to the physical machine. Note that you will be able to additionally customize Datapipe Interface Pairs used for the backup data traffic later in the Calypso Java



The interface names and IP addresses depend on the computer in which the software is installed and may be different from the example shown.

- 8. Press Enter.
- 9. Type the appropriate number to select 1-Touch Server.
   A confirmation screen will mark your choice with an "X".
   Type d for Done, and press Enter.

#### 10. Press Enter.

11. Type the appropriate number to install the latest software scripts and press **Enter**.

- Select **Download from the software provider website** to download the latest software scripts. Make sure you have internet access.
- Select Use the one in the installation media to install the software scripts from the package or share from which the installation is currently being performed.
- Select **Use the copy I already have by entering its unix path**, to specify the path if you have the software script in an alternate location.
- 12. Press Enter.

# **13.** Press **Enter** to accept the default path.

- If you want to specify a different path, type the path and then press **Enter**.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press **Enter**.

In order to make sure that the client computer has read/write access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&\*():/?\

14. Press Enter to accept the default location.

- Enter a path to modify the default location and press Enter.
- All the modules installed on the computer will store the log files in this directory.
- 15. Press Enter.

#### GUI.

Please check the interface name below, and make connections if necessary:

Physical Machine Host Name: [angel.company.com]

Please specify the client name for this machine.

It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe.

Physical Machine Client name: [angel]

Install Calypso on physical machine angel

Please select the Calypso module(s) that you would like to install.

[ ] 1) MediaAgent [1301] [CVGxMA]

[ ] 2) UNIX File System iDataAgent [1101] [CVGxIDA]

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:2</pre>

Do you want to use the agents for restore only without consuming licenses? [no]

Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.

If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media  $% \left( {{{\left[ {{{\left[ {{{\left[ {{{c_{{\rm{m}}}}} \right]}}} \right]}}}} \right]$ 

3) Use the copy I already have by entering its unix path

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

Installation Directory: [/opt]

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log\_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log\_Files".

Log Directory: [/var/log]

Most of Software processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "dba" group.

We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later. that must be used to launch processes.

Enter the group name and then press Enter.

If you're planning to backup Oracle DB you should use "dba" group.

Would you like to assign a specific group to Software? [yes]

Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run.

In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "dba" group here.

Group name: skyl

REMINDER

If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "skyl".

Press <ENTER> to continue ...

Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.

The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.

Please enter the port numbers.

Port Number for CVD : [8400]

Port Number for EvMgrC: [8402]

Is there a firewall between this client and the CommServe? [no]

**18.** If you do not wish to configure the firewall services, press **Enter**.

If this computer is separated from the CommServe by firewall(s), type  $\ensuremath{\text{Yes}}$  and then press  $\ensuremath{\text{Enter}}.$ 

If you indicated **Yes** in the previous step, you will be prompted for the group name

Type a network TCP port number for the Communications Service (CVD) and press

Type a network TCP port number for the Client Event Manager Service (EvMgrC) and

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

Type the appropriate number to select the **Client Group** and press **Enter**.

This screen will be displayed only if Client Groups are configured for the

Enter the number associated with the storage policy you want use and press Enter.

**19.** Type the fully gualified CommServe host name and press **Enter**.

Ensure that the CommServe is accessible before typing the name; otherwise the installation will fail.

20. Press Enter.

21.

22.

16.

17.

Enter.

press Enter.

Please specify hostname of the CommServe below. Make sure the hostname is fully qualified, resolvable by the name services configured on this machine.

CommServe Host Name: mycommserve.company.com

Commcell Level Global Filters are set through Calypso GUI's Control Panel in order to filter out certain directories or files from backup Commcell-widely. If you turn on the Global filters, they will be effective to the default subclient. There are three options you can choose to set the filters.

- 1) Use Cell level policy
- 2) Always use Global filters
- 3) Do not use Global filters

Please select how to set the Global Filters for the default subclient? [1]

Client Group(s) is currently configured on CommServe mycommserve.company.com. Please choose the group(s) that you want to add this client angel.company.com to. The selected group(s) will be marked (X) and can be deselected if you enter the same number again. After you are finished with the selection, select "Done with the Selection".

[ ] 1) Unix

[] 2) DR

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]s</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 2</pre>

Please select one storage policy for this IDA from the list below:

1) SP\_StandAloneLibrary2\_2

- 2) SP\_Library3\_3
- 3) SP\_MagLibrary4\_4

Storage Policy: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual

Type 3 to the Exit option and press Enter.
 The installation is now complete.

CommCell

machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "failover" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

Currently you have Calypso installed on physical node angel.company.com.

Now you have a choice of either adding another package to the existing installation or configure Calypso on a virtual machine for use in a cluster.

1) Add another package to angel.company.com

2) Install Calypso on a virtual machine

3) Exit

Your choice: [3]

# **1-TOUCH CLIENT**

## METHOD 1: INTERACTIVE INSTALL UNIX FILE SYSTEM /DATAAGENT

- 1. Place the **Software Installation Disc** on a HP-UX client computer that satisfies the minimum System Requirements.
- 2. Run the following command from the Software Installation Disc:

#### ./cvpkgadd

- The product banner and other information is displayed. Press Enter.
- 4. Read the license agreement. Type y and press Enter.
- 5. Press Enter.

#### 6. Press Enter.

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

- 2) Advance options
- 3) Exit this menu

Your choice: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "failover" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

You now have a choice of performing a regular Calypso install on the physical host or installing Calypso on a virtual machine for operation within a cluster.

Most users should select "Install on a physical machine" here.

- 1) Install on a physical machine
- 2) Install on a virtual machine

Your choice: [1]

We found one network interface available on your machine. We will associate it with the physical machine being installed, and it will also be used by the CommServe to connect to the physical machine. Note that you will be able to additionally customize Datapipe Interface Pairs used for the backup data traffic later in the Calypso Java GUI.

Please check the interface name below, and make connections if necessary:

Physical Machine Host Name: [angel.company.com]

Please specify the client name for this machine.

It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe.

7. If you have only one network interface, press **Enter** to accept the default network interface name and continue.

If you have multiple network interfaces, enter the interface name that you wish to use as default, and then press  ${\bf Enter}.$ 

The interface names and IP addresses depend on the computer in which the software is installed and may be different from the example shown.

#### 8. Press Enter.

<sup>3)</sup> Exit

9. Type the appropriate number to install Unix File System *i*DataAgent.
A confirmation screen will mark your choice with an "X".
Type d for Done, and press Enter.

#### 10. Press Enter.

- 11. Type the appropriate number to install the latest software scripts and press **Enter**.
  - Select **Download from the software provider website** to download the latest software scripts. Make sure you have internet access.
  - Select Use the one in the installation media to install the software scripts from the package or share from which the installation is currently being performed.
  - Select Use the copy I already have by entering its unix path, to specify the path if you have the software script in an alternate location.

#### 12. Press Enter.

**13.** Press **Enter** to accept the default path.

- If you want to specify a different path, type the path and then press **Enter**.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press **Enter**.

In order to make sure that the client computer has  ${\tt read/write}$  access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&\*():/?\

- 14. Press Enter to accept the default location.
  - Enter a path to modify the default location and press Enter.
  - All the modules installed on the computer will store the log files in this directory.

#### 15. Press Enter.

Type the Group name and press Enter.
 Press Enter again.

Physical Machine Client name: [angel]

Install Calypso on physical machine angel

Please select the Calypso module(s) that you would like to install.

[ ] 1) MediaAgent [1301] [CVGxMA]

[ ] 2) UNIX File System iDataAgent [1101] [CVGxIDA]

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:2</pre>

Do you want to use the agents for restore only without consuming licenses? [no]

Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.

If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media

3) Use the copy I already have by entering its unix path

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176 MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

Installation Directory: [/opt]

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log\_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log\_Files".

Log Directory: [/var/log]

Most of Software processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "dba" group.

We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later.

If you're planning to backup Oracle DB you should use "dba" group.

Would you like to assign a specific group to Software? [yes]

Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run.

In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to

		use Oracle iDataAgent or SAP Agent, you should enter Oracle's "dba" group here.
		Group name: skyl
		REMINDER
		If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "skyl".
		Press <enter> to continue</enter>
17.	Type a network TCP port number for the Communications Service (CVD) and press <b>Enter</b> .	Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.
	Type a network TCP port number for the Client Event Manager Service (EvMgrC) and press <b>Enter</b> .	The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.
		Please enter the port numbers.
		Port Number for CVD : [8400]
		Port Number for EvMgrC: [8402]
18.	If you do not wich to configure the firewall convices press Enter	Is there a firewall between this client and the CommServe?
10.	If you do not wish to configure the firewall services, press <b>Enter</b> . If this computer is separated from the CommServe by firewall(s), type	[no]
	Yes and then press Enter.	
	For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.	
19.	Type the fully qualified CommServe host name and press Enter.	Please specify hostname of the CommServe below. Make sure the hostname is fully qualified, resolvable by the name
	Ensure that the CommServe is accessible before typing the name;	services configured on this machine.
	otherwise the installation will fail.	CommServe Host Name: mycommserve.company.com
20.	Press <b>Enter</b> .	Commcell Level Global Filters are set through Calypso GUI's Control Panel in order to filter out certain directories or files from backup Commcell-widely. If you turn on the Global filters, they will be effective to the default subclient. There are three options you can choose to set the filters.
		1) Use Cell level policy
		2) Always use Global filters
		3) Do not use Global filters
		Please select how to set the Global Filters for the default subclient? [1]
21.	Type the appropriate number to select the <b>Client Group</b> and press <b>Enter</b> .	Client Group(s) is currently configured on CommServe mycommserve.company.com. Please choose the group(s) that
	This screen will be displayed only if Client Groups are configured for the CommCell	you want to add this client angel.company.com to The selected group(s) will be marked (X) and can be deselected if you enter the same number again. After you are finished with the selection, select "Done with the Selection".
		[ ] 1) Unix
		[] 2) DR
		[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]s
		<pre>Enter number(s)/one of "a,n,r,q,d,&gt;,&lt;,?" here: 2</pre>
22.	Enter the number associated with the storage policy you want use and press <b>Enter</b> .	Please select one storage policy for this IDA from the list below:
		1) SP_StandAloneLibrary2_2
		2) SP_Library3_3
		<pre>3) SP_MagLibrary4_4</pre>
		Storage Policy: [1]
23.	Type <b>3</b> to the <b>Exit</b> option and press <b>Enter</b> . The installation is now complete.	Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.
		Currently you have Calypso installed on physical node angel.company.com.
		Now you have a choice of either adding another package to the existing installation or configure Calypso on a virtual machine for use in a cluster.

- 1) Add another package to angel.company.com
- 2) Install Calypso on a virtual machine
- 3) Exit
- Your choice: [3]

# METHOD 2: INSTALL SOFTWARE FROM COMMCELL CONSOLE

1. From the CommCell Browser, select Tools | Add/Remove Software | Install Software.

2. Click Next.

3. Select Unix and Linux. Click Next.

4. Select Manually Select Computers. Click Next.

murphy - CommCell Console		
File View Tools "		
Browse & Recover		
A CommCell Job Controller	🍓 murphy 🗙 🗔 Job Controller 🗙	4 🕨 🖾
A murphy Scheduler	murphy >	408
Commit Scheduler	A & Q	•
🗄 📴 mu 💭 🖉 👘 👘	Client Client Client Computer Computers	Security
Control Panel     Secure     Secure     Secure     Secure     Secure     Policies     Data Benkration Monitor	Groups	
🗄 🎯 Conter 🚰 Data Classification Concole	59 Da 🐻	_ 😭 🛛
Add/Remove Software	Install Updates	ontent irector
	Remove Updates 3	
	Upgrade Software	
	Download Software	
	Copy Software	
	Add/Remove Software Configuration	
CommCel Browser		
🔗 Agents		
÷		
	murphy admin	
		_
Installer		×
Install Wizard		
	ps required to install software on comput	ers.
Click Next to continue.		
< Book (Bent >) \$ 50	ve As Script Finish <b>Cancel</b>	Eleip
	ve As Script Finish Carcel	
<box (bent="">) 5- Insteller</box>	ve &s Script Friesh Cancel	Help.
Installer		
Installer		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating sy		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating syn Windows		
Installer Select the computer's operating sy Windows O Unix and Linux 1		
Installer Select the computer's operating sy Windows O Linix and Linux 1		

5. Enter the fully qualified domain name of the HP-UX client computer in which you wish to install.

For example: apple.domain.company.com

The Unix File System *i*DataAgent software will be installed on this client computer. Click **Next**.

6. Click Next.

7. Specify UserName and Password of client computer. Click Next.

Installer	×
Select how to discover the computers for installing the softwa	re
Software will be installed only on the selected list of computers.	
Automatically discover computers	
Computers will be discovered when the job runs.	
<u> </u>	
< Back Next > Save As Script Finish C	ancel <u>H</u> elp
Installer	×
Enter the host names of the computers	
Please enter the host names of the computers, one per line	(
apple.domain.company.com	from File
Import From	Active Directory
Select from	existing clients
< Back Next > Save As Script Finish C	ancel <u>H</u> elp
Installer	×
	×
Select Software Cache	ehe settings cherk
	iche settings check
Select Software Cache	iche settings check
Select Software Cache To use current Clent or Clent Grup, Schware Cache settings, did Next. To override Software Ca Override Software Cache and select the Software Cache to be used.	iche settings check
Select Software Cache To uso umert Clent or Clent Group Software Cache sottings, did Next. To override Software Ca Override Software Cache and select the Software Cache to be used. Coverride Software Cache	whe settings sheck
Select Software Cache To uso umert Clent or Clent Group Software Cache sottings, did Next. To override Software Ca Override Software Cache and select the Software Cache to be used. Coverride Software Cache	che settings check:
Select Software Cache To uso umert Clent or Clent Group Software Cache sottings, did Next. To override Software Ca Override Software Cache and select the Software Cache to be used. Coverride Software Cache	che settings check.
Select Software Cache To uso umert Clent or Clent Group Software Cache sottings, did Next. To override Software Ca Override Software Cache and select the Software Cache to be used. Coverride Software Cache	de settings died.
Select Software Cache To uso umert Clent or Clent Group Software Cache sottings, did Next. To override Software Ca Override Software Cache and select the Software Cache to be used. Coverride Software Cache	ide settings died.
Select Software Cache To uso umert Clent or Clent Group Software Cache sottings, did Next. To override Software Ca Override Software Cache and select the Software Cache to be used. Coverride Software Cache	ide satings died.
Select Software Cache To uso umert Clent or Clent Group Software Cache sottings, did Next. To override Software Ca Override Software Cache and select the Software Cache to be used. Coverride Software Cache	uhe setting thed.
Select Software Cache To uso umert Clent or Clent Group Software Cache sottings, did Next. To override Software Ca Override Software Cache and select the Software Cache to be used. Coverride Software Cache	de setings died.
Select Software Cache To use crimet Clerk or Clerk Group Software Cache sottings, dick likest. To override Software Cache ond select the Software Cache to be used.	de setings died.
Select Software Cache To uso current Clent or Clent Group Software Cache actions, did Next. To override Software Cache and select the Software Cache to be used.	2
Select Software Cache To use crimet Clerk or Clerk Group Software Cache sottings, dick likest. To override Software Ca Override Software Cache and select the Software Cache to be used.	Concel (1960)
Select Software Cache Tous current Clerk of Clerk Group Software Cache softmare, clek level. To overvide Software Cache Covervide Software Cache Software Ca	M
Select Software Cache To uso oversid Clerk or Clerk Group Software Cache settings, did Next. To overside Software Cache Coverside Software Cache Coverside Software Cache Software Cache Software Cache	N
Select Software Cache To use current Clent or Clent Group Software Cache softmage, click Hont. To override Software Cache Override Software Cache Software C	N
Select Software Cache To use oversit Clerk ar Clerk Group Software Cache sottings, did. Host. To overside Software Cache Coverside Software Cache Software C	Cancel (1946)
Select Software Cache         To use current Clent or Clent Group Software Cache sottings, click lext. To override Software Cache         Override Software Cache         Sof	Cancel (1946)
Select Software Cache To use oversit Clerk ar Clerk Group Software Cache sottings, did. Host. To overside Software Cache Coverside Software Cache Software C	Cancel (1946)
Select Software Cache         To use current Clerk or diset Group Software Cache settings, diki Novi. To override Software Cache         Override Software Cache         Soft	Cancel (1946)
Select Software Cache         To use current: Clerk or dises Groups Software Cache sottings, did. Host. To overside Software Cache and select the Software Cache to be used.         Overside Software Cache         Installer         Enter Account Information         The specified account should have access and SSH login permission. If y         multiple clents, the user should have access to all clents.	Cancel (1946)
Select Software Cache To use current Clerk or Clerk Group Software Cache sottings, click least. To override Software Cache Override Software Cache Software	Cancel (1946)
Select Software Cache         To use current: Clerk or clerk force Software Cache softmage, click laws. To override Software Cache         Override Software Cache         So	Cancel (1946)
Select Software Cache         To use current Clerk or diest Group Software Cache settings, dik Howt. To override Software Cache         Override Software Cache         Softw	Cancel Life
Select Software Cache         To use current Clerk or diest Group Software Cache settings, dik Howt. To override Software Cache         Override Software Cache         Softw	Cancel Life
Select Software Cache         To use current Clerk or diest Group Software Cache settings, dik Howt. To override Software Cache         Override Software Cache         Softw	Cancel (1946)
Select Software Cache         To use current Clerk or diest Group Software Cache settings, dik Howt. To override Software Cache         Override Software Cache         Softw	Cancel (1946)
Select Software Cache         To use current Clerk or diest Group Software Cache settings, dik Howt. To override Software Cache         Override Software Cache         Softw	Cancel (1946)
Select Software Cache         To use current Clerk or diest Group Software Cache settings, dik Howt. To override Software Cache         Override Software Cache         Softw	Cancel [Heb
Select Software Cache To us ourset. Clerk of Group Software Cache settings, dki kivet. To override Software Cache Coverride Software Cache So	Cancel Lieb

 Select Unix File System iDataAgent. Click Next.

- 9.
- Select **Client Group** from **Available** and click **Add**. Do not add more than one Client Group.
  - Select a **Storage Policy** from the drop-down list. Click **Next**.

10. Click Next.

# 11. Select Immediate. Click Next.

Select Package(e) to (ant	11
Select Package(s) to insta Simpana	
😑 🗀 Client Modules	
Backup & Recovery	
File System	m DistaAgent MP Restore Enabler
- ProxyHost Dat	aAgent
Novell CES File	System DataAgent
Novell OES Dire	upwise DataBase DataAgent
- Image Level Pro	xxyHost DataAgent
DB2 iDataAgen	
- MySQL DataAg	ent Agent
- Documentum iC	ataAgent
Oracle iDataAg	ent
SAP for Oracle	
🖻 🗁 Lotus Notes	
	< Back Next > Save As Script Finish Cancel Help
Installer	X
Enter Recommended Sett	ings for the selected Software
Recommended Settings	
Client Groups	
Available:	Selected:
Laptop Laptop Backup	Add >
Laptop Group Laptop_Group	< Remove
	Add All >>
	<< Remove All
Global Filters	
wobai niters	Use Cell level policy
Configure For Laptop B	schups
<ul> <li>Storage Policy to use</li> </ul>	×
<ul> <li>Subclient Policy to use</li> </ul>	
l	< Back Next > Save As Script Finish Cancel Help
Installer	
Enter Additional Install Opt	ions
Installer Flags	
🖌 Install Updates	
Reboot (if required)	
Kill Browser Processes (if	required)
Kill browser Processes (il	
Ignore Running Jobs	
Ignore Running Jobs	equired)
Ignore Running Jobs	
Ignore Running Jobs Stop Orade Services (Fi Skip clenks that are aires Advanced Options	regared) dy part of the Camerical component
Ignore Running Jobs     Stop Oracle Services (Fill     Skip dents that are alree     Advanced Options     Velete Packages After Ib	equed) of yest of the Cumical component vola
Jgnore Running Jobs     Stop Oracle Services (if i     Skip dents that are aire     Advanced Options     Oelece Packages After Is     Listen only on the networ	regand) oby part of the CarenCell component 
Janore Running Jobs Job Charles Services (F I Job Charles Services (F I Job Charles Services (F I Advanced Options Cherke Packages After I Listen only on the networ Do not load WA driver in	regare() gay part of the Connected component and and And for force such as hostoname to kineted the time
Jonore Running Jobs     Jopore Running Jobs     Jop Oracle Services (# ri     dep Caracle Services (# ri     device Packages After III     Usten only on the network     Do not load VMA driver in     Number Of Streams	regand) oby part of the CarenCel component 
Ingree Running Jobs     Group Oracle Services (#     Sile dents that are alree     Advanced Options     Deletes Packages After &     Laten only on the network     Do not load MA driver in     Nome of 22 services     Units Group	regard) ady part of the CommCell component: and A reterfuse used as hostname to kennel the tame 0
Ingrore Running Jobs     Sign Oracle Services (#     Advanced Services (#     Advanced Services (#     Advanced Options     Obtions Peduages After //     Deates Peduages After //     Deates Advance in     Nantier of Zerealis     Mark Group     Access permissions for other	rearbo) doy part of the ConneCel component and all extensions and so hostmanne to home the taxe ourses 0
Jigure Running Job     Jose Cando Sense (1)     Step Cando Sense (1)     Step Cando Sense (1)     Can	equed) sky part of the ConneCel component. sk strafrace used as hostname to larmed the tase
Spore Running Jobs     Spore Running Jobs     Spore Check Senserved: Pro-     Spore Check Senserved:     Delete Partagen After &     Delete Partagen After &     Denote Read Ville After Area     Denote Read After Area	equed) sky part of the ConneCel component. sk strafrace used as hostname to larmed the tase
Japore Running Jobs     Jesp Crask Service (P)     Ge docta Service (P)     Ge docta Service (P)     Gedeta Podgeward PP     Gedeta Podgeward PP     Gedeta Podgeward PP     Monter Of Zeness     Monter Or Zeness     Monter Or Zeness     Monter Or Zeness     Gedeta Podgeward PP     Gedeta P	regards) sky part of the ConneCid component and the Arterises used as hostname to barred the true conner context a context a context context a context a c
Inproceinum Subsite     Inproceinum Subsite     Steip Cartes Service (C)     Steip Cartes Service (C)     Carte Service (C)	regards) sky part of the ConneCid component and the Arterises used as hostname to barred the true conner context a context a context context a context a c
Stop or Running Jobs     Stop Oracle Service (R)     Codels Force(R)     Codels     Codels Force(R)     Codels     C	eases) exp part of the Connect component and its kennet the time conflict so conflict so conflict
Ippore Running Job     Sing Charles Service (1)     Constant Service (1)	require() dry part of the Conneck component and it at therefore used as hostname to there the time
Inproceinum Subsidie     Inproceinum Subsidie     Step Central Service (2)     Sep Central Service (2)	eases) exp part of the Connect component and its kennet the time conflict so conflict so conflict
Step Gradie Stering     Step Crash Stering     Step Crash Stering	require() doy part of the Connect component and it at therefore used as hostname to there the time
Inproceinum Subsidie     Inproceinum Subsidie     Step Central Service (2)     Sep Central Service (2)	require() doy part of the Connect component and it at therefore used as hostname to there the time
Byore Running Jobs     Biop Cracks Service(IP)     Gedes Ser	require() doy part of the Connect component and it at therefore used as hostname to there the time
Byore Running Jobs     Biop Cracks Service(IP)     Gedes Ser	require() doy part of the Connect component and it at therefore used as hostname to there the time
Step Gradie Stering     Step Crash Stering     Step Crash Stering	rearb() ady part of the ConneCd component and it electrica counced is hostname to benefit the true Confect ages
Step Gradie Stering     Step Crash Stering     Step Crash Stering	rearb() ady part of the ConneCd component and it electrica counced is hostname to benefit the true Confect ages
☐ Ignore Running Jobe ☐ Step Gradual Sension (IP) ☐ Cedele Faciogna Jobe <	rearch solver at the Connect component and Anterior word was harboarnes to terred the tree
Proce Running Mail     Process Service (I)     Pr	rearch solver at the Connect component and Anterior word was harboarnes to terred the tree
Installer	verech exp of die Connol compone stal de den to toome to toome toome too too toome too too condet: exp (dek too) too do too too do too too too too too too too too
Proce Running Mail     Process Service (I)     Pr	verech exp of die Connol compone stal de den to toome to toome toome too too toome too too condet: exp (dek too) too do too too do too too too too too too too too
Input Running Materian     Input Running Ma	verech exp of die Connol compone stal de den to toome to toome toome too too toome too too condet: exp (dek too) too do too too do too too too too too too too too
Installer	verech exp of die Connol compone stal de den to toome to toome toome too too toome too too condet: exp (dek too) too do too too do too too too too too too too too
Input Running Materian     Input Running Ma	rearch dely part of the Connect component. and at a starter sea used as horborane to atter for used as horborane to atter for used as horborane to atter for used as horborane output to atter for used as horborane expected as horborane atter for used as horborane expected as horborane atter for used as horborane expected as horborane atter for used atter for used as horborane atter for used as horborane a
Inpres Ruring Job     Grado Sensice (P)     Grado Sensice (P)	rearch dely part of the Connect component. and at a starter sea used as horborane to atter for used as horborane to atter for used as horborane to atter for used as horborane output to atter for used as horborane expected as horborane atter for used as horborane expected as horborane atter for used as horborane expected as horborane atter for used atter for used as horborane atter for used as horborane a
Input Running Materian	rearch dely part of the Connect component. and at a starter sea used as horborane to atter for used as horborane to atter for used as horborane to atter for used as horborane output to atter for used as horborane expected as horborane atter for used as horborane expected as horborane atter for used as horborane expected as horborane atter for used atter for used as horborane atter for used as horborane a
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	rearch dely part of the Connect component. and at a starter sea used as horborane to atter for used as horborane to atter for used as horborane to atter for used as horborane output to atter for used as horborane expected as horborane atter for used as horborane expected as horborane atter for used as horborane expected as horborane atter for used atter for used as horborane atter for used as horborane a
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      Installer      Prease Societ Whee      Schedue      Monode Societ Societ      Monode Societ Societ      Monode Societ Societ      Monode Societ	reard) sky and all connect component and Afterface used as hadranes to kenned the time
Installer      I	reard) sky and all connect component and Afterface used as hadranes to kenned the time

- **13.** You can track the progress of the job from the **Job Controller** or **Event Viewer** window.
- 14. Once the job is complete, right-click the **CommServe** computer, click **View** and then click **Admin Job History**.

15. Select Install/Upgrade/Remove Software. Click OK.

Summary	
	ed options and click Finish to run the job immediately or click Save As Script to save the j
Client Install Option	
	tallation: Unix and Linux ent Discovery: Manually select computers
Reuse Active Direc	tory credentials: No
Client Authentication User Name: root	for Job
Password: **** Install Flags	
Install Updates: Y	
Reboot (if required Kill Browser Proces	sses (if required): No
Ignore Running Jo Stop Oracle Service	es (if required): No
Delete Packages A	
	network interface used as hostname: No iver in to kernel this time: No
Number Of Stream Access permissions	for other users: 0
Ignore Client/Host Install Agents For	Name Conflict: Yes Restore Only: No
Client Composition	
	Cache: No callation: Copy packages to remote machine
Components Selected Component	nts To Install: UNIX File System iDataAgent
< Back	Next > Save As Script Finish Cancel
💌 Job Controller 🗴	
Job Controller     H Job D Operation Client Co	Agent Type Subdent 3bb Type" I Phase Storage Medialquet Status Progress Errors Delay Re-
C Bruse Playing Durnin	P
🖉 Event Never 🛪 🚷 Admin Job History	x
Event liever           Seventy         Event ID         3ob ID         Date           20         228         20 08/31/2010	V Program Computer Event Code Desception
	11:05:01         Operating Sector         Approximation of the sector of
File View Tools Windows	Help
File View Tools Windows	Help
CormCell Browser	Help
CommCell Browser	Help A spate x A state > Xet Harry Clerk Sacade Pates Pates
Connect Provier	Help
Commod Browser	Helio A spate X A spate
Control Brower     Al Tads     Al Tad	Helio A spate X A spate
Control Paralel     C	Helio A spate X A spate
Control Brower     Al Tads     Al Tad	Hele A spele x A spe
Control Forener      Cont	Help  A apple x  A cols  A co
Control Forener      Cont	Help     Image: Security     Standard       Applie     Image: Security     Standard       Applie     Concuters     Concuters       Applie     Concuters     Standard       If Druce Mover     Concuters     Standard       Serverty     Network     Concuters       21     Concuters     Standard       Serverty     Standard     Double       Serverty     Standard     Standard       22     21 00/01/2010 12:00020 XMMmager     Standard       22     22     21 00/01/2010 12:0002 XMMmager     Standard
Control Brower	Image: Security     Social Security       Social Security     Social Security
Control Former	Heli A spale × A spale × A spale × A spale × Computer Security Stronge Computer Security Stronge Computer Security Stronge Palces Debades The Security Security Stronge Palces Debades The Security Security Security Security The Security Security Security Security The Security Security Security Security The Security Security Security Security The Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Securety Security Security Secur
Control Provee       Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee      Control Provee	
Control Browner     C	Prove Verser 2     Consider Security Brance Places     Consider Security Brance Places     Consider Security Brance Places     Consider Security Brance Places     Consider Security Brance     Consider Security     Consider Security Brance     Consider Brance     C
Control Resource     Control Poster     Contro	Prove Verser 2     Consider Security Brance Places     Schedular Verse Verser 2     Consider Security Brance Places     Schedular Verser Verser 2     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Su
Control Browner     C	Prove Verser 2     Consider Security Brance Places     Schedular Verse Verser 2     Consider Security Brance Places     Schedular Verser Verser 2     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Subdert & bb Typer 1     Desettion Clert Co Apert Type Su
Control Provers  Contr	
Control Boover     Control	
	Image: Second
	Image: Source

View All Jobs
 Desired Number of Jobs

10 +

2 OK Cancel Help

**16.** You can view the following details about the job by right-clicking the job:

• Items that succeeded during the job

- Items that failed during the job
- Details of the job
- Events of the job
- Log files of the job

Job Type	Job ID	Status	Start Time	End Time	User N	Error C	Storag	Auton	Legal	Legal	¥	
istali Software	20	S Complete	View Job Details	1	L1 admin			njia	N/A	N/A	^	
			Resubmit Job									
			View Events									
			View Content Ind	ex 🕨								
			View Logs									
			Send Logs								~	
Total records	count : 9											
								_			_	
								( 🖌	Pre	viou	18 Y	Nex
								1	1.10	WIQ1	va V	1462

# **Configuration - 1-Touch for HP-UX**

Deployment Configuration Recovery FAQ

# **TABLE OF CONTENTS**

### **Basic Configuration**

Enable 1-Touch Perform a Backup

# **BASIC SETUP**

## ENABLE 1-TOUCH

After you install the File System iDataAgent, follow the steps given below to enable the 1-Touch for the default subclient :

- From the CommCell Console, navigate to <Client> | File System iDataAgent | defaultBackupSet.
  - Right-click the default subclient and click Properties.
- 2. Click 1-Touch Recovery tab.
  - Select 1-Touch Recovery.
  - Select the **1-Touch Server** from the list.
  - Enter the path to the 1-Touch server directory.
     Enter the location of the ignite server in the 1-Touch Server directory. Typically, the location of the the ignite server is as follows: /var/opt/ignite/clients/
  - Click Ok.

		l

If you replaced the 1-Touch client's network card after the 1-Touch backup, be sure to update the 1-Touch server with the new MAC address before you start the 1-Touch recovery.

# PERFORM A BACKUP

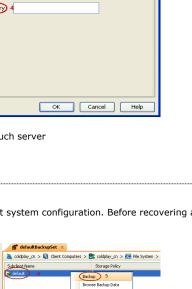
After you enable 1-Touch, perform backups of the default subclient periodically to capture any changes in the client system configuration. Before recovering a client, ensure that you have run at least one full backup of the default subclient.

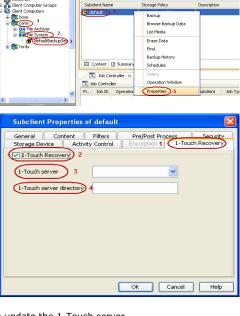
- From the CommCell Console, navigate to <Client> | File System iDataAgent | defaultBackupSet.
  - Right-click the subclient, and click **Backup**.



• Select Full.

- Select Immediate.
- Click OK.

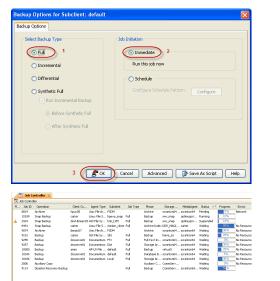




ultBackupSet 🗙

ida37-2k8-r2 > 🚺 Client Computers > 🛱 canis > 📴 File System

Previous Next >



Previous

Next >

 You can track the progress of the backup job from the Job Controller window. When the backup job has completed, the Job Controller displays the status as Completed.

# **Recovery - 1-Touch for HP-UX**

Deployment Configuration Recovery FAQ

# TABLE OF CONTENTS

### Basic Recovery - Restoring to Client with HP-UX Operating System Running

## **Advanced Recovery**

Rebuilding a Client Restoring Data Backed Up Before a Specific date Changing the Priority of the Restore Job Starting the Restore Job in Suspended State Restoring From a Copy Precedence Restoring From a specific Data Path

# BASIC RECOVERY - RESTORING TO A CLIENT WITH HP-UX OPERATING SYSTEM RUNNING

Follow the steps given below when the HP-UX Operating System is running on the client and you can automatically boot the client:

1. Login to CommCell Console using CommCell credentials.

Do not use domain credentials to login to CommCell. The single sign on is not supported for 1-Touch feature.

- From the CommCell Console, navigate to <Client> | File System iDataAgent | defaultBackupSet.
  - Right-click the **Default Backup Set** and click **All Tasks | 1-Touch Recovery**.

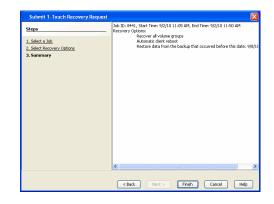
- **3.** Select the backup job for recovering the operating system.
  - Click Next.

4. Click Next.

🛆 CommCell Browser 🛛 🛛	defaultBackupSe	t × 00 What's new? ×		4 0 0
E Ex beaix08			(20 > 🚾 File System > 💣	9 D Ø
🖶 😡 braid 🗃 🔂 braid	Subclient Name	Storage Policy	Description	×
B-004 File System 1			besuguan	
efaulted of all Tasks 2	Backup All Subclients			
E 04 File System Yew >	Browse Backup Data			4 0 8
📲 defaultBacku	Find			4 C J
ida14     Properties     ida26vm8	(1-Touch Recovery) 3	Client Co.	. Agent Type Subclient Job Typ	e Phase 🗧
😥 😡 intrepid32	Restore 3	) devi-lomaix	03 A3X File Sy hds_LWM Full	Backup 🔼
🕀 🎊 james	Restore by Jobs	carter houx05	Linux File S clarion_clone Full Unix File Ar PSDM	Archive : Archive
B G kapow B G kaveri	Operation Window	hputus hmeidi7	Unix File Ar FSDM	Archive
a at winds		canes	AIX File Sy SB1 Full	Backup -
e Gikrish e Gikyu	New Subclient		Documentum FTI Ful	Full Text
e R meno	9257 Backup		Documentum Dist Pull	Storage
e 🕃 meno e 🚉 milar64	10000 Backup 10184 Backup	aries	HP-UXFile default Full	Backup
🛞 🕃 optinusprine	10184 Backup 10186 Backup	docserve01	Documentum default Pull Documentum Local Pull	Databas Storage
🛆 CommCell Browser	10189 Snap Backu		Linux File S hpeva_snap Full	Bacium
🛒 Agents				Sacrab N
2	II Pause Playing			
	The second second			
1 object(s)		sa	anton64 admin	
Submit 1 Touch Process	ny Doguost			
Submit 1-Touch Recove	nykequest			
	Please select the h	ackup iob from w	hich you want to recove	r OS.
Steps				
	Job ID S	tart Time En	d Time	×
1. Select a Job	8441 9/2	2/10 11:0 9/2	10 11:5	^
2. Select Recovery Options				
3. Summary				
<u>o. Jannary</u>				
				~
	- New A		Const.	ta la
< Bad	Next >	Finish	Cancel H	telp
Submit 1-Touch Recovery Requ	est			
Steps	Decours All tables	Crowne		
1. Select a Job	Recover All Volum			
2. Select Recovery Options	Preserve Exis	ting Volume Groups		
3. Summary	Automatic Client R	aboot		
	Automatic Client R	ebout		
	<u>.</u>			
	<ul> <li>Restore data from the</li> </ul>	latest backup		
	<ul> <li>Restore data from the</li> </ul>	backup that occurrent	before this date	
		-	01 : 01 PM	
	Time Zone: ()	JTC-05:00) Eastern Ti	me (US & Canada)	
	🔿 Do not restore data of	her than on Root Volu	ime Group	
			Adva	inced
	< Back	Next >	Finish Cancel	Help

Previous Next >

- **5.** Review the recovery options.
  - Click Finish.



💣 defaultBackupSet 🗴 🚾 What's new? 🗴

ns > 隆 break20 > 🚾 Fil

Please select the backup job from which you want to recover OS

Start Time End Time 9/2/10 11:0... 9/2/10 11:5... > **6** 

Ful Ful Ful Ful Ful Ful Ful 9 🗆 ð

Archive Archive Backup Full Text Storage Backup Databas

🚴 scranton64 > 🟮 Client

Backup Data

Subclient Name

Restore by Jobs

Operation Windo

II Pause Playing

Job ID

Submit 1-Touch Recovery Request

New Subclient 9257 Backup 10000 Backup 10184 Backup 10186 Backup 10189 Snap B

ě.

8

Steps

1. Select a Job

# **ADVANCED RECOVERY**

## **REBUILDING A CLIENT**

When HP-UX operating system is not running, you need to rebuild the client. You have to manually perform the network boot for the client.

For network reboot, The 1-Touch server and the 1-Touch client need not be in the same subnet. If the client is in a different subnet, data can still be recovered over the network by using an Ignite Server with the help of a boot helper (provided by Hewlett-Packard).

- From the CommCell Console, navigate to <Client> | File System iDataAgent | defaultBackupSet.
  - Right-click the **Default Backup Set** and click **All Tasks | 1-Touch Recovery**.

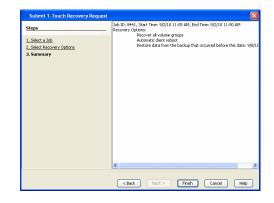
- Select the backup job for recovering the operating system.
  - Click Next.

3.	•	Do not select Automatic Client Reboot.
----	---	----------------------------------------

• Click Next.

2. Select Recovery Options 3. Summery	
<	Back Next > Finish Cancel Help
Submit 1-Fouch Recovery R Steps	Argunst
	<back next=""> Finish Cancel Help</back>

- 4. Review the recovery options.
  - Click Finish.



- Connect the client to network and switch on the power.
  - Perform the LAN boot.

### **RESTORING DATA BACKED UP BEFORE A SPECIFIC DATE**

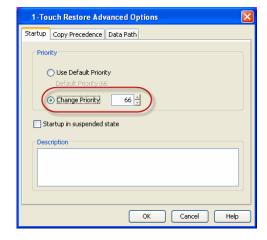
You can perform a point-in-time restore of the system state. You can recover data from a backup that occurred before the specified date and time.

- 1. From the CommCell Console, navigate to <Client> | File System iDataAgent | defaultBackupSet.
- 2. Right-click the defaultBackupSet and click All Tasks | 1-Touch Recovery.
- 3. In the Submit 1-Touch Recovery Request dialog box, click Select Recovery Options.
- 4. Click Restore data from the backup that occurred before this date.
- 5. Enter date and time.
- 6. Select a Time Zone.
- 7. Click Next.
- 8. Click Finish.

## CHANGING THE PRIORITY OF THE RESTORE JOB

You can increase the priority of a restore job. If you want to perform the 1-Touch recovery on a high priority, follow the steps given below:

- 1. From the CommCell Console, navigate to **<Client>** | File System *i*DataAgent | defaultBackupSet.
- 2. Right-click the defaultBackupSet and click All Tasks | 1-Touch Recovery.
- 3. In the Submit 1-Touch Recovery Request dialog box, click Select Recovery Options.
- 4. Click Advanced.
- 5. Click Change Priority.
- 6. Enter the priority number between 0 to 999. Lower the number, higher the priority.
- 7. Click Ok.
- 8. Click Next.
- 9. Click Finish.



## STARTING THE RESTORE JOB IN SUSPENDED STATE

If there are multiple jobs running simultaneously on the CommServe, you can hold the restore job on suspended state. Once the CommServe is freed up, you can resume the restore job from the **Job Controller** window.

1. From the CommCell Console, navigate to **<Client>** | File System iDataAgent | defaultBackupSet.

Subline 1-Touch Record	
Steps 1. Select a Job 2. Select Recovery Optio 3. Summary	Recover All Volume Groups     Preserve Existing Volume Groups     Automatic Client Reboot
	Restore data from the latest backup     Bestore data from the backup that occurred before this date     Thu 09/16/2010     O 9: 30 AH     Time Zone:     (UTC-05:00) Eastern Time (US & Canada)     O not restore data other than on Root Volume Group
< <u> </u>	Advanced <back next=""> Finish Cancel Heb</back>

- 2. Right-click the defaultBackupSet and click All Tasks | 1-Touch Recovery.
- 3. In the Submit 1-Touch Recovery Request dialog box, click Select Recovery Options.
- 4. Click Advanced.
- 5. Click Startup in suspended state
- 6. Click **Ok**.
- 7. Click Next.
- 8. Click Finish.

1-Touch Restore Advanced Options		
Startup Copy Precedence Data Path		
Priority		
Use Default Priority		
Default Priority:66		
Change Priority 66		
Startup in suspended state		
Description		
OK Cancel Help		

## RESTORING DATA FROM A COPY PRECEDENCE

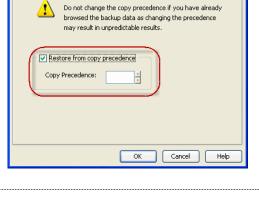
By default, 1-Touch recovery will restore the data from the primary copy. But if you want to restore data from a particular storage policy copy, you can specify the copy precedence.

- 1. From the CommCell Console, navigate to **<Client>** | File System iDataAgent | defaultBackupSet.
- 2. Right-click the defaultBackupSet and click All Tasks | 1-Touch Recovery.
- 3. In the Submit 1-Touch Recovery Request dialog box, click Select Recovery Options.
- 4. Click Advanced.
- 5. Click Copy Precedence.
- 6. Click Restore from copy precedence.
- 7. Enter the copy precedence number.
- 8. Click **Ok**.
- 9. Click Next.
- 10. Click Finish.

## RESTORING DATA FROM A SPECIFIC DATA PATH

If you want to restore the data from a specific location on a MediaAgent, you can specify the data path as follows:

- 1. From the CommCell Console, navigate to **<Client>** | File System *i*DataAgent | defaultBackupSet.
- 2. Right-click the defaultBackupSet and click All Tasks | 1-Touch Recovery.
- 3. In the Submit 1-Touch Recovery Request dialog box, click Select Recovery Options.
- 4. Click Advanced.
- 5. Click Data Path.
- 6. Select the following to specify the data path:
  - Use MediaAgent
  - Use Library
  - Use Drive Pool
  - Use Drive
  - Use Proxy
- 7. Click **Ok**.
- 8. Click Next.
- 9. Click Finish.



1-Touch Restore Advanced Options

Startup Copy Precedence Data Path

1-Touch Restore Advanced Options				
Startup Copy Prece	dence Data Path	_		
Use MediaAgent	scranton64			
Use Library	VirtualLib 2	•		
Use Drive Pool	DrivePool(scranton64)2			
Use Drive	<any drive=""></any>			
Use Proxy	carter			
	OK Cancel Help			

Previous Next >

# Getting Started - OnePass Agent for Unix File System Deployment

Install

Install Cluster Configuration

Data Movement Recover



The OnePass Agent is an integrated with Unix File System *i*DataAgent as a method to archive files which have been backed up. Only files which meet a predetermined user defined set of rules become candidates for archiving. Follow the steps given below to install the OnePass Agent.

# INSTALLATION

The software can be installed using one of the following methods. Ensure you have the following before performing the install:

Software version Service Pack 12.

#### **METHOD 1: INTERACTIVE INSTALL**

Use this procedure to install directly on client computer.

#### METHOD 2: INSTALL SOFTWARE FROM COMMCELL CONSOLE

Use this procedure to install remotely on a client computer.

# **METHOD 1: INTERACTIVE INSTALL**

1. Place the **Software Installation Disc** on a client computer that satisfies the minimum requirements specified in the System Requirements.

Type 5 to select File System iDataAgent with Archiving Enabler.

2. Run the following command from the Software Installation Disc:

#### ./cvpkgadd

- **3.** The product banner and other information is displayed.
  - Press Enter.

6.

- 4. Read the license agreement. Type **y** and press **Enter** to continue.
- 5. Type 2 to select Advanced options.

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

2) Advance options

**BEFORE YOU BEGIN** 

System Requirements

install.

**Download Software Packages** 

Download the latest software package to perform the

Verify that the computer in which you wish to install the software satisfies the System Requirements.

3) Exit this menu

Your choice: [1]

Please select a setup task you want to perform from the list below:

```
[Record and Play]
1) Create a recording of user selections (Record Mode
2) Play a recorded install on this computer
[Custom Package Creator]
3) Create a custom install package
[De-coupled Installer]
4) Pre-install software Components [De-couple Mode]
[Integrated File Archiver]
5) File System iDataAgent with Archiving Enabler
[Customized Cluster Agents]
6) Veritas Cluster Agents
[Third Party Connector]
7) Symantec NetBackup Agent
8) NetApp Snap Manager for Oracle
9) NetApp Snap Manager for SAP/Oracle
[Done]
10) Exit this menu
```

Your choice: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "failover" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

You now have a choice of performing a regular Calypso

install on the physical host or installing Calypso on a virtual machine for operation within a cluster.

Most users should select "Install on a physical machine" here.

1) Install on a physical machine

2) Install on a virtual machine

3) Exit

Your choice: [1]

We found one network interface available on your machine. We will associate it with the physical machine being installed, and it will also be used by the CommServe to connect to the physical machine. Note that you will be able to additionally customize Datapipe Interface Pairs used for the backup data traffic later in the Calypso Java CUIT

Please check the interface name below, and make connections if necessary:

Physical Machine Host Name: [angel.company.com]

Please specify the client name for this machine.

It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe.

Physical Machine Client name: [angel]

Do you want to use the agents for restore only without consuming licenses? [no]

Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.

If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media

3) Use the copy I already have by entering its unix path

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now?  $[{\tt no}]$ 

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

Installation Directory: [/opt]

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log\_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log\_Files".

Log Directory: [/var/log]

Most of Software processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a

8. If you have only one network interface, press **Enter** to accept the default network interface name and continue.

If you have multiple network interfaces, enter the interface name that you wish to use as default, and then press **Enter**.

The interface names and IP addresses depend on the computer in which the software is installed and may be different from the example shown.

- 9. Press Enter.
- 10. Press Enter.

**11.** Type the appropriate number to install the latest software scripts and press **Enter**.

- Select **Download from the software provider website** to download the latest software scripts. Make sure you have internet access.
- Select **Use the one in the installation media** to install the software scripts from the package or share from which the installation is currently being performed.
- Select Use the copy I already have by entering its unix path, to specify the path if you have the software script in an alternate location.

#### 12. Press Enter.

13.

14.

Press Enter to accept the default path.

- If you want to specify a different path, type the path and then press **Enter**.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press **Enter**.

In order to make sure that the client computer has  ${\tt read/write}$  access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&\*():/?\

Press Enter to accept the default location.

- Enter a path to modify the default location and press Enter.
- All the modules installed on the computer will store the log files in this directory.
- 15. Press Enter.

		"calypso" or a "dba" group.
		We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later.
		If you're planning to backup Oracle DB you should use "dba" group.
		Would you like to assign a specific group to Software? [yes]
16.	If you indicated <b>Yes</b> in the previous step, you will be prompted for the group name that must be used to launch processes.	Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run.
	Enter the group name and then press <b>Enter</b> .	In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "dba" group here.
		Group name: skyl REMINDER
		If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "skyl".
		Press <enter> to continue</enter>
17.	Type a network TCP port number for the Communications Service (CVD) and press <b>Enter</b> .	Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.
	Type a network TCP port number for the Client Event Manager Service (EvMgrC) and press <b>Enter</b> .	The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.
		Please enter the port numbers.
		Port Number for CVD : [8400]
		Port Number for EvMgrC: [8402]
18.	If this computer and the CommEquie is constrated by a firswall, type <b>Ves</b> and then	Is there a firewall between this client and the CommServe?
10.	If this computer and the CommServe is separated by a firewall, type <b>Yes</b> and then press <b>Enter</b> to continue.	[no]
	For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.	
	If you do not wish to configure the firewall services, type $\mathbf{No}$ and then press $\mathbf{Enter}$ to continue.	
19.	Type the fully qualified CommServe host name and press <b>Enter</b> .	Please specify hostname of the CommServe below. Make sure the hostname is fully qualified, resolvable by the name
	Ensure that the CommServe is accessible before typing the name; otherwise the installation will fail.	services configured on this machine.
		CommServe Host Name: mycommserve.company.com
20.	Press <b>Enter</b> .	Commcell Level Global Filters are set through Calypso GUI's Control Panel in order to filter out certain directories or files from backup Commcell-widely. If you turn on the Global filters, they will be effective to the default subclient. There are three options you can choose to set the filters.
		1) Use Cell level policy
		2) Always use Global filters
		3) Do not use Global filters
		Please select how to set the Global Filters for the default subclient? [1]
21.	Type the appropriate number to select the <b>Client Group</b> and press <b>Enter</b> .	Client Group(s) is currently configured on CommServe mycommserve.company.com. Please choose the group(s) that
	This screen will be displayed only if Client Groups are configured for the CommCell	you want to add this client angel.company.com to. The selected group(s) will be marked (X) and can be deselected if you enter the same number again. After you are finished with the selection, select "Done with the Selection".
		[ ] 1) Unix
		[] 2) DR
		<pre>[a=all n=none r=reverse q=quit d=done &gt;=next &lt;=previous ? =help]s</pre>
		Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 2
22.	Enter the number corresponding to the storage policy through which you want to back up the File System <i>i</i> DataAgent and press <b>Enter</b> .	Please select one storage policy for this IDA from the list below:
		1) CD Otan Jalan I (humun) 0

- 1) SP\_StandAloneLibrary2\_2
- 2) SP\_Library3\_3
- SP\_MagLibrary4\_4

If you do not have Storage Policy created, this message will be displayed. You may not be prompted for user input.

23 Type 3 to the **Exit** option and press **Enter**. The installation is now complete. Storage Policy: [1]

There seem to be no Storage Policies configured on the CommServe. Before you can run any backups of this IDA, you will need to install a MediaAgent, create a Storage Policy and assign it to all subclients..

Adjusting modes and permissions of files

Successfully installed Calypso

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

Currently you have Calypso installed on physical node angel.company.com.

Now you have a choice of either adding another package to the existing installation or configure Calypso on a virtual machine for use in a cluster.

1) Add another package to angel.company.com

2) Install Calypso on a virtual machine

3) Exit

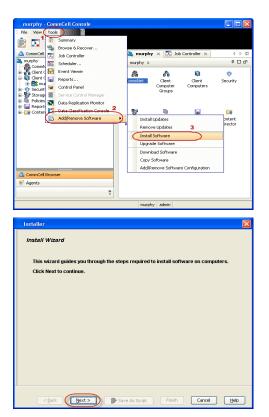
Your choice: [3]

# METHOD 2: INSTALL SOFTWARE FROM COMMCELL CONSOLE

1. From the CommCell Browser, select Tools | Add/Remove Software | Install Software.

2. Click Next.

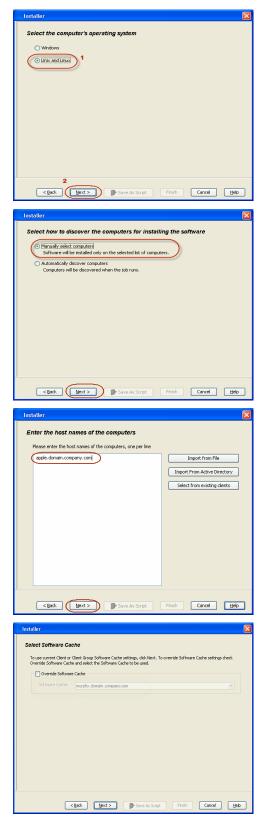
3. Select Unix and Linux. Click Next.



4. Select Manually Select Computers. Click Next.

5. Enter the fully qualified domain name of the computer in which you wish to install. For example: apple.domain.company.com Click Next.

6. Click Next.



**7.** Specify **UserName** and **Password** of client computer who has administrator or sudo privileges.

#### Click Next.

If a SUDO user has been created for root access then use visudo to change /etc/sudoers, so this user can SUDO into ssh without being

		Installer
	prompted for the password.	Enter Account Information
	For SuSE Linux comment the following lines:	The specified account should have root level access and SSH login permission. If you are installing multiple clients, the user should have access to all clients.
	<ul> <li>Defaults targetpw # ask for the password of the target user i.e. root</li> </ul>	Reuse Active Directory credentials
	<ul> <li>ALL ALL=(ALL) ALL # WARNING! Only use this together with 'Defaults targetpw'!</li> </ul>	User Name: root Example:username(root or Administrator) Password:
	For RHEL/CentOS comment the following line:	Confirm Password:
	• Defaults requiretty	
		<back next=""> Price As Sorpt Fried Cancel Help</back>
8.	Select File System iDataAgent with Archiving Enabler.	Installer 🔀
	Click Next.	Scient Pockager(s) to Install
9.	• Select Client Group from Available and click Add.	Installer 🛛
	Do not add more than one Client Group.	Enter Recommended Settings for the selected Software
	• Select a <b>Storage Policy</b> from the drop-down list. Click <b>Next</b> .	Cichal Fitnes Ubs Callevel poly Configure For Laptop Boolups

10. Select Reboot. Click Next. < Back Vext> Save As Script Finish Cancel Help

## 11. Select Immediate. Click Next.

12. Click Finish.

13. You can track the progress of the job from the **Job Controller** or **Event Viewer** window.

Enter Additional Install Opt	
Enter Additional Install Opt	tions
🖃 Installer Flags	
✓ Install Updates	
Reboot (if required)	
Kill Browser Processes (	T consider
Ianore Running Jobs	a magamay
Stop Oracle Services (if	required)
Skip clients that are alre	eady part of the CommCell component
Advanced Options	
Delete Packages After 1	Install
	ork interface used as hostname
Do not load WA driver i	
Number Of Streams	0 1
Unix Group	
Access permissions for othe	v users
Ignore Client/Host Nam	e Conflict
Install Agents For Rest	ore Only
Optional Settings	
🖃 Job Result Direc	
Path	
CVD Port	l l
	8400 -
Evmgrc Port	8402 ±
Install Directory	
CommServe Host Name	
	< Back Next > Save As Script Finish Cancel Help
Installer	
Please Select Wh	en To Run The Job
Job Initiation	
( Immediate	
Run this job	now
O Schedule	
Configure S	chedule Pattern Configure
< Back Next >	Save As Script Finish Cancel Help
< Back (Lext >	Seve As Script Finish Cancel Help
	Save As Script Finish Cancel Help
< Back Next >	
Installer Summary	
Installer Summary Please verify all the selected optio	
Installer Summary Please verify all the selected optio scipt.	
Installer Summary Please verfy all the selected optio sopt. Install Flags Install Updates: Yes	ns and did. Fright to run the job immediately or did. Since As Script to save the job options as a
Installer Summary Please verfy all the selected optic script. Install Flags Install Flags Install Flags	ns and dick Frish to run the job immediately or dick Save As Sorpt to save the job spitors as a
Installer Summary Please verfy all the selected opto sciet. Install Flags Install Updates: Yes Reboot (if required): Yes Kull Srower Processes (if	res and didk. Finish to run the job minesidately or dick. Since As Script to save the job options as a
Installer Summary Please verfy all the selected optic script. Install Flags Install Flags Install Flags	ns and dick Firish to run the job immediately or dick Sare As Sorpt to sare the job options as a required) : No
Installer Summary Poses very all the selected optic sock. Install Eplage Install Updates: Yes Reboot (if required): Yes Kill Browser Processes (if Ignore Ruming Jobs: N Stop Oracle Services (if Skip Crients that are altre	es and dok Frish to run the job inmediately or dok Sare As Sorpt to save the job options as a required) : No sequired) : No sequired) : No
Installer Summary Piese very all the selected optic sock. Install Updates: Yes Reboot (if required): Yes Kill Browse Processes (if Ignore Running John: N Stop Oracle Services (if Stop Optical Services (if	required) : No adjust in the job mmediately or dok. Sine As Sorgt to save the job options as a required) : No adjust in the commonle of the Common of the Co
Installer Summary Piese very all the selected opter sect. Install Updates: Yer Reboot (if required): Yer Rill Brower Processes (if Ignore Running Jois: N Stop Oracle Services (if Skip cleants that are alter Delete Perkcieges After In Listen only on the networ Do on to lead VA driver in	res and dok Presh to run the job mendiately or dok Sere As Sorpt to save the job options as a (requined) : No equined) : No equined) : No equined: No exactle: Yes thinterface used as hostname: No exactle: Yes
Installer Summary Process wird all be selected optic Install (Datates: Yes Reboot (if required): Yes Reboot (if required): Yes Sing Oracle Services (if Sing Oracle Services (if) Sing Oracle Services (if) Si	res and dok Presh to run the job mendately or dok Sere As Sorpt to save the job options as a Trequined) : No required) : No required : N
Installer Summary Piese very all the selected opter over. Install Updates: Yes Reboot (if required): Yes Rill Brower Processes (if Ignore Running Johs: N Stop Oracle Services (if Skip Lients that are alter Delete Parketsges After In Listen only on the networ De not lead VA driver in Number Of Streams: O	required) : No equired) : No equired) : No add by the component: No stall: Yes K interfree used as bostname: No to kernel this time: No her users: 0
Installer Summary Please very all the selected optic root. Install Updates: Yes Reboot (if required): Yes Reboot (if required): Yes Kill Browse Processes (if Ignore Running John: No Stop Oracle Services (if Stop Delete Parkcages After In Delete Parkcages After In Listen only on the netwoo Do not load VA driver in Number Of Streams: O Acreess permissions for re- lated services for Restor	required) : No equired) : No equired) : No the formation of the component: No the function used as bestmanne: No to kernel this time: No to kernel this time: No to comflet: Yes
Installer Summary Peace very all the selected optic occt. Install Plaget Install Updates: Yee Robots (if required): Yee Robots (if required): Yee Still Brower Processor (if Ugnor Romaling Job: H Still Opticates Processor (if Scholler Swreker (if Scholler Swreker (if Delete Packages Arter In Lafere only on the networ De ont Load Va driver in Number Of Streams: O Larces permissions for ot Ignoro Client/Host Name Install Agents For Reston Client Componition	regained): No adjustry: No bernarching adjustry: No the Internet Maximum No Conflict: Yes to Outpy: No
Installer Summary Pieses verly all the selected opte sold. Install Updates: Yes Reboot (if required): Yes Reboot (if required): Yes Kill Browser Processes (if Igarone Running John: No Stop Oracle Services (if Skip Cleants that are alter Delete Parkcages After In Delete Parkcages After In Delete Parkcages After Delete Delete Services (if Igarone Cleant/Bast Name Install Agents For Restor Cleant Composition Override Software Cache	required) : No  required) : No  Complete used as bostname: No to kernet this time: No her users: 0 Comflet: Yes e obje: No
Installer Summary Please very all the selected opter sector. Install Updates: Yer Reboot (if required): Yer Reboot (if required): Yer Rill Brower Processer (if Ignore Running Jois: N Stop Oracle Services (if Skip cleants that are alter Delete Perkcasser After In Listen only on the networ De not lead VA driver in Number Of Stremass: O Arcress permissions for ot Ignore Client/Host Name Install Agents For Restor Client Composition Override Software Cache Select Type Of Installation	regained): No adjustry: No bernarching adjustry: No the Internet Maximum No Conflict: Yes to Outpy: No
Installer Summary Press very all he selected opto core. Install Updates: Yes Reboot (If required): Yes Reboot (If required	required) : No equired) : No equired: No equir
Installer Summary Piesse verly all the selected optic social Install Updates: Yes Reboot (if required): Yes Reboot (if required): Yes Kill Brower Processes (if Ignore Running John: No Stop Oracle Services (if Stop Oracle Services (if Second Components To Selected Components To	set and ddk Frieht to run the job mendiately or ddk Save As Sorgt to save the job options as a required): No adjust of the CommoCell component: No adjust of the CommoCell component: No ther users: 0 Condict: Yes to ther: Ves to the 'the 'the 'the 'the 'the 'the 'the
Installer Summary Processer Summary Processer Summary Install Updates: Yes Reboot (If required):	required) : No     required) : No     required) : No     required (Component: No     required)     req     required (Component: No     required)     requ
Installer Summary Press very all he selected opticot cost. Install Updates: Yes Reboot (if required): Yes Reboot (if Response) Reboot (if Response) Reboot (if Response) Reboot (if Response) Response) Response Respo	required) : No     required) : No     required) : No     required (Component: No     required)     req     required (Component: No     required)     requ
Installer Summary Press very all he selected optic optic. Install Updates: Yes Reboot (if required): Yes Reboot (if Reboot (if Reboot Reboot (if Reboot	required) : No     required) : No     required) : No     required (Component: No     required)     req     required (Component: No     required)     requ
Installer Summary Press very all the selected optic sort. Install Updates: Yes Reboot (if required): Yes Reboot (if required): Yes Kill Brower Processes (if Iganore Running John: No Stop Oracle Services (if Stop Oracle Services (if Selected Components To Common Information (Optic Cideha Filters: Use Cells Change Filters: Use Cells Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Selected Components To Common Information (Optic Cideha Filters: Use Cells Change Filters: Use Cells Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Selected Components To Common Information (Optic Cideha Filters: Use Cells Selected Components To Common Information (Optic Change Filters: Use Cells Selected Components To Common Information (Optic Change Filters: Use Cells Selected Components To Common Information (Selected Selected Select	required) : No     required) : No     required) : No     required (Component: No     required)     req     required (Component: No     required)     requ
Installer Summary Press very all he selected optic optic. Install Updates: Yes Reboot (if required): Yes Reboot (if Reboot (if Reboot Reboot (if Reboot	required) : No required) : No required) : No required) : No required is the Component: No statil: Yes to be constitution to remote machine is constitution to remote machine intertail: Rel System (DataAgent with Archoing Enabler const) required req required req required re
Installer Summary Press very all the selected optic sort. Install Updates: Yes Reboot (if required): Yes Reboot (if required): Yes Kill Brower Processes (if Iganore Running John: No Stop Oracle Services (if Stop Oracle Services (if Selected Components To Common Information (Optic Cideha Filters: Use Cells Change Filters: Use Cells Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Selected Components To Common Information (Optic Cideha Filters: Use Cells Change Filters: Use Cells Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Services (Stop Oracle Sel) Selected Components To Common Information (Optic Cideha Filters: Use Cells Selected Components To Common Information (Optic Change Filters: Use Cells Selected Components To Common Information (Optic Change Filters: Use Cells Selected Components To Common Information (Selected Selected Select	required) : No     required) : No     required) : No     required (Component: No     required)     req     required (Component: No     required)     requ
Installer Summary Procession Summary Install Updates: Yes Reboot (If required): Reboot Reboot (If required): Reboot Rebo	res and dick Freich to run the job mendiately or dick Sere As Sorget to save the job options as a  required) : No equired) : No equired) : No equired() : N
Installer Summary Procession Summary Install Updates: Yes Reboot (If required): Reboot Reboot (If required): Reboot Rebo	required) : No required) : No required) : No required) : No required is the CommoCell component: No statil: Yes to bernet this time: No to bernet thi
Installer Summary Press very of the selected optic solet. Install Updates: Yes Reboot (if required): Yes Reboot (if requir	res and dick Freich to run the job mendiately or dick Sere As Sorget to save the job options as a  required) : No equired) : No equired) : No equired() : N
Installer Summary Processing of the sector of o	res and dick Frieh to run the job mendately or dick Sere Ao Sorget to save the job options as a  rengelined) : No equivable : No equivable : No to kernel this time : No to kernel this time : No her users : 0 Comflict : Yes e Oaky : No : No :: Copy packages to remote machine Install: File System DataAgent with Archering Emailer enal) ved policy :: No :: Save As Sorget :: Proof. :: No :: Copy packages to remote machine :: Install:: File System DataAgent with Archering Emailer enal) ved policy :: No :
Installer Summary Processing of the sector of points Install Updates: Yes Reboot (If required): Yes Reboot	required) : No equired) : No equired: No equired: No equired: No equired: No equired: No example this time: No example
Installer Summary Processing of the sector of points Install Updates: Yes Reboot (If required): Yes Reboot De not load VA driver in Listen only on the networy De not load VA driver in Listen only on the networy De not load VA driver in Listen only on the networy De not load VA driver in Reboot Rebo	res and dick Frieh to run the job mendately or dick Sere Ao Sorget to save the job options as a  rengelined) : No equivable : No equivable : No to kernel this time : No to kernel this time : No her users : 0 Comflict : Yes e Oaky : No : No :: Copy packages to remote machine Install: File System DataAgent with Archering Emailer enal) ved policy :: No :: Save As Sorget :: Proof. :: No :: Copy packages to remote machine :: Install:: File System DataAgent with Archering Emailer enal) ved policy :: No :
Installer Summary Processing of the sector of points Install Updates: Yes Reboot (If required): Yes Reboot De not load VA driver in Listen only on the networy De not load VA driver in Listen only on the networy De not load VA driver in Listen only on the networy De not load VA driver in Reboot Rebo	res and dick Frieh to run the job mendately or dick Sere Ao Sorget to save the job options as a  rengelined) : No equivable : No equivable : No to kernel this time : No to kernel this time : No her users : 0 Comflict : Yes e Oaky : No : No :: Copy packages to remote machine Install: File System DataAgent with Archering Emailer enal) ved policy :: No :: Save As Sorget :: Proof. :: No :: Copy packages to remote machine :: Install:: File System DataAgent with Archering Emailer enal) ved policy :: No :
Installer  Summery  Processory  Install Updates: Yes  Install Updates: Yes  Rebool: (If required): Tele  Install Updates: Yes  Rebool: (If required): Tele  Step Cleans Arrives of  Step Cleans Arrives of  Step Cleans Arrives of  Number Of Streams: 0  Acress permissions for ot  Listen only on the astrow Do not load VA driver in  Delete Packages After In  Commit Step Cleans After In  Commit Set Streams: 0  Acress permissions for ot  Clean Components Subcide Components To  Commit Information (Opt Clean Filters: Use Cell  Clean  COD Part: 800  Engene Clean  Clean  Cod Part: 800  Engene Clean  Clea	res and dick Frieh to run the job mendately or dick Sere Ao Sorget to save the job options as a  rengelined) : No equivable : No equivable : No to kernel this time : No to kernel this time : No her users : 0 Comflict : Yes e Oaky : No : No :: Copy packages to remote machine Install: File System DataAgent with Archering Emailer enal) ved policy :: No :: Save As Sorget :: Proof. :: No :: Copy packages to remote machine :: Install:: File System DataAgent with Archering Emailer enal) ved policy :: No :
Installer Summary Press wird all be selected optic sciet. Install Updates: Yes Reboot (if required): Yes Reboot (if requir	required) : No evaluation: No evaluation: No evaluation: No evaluation: No evaluation: No evaluation: No evaluation: No to kernel table time: No to kernel table time: No her users: 0 Conflict: Yes e Oahy: No : No : No : No : No : No : No : No
Installer  Summary  Press verhy dithe selected opto  Sorter  Install Updates: Yes Reboot (if required): Yes Reboot (if req	
Installer  Summary  Press very all he selected optic  sold. Install Updates: Yes Reboot (if required): Yes Reboot Reboot Reboot Reboot (if required): Yes Reboot	
Installer  Summary  Press very all he selected optic  sold. Install Updates: Yes Reboot (if required): Yes Reboot Reboot Reboot Reboot (if required): Yes Reboot	the second
Installer  Summary  Press verhy dithe selected opto  Sorter  Install Updates: Yes Reboot (if required): Yes Reboot (if req	
Installer  Summary  Press very all he selected optic  sold. Install Updates: Yes Reboot (if required): Yes Reboot Reboot Reboot Reboot (if required): Yes Reboot	stated bit Presh to run the job menddately or dick Save As Sorgt to save the job options as a     required) : No     equired) : No     equired : No
Installer  Summary  Press very all he selected optic  sold. Install Updates: Yes Reboot (if required): Yes Reboot Reboot Reboot Reboot (if required): Yes Reboot	required) : No second dd: Fresh to run the job secondately or ddd. Sere As Sorpt to save the job options is a required) : No second dd: Fresh to run the job secondately or ddd. Sere As Sorpt to save the job options is a required) : No second dd: Fresh to run the job secondately or ddd. Sere As Sorpt to save the job options is a second dd: Fresh to run the job secondately or ddd. Sere As Sorpt to save the job options is a second dd: Fresh to run the job secondately or ddd. Sere As Sorpt to save the job options is a second dd: Fresh to run the job second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is a second dd is

14. Once the job is complete, right-click the  $\ensuremath{\textbf{CommServe}}$  computer, click  $\ensuremath{\textbf{View}}$  and then click Admin Job History.

15. Select Install/Upgrade/Remove Software. Click OK.

idol.testlab.commvault.	om - CommCell Console				X
File View Tools Windows	Help				
훋 🖪 🖪 🛍	I 🜆 😨				
CommCell Browser	🚴 apple 🛛			4.12	
All Tasks	🚴 apple >			P 🗆	
View 2 > Control Panel	Job History	۹	o 🕏	•	^
Properties	Admin Job History Log Tiles 3	Client Computers	Security Storage Resources	Policies	×
File System	Users Logged In			4 4	
Of Virtual Server     Mustang	Schedules			÷ 🗆	
Of File System     Of Virtual Server	Fl Job ID Operation 21 Data Aging	Client Co	Agent Type Subclient	Job Type= 1 Phar N/A	¥
· Security	21 Data Aging			N/A	2
Storage Resources     Policies		tunnin			-
Reports     Content Director	Event Viewer ×			4 Þ	
	Event Viewer	Admin Job History	×	0 P	
	Severity Event ID 3	b ID Date	v 1 Program		*
	233 232		2:00:23 JobManager 2:00:08 JobManager	apple 19: apple 19:	
CommCell Browser	231	08/31/2010 1	1:52:42 EvMgrS	apple 35:	
Agents	228	20 08/31/2010 1	1:46:15 DistributeSoftware	apple 68:	-
*	Reuse Playing Info				
8 object(s)	Pause Praying Into		ple admin	own: 200	_
o object(s)		4	ppe admin		
Admin Job History F	ilter				×
Job Type					
O All	🔵 Data Aging		🔵 Export Media		
<ul> <li>Auxiliary Copy</li> </ul>	<ul> <li>Inventory</li> </ul>		<ul> <li>Disaster Recover</li> </ul>	ry Backup	
O Data Verification	Offline Conte	nt Indexing	🔵 Erase Media		
0.0 0.1 H					
<ul> <li>Erase Backup/Archived</li> </ul>	Data 🔿 Drive Validati	on	O Drive Cleaning		
				Software	
Stamp Media	O Install/Remo	ve Updates	O Download/Copy		
Stamp Media	O Install/Remo	ve Updates Naintenance	Download/Copy     SRM Reports/Ac	tions	
Stamp Media  Install/Upgrade/Remov Information Manageme	Install/Removes the software of the softw	ve Updates Naintenance port	O Download/Copy	tions	
Stamp Media	o Install/Remove e Software Disk Library Mont	ve Updates Naintenance port	Download/Copy     SRM Reports/Ac	tions	
Stamp Media  Install/Upgrade/Remov  Information Manageme	Install/Removes the software of the softw	ve Updates Naintenance port	Download/Copy     SRM Reports/Ac	tions	
Stamp Media Install/Upgrade/Remov Information Manageme Media Refreshing Specify Time Range	Install/Remove Software     Disk Library M     CommCell Ex     Recover Store	ve Updates Naintenance port e	Download/Copy     SRM Reports/Ac	tions	
Stamp Media Install/Upgrade/Remov Information Manageme Media Refreshing Specify Time Range	Install/Removes the software of the softw	ve Updates Naintenance port e	Download/Copy     SRM Reports/Ac	tions	
Stamp Media  Information Manageme Media Refreshing  Specify Time Range  Time Zone:  Saft Time	Instal/Remo     Disk Library N     Commcel Ex     Recover Stor     Commcel Ex     Commcel E	ve Updates Maintenance port e Canada) End Time	Download/Copy     SRM Reports/Ac     CommCell Impor	tions	
Stamp Meda  Instal/Upgrade/Remov Information Manageme Meda Refreshing  Specify Time Range  Time Zone:  Sart Time  Mon 08/30/20	Instal/Removement     Softward     Disk Library N     CommCell Exit     Recover Stor     Cost CommCell Exit     Recover Stor     Cost CommCell Exit     Recover Stor	ve Updates Maintenance port e Canada) End Time	O Download/Copy SRM Reports/Ac O CommCell Impor	tions	
Stamp Media  Information Manageme Media Refreshing  Specify Time Range  Time Zone:  Saft Time	Instal/Removement     Softward     Disk Library N     CommCell Exit     Recover Stor     Cost CommCell Exit     Recover Stor     Cost CommCell Exit     Recover Stor	ve Updates Maintenance port e Canada) End Time	Download/Copy     SRM Reports/Ac     CommCell Impor	tions	
Stamp Meda  Instal/Upgrade/Remov Information Manageme Meda Refreshing  Specify Time Range  Time Zone:  Sart Time  Mon 08/30/20	Instal/Remove a Softward     Disk Library N     CommCell Exit     Recover Stor     F-05:00) Eastern Time (US & C	ve Updates Maintenance port e Canada) End Time	O Download/Copy SRM Reports/Ac O CommCell Impor	tions	
Stamp Meda  Thratl/Upg ade/Ferrory Thratl/Upg ade/Ferrory Media Refreshing  Specify Time Range  Time Zone:  Ken  Media Refreshing  Time Zone:  Refreshing  Time Zone:  Refreshing  Refres	Instal/Remove a Softward     Disk Library N     CommCell Exit     Recover Stor     F-05:00) Eastern Time (US & C	ve Updates Maintenance port e Canada) End Time	O Download/Copy SRM Reports/Ac O CommCell Impor	tions	
Stamp Meda Stamp Meda Statute Action Statute	- Unstall/Remove Software) Disk Lohray M Commole Ext - (05:00) Exstern Time (US & C 0 - (05:00) Exstern Time (US & C -	ve Updates Naintenance port e Canada) End Time Tue 0	Download/Copy SRM Reports/Ac CommCell Impor	tions	
Stamp Meda Stamp Meda Status Status Addition Status Status Addition Addition Status Addition Status Addition	Instal/Remove a Softward     Disk Library N     CommCell Exit     Recover Stor     F-05:00) Eastern Time (US & C	ve Updates Maintenance port e Canada) End Time	O Download/Copy SRM Reports/Ac O CommCell Impor	tions	
Stamp Meda Stamp Meda Statute Action Statute	- Unstall/Remove Software) Disk Lohray M Commole Ext - (05:00) Exstern Time (US & C 0 - (05:00) Exstern Time (US & C -	ve Updates Naintenance port e Canada) End Time Tue 0	Download/Copy SRM Reports/Ac CommCell Impor	tions	
Stamp Meda  Stamp Meda  Chatal/Log add Remov  Meda B Arreshing  M	- Unstall/Remove Software) Disk Lohray M Commole Ext - (05:00) Exstern Time (US & C 0 - (05:00) Exstern Time (US & C -	ve Updates Naintenance port e Canada) End Time Tue 0	Download/Copy SRM Reports/Ac CommCell Impor	tions	
Starp Meda Charlehops definence Difformation Management Medas Baferahorg Specify Time Range Time Zone: Rait Time Rein Gelfandzo Rait Time Add Status (a) Al Number of Jabs (b) Yenk All bobs	Completed	ve Updates Naintenance port e Canada) End Time Tue 0	Download/Copy SRM Reports/Ac CommCell Impor	tions	
Starp Meda ChatAbpadeRemov Difformation Minageme Medas Refeating Medas Refeating Reat Time Reat Time Reat Time Reat Optimized Reat Status O Al Number of Jobs O Lessed Number of Desend Number of	Completed	ve Updates Naintenance port e Canada) End Time Tue 0	Download/Copy SRM Reports/Ac CommCell Impor	tions	
Storp Meda  Total Log add Remov  Difformation Manageme Meda Baffer Ange add Remov  Meda Baffer Ange Meda Baffer Ange Sant Time Sant Time Sant Time Sant Time Sant Time Add Santus  Add Antober of Jobs  O Yew All Jobs	Completed	ve Updates Naintenance port e Canada) End Time Tue 0	Download/Copy SRM Reports/Ac CommCell Impor	tions	
Storp Meda Contal/Log additions Deformation Manageme Deformation Manageme Medas Before Rat Time Rat Status O Al Number of Jobs O Lessed Number of	Completed	ve Updates Naintenance port e Canada) End Time Tue 0	Download/Copy     SRN Reports/AC     CommCel Impor     Internet State     Kiled     Kiled	tions	
Storp Meda Contal/Log additions Deformation Manageme Deformation Manageme Medas Before Rat Time Rat Status O Al Number of Jobs O Lessed Number of	Completed	ve Updates Isantenance oprt e ianada) End Time True 0 Faded	Download/Copy SRM Reports/Ac CommCell Impor	tions	
Starp Meda Distall/Log additions Information Manageme Meda Befenhag Start Time Free Zone: Start Time Men 06120200 Start Time Men 0612000 Start Time Men 0612000 Start Time Men 0612000 Start Time Men 0612000 Start Time Men 0612000 Start Time Men 0612000 Start Time Men 061200 Start Time Men 061200	Orgeted	ve Updates Isantenance oprt e ianada) End Time True 0 Faded	Download/Copy     SRN Reports/AC     CommCel Impor     Internet State     Kiled     Kiled	tions t	
Storp Meda Contal/Log additions Deformation Manageme Deformation Manageme Medas Before Rat Time Rat Status O Al Number of Jobs O Lessed Number of	Orgeted	ve Updates Isantenance oprt e ianada) End Time True 0 Faded	Download/Copy     SRN Reports/AC     CommCel Impor     Internet State     Kiled     Kiled	tions t d d t e t	
Starp Meda  Starp Meda  Triotal/Lipp ade/Ferrory  Formation Manageme  Start Time  Start Time  Meda Refreshing  Start Time  Men 08/20/20  Start Time	Orgeted	ve Updates Isantenance oprt e ianada) End Time True 0 Faded	Download/Copy     SRN Reports/Ac     CommCell Impor     CommCell Impor     I2 :07PM     Kiled     OK     Connect	tions t d d Help d Help	6
Stamp Meda  Thread Management  Meda Reference  Meda Reference  Sector Time Range  Time Zone:  Meda Reference  Sector Time Range  Time Zone:  Meda Reference  Meda Reference  Meda Reference  Reference  Meda Reference  Reference Reference  Reference Reference Reference Reference Reference Reference Reference Reference Reference Reference Reference Refe	Completed      C	re Lipdates Idantenance port e canada) find Time Time 0 Failed 2	Comicel Impor	tions t d d Help d Help	
Starp Meda  Startal/Upg ade/Ferrory Information Manageme Meda Refreshing  Start Tim  Start Tim  Mono 0930/20  Starts  Ab Status  Vamber of Jobs  Verv Al Jobs  Desired Number of Include Aged Date  Refreshing  Addina Ski titatory  Addina Ski	Completed      Set Train     Se	re Lipdates Idantenance port e canada) find Time Time 0 Failed 2	Download/Copy     SRN Reports/Ac     CommCell Impor     CommCell Impor     I2 :07PM     Kiled     OK     Connect	tions t d d Help d Help	6
Starp Meda  Startal/Upg ade/Ferrory Information Manageme Meda Refreshing  Start Time  Start Time  Mode Startus  Ado Status  Ado Status  Vamber of Jobs  Verw Al Jobs  Desired Number of  Include Aged Date  Refreshing  Additional Status  Comparison	Completed       Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed	re Lipdates Idantenance port e canada) find Time Time 0 Failed 2	Download/Copy     SRN Reports/Ac     CommCell Impor     CommCell Impor     I2 :07PM     Kiled     OK     Connect	tions t d d Help d Help	6
Starp Meda  Startal/Upg ade/Ferrory Information Manageme Meda Refreshing  Start Time  Start Time  Mode Startus  Ado Status  Ado Status  Vamber of Jobs  Verw Al Jobs  Desired Number of  Include Aged Date  Refreshing  Additional Status  Comparison	Completed      Software	re Lipdates Idantenance port e canada) find Time Time 0 Failed 2	Download/Copy     SRN Reports/Ac     CommCell Impor     CommCell Impor     I2 :07PM     Kiled     OK     Connect	tions t d d Help d Help	6
Stamp Meda  Thread Management  Meda Reference  Meda Reference  Sector Time Range  Time Zone:  Meda Reference  Sector Time Range  Time Zone:  Meda Reference  Meda Reference  Meda Reference  Reference  Meda Reference  Reference Reference  Reference Reference Reference Reference Reference Reference Reference Reference Reference Reference Reference Refe	Completed       Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed      Completed	re Lipdates Idantenance port e canada) find Time Time 0 Failed 2	Download/Copy     SRN Reports/Ac     CommCell Impor     CommCell Impor     I2 :07PM     Kiled     OK     Connect	tions t d d Help d f r c r c r c r	6

- You can view the following details about the job by right-clicking the job: 16.
  - Items that succeeded during the job
  - Items that failed during the job
  - Details of the job
  - Events of the job
  - Log files of the job

Previous Next >

# Getting Started - OnePass Agent for Unix File System Configuration

Install Install Cluster Configuration Data Movement Recover

< Previous Next >

Once the Unix File System iDataAgent is installed, the OnePass Agent can be enabled by following the steps given below:

- 1. From the CommCell Console, navigate to Client Computers | File System.
  - Right-click the File System | Properties.
  - Select Enable for Archiving.
  - Click OK.

- From the CommCell Browser, navigate to <*Client*> | File System | DefaultBackupSet.
  - Right-click DefaultBackupSet | All Tasks.
  - Click New Subclient.

3. Enter Subclient Name.

🚴 mu Backup: black\_2\_cn All Tasks 🔹 Billing Department Not Defined/Not Define i4\_cn View )ataAgent: File System Properties 2 Installed date Wednesday, September 22, 2010 NDMP Restore Enabled Enable SRM feature Enable Office Communications Server Backup Enable for archiving 4 10\_0 1\_0N Stub Recovery Parameters Maximum Stub Recovery 30 ÷ Time between recall to count as successive in seconds. Time to wait after maximum successive recalls limit is reached in seconds. 30 🗄 5 OK Cancel Help д 💣 defaultBackupSet 🗙 goofy 🚴 scranton64 > 📦 Client Computers > 🚉 grant > 📴 File Sy Subclient Name 🗄 🚾 Continuous Data Repli File Archiver 📑 default 🗟 FSDDR 🗟 index All Tasks Backup All Subclients 🗉 🕄 hermione the minimum of t 2 View Browse Backup Data Propertie Find 1-Touch Recovery Restore Restore by Jobs ibmaix07
 ibmaix08
 ibmaix08
 ibmaix09 Operation Window New Subclient Storage De Rules Filters Pre/Post Pro Client Name: Billing Depa iDataAgent: File System Backup Set defaultBack Subclient na volume-ddr\_src 2 ÷ Number of Data Re ders within a drive or mount point Incremental backup should use 2 OK Cancel Help

<mark>.</mark> Е

- Click the Content tab.
  - Browse to the folder that has files to be backed up.
  - Select the folder and click Add.
  - Click OK.

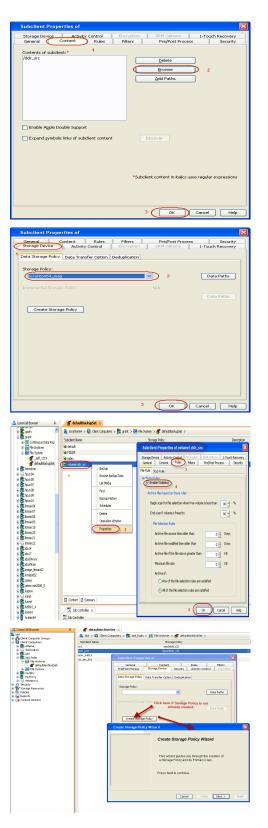
4.

- Click the Storage Device tab.
  - Select the Storage Policy from the drop down list.
  - Click OK.
    - If you do not have a Storage Policy already created, follow the steps given in Step 7 to create a Storage Policy.
- 6. Once the **Subclient** is created, enable it for stubbing:
  - Right-click the subclient and select Properties.
  - Click the Rules tab and select Enable Stubbing.
  - To archive files immediately, set the rules accordingly based on the file access time, modified time or file size.
  - Click OK.



### 1. Click Create Storage Policy.

- 2. Follow the prompts displayed in the Storage Policy Wizard. The required options are mentioned below:
  - O  $\ \, \mbox{Select the Storage Policy type as Data Protection and Archiving.}$
  - $\circ~$  Select  ${\tt No}$  to allow legal hold to use the policy.
  - Specify the name of the Storage Policy.
  - Specify the name of the primary copy. The primary copy is automatically created along with the Storage Policy.
  - $\circ~$  Select  ${\tt No}$  for use of an existing global deduplication policy.
  - Specify name of the default library to which the Primary Copy should be associated. This must be a disk library. Ensure that you select a library attached to a MediaAgent operating in the current release.
  - Select the MediaAgent.
  - $\circ\;$  Verify the device streams and the retention criteria information.
  - $\circ~$  Select  ${\tt Yes}$  to enable deduplication for the primary copy. Select the Enable Client Side Deduplication option.
  - Name of the Deduplication Store, MediaAgent hosting the Deduplication Store, and the location of the Deduplication Store.
  - $\circ\;$  Review the details and click Finish to create the Storage Policy. The primary copy is also created.



3. Return to Step 5 to associate the Storage Policy to the subclient.

Previous Next >

# Getting Started - OnePass Agent for Unix File System Data Movement

Install

Install Cluster Configuration Data

Data Movement Recover



## PERFORM A BACKUP

Once the OnePass Agent is enabled, perform a full backup to archive the backed up files.

## WHAT GETS ARCHIVED

The OnePass Agent archives the following file systems:

OPERATING SYSTEM	ARCHIVED FILE SYSTEMS
AIX	Journal File System 2 (JFS2)
	IBM General Parallel File System (GPFS)
	VERITAS File System (VxFS)
	VERITAS Cluster File System (VxCFS)
HP-UX	VERITAS File System (VxFS)
Linux	'X' File System (XFS)
	B-tree File System (Btrfs)
	Extended 3 File System (ext3)
	Extended 4 File System (ext4)
	IBM General Parallel File System (GPFS)
	X9000 IBRIX File System (IBRIXFS) 6.x
	PolyServe Matrix Server
	VERITAS File System (VxFS)
	VERITAS Cluster File System (VxCFS)
	Lustre File System (Clustered File System)
Red Hat Linux 6.x	GFS2 (Clustered File System)
	The default Extended 2 File System (ext2) gets archived when it is compiled as a module.
Novell OES2 Linux	NSS file system
Solaris	Unix File System (UFS)
	VERITAS File System (VxFS)
	Zettabyte File System (ZFS on Solaris 10 6/06)

## WHAT DOES NOT GET ARCHIVED

The following file types/objects are automatically filtered out of archive operations by the system, and will not be archived.

- Sparse files (Example: File Archiver stub files)
- Install directory
- Job Results directory
- Log files directory
- /usr system directory
- /kernel system directory
- /etc system directory
- /tmp directory
- Extended attributes in the OES Linux data
- Stubs originating from the OES Linux Operating System in a Netware Operating System

Files with extensions \*.a, \*.ksh, \*.csh, \*.sh, \*.lib, and \*.so are automatically filtered out of subclient content by default. Similarly, files in the following directories are also skipped from archiving on all Unix platforms.

- /usr/\*\*
- /bin/\*\*
- /lib/\*\*
- /boot/\*\*

- /dev/\*\*
- /etc/\*\*
- /var/\*\*
- /tmp/\*\* •
- /sbin/\*\*
- /lib64/\*\*
- /opt/\*\* •
- /sys/\*\* ٠
- /kernel/\*\* ٠
- /devices/\*\* ٠
- /proc/\*\*
- /selinux/\*\*
- /stand/\*\*

In addition to the above, there are also platform specific files that are automatically filtered from archiving.

- AIX /\*\*/\*.imp, /\*\*/\*.exp
- Darwin /\*\*/\*.dylib, /\*\*/\*.scpt, /Applications/\*\*, /Developer/\*\*, /Library/\*\*, /Network/\*\*, /System/\*\*, /Volumes/\*\*, /private/\*\*
- Solaris /platform/\*\*
- FreeBSD /rescue/\*\*

The following section provides step-by-step instructions for performing your first backup.

The default subclient has the root directory as the subclient content. Therefore a backup and archive job run on the default subclient results in backing up the entire root directory. In order to run a backup and archive of selective data files, run the backup on an user defined subclient with specific content.

- 1. • From the CommCell Console, navigate to Client Computers | File System | defaultBackupSet.
  - Right-click the **Subclient** and click **Backup**.

- 2. • Select Full as backup type and Immediate to run the job immediately.
  - Click OK.

window of the CommCell console.

3.

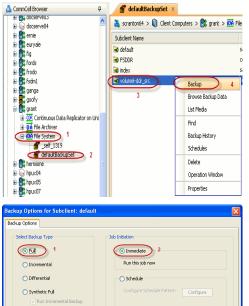


Job ID Operation

Client Co... Agent Type Subdient Job Type

Storage ... MediaAgent Status

Once the backup process is completed, archiving rules are applied per volume (mount Files before stubbing 4.



Dela

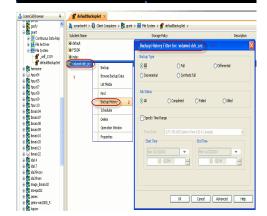
point) level and files that meet the stubbing rules are stubbed.

- **Stubs** are placeholders of the original data after it has been migrated to the secondary storage.
- Stubs replace the backed up files in the location selected by the user during backup.
- After stubbing, the block size of the files on the disk reduces to a single block.

root@grant.commvault	.com # df	-h	grep /da	ir_src	
df: cannot statvfs /	'90pkg: No	such	file or	directo	ry
ddr_src_pool/MAG	9.8G	4.3G	5.5G	44%	/ddr_src/HkG
ddr_src_pool/turbo	9.8G	9.5N	5.5G		/ddr_src_pool/turbo
ddr src pool	9.8G	4.3G	5.5G	44%	/ddr_src
root@grant.commvault	.com #				

### Files after stubbing

root@grant.commvaul	t.com # df.	-h	grep ddr	src	
df: cannot statvfs	/90pkg: No	such	file or d	lirect	tory
ddr_src_pool/MAG	9.8G	773M	9.0G	88	/ddr_src/MAG
ddr_src_pool/turbo	9.8G	9.5M	9.0G	18	/ddr_src_pool/turbo
ddr_src_pool	9.8G	773M	9.0G	8\$	/ddr_src
root@grant.commvaul	t.com #				



Find

View Falled Iten

admit 3xb

iew Job Det

New Meda

View Events

View Stub file list 2

Enable Stubbing

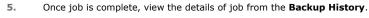
○ Any of the file ⊙ All of the file : 50-1 %

81-1 %

1 18

Previous

Next >



- Right-click the subclient and select **Backup History**.
- Click OK.

- 6.
- Right-click the job and select **View Stub File List** to see the files that got stubbed during the backup process.

By default, files that satisfy the following criteria will be stubbed when a backup is run:

- Archiving starts when the free space on the volume goes below 50%.
- Archiving stops when 80% of the volume space is freed up.
- Files not accessed for 90 days or more will be archived.
- Files not modified in the last 90 days will be archived.
- Files greater than 1 KB will be archived.

# Getting Started OnePass Agent for Unix File System Recover Data

Install Cluster Configuration

Data Movement Recover



### **RECOVER STUBS**

Use the following method to recover stubs of a file or multiple files from a Unix terminal or console window.

- Any application accessing (read/write) the migrated data will trigger a recall. In order to manually perform a recall, follow the steps given below:
  - Open a Terminal or Console Window.
  - Perform an action that executes an open and read on an archived file to initiate the recovery operation. For example, you can use the vi or cat commands to do this:
    - o vi <path><filename>
    - o cat <path><filename>
- You can track the progress of the job from the Job Controller or Event Viewer window of the CommCell console.
  - Multiple stub recoveries are submitted to the Job Controller as one job called a *Persistent Recovery* job.

bose:/fsdm/so	<u>1</u> -	-MA #	ls -1	ls				
total 32								
8 -rw-rr		root	root	399234	Sep	29	13:25	H1
8 -rw-rr		root	root	399234	Sep	29	13:25	H2
8 -rw-rr		root	root	399234	Sep	29	13:25	HЗ
8 -rw-rr		root	root	399234	Sep	29	13:25	H4
bose:/fsdm/so	51-	-MA #(	cat I	11				

7	f defaul	BackupSet 🗴 🔮 Bar	kup Jab Histor;	of def X 👖 Job	Controller :	<							()
X	Job Contro	ler											90
ų	Jab ID	Operation	Client Co	Agent Type	Subdient	.lob Type	Phase	Storage	MediaAgent	Status	Rogress	Errors	Delay
1	30	Persistent Recovery	autotest2k	Windows File Archiver			Recover		autotest2k	Running	0%		
1	33	Disaster Recovery Ba				Ril	Sen	Comfore	added2)		33%	Application	Loss of
	35	Persistent Recovery	bose_CN	Linux File System			Racover		autotest2k	Running	0%		
7	_												/

- Once job is complete, view the details of job from the **Restore History**.
  - Right-click the **BackupSet** and select **View | Restore History**.

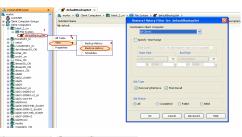
After recovery, stubs are replaced by files in the location specified.

Right-click the job and select View Job Details.

• Click OK.

4.

5.





Recovered files:

Filesvatem	Size	Uged	Avai1	COLUMN THE	Mounted c
/dev/mapper/avat	em-root				
	9.56	5.06	2.06		
udev	12675	1121	1261	11.10	/dev
/dev/ada1	6916	0.915	5615	14%	/boot
/dev/mapper/zavi	CIE D - f z clm				
		9216			/ francing
/dev/mapper/savi					
	4858	4851			/ext3
/dev/mapper/savi					
		56711			/cdrcache
/dev/mapper/savi					
		56711			/edrdest
mesons:/vol/vol3					
		7670			/evbuild
mesons:/vol/gupd					
		9310			/updates
oemdepot.commvau					
					/90
oemdepot.commvau					

Stubbed files:

Filesystem	81.se				
/dev/mapper/system					
	9.50	3.03	6.50		
udev	136M	1128	126M	3.5	/dev
/dev/sda1	69M	8.9M	SGM		/boot
/dev/mapper/savig	cp-fectm				
		92M			/Ischn
/dev/mapper/savig					
/dev/mapper/savig	cp-odroach				
	4.00	567M			/odroache
/dev/mapper/savig	cp-odroach				
	4.00	567M			/odrdest
mesons:/vol/vol3/d					
		2670			/evbuild
mesons:/vol/Qupdat					
		9310			/updates
cemdepot.commvault					
					/90
cemdepot.commvaul					
					/908P1
bose:/opt/simpana,	Updates #				

### BROWSE AND RESTORE FROM COMMCELL CONSOLE

Use the following method to restore deleted files. Deleted stubs that are not yet aged, can also be recovered by performing a Browse and Restore.

- 1. From the CommCell Console, navigate to <*Client*> | File System
  - Right-click the backup set that contains the data you want to restore and click All Tasks | Browse Backup Data

2. Click **OK**.

 Select the folder level under the backup set. Its entire contents will be automatically selected in the right pane.

• Click Recover All Selected.

4. Click OK.

If you wish to restore the backed up data which may be stubbed, select **Restore data instead of stub**.

	÷.	💣 defaultBackupSe		
CommCell Browser				ty_idol > 📴 File System >
🗐 🚺 Client Computers		Subclient Name		Storage Policy
Git athena     Git doclocalvm		🗃 default		aaa(idol)_(2)
Bit Idol     Bit Idol_fsdm     Bit Idol_fsdm     Bit Idol_fsdm     Bit Iberty_idol     Dolgraphic				
2 defaultBackupSe				
murphy     myProxy	3 All Tasks View	Backup All Sub		
B lie zekeproxy B of the second s	Properties	Growse Backu     Find	Data	
<ul> <li>Storage Resources</li> <li>Policies</li> </ul>	-	Restore		
🗄 📊 Reports 🗄 🍘 Content Director		C Restore by Jo		
		30 New Subclient		
		Fl Job ID Operation 2 Install Upda		Agent Type Subclient
Browse Options			_	
<ul> <li>Browse the Lat</li> </ul>	est Data			
C Specify Browse	Time			
-				
Browse Data Bef	ure;			
Thu 11/04	/2010	<b>•</b> 11	: 43 AM	A V
Time 7-1-		OE:00) Eachara Tire - 0	IS 9. Canada)	~
Time Zone	; [GMT-	05:00) Eastern Time (	up ix Canada)	
Client Computer:	berty_idol			×
Use MediaAgent				
Use mould wgent	<any< th=""><td>MEDIAAGENT&gt;</td><td></td><td><b>*</b></td></any<>	MEDIAAGENT>		<b>*</b>
Specify Browse P	ath:			
Show Deleted Ite	ms			
Dirow Deleted Ite	115			
Page Size: 7483647	×			
			Link Manda	
OK	Cancel	Advanced	List Media	Help
	Cancel	Advanced	List Media	Help
🙀 Client: liberty_idol ( La × ); Clent: liberty_idol ( Lates: Data ) rande failed and ( Lates: Data )	Cancel	Advanced	List Media	Help
🙀 Client: liberty_idol ( La × ); Clent: liberty_idol ( Lates: Data ) rande failed and ( Lates: Data )	ted Name data1	Ster 11 Bytes	Type File	Modified 11/(/10.10.04 AM
🙀 Client: liberty_idol ( La × ); Clent: liberty_idol ( Lates: Data ) rande failed and ( Lates: Data )	ted Name	300		Modified
🙀 Client: liberty_idol ( La × ); Clent: liberty_idol ( Lates: Data ) rande failed and ( Lates: Data )	ted Name data1 data2	Size 11 Bytes 11 Bytes	Type File File	Modified 114/1010:004 AM 114/1010:004 AM
🙀 Client: liberty_idol ( La × ); Clent: liberty_idol ( Lates: Data ) rande failed and ( Lates: Data )	ted Name data1 data2	Size 11 Bytes 11 Bytes	Type File File	Modified 114/1010:004 AM 114/1010:004 AM
Cherk Beerty, Jold (La. )       2) derk Beerty, Jold (Jack (240))       20 merk Beerty (140)       20 merk B	ted Name data1 data2 data3	See 11 Bytes 11 Bytes 11 Bytes	Type File File File	Modified 114/1010:004 AM 114/1010:004 AM
Cherk Beerty, Jold (La. )       2) derk Beerty, Jold (Jack (240))       20 merk Beerty (140)       20 merk B	ted Name data1 data2 data3	Size 11 Bytes 11 Bytes	Type File File File	Modified 114/1010:004 AM 114/1010:004 AM
Cherk Beerty, Jold (La. )       2) derk Beerty, Jold (Jack (240))       20 merk Beerty (140)       20 merk B	ted Name dota1 dota2 dota3	See 11 Bytes 11 Bytes 11 Bytes 11 Bytes ndLut Phota and See	Type File File File	Modified 114/1010:004 AM 114/1010:004 AM
Cherk Henry Jold (La. ) Cherk Henry Jold (Jaco Geo) Werk Henry Jold (Jaco Geo) Werk Henry Jold (Jaco Geo) Werk Henry John Henry John Henry Werk Henry	ted Name dota1 dota2 dota3	See 11 Bytes 11 Bytes 11 Bytes 11 Bytes ndLut Phota and See	Type File File File	Modified 114/1010:004 AM 114/1010:004 AM
Cherk Henry Jold (La. ) The Berry Jold (Lard Dela) The Berry Jold (Lard Dela) The Department Cherk School (Delay Cherk Dela) Restore Options for All Ceneral Job Initiation	ted Name dota1 dota2 dota3	See 11 Bytes 11 Bytes 11 Bytes 11 Bytes ndLut Phota and See	Type File File File	Modified 114/1010:004 AM 114/1010:004 AM
Cherk Henry Jold (La. States: Deny Jold (La Cardina) States: Deny Jold (La Cardina) Provide States (La Cardina) Resource Options for All' Central Job Initiation Prestore Acls	ted Name dota1 dota2 dota3	See 11 Bytes 11 Bytes 11 Bytes 11 Bytes ndLut Phota and See	Type File File File	Modified 114/1010:004 AM 114/1010:004 AM
Cherk Henry Jold (La. ) The Benry Jold (Large Dea) The Dealer Method (Jacks Dea) Cherk Scherk Johnson Restore Options for All' General Job Intistion Electore ACLs Data In device node	ter forme dotal dotal dota2 dota3 Recover Al Select Selected Herm	See 11 Phrise 11	Type File File File	Modified 114/1010:004 AM 114/1010:004 AM
Clerk Horty Jold (La. ) Clerk Horty Jold (La Clerk) Clerk Hort Jold (La Cl	ter forme dotal dotal dota2 dota3 Recover Al Select Selected Herm	See 11 Phrise 11	Type File File File	Modified 114/1010:004 AM 114/1010:004 AM
Centrel Levy Jold (La. Control Levy Jold (La. Control Levy Jold (Law Dea)) Control Levy Jold Care Dea) Control Levy Jold Care Dea) Control Levy Jold Care Deale Levy John Control Levy John Con	Ind Rates October October October October October Selected Ifemy Re only If target is	200 11 fb/tre 11 fb/tre 12 fb/tre 11 fb/tre 12 fb/tre 12 fb/tre 13 fb/tre 14 fb/tre 14 fb/tre 15 fb/tre 15 fb/tre 16 fb/	Tree Tree Fe Fe	Modified 114/1010:004 AM 114/1010:004 AM
Central 20 prime for All  Central 20 primes for Al	Ited Rates Out of Out of Out of Out of Out of Out of Selected Ifems Re only if target is neda is never	See 11 Phrise 11	Tree Tree Fe Fe	Modified 114/1010:004 AM 114/1010:004 AM
Centrel Levy Jold (La. Control Levy Jold (La. Control Levy Jold (Law Dea)) Control Levy Jold Care Dea) Control Levy Jold Care Dea) Control Levy Jold Care Deale Levy John Control Levy John Con	Ited Rates Out of Out of Out of Out of Out of Out of Selected Ifems Re only if target is neda is never	200 11 fb/tre 11 fb/tre 12 fb/tre 12 fb/tre 13 fb/tre 14 fb/tre 14 fb/tre 15 fb/tre 15 fb/tre 16 fb/	Tree Tree Fe Fe	Modified 114/1010:004 AM 114/1010:004 AM
Central 20 prime for All  Central 20 primes for Al	ted fame oral oral oral oral oral oral oral oral	200 11 fb/tre 11 fb/tre 12 fb/tre 12 fb/tre 13 fb/tre 14 fb/tre 14 fb/tre 15 fb/tre 15 fb/tre 16 fb/	Tree Tree Fe Fe	Modified 114/1010:004 AM 114/1010:004 AM
Center Henry, Jold (La. )     Center Hunry, Jold (La Cella)     Center Hunry, Jold (Lance Dea)     Center Hunry, Jol	ted fame oral oral oral oral oral oral oral oral	200 11 fb/tre 11 fb/tre 12 fb/tre 12 fb/tre 13 fb/tre 14 fb/tre 14 fb/tre 15 fb/tre 15 fb/tre 16 fb/	Tree Tree Fe Fe	Modified 114/1010:004 AM 114/1010:004 AM
Centre Henry, skel (La. )     Centre Market (Section 2000)     Centre Market (Section 2000)     Centre Market (Section 2000)     Centre Acts     Centre Acts     Centre Acts     Centre Acts     Centre Acts     Centre Acts     Converte files     Overwrite files	ted filese deal deal deal deal deal deal deal dea	200 11 fb/tre 11 fb/tre 12 fb/tre 12 fb/tre 13 fb/tre 14 fb/tre 14 fb/tre 15 fb/tre 15 fb/tre 16 fb/	Tree Tree Fe Fe	Modified 114/1010:004 AM 114/1010:004 AM
Cherk Henry Jold (La.     Compared and the set of	ted filese deal deal deal deal deal deal deal secont al select te only if target is red a is never t exists table	200 11 fb/tre 11 fb/tre 12 fb/tre 12 fb/tre 13 fb/tre 14 fb/tre 14 fb/tre 15 fb/tre 15 fb/tre 16 fb/	Tree Tree Fe Fe	Redetal Telepisore and Telepisore and Telepisore and Telepisore and Telepisore and Telepisore and
Cherk Henry Jold (La.     Construction of the second	ted filese deal deal deal deal deal deal deal secont al select te only if target is red a is never t exists table	200 11 fb/tre 11 fb/tre 12 fb/tre 12 fb/tre 13 fb/tre 14 fb/tre 14 fb/tre 15 fb/tre 15 fb/tre 16 fb/	Tree Tree Fe Fe	Redetal Telepisore and Telepisore and Telepisore and Telepisore and Telepisore and Telepisore and
Control Line (Line) Contr	ted filese deal deal deal deal deal deal deal secont al select te only if target is red a is never t exists table	200 11 fb/tre 11 fb/tre 12 fb/tre 12 fb/tre 13 fb/tre 14 fb/tre 14 fb/tre 15 fb/tre 15 fb/tre 16 fb/	Tree Tree Fe Fe	Redetal Telepisore and Telepisore and Telepisore and Telepisore and Telepisore and Telepisore and
Control Sector C	ted filese deal deal deal deal deal deal deal secont al select te only if target is red a is never t exists table	200 11 fb/tre 11 fb/tre 12 fb/tre 12 fb/tre 13 fb/tre 14 fb/tre 14 fb/tre 15 fb/tre 15 fb/tre 16 fb/	Tree Tree Fe Fe	
Control C	ted Name oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia oracia orac	See 11 force 11 force 1	Tree Provide	
Control Sector Control Contro Control Control Control Control Control Control Control Control Co	ted Record Al Selected Herman Record Al Selected Herman Record y If Larget is record as is never texists record as is never texists record as is never record	See	te path	
Control C	ted fines deal deal deal deal deal deal deal deal	See 11 force 11 force 1	te path	
Control Sector Control Contro Control Control Control Control Control Control Control Control Co	ted Record Al Selected Herman Record Al Selected Herman Record y If Larget is record as is never texists record as is never texists record as is never record	See	te path	
Control State (La Control Con	ted Record Al Selected Herman Record Al Selected Herman Record y If Larget is record as is never texists record as is never texists record as is never record	See	te	

5. You can monitor the progress of the restore job in the **Job Controller** or **Event Viewer** window of the CommCell Console.

 We Born (1996)
 0 (1997)

 Mark Under
 Outer C. Agent Tote
 Subset Outer C. Agent Tote

7. Right-click the job and select **View Job Details**.

6.

• Click OK.

### CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST ARCHIVE AND STUB RECOVERY.

If you want to further explore this feature read the **Advanced Options** section of this documentation.

Once job is complete, view the details of job from the **Restore History**.
Right-click the **BackupSet** and select **View | Restore History**.

Previous Next >>)

# **OnePass Agent for Unix File System Advanced Configuration**

### **TABLE OF CONTENTS**

### Archiving Rules

File System Size File Access Time File Modified Time File Size

### **Configuring Stub Rules**

Pruning Archived Data for Space Reclamation Example 1 Example 2

### Filtering Files From Archiving

- Manually Filtering Files from Archiving Manually Including Files for Archiving
- Filtering Files Using Registry Key

### Configuring Archiving for IBRIX File System

Setting Up Stub Cache

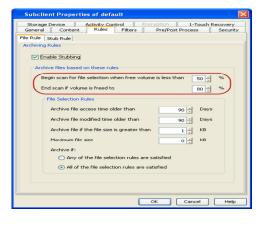
### **ARCHIVING RULES**

Archiving rules specify the criteria for the type of data to be archived. You can configure these rules on a requirement basis.

### FILE SYSTEM SIZE

The backed up files can be stubbed based on the available free space on the volume. During a backup job if the free space on the volume is less than this value, files matching the remaining rules will get stubbed.

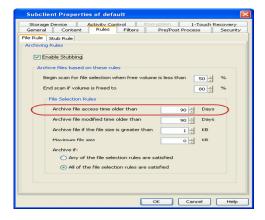
- 1. From the CommCell Console, navigate to Client Computers | File System.
- 2. Right-click the Subclient and click Properties.
- 3. Select Rules tab.
- 4. Enter the low watermark value for the volume in **Begin scan for file selection** when free volume is less than n%.
- 5. Enter the high watermark value for the volume in  ${\bf End}\ {\bf scan}\ {\bf if}\ {\bf volume}\ {\bf is}\ {\bf freed}\ {\bf to}\ {\bf n}{\boldsymbol \%}.$
- 6. Click OK.



### FILE ACCESS TIME

This configuration will stub files based on the last accessed date of each file within the volume or folder/directory. In case it is older than the number of days specified, the files will get stubbed.

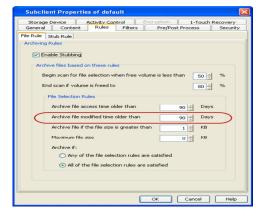
- 1. From the CommCell Console, navigate to Client Computers | File System.
- 2. Right-click the Subclient and click Properties.
- 3. Select Rules tab.
- Enter the number of days elapsed since the file was last accessed Archive file access time older than n Days.
- 5. Select Any one of the file selection rules are satisfied.
- 6. Click OK.



### FILE MODIFIED TIME

This configuration will stub files based on the last modified date of each file within the volume or folder/directory.

- 1. From the CommCell Console, navigate to Client Computers | File System.
- 2. Right-click the **Subclient** and click **Properties**.
- 3. Select Rules tab.
- 4. Enter the number of days elapsed since the file was last modified **Archive file modified time older than** *n* **Days**.
- 5. Select Any one of the file selection rules are satisfied.
- 6. Click **OK**.



### FILE SIZE

This configuration will stub files based on the file size. If a file size within a scanned volume or folder/directory is in between the two limit values set, it will get stubbed.

- 1. From the CommCell Console, navigate to Client Computers | File System.
- 2. Right-click the Subclient and click Properties.
- 3. Select Rules tab.
- 4. Enter the minimum file size in Archive file if size is greater than *n* KB.
- 5. Enter the maximum file size in Maximum file size.

These options can be used individually or in combination to specify a range.

- 6. Select All of the file selection rules are satisfied.
- 7. Click **OK**.

### For Example:

To archive files more than 5KB but less than 20KB:

- Enter 5 KB in Archive file if size is greater than *n* KB.
- Enter 20 KB in Maximum file size.

### **CONFIGURING STUB RULES**

By default, the stubs are deleted 730 days from the day of stubbing when you enable the **Prune archived items** option. However, you can set the number of days after which the stubs will be pruned using the following steps:

- 1. From the CommCell Console, navigate to Client Computers | File System.
- 2. In the right pane right-click the **Subclient** and click **Properties**.
- 3. Click the Rules tab.
- 4. Select the Stub Rule tab and make sure that the Prune archived items checkbox is enabled.
- 5. You can enter the number of days after which the stubs will be pruned.
- 6. Click **OK**.

Subci	lent Properties of default		
Stora		tion 1-Touch	Recovery Security
	a concorte macora micora m	re/Post Process	Securicy
File Rule			
Archivin	ng Rules		
	Enable Stubbing		
Are	thive files based on these rules		
	Begin scan for file selection when free volume is	less than 50 -	%
		50 -	
	End scan if volume is freed to	80 ÷	%
	File Selection Rules		
	Archive file access time older than	90 🗧 Day:	
	Archive file modified time older than	90 ÷ Day:	;
1	Archive file if the file size is greater than	1 ÷ KB	
	Maximum file size	0 ÷ KB	J
		0	
	Archive if:		
	Any of the file selection rules are satis	sfied	
	<ul> <li>All of the file selection rules are satisfication</li> </ul>	ed	
			<u></u>
	ОК	Cancel	Help

	st Process General	Security	Storage Device Content	Activity Control Rules	Encryption
ile Rule	Stub Rule				
Stub Mar	nagement				
Afte	r successfully a	archiving file			
6	Replace the	File with a St	ub		
	of replace are	ric mara ar			
Stub	Pruning				
	) Preserve st	ubs until the r	media has been pruned		
(	Prune stub o	only after	90	days	
- 12	Prune archived	liteme			
	Fruite al critived				
	730 🗧	Days after	their deletion		

### **PRUNING ARCHIVED DATA FOR SPACE RECLAMATION**

Archived data is pruned and secondary storage space is reclaimed based on the stub retention setting and the storage policy cycle - based retention criteria. Running a synthetic full backup can reduce space on the secondary storage for deleted stubs that meet the expiration criteria. Running data-aging can reclaim space on the secondary storage by pruning the expired backup jobs. The following section describes two scenarios for space reclamation:

### EXAMPLE 1

1.

By default stub retention is set to 730 days from the Stub Rules tab and the Storage Policy retention is set for 2 cycles and 15 days. The following procedure demonstrates the reduction in the secondary storage usage:

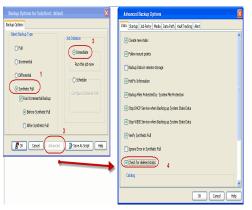
- Run a few backup jobs. This will lead to stub generation of the data meeting the defined archiving rules. The subsequent incremental backup will backup these stubs.
  - Delete a few stubs.
  - Perform an incremental backup operation. The time-interval between this
    incremental backup and the subsequent synthetic full will be calculated as the
    number of days specified in the retention criteria. The deleted stubs meeting the
    retention criteria will get expired. For example, if a user has set 20 days for
    pruning archived items, the deleted stubs will expire after 20 days.
  - Run synthetic full backup with **Check for Deleted Stub** option selected in the advanced tab. The expired stubs and the corresponding data would not get backed up in this operation.
  - From the backup job history, verify the backup file list. Ensure that the deleted stubs and their corresponding data are no longer included in the synthetic full backup image.
  - Note that space on secondary storage has been freed up by pruning of expired stubs and their corresponding data by running a synthetic full backup.
- 2. The following procedure demonstrates the reclamation of secondary storage space:
  - Run backup jobs to generate 2 backup cycles.
  - Wait for the last job of the first cycle to expire (based on the Storage Policy retention, which is 15 days by default).
  - Run a Synthetic full backup.
  - Running the synthetic full job will start the third backup cycle and will render the first cycle prune-able.
  - Run a data aging job. Notice that the secondary storage space occupied by the first backup cycle has been reclaimed.

### EXAMPLE 2

In order to reclaim space on secondary storage by completely removing the archived data and their stubs, follow the steps given below:

### **Pre-requisites**

- Stub retention has been set to n days from Subclient properties Stub Rule tab.
- Storage Policy retention has been set to x cycles and y days.
- A few backup cycles have been completed.
- 1. Change the stub retention to a minimum of 1 day from Subclient properties **Stub Rule** tab..
- 2. Change the storage policy retention setting to 2 cycles and 15 days.
- 3. Delete the unwanted stubs.



- 4 Perform incremental backup twice to generate two backup cycles.
- 5 Wait for the deleted stubs pertaining to last backup job in the first backup cycle to expire.
- 6 Run synthetic full backup with **Check for Deleted Stub** option selected in the advanced tab.

Note that the synthetic full backup will be considered as the third backup cycle and it will render the stubs in the first cycle prunable.

- 7 Running the synthetic full backup will start a new backup cycle. Due to the change in storage policy retention all the previous backup have expired.
- 8 Run a data aging job. All jobs from the first backup cycle will be pruned.

Note that space on secondary storage has been freed up as all the unwanted stubs and their corresponding data have been pruned.

### **FILTERING FILES FROM ARCHIVING**

Prior to archiving the files, you can set filters to prevent specific type of files from being archived. Filters can also be used to exclude certain system-related files and database application files which consistently fail during a archive operation and are not integral to the operation of the system or application.

The platform specific files that are automatically filtered from archiving are:

- AIX /\*\*/\*.imp, /\*\*/\*.exp
- Darwin /\*\*/\*.dylib, /\*\*/\*.scpt, /Applications/\*\*, /Developer/\*\*, /Library/\*\*, /Network/\*\*, /System/\*\*, /Volumes/\*\*, /private/\*\*
- Solaris /platform/\*\*
- FreeBSD /rescue/\*\*

### MANUALLY FILTERING FILES FROM ARCHIVING

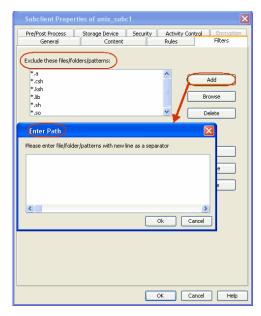
You can manually set filters on selected file types, folders or files to be excluded from archiving. For example if you specify \*.txt in the filters then all the text files will be excluded from being archived.

- 1. From the CommCell Console, navigate to Client Computers | File System.
- 2. In the right pane right-click the Subclient and click Properties.
- 3. Click the **Filters** tab.
- 4. Click Add from the Exclude these files/folders/patterns group.
- 5. Enter the complete path of the file, folder, or directory that you want to exclude from the archiving operations

or

Click the **Browse** and expand the file system of the client computer. Click the file, folder, or directory that you want to exclude from the archiving operations and then click **Add**.

6. Click **OK** to save your changes.



### MANUALLY INCLUDING FILES FOR ARCHIVING

When excluding files from archiving, you can also provide exceptions to the data that you are excluding. For example, if you want to exclude from your migration archive operation all the files in the /ops directory except the Maintenance file, you can add a subclient filter to exclude the /ops directory from being archived and also add a corresponding subclient filter to allow the Maintenance file to be archived.

- 1. From the CommCell Console, navigate to Client Computers | File System.
- 2. In the right pane right-click the **Subclient** and click **Properties**.
- 3. Click the **Filters** tab.
- 4. Click Add from the Include these files/folder/patters: group.
- 5. Enter the complete path of the file, folder, or directory that you want to be included in the archiving operation.
  - or

Click the **Browse** and expand the file system of the client computer. Click the file, folder, or directory that you want to be included in the archiving operation. and then click **Add**.

6. Click **OK**.

					-
Pre/Post Process	Storage Device		Activity Co		n
General	Content	F	Rules	Filters	
Exclude these files/fc *.a *.csh *.ksh *.lib *.sh	Iders/patterns:			Add	
*.so			. r	Delete	
.30			= L	Delete	
			K	Add	
				Browse	
Enter Path					
	ders with new line as a s	eparator	)	Browse	
Please enter file/fol	ters with new line as a s	eparator		Browse	
	fers with new line as a s		>	Browse	

### FILTERING FILES USING REGISTRY KEY

The following registry keys can be used to set additional filters for an archive operation:

sSTUB\_PRUNE\_PATTERNS

sSTUB\_PRUNE\_EXCEPTIONS

Use this registry key to specify additional filters.

Ex: sstuB\_PRUNE\_PATTERNS \*.so \*.so.\* \*.a \*.lib \*.sh \*.ksh \*.csh /usr/\*\* /bin/\*\* /lib/\*\* /etc/\*\* /var/\*\*

Use this registry key to set any exceptions to the filter list defined in sSTUB\_PRUNE\_PATTERNS.

Ex: sSTUB PRUNE EXCEPTIONS /var/log/abcd/\*\*

### **CONFIGURING ARCHIVING FOR IBRIX FILE SYSTEM**

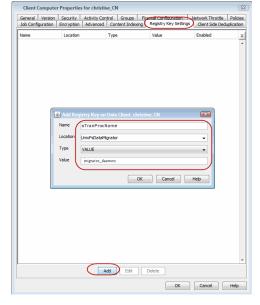
For X9000 IBRIX , by default the stubs are recalled during the data tiering process, which moves the files and the data stubs from one storage tier to another based on pre determined parameters. However you can configure the sTranProcName registry key to seamlessly migrate data stubs from one storage tier to another without triggering a stub recall. The steps to configure the key are as follows:

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the <*Client*> and then click **Properties**.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the Name field, type sTranProcName
- 6. In the Location list, type or select UnixFsDataMigrator.
- 7. In the **Type** list, select **Value**.
- In the Value field, type the process name used migrate stubs from one storage tier to another.

Example migrator\_daemon

On specifying this value the stubs will not be recalled during the data tiering process.

9. Click OK.



### SETTING UP STUB CACHE

After recalling the files, you can re-archive the recalled files by preserving them in a stub cache. The recalled file will be re-archived from the cache if the file meets the archiving rules and has not been modified after the recall. The following registry keys allow you to set the stub cache and re-stub the recalled files from the cache memory.

nUSE\_STUB\_CACHE

dSTUB\_CACHE\_ROOT

This key allows a file to be re-stubbed after recall by preserving it in cache memory.

By default the stubs are cached under , /opt/calypso/stubcache folder. Use this key to specify a different location of the root folder for the File Archiver stub cache.

Back to Top

# **OnePass Agent for Unix File System Advanced Data Movement**

### **TABLE OF CONTENTS**

### Scheduling an Archive Job

### Check for Deleted/Moved stubs

### Long Term Data Retention Cloud Storage

Auxiliary Copy

### **SCHEDULING AN ARCHIVE JOB**

- 1. From the CommCell Console, navigate to Client Computers | File System | Backupset
  - Right-click the **Subclient** in the left pane and click **Backup**.

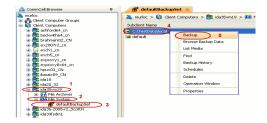
The OnePass agent does not support Differential backup and a selection of Differential backup will lead to job failure.

- Click **Schedule** to schedule the backup job for a specific time.
  - Click Configure to set the schedule for the backup job. The Schedule Details dialog displays.

<ol> <li>Select the appropriate scheduling options</li> </ol>	. For example:
---------------------------------------------------------------	----------------

- Click Weekly.
- Check the days you want the run the archive job.
- Change the Start Time to 9:00 PM
- Click **OK** to close the Schedule Details dialog
- Click **OK** to close the Backup Options dialog

The backup job will execute as per the schedule.



		X
Backup Options		
Select Backup Type	Job Initiation	
) Ful	O Immediate	
<ul> <li>Incremental</li> </ul>	Run this job now	
O Differential	Schedule	
O Synthetic Full	Configure Schedule Pattern	Configure
🖌 Run Incremental Backup		<u> </u>
(iii) Before Synthetic Full		
After Synthetic Full		
L		
	B OK Cancel Advanced	Save As Script Help

ᅇ Schedule Details					×
Schedule Name					
<ul> <li>One Time</li> <li>Daily</li> <li>Weekly</li> <li>Monthly</li> <li>Yearly</li> </ul>	Start Time	9:00PM	) <u>.</u>		
	On these days	<ul> <li>Monday</li> <li>Thursday</li> <li>Sunday</li> </ul>	☐ Tuesday IV Friday	Uednesdey	
	ОК	Cancel	Help	Options>	2

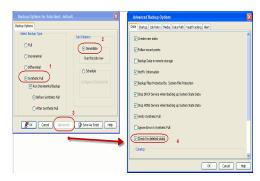
### CHECK FOR DELETED/MOVED STUBS

You can run a check for deleted or moved stubs on your client computer. The client computer is scanned for moved/deleted stubs during a synthetic full backup if the **Check for deleted stubs** option is selected in the **advanced** tab.

We recommend you to enable this option only when the stubs are moved from one location to another. Enabling this option makes synthetic full backups slower.

Follow the steps given below to run this scan:

- 1. From the CommCell Console, navigate to Client Computers | File System.
- 2. Right-click the **Subclient** and click **Backup**.
- 3. From the **Backup Options** dialog box, select **Synthetic Full** as the backup type and **Immediately** as the **Job Initiation** option.
- 4. Click Advanced.
- 5. Select Check for deleted stubs.
- 6. Click **OK**.
- 7. You can track the progress of the backup job from the **Job Controller** window.



### LONG TERM DATA RETENTION

Once the backed up data has been archived, it can be transferred and retained for an extended period on a cost effective media by using the following methods:

### CLOUD STORAGE

- Cloud Storage enables you to configure and use online storage devices cloud storage devices as storage targets.
- It reduces the need to maintain hardware resources such as tape or disk storage devices at onsite locations.
- It also provides the ability to easily increase your storage capacity as and when it is required.
- It also provides centralized data access, better failover capabilities and reduces the day-to-day storage administration tasks.

For more details, see Cloud Storage.

### **AUXILIARY COPY**

- An auxiliary copy operation allows you to create secondary copies of data associated with data protection operations, independent of the original copy.
- The auxiliary copy operation can be useful for creating additional standby copies of data.
- The primary and secondary copies use different media and often use different libraries, depending on the configuration.
- In case the primary copy become inoperative, you can promote a synchronous copy to become the primary copy. This allows you to continue data protection and data recovery operations without interruptions.

For details, see Auxiliary Copy.

# **OnePass Agent for Unix File System- Advanced Recover**

### **TABLE OF CONTENTS**

Accessing Stubs Without Triggering a Recall

### Scheduling a Restore

### **Restore Destinations**

### **Restore By Jobs**

### Listing Media

Listing Media for a Subclient Listing Media for a BackupSet

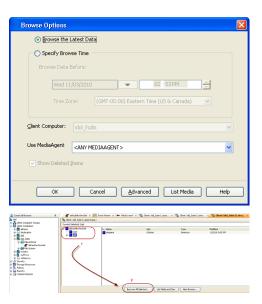
### **ACCESSING STUBS WITHOUT TRIGGERING A RECALL**

If a stub has been moved to a new location, recall operations will restore the data to the new location and not the source.

- If stubs are moved within the monitored volume, it does not trigger a stub recall and the file is moved.
- If stubs are moved outside the monitored volume, it triggers a stub recall and the file is moved.
- If stubs are copied within or outside the archived volume, it triggers a stub recall and the file is copied.
- Stubs can be moved or copied without triggering a recall, by using the Registry key sTranProcName. In such cases, the stub will not be accessing actual data.

### **S**CHEDULING A RESTORE

- From the CommCell Console, navigate to **Client Computers** | **File System**.
  - Right-click the backup set and click All Tasks | Browse.
    - Click OK.



- Select data to restore.
  - Click Recover All Selected.
  - Click Job Initiation tab and click Schedule.
    - Click Configure.

3.

General	Job Initiat	ion .				
-Job I	nitiation					
		linto				
6	<ul> <li>Eched</li> </ul>	ule				
	Configu	ire Schedule P	attern		onfigure	
(						
	<b>В</b> ок	Cancel	Advanced		ave As Scrip	ot Help
	🕞 ок	Cancel	Advanced	□ <b>⊉</b> s	ave As Scrip	ot Help
Schedule		Cancel	Advanced	■ <b>₽</b> s	ave As Scrip	ot Help
Schedule	e Details	Cancel	Advanced	• 🕑 s	ave As Scrip	ot Help
Schedule Schedule I	Details	Cancel	Advanced	- <b>P</b> s	ave As Scrip	ot Help
Schedule Schedule I	Details Name	Cancel Start Time	,	- <b>P</b> s	ave As Scrip	ot Help
Schedule Schedule I One Daily	Potails Name		,		ave As Scrip	ot Help
Schedule Schedule I One Daily Weel	E Details Name		,		ave As Scrip	ot Help
Schedule Schedule I One Daily Weel Mont	e Details Name Time My thly	Start Time	,			
Schedule Schedule I One Daily Weel	e Details Name Time My thly		9 : 00 PM	÷ Tuesday	₹ ₩	/ednesday
Schedule Schedule I One Daily Weel Mont	e Details Name Time My thly	Start Time	9:00PM	÷	₹ ₩	
Schedule Schedule I One Daily Weel Mont	e Details Name Time My thly	Start Time	9 : 00 PM	÷ Tuesday	₹ ₩	/ednesday
Schedule Schedule I One Daily Weel Mont	e Details Name Time My thly	Start Time	9 : 00 PM	÷ Tuesday	₹ ₩	/ednesday
Schedule Schedule I One Daily Weel Mont	e Details Name Time My thly	Start Time	9 : 00 PM	÷ Tuesday	₹ ₩	/ednesday
Schedule Schedule I One Daily Weel Mont	e Details Name Time My thly	Start Time	9 : 00 PM	÷ Tuesday	₹ ₩	/ednesday
Schedule Schedule I One Daily Weel Mont	e Details Name Time My thly	Start Time	9 : 00 PM	÷ Tuesday	₹ ₩	/ednesday

- 4. Select the appropriate scheduling options. For example:
  - Click Weekly.
  - Check the days you want the run the restore job.
  - Change the Start Time to 9:00 PM
  - Click **OK** to close the Schedule Details dialog
  - Click **OK** to close the Restore Options dialog

The restore job will execute as per the schedule.

### **RESTORE DESTINATIONS**

By default, the OnePass Agent restores data to the client computer from which it originated; this is referred to as an in-place restore. You can also restore the data to another client computer in the CommCell. The following section enumerates the types of restore destinations that are supported by the OnePass Agent.

### **IN-PLACE RESTORE**

When restoring data, the OnePass Agent provides the facility to restore the data to the same path/destination on the client computer from which the data originated; this is referred to as an in-place restore.

- 1. From the CommCell Console, perform a Browse and Restore operation.
- 2. When browsing the data, select data that was initially backed up and click Recover All Selected.
- 3. Click OK.
- 4. Select the **Destination Client** that was the original computer from which the data originated.
- 5. Depending on the data selected to restore, choose one of more of the options (e.g., Restore ACLs).
- 6. Click **OK**.

### **OUT-OF-PLACE RESTORE**

All restore levels provide the facility to restore data to a different directory on the client computer from which the data originated; this is referred to as an outof-place restore to a different path/destination. You can also restore data to a different client computer in the CommCell using the same path/destination.

When you perform an out-of-place restore, the restored data assumes the rights (i.e., permissions) of the parent directory.

- 1. From the CommCell Console, perform a Browse and Restore operation.
- 2. When browsing the data, select data that was initially backed up and click Recover All Selected.
- 3. Click OK.
- 4. Select the Destination Client that is a different computer from which the data originated.
- 5. Depending on the data selected to restore, choose one of more of the options (e.g., Restore ACLs).

6. Click **OK**.

### **RESTORE BY JOBS**

The Restore By Jobs feature provides the facility to select a specific backup job to be restored. This method of restoring data is considerably faster as it reads continuously on the tape and retrieves the data and does not depend on the indexing subsystem to get the seek offsets on the media.

This feature can be used to restore point-in-time data associated with a specific backup job, such as full, incremental, differential, etc.

Consider the following when restoring by jobs:

- Run a restore by jobs whenever you want to restore the entire contents of the job.
- Avoid running restores by jobs for jobs associated with the default subclient. If you do this, the entire contents of the machine will be restored. As such, this
  may cause problems (e.g., the machine might run out of space) or produce undesirable results (e.g., you might end up restoring operating system files or
  directories that you really do not want to restore).
- Avoid modifying the contents of any associated subclients since this may result in the retrieval of older data.

Use the following steps to restore data by jobs.

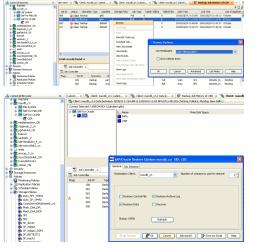
1. From the CommCell Browser, right-click the level whose data you want to browse, click **View** and then click the **Backup History**.

CanaCel Branser	0 / 🖉 CER 🗶 🐽 Whit's	new? 🗴 📸 Cleve navdb_m (Latest 🗴 🖏 Cleve na	ndb_m(Latest x 👒 Clent: wandb_m(Gafa.b x	4.1.0
e di nado o	🐴 🚵 kitestijus > 🚯 Geet	Computers > 🕃 mandb_cn > 🦝 SVP for Oracle > 🕂 CDP	1 >	000
File System	Subclient Name	Storage Palicy	Description	1 A
in To SNP for PWC08	😂 def avit	191		~
al Teda	a ghh	991		
Content of the second sec	Beckup Hotory Restore History Schedules			
Sussibudiful_CN				~
a Stowd0r2is4	Contract D Summary			

2. From the **Backup History Filter** window, select the filter options, if any, that you want to apply and click **OK**.



- From the Backup Job History window, right-click the backup job that need to be restored and select **Browse**.
- From the Browse Options dialog box, click OK to execute the browse using the Browse the Latest Data option.
- From the Browse window, select the instance node in the left pane and then select the required data and logs in the right pane, and click the Recover All Selected button at the bottom of the window.
- 6. Select the desired restore options and click **OK**.



### LISTING MEDIA

List media option is useful to predict media required for the following operations:

- To restore data associated with a specific backup set, subclient or instance
- To restore the index required to browse data associated with a specific backup set or subclient
- To restore a specific file (or specific files and folders)
- To restore data associated with a specific job

The list media operation can be performed for instances, backup sets, and subclients. The following sections describe each of these methods. The List Media feature can also be used in a number of other capacities. Refer to the List Media documentation for a complete overview of this feature.

### LISTING MEDIA FOR A SUBCLIENT

- 1. From the CommCell Browser, right-click the subclient for which you wish to list media and then click List Media.
- 2. From the List Media dialog box choose one of the following options:
  - o Click Media For the Latest Data to list media associated with the most recent data protection cycle.
  - o Click Specify Time Range to list media associated with data protection operations up to the specified date and time range.

Use the **Data Before** box to specify the end date and time.

o Click Advanced and then click Exclude Data Before to list media associated with data protection operations after the specified date and time.

Note that you can use the Specify Browse Time and Exclude Data Before options to list media between a specified date and time range.

3. Click **OK**.

The appropriate media is listed in the **Media** dialog box.

### LISTING MEDIA FOR A BACKUP SET

- 1. From the CommCell Browser, right-click the backup set for which you wish to list media, click All Tasks and then click Browse.
- 2. From the Browse Options dialog box, if required, select the following options:
  - o Click Browse the Latest Data to list media associated with the most recent data protection cycle.
  - o Click Specify Browse Time to list media associated with data protection operations up to the specified date and time range.

Use the Browse Data Before box to specify the end date and time.

• Click **Advanced** and then click **Exclude Data Before** and then select the date and time from which you wish to list media associated with data protection operations.

Note that you can use the Specify Browse Time and Exclude Data Before options to list media between a specified date and time range.

- 3. Click List Media.
- 4. From the List Media dialog box, click List Media for restore within specified time range and click OK.

The appropriate media is listed in the **Media** dialog box.

## **Troubleshooting - OnePass Agent for Unix File System**

The following section provides information on some of the troubleshooting scenarios

# BACKUP OF SUBCLIENTS USING ONEPASS AGENT WILL FAIL IF THE STORAGE POLICY IT WAS USING BEFORE RUNNING A NEW SYNTHETIC FULL BACKUP IS DELETED.

By default the OnePass Agent uses a synthetic full forever incremental design. If you want to change the storage policy being used, you should re-assign the policy, run a new synthetic full (this will get the data from the older policy). The older storage policy should only be deleted after running the new synthetic full.

If the older storage policy is accidentally deleted before running a synthetic full backup, follow the steps given below to allow for new backups to run:

- 1. Create a new backup set.
- 2. Configure subclient with the same content path as that of the old subclient.
- 3. Associate the new subclient to the new storage policy.
- 4. Run a backup.

The first backup will be full, but all subsequent backups will be incremental.

# INCREMENTAL BACKUPS GOING TO A PENDING STATE WITH THE "NO ARCHIVE DATA" ERROR MESSAGE

This message will be displayed if the full backup associated with the subclient is deleted.

It is recommended to create a new subclient, assign the same content and run full and incremental backups.

### SYNTHETIC FULL BACKUPS FAILING WITH "NO INCREMENTAL JOB RAN" ERROR MESSAGE

This message will be displayed if you run a synthetic full backup after deleting the most recent synthetic full with no 'new' incremental backups in-between. Re-run the synthetic full backup and the error will message will not be displayed again.

# Frequently Asked Questions - OnePass Agent for Unix File System

### I AM UNABLE TO SEE THE RULES TAB IN THE SUBCLIENT PROPERTIES DIALOG BOX

Select the **Enable for Archiving** option in the File System Agent properties dialog box, the OnePass Agent mode gets enabled. Now right-click the subclient and select properties. The **Rules** tab will be visible with **File Rule** and **Stub Rule** tabs.

### ONCE THE ONEPASS AGENT MODE IS ENABLED, CAN I RUN FULL BACKUPS EVEN AFTER THE FIRST FULL BACKUP

No. Once the OnePass Agent mode is enabled, after the first full backup, full backups will be converted into incremental backup followed by a synthetic full backup in these scenarios:

- Full backup job initiated manually by a user
- Full backup job scheduled using a Schedule Policy
- Full backup job scheduled using a Scheduler

### WHY ARE THE DIFFERENTIAL BACKUPS FAILING?

The OnePass agent does not support Differential backup. Therefore a selection of differential backup will result in backup job failure.

### HOW DO I RECOVER DELETED STUBS?

Deleted stubs can be recovered using the following methods:

**Case 1:** If the stubs that were deleted have not yet reached the expiration date set at **Prune archived items** from the **Subclient Properties (Rules)** tab, you can recover the stubs by performing a Browse and Restore operation from the latest synthetic full backup. To restore data, navigate to the location the stubs are restored and perform a stub recovery.

**Case 2:** If stubs are deleted and aged, but data is still available in the media, you can restore them by performing the method described in Recovering Pruned and Deleted data.

### HOW DO I EXTEND MY STUB PRUNING SETTING?

Follow the steps given below to extend and reset your stub pruning setting.

- From the CommCell Console, navigate to Client Computers | File System.
- Right-click the Subclient and click Properties
- Select Rules|Stub Rule.
- Select **Prune archived items** to extend the retention days.
- Click OK.

### WHY AM I UNABLE TO ARCHIVE DATA?

Your data will get archived only if the Enable for Archiving checkbox is selected and OnePass Agent license is available.

- From the CommCell Console, navigate to Client Computers | File System.
- Right-click File System | Properties.
- Select Enable for Archiving, if it is not already selected.

### WILL MY SYSTEM FILES GET ARCHIVED IF I BACKUP MY ROOT VOLUME?

No, backing up your root volume will not archive the system files. During backup of your entire client machine, system files are automatically excluded.

For more details on files that will not get archived see, File Excluded from Archiving.

### HOW DO I ADD THE ONEPASS AGENT IF I HAVE UNIX FILE SYSTEM IDATAAGENT ALREADY INSTALLED?

If the Unix File System *i*DataAgent is already installed, install the Driver for File Archiver. To install the Driver for File Archiver, follow the same steps as with installing the Unix File System *i*DataAgent with Archiving Enabled. Internally, the system will install only the driver.



### IS DATA TIERING POSSIBLE FOR X9000 IBRIX WITHOUT TRIGGERING STUB RECALL?

For X9000 IBRIX, data tiering process allows seamless movement of data from one storage tier to another depending upon its relevance, usage and other predetermined parameters. In case there are data archiver stubs available in any storage tier, the data tiering process triggers a stub recall.

In order to successfully process data tiering, it is recommended to configure sTranProcName key on the computer that has the archiver agent installed. For details, see Configuring Archiving for X9000 IBRIX.

### WHY ARE THE RECALLS SLOW?

The recall process may become slow when old data is not aged off. Therefore it is recommended to schedule Synthetic Full backups at regular intervals so that the archived items are aged off based on their retention criteria.

## **Desktop Browse - Unix File System (User)**

This feature/product/platform is deprecated in this release. See Deprecated Features, Products, and Platforms for more information.

It is recommended to use Laptop Backup to browse file system data.

Getting Started Advanced Options Restore



Desktop Browse enables users to browse and restore data using a web browser from any remote location without the need for installing the software.

### LOGGING TO WEB CONSOLE

Open the supported Web Browser and type the Web Console URL in the address line. 1. For example, http://amber.domain.company.com/<web\_alias\_name>

File Edit Vi	ew Favorites	Took Help				
🚖 Favorites	🏉 Blank Page					
C Complianc	e Search - Wii	ndows Internet Exp	dorer			
		ndows Internet Exp				<b>•</b>
<b>G</b> Q-	http://compe					¥ 4
<b>G</b> Q-	http://compe	any 82/compliancesearc Tools Help				<b>•</b>
G C ▼ Ne Edit Vi	<ul> <li>http://compa</li> <li>ew Pavorites</li> </ul>	any 82/compliancesearc Tools Help				<b>-</b>
G C ▼ Ne Edit Vi	<ul> <li>http://compa</li> <li>ew Pavorites</li> </ul>	any 82/compliancesearc Tools Help				<b>9</b>
G C ▼ Ne Edit Vi	<ul> <li>http://compa</li> <li>ew Pavorites</li> </ul>	any 82/compliancesearc Tools Help Search				<b>v 1 4 9 ]</b>
G C ▼ Ne Edit Vi	<ul> <li>http://compa</li> <li>ew Pavorites</li> </ul>	any 82/compliancesearc Tools Help Search	to Web Console			<b>M</b>
G C ▼ Ne Edit Vi	<ul> <li>http://compa</li> <li>ew Pavorites</li> </ul>	any 82/compliancesearc Tools Help Search	to Web Console te:			<b>M</b> [ <b>47</b> ]
G C ▼ Ne Edit Vi	<ul> <li>http://compa</li> <li>ew Pavorites</li> </ul>	any 182/complianceseur c Tools Help Search Search Useman Useman	N Web Console ne:	TTN		<b>¥</b>
G C ▼ Ne Edit Vi	<ul> <li>http://compa</li> <li>ew Pavorites</li> </ul>	any ft2/complemenseur of Tools Help Search Search Usernan Passwor	to Web Console ne:	The second se		<b>*</b> ]
G C ▼ Ne Edit Vi	<ul> <li>http://compa</li> <li>ew Pavorites</li> </ul>	any ft2/complemenseur of Tools Help Search Search Usernan Passwor	to Web Console ne:	vm	Login	

### • Type the login credentials to access the Web Console. • Click Login.

2.



1. From the Web Console, click **Browse** on the left pane.

				P	
				$\mathcal{P}$	
			Advanced Search		
Search					
My Sets					
Brase					
arch Mew Report View					
anch Application Londed.					Logget in User: dec_adningbatab +
					O contractor (output of the
	Search				
	Search Search				
Nit dia an	Search				
	Search				
HEAR AND	Search				
insta	Search				
Inst O	Smarch				
nust 🛛	Search				
Next C	leach				
NANN C	Isauk				
waata 🛛 🖸	Teach			\$	
naav 🛛	haab		AdvocatEleash	A	
naat	heads		Advocat Stach	A	
	haab		Advanced Datesh	A	
any 9	faceb		Advanced Strench	A	
	faanb	[	Admond Streets	A	
	faceb		Advanced Davab	A	
	fands		Advanced Streach	A	
	Sand.		bhanailleach	2	
	tand.		Adasted Daved	A	
ati 0			bàssailleach	A	
	fand.		Admond David	A	
	tend		Advanced Datesh	A	
			Abacal Sanh	A	
			óðmað lännð	A	
			bhanst lineb	A	
			Abacci Dash	4	
(ken).	Serve 2		Admont Stands	A	
Samp Many	han i		Manual Sanah	A	
(See).	han j		Manual Sandi	4	
Samp Many			óðman Tanni	A	

E Seat

.

2. Double-click the **<CommServe computer name>**.

з. Double-click Files.

Navigate to the file to be restored on the right pane. 5.

• Double-click the specific <client computer name>.

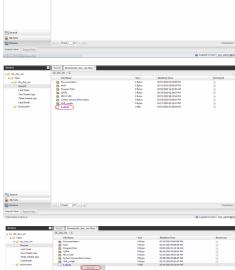
4.

• Select Recent.

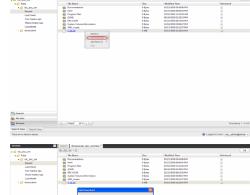
6. Right-click the file and select **Retrieve.** The file is copied to the **MyReviewSet** folder under **MySets | ReviewSet** node in the Web Console.

7. Right-click the file and select **Download Item**.

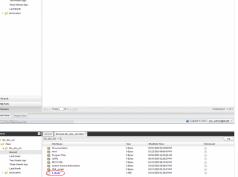
- 8. • Click Save from the File Download dialog.
  - Specify the location where the file needs to be downloaded in the Web Browser's • download dialog box.
  - Click Save.







While Nex how the Internet or hom your computer. If you do



Administration Guide - HP-UX File System iDataAgent

Previous Next >

### **Desktop Browse - Unix File System (User)**

Getting Started Restore Advanced Options

### TABLE OF CONTENTS

Restoring Data From a Specific Time Range Restoring Data To a Specific Client Computer Finding Data with a Specific Pattern Finding Data within a Specific Folder Finding Data with a Specific Modified Time

### **RESTORING DATA FROM A SPECIFIC TIME RANGE**

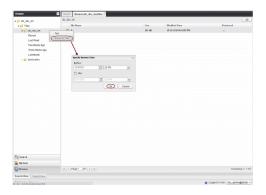
You can also browse and restore data that was backed up some time earlier or within a specific time range.

- 1. From the Web Console, click **Browse** on the left pane.
- 2. Double-click the <CommServe computer name>.
- 3. Double-click Files.
- Double-click the specific <client computer name> and select one of the following options:
  - Last Week
  - Two Weeks Ago
  - $\circ~$  Three Weeks Ago ~
  - Last Month.
- 5. Right-click the <client computer name> and select Browse By Time.
- 6. Select the time range in the Before drop down boxes.
- 7. Click **After** and specify the time range.
- 8. Click OK.
- 9. Navigate to the file to be restored on the right pane.
- Right-click the file and select **Restore.** The file is copied to the **MyReviewSet** folder under **MySets** | **ReviewSet** node in the Web Console.
- 11. Right-click the file and select Download Item.
- 12. Click Save from the File Download dialog.
- 13. Specify the location where the file needs to be downloaded in the Web Browser's download dialog box and click **Save**.

### **RESTORING DATA TO A SPECIFIC CLIENT COMPUTER**

You can restore the data to a specific client computer.

- 1. From the Web Console, click Browse on the left pane.
- 2. Double-click the <CommServe computer name>.
- 3. Double-click Files.
- Double-click the specific <client computer name> and select one of the following options:
  - Last Week
  - Two Weeks Ago
  - Three Weeks Ago
  - Last Month
- 5. Right-click the <client computer name> and select Browse By Time.
- 6. Select the time range in the **Before** drop down boxes.
- 7. Click **After** and specify the time range.
- 8. Click **OK**.
- 9. Navigate to the file to be restored on the right pane.
- 10. Right-click the file and select Restore To Client.



Browse	Earth Browseldc_doc_staffes <sup>21</sup>			
a 💋 idc_doc_m	101_001_V0			
+ 🗭 Files	File Name	Size	Modified line	Retrieved
a 💋 ldc_doc_ym		141.68	18/18/2910-90-4453 PM	
Pecent	union by Time			
Two Weeks Ago Three Weeks Ago				
Three Weeks Aga Last Month	1			
b 💋 dadacalem	Specify Browse Time			
- D toolaans	Before:			
	11/17/10 🖸 2:20 PM 💌			
	Atter			
	1107010 🖾 220 PM 💌			
	Cancel			
Search				
My Sets				
Drame	11 4 Papet H1 > 11			Displaying
Fearch View Report View				

Previous Next >

- 11. Select the **Destination Computer** from the drop-down box.
  - Uncheck the Restore to the same folder check box
  - $\circ$  Type the destination path to restore the file to a specific folder in the computer.
- 12. Click  $\mathbf{OK}$ . The file will be restored to the specified destination computer.

### FINDING DATA WITH A SPECIFIC PATTERN

You can use **Find** option to search and locate files with a specific file name or file name pattern.

Follow the steps given below to find and locate files with a specific file name or file name pattern:

- 1. From the Web Console, click **Browse** on the left pane.
- 2. Double-click the <CommServe computer name>.
- 3. Double-click Files.
- 4. Right-click the <Client computer name> and select Find.
- Type the file name or wildcard pattern criteria in the File/Pattern text box from the Find Options dialog box.
- 6. Click **OK**.

	۷

### FINDING DATA WITHIN A SPECIFIC FOLDER

You can find and locate a folder with a specific folder name.

Follow the steps given below to find and locate a folder with a specific name.

- 1. From the Web Console, click **Browse** on the left pane.
- 2. Double-click the **<CommServe computer name>**.
- 3. Double-click Files.
- 4. Right-click the **<Client computer name>** and select Find.
- 5. Type the folder name in which the file resides in the **Folder** text box from the **Find Options** dialog box.
- 6. Click **OK**.

nd options in folder \	×
File	
File/Pattern	
Folder	
1	
Modified Time	
Any	<b>v</b>
	Ok Cancel

### FINDING DATA WITH A SPECIFIC MODIFIED TIME

You can find and locate a file based on the time range (such as any, today, yesterday, etc) when the files were modified.

Follow the steps given below to find and locate files based on the modified time.

- 1. From the Web Console, click **Browse** on the left pane.
- 2. Double-click the **<CommServe computer name>**.
- 3. Double-click Files.
- 4. Right-click the **<Client computer name>** and select Find.
- 5. Click the **Modified Time** drop-down box and select the time range (such as Any, Today, Yesterday, This Week, etc.) when the files were modified.
- 6. Click **OK**.

ind options in folder $\setminus$	×
File	
File/Pattern	
Folder	
1	
(Modified Time)	v
Any	
	Ok Cancel

Administration Guide - HP-UX File System iDataAgent

Previous Next >

### Desktop Browse - Unix File System (User)

Getting Started Restore Advanced Options

### **TABLE OF CONTENTS**

Retaining a File for Long Term Moving a File to a Records Management Site Adding Comments to a File Adding Review Tags to a File Grouping Files by Folder Path Filtering Files by Folder Path Downloading a File Downloading Multiple Files Saving File Properties Sharing Files to Other Users Sharing Browse Results to Other Users

### **RETAINING A FILE FOR LONG TERM**

Compliance users can retain specific files for a longer term by moving them to a Legal Hold container.

- 1. From the Web Console, click  $\ensuremath{\textbf{MySets}}$  on the left pane.
- 2. Double-click Review Set and click the <Review Set Name>.
- 3. Right-click the file, navigate to Add Item To | Legal Holds and select <Legal Hold Name>.





### ADDING SEARCH TAGS TO A FILE

< Previous

Next >

### MOVING A FILE TO A RECORDS MANAGEMENT SITE Compliance users can move files to a Records Management Site (eq., Microsoft

Compliance users can move files to a Records Management Site (eg., Microsoft SharePoint Site) using an ERM Connector.

- 1. From the Web Console, click  $\ensuremath{\textbf{MySets}}$  on the left pane.
- 2. Double-click Review Set and click the <Review Set Name>.
- 3. Right-click the file, and select **Submit To ERM**.
- 4. Click ERM Connector Name drop-down box and select the <ERM Connector name>.
- 5. Click **OK**.

### ADDING COMMENTS TO A FILE

- 1. From the Web Console, click  $\ensuremath{\textbf{MySets}}$  on the left pane.
- 2. Double-click Review Set and click the <Review Set Name>.
- 3. Right-click the file and select **Comment**.
- 4. Type the statement for comments and click **Comment**.
- 5. Click Close to exit the Comment window.

Compliance users can apply review tags to a file to facilitate easy search based on tags at a later point of time.

- 1. From the Web Console, click **MySets** on the left pane.
- 2. Double-click Review Set and click the <Review Set Name>.
- 3. Right-click the file and select Manage Tags.
- 4. On the Manage Tag(s) window, select the tag to apply.
- 5. Click Apply Tags.

2.

3.

### **GROUPING FILES BY FOLDER PATH**

- 1. From the Web Browser, click My Sets on the left pane.
- 2. Double-click Review Set, and then click the desired <Review Set name>/<Legal Hold Set Name>.
- 3. On the Group By menu, click Folder Path.

On the Filter menu, click Folder Path. 4. On the right pane, select the folder path.

FILTERING FILES BY FOLDER PATH

1. From the Web Browser, click My Sets on the left pane.





### **DOWNLOADING A FILE**

selected folder path on the right pane.

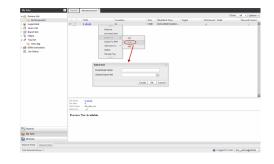
Hold Set Name>

5. Click Apply.

- 1. From the Web Console, click MySets on the left pane.
- 2. Double-click Review Set and click the <Review Set Name>.
- 3. Right-click the file and select **Download Item**.
- Specify the location where the file needs to be downloaded in the Web Browser's 4. download dialog box.

You can click the **Clear** button on the right pane to clear all the selected folder paths. To clear a specific selected folder path, click the cross-mark symbol corresponding to the





### **DOWNLOADING MULTIPLE FILES**

In order to download multiple files, you can export the selected files/folder to a compressed file format (CAB format) and then download the CAB file to your computer.

- 1. From the Web Console, click MySets on the left pane.
- 2. Double-click Review Set and click the <Review Set Name>.
- 3. Right-click the file and select Export To | CAB.
- 4. Specify the Download Name.
- 5. Select the Select Export Set.
- 6. Click **OK**. The selected file(s) are moved to the selected **Export Set** with the given name.
- 7. Click MySets | Export Set.
- Click the Export Set which contains the CAB file. 8.
- Right-click the CAB file and select **Download**. 9.
- 10. Click Save from the File Download dialog box.

- 11. Navigate to the location where you want to download the file.
- 12. Click **OK**.

### **SAVING FILE PROPERTIES**

You can save the properties of all the files in a review set as an XML file to you local computer.

- 1. From the Web Console, click **MySets** on the left pane.
- 2. Double-click Review Set.
- 3. Right-click the <Review Set Name> and select Save to XML.
- 4. Click **Save** from the File Download dialog.
- 5. Navigate to the location where you want to save the file.
- 6. Click **OK**.

### **SHARING FILES TO OTHER USERS**

You can share and assign access permissions to all the files in your Review Set folder to selected users.

- 1. From the Web Console, click **MySets** on the left pane.
- 2. Double-click Review Set and click the <Review Set Name>.
- 3. Right-click the review set and select **Shares**.
- 4. Click Add.
- 5. Select the user/user groups from the **Select User or Group** window.
- 6. Click OK.
- 7. Select **Allow** check box to assign the respective privileges.
- 8. Click OK.

### **SHARING BROWSE RESULTS TO OTHER USERS**

When browsing data, you can share the browse results with other users.

- 1. From the Web Console, click Browse.
- 2. Navigate to the client computer to be browsed.
- 3. Copy the URL of the browse result page from the browser's address bar and email to other users.

When the recipient users open the URL, they can directly view the browse result page as soon as they login to the Web Console.

💼 Review Sel								Stow AL +	Cettors -
My Researched		Table	Location	Size	Modified Time	Taghi) Re	twicted Hold	d Reco	ed Center
Colors Colors	* D	and a second a chemical second a second	C/.depende22_x86	19132	18/25/2994-02.29.00		Les	111111	<ul> <li>I</li> </ul>
GuerySet there	- 160	😜 what is this consider confide le		15.93	LA 21/24/97/05 25:04				•
Eport Get Care To 205									
Ty Filters Planage Tag	1								
7 Tag Set Funnet for a									
A BRM conn-									
Job Status Subnit To Glass									
				De .					
	Fig. Sara	- associates 🔛		16					_
	File Public Clarit Na Betclario	<ul> <li>Cridependis22_x06</li> <li>anno der25da</li> </ul>							
	Deni	iew Not Available.							
Search									
My Sets									
C Brouse									





# **Desktop Browse - Unix File System (Administrator)**

This feature/product/platform is deprecated in this release. See Deprecated Features, Products, and Platforms for more information.

It is recommended to use Laptop Backup to browse file system data.





Desktop Browse enables users to browse data from an user-friendly Web interface from any remote location. To enable Desktop Browse operations, you need to first install the Web Search Server and the Web Search Client. The Web Search Server and Web Search Client can be installed on the same computer or on different computers.

Ensure you have the following before performing the install:

• Software version or higher.

### **INSTALLING THE WEB SEARCH SERVER AND WEB SEARCH CLIENT**

- 1. Ensure that the IIS is installed on the CommServe computer before installing the Web Search Server and Web Search Client.
- 2. Run Setup.exe from Software Installation Discs on the CommServe computer.
- Select the required language.
   Click Next.

	Select the language you will use during installation. English (United States)
	Next > Cancel
he	≓ Install Software on this computer ≓ Advanced options
	<ul> <li>View documentation website</li> <li>View Install Quick Start Guide (Requires Adobe Acrobat Reader)</li> <li>Install Adobe Acrobat Reader</li> <li>Exit</li> </ul>
	Installer  Welcome The Installer will guide you through the setup process for Software
	This program will install Software on your computer. It is strongly recommended that you exit all Windows programs before running this Setup program. Dick Cancel to quit Setup and then close any programs you have running. Dick Next to continue with Setup. WARINING: This program is protected by copyright law and international treaties. Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law.
	Installer Cancel

4. Select the option to install software on this computer.

### NOTES

• The options that appear on this screen depend on the computer in which the software is being installed.

5. Click Next.

7. Select I accept the terms in the license agreement. Click Next.

 Expand Client Modules | Web Search Server & Browse and select Web Search Server and Web Search Client.
 Click Next.

- 9. Click Yes.
- 10. Click Yes.
- **11.** Specify the SQL Server System Administrator password.

### NOTES

• This is the password for the administrator's account created by SQL during the installation.

Click Next.

(į)	The Second
	It is strongly recommended that any and all virus scanning software be disabled immediately before continuing with this Software installation. Failure to do so may result file-locking by the virus scanner and subsequent failure for setup to install its own files. Click DK once you have disabled them and setup will continue.
	OK
Installe	
Please	e <b>Agreement</b> s read the following License Agreement. Press GE DDWN key to view the entire agreement.
_	
	a
	End User License and Limited Warranty Agreement
6	Software Release 9.0.0 ncluding Microsoft® SQL Server™ 2008 Enterprise Edition, SQL Server™
	2008 Express Edition and Windows Pre-Installation Environment)
•	accept the terms in the license agreement.
C I	do not accept the terms in the license agreement. Installer
	< Back Next > Cancel
	Platforms
Select	the platforms you want to configure.
•	Common Technology Engine
	CommCell Console     CommCell Console     description     descripti     descripti     des
	MediaAgent Modules
	Dackup & Recovery     Content Indexing and Search
	Web Based Search & Browse     Installation Folder:     OMB/0 MB
	ContinuousDataReplicator     SRM     Temporary on C: drive:
Ŧ	C Supporting Modules     OMB/0 MB
	Installer Special Registry Keys In L
🗆 Insta	all Agents for Restore Only CBack Next> Cancel
Installe	
2	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances.
?	Setup detected one or more instances of Microsoft SQL Server running on this system For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue or No to exit.
?	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances.
?	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue or No to evit.
Installer	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue or No to exit.
<ul> <li>Installer</li> <li>(2)</li> </ul>	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue of No to exit.
-	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue or No to exit.
	Click Yes to continue or No to exit.
	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue of No to exit.
	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue of No to exit. Setup detected an instance of SQL Server with the name Company already exists on this computer. If any thirdparty applications are using this instance, it is strongly recommended thay use with in-instance, unitsal Company instance and run Setup again. Otherwise, you may continue with the instal.
?	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue of No to exit. Setup detected an instance of SQL Server with the name Company already exists on this computer. If any third party applications are using this instance, it is storgly recommended thay our eith ministry unnited Company instance and run Setup again. Otherwise, you may continue with the instal.
(2) Installe SQL L	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances.  Lick Yes to continue or No to exit.  Subjected an instance of SQL Server with the name Company already exists on this compared. If any bidgesty applications are using this instance, it is strongly recommended thay out with instance, unitsal Company instance and run Setup again.  Click Yes to continue or No to exit.  Yes No
(2) Installe SQL L	For performance reasons, it is stongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue of No to exit. Setup detected an instance of SQL Server with the name Company already exists on this computer. If any third-parky applications are using this instance, it is stongly recommended that you exit the instance of using the instance, it is stongly commended that you exit the instance of using the instance, it is stongly applications are using this instance, it is stongly commended that you exit the instance of using the instance, it is stongly commended that you exit the instance Otherwise, you may continue with the instance. Click Yes to continue or No to exit. Yes No
(2) Installe SQL L	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances.  Lick Yes to continue or No to exit.  Subjected an instance of SQL Server with the name Company already exists on this compared. If any bidgesty applications are using this instance, it is strongly recommended thay out with instance, unitsal Company instance and run Setup again.  Click Yes to continue or No to exit.  Yes No
(2) Installe SQL L	For performance reasons, it is storogly recommended not to run any other Applications oblives ensure that make use of these instances.         Click Yes to continue or No to exit.         Setup detected an instance of SQL Server with the name Company already exists on this compare, if any third party applications are using this instance, it is storogly recommended by unrial Company already exists on this compare. If any third party applications are using this instance, it is storogly incommended that you exit the instance of using the instance and run Setup again.         Click Yes to continue or No to exit.         Yes       No         Idea password       Be a password for SQL user 'sa'         Please provide a password for SQL user 'sa'
(2) Installe SQL L	For performance reasons, it is stongly recommended not to run any other Applications collware server that make use of these instances.  Click Yes to continue of No to exit.  Setup detected an instance of SQL Server with the name Company already exists on this compared that you exit the instance of the instance, it is stongly recommended that you exit the instance, unital Company instance and run Setup again.  Click Yes to continue or No to exit.  Yes No  For Password  de a password for SQL user 'sa'  Please provide a password for SQL user 'sa'  SQL user 'sa'
(2) Installe SQL L	For performance reasons, it is storogly recommended not to run any other Applications oblives ensure that make use of these instances.         Click Yes to continue or No to exit.         Setup detected an instance of SQL Server with the name Company already exists on this compare, if any third party applications are using this instance, it is storogly recommended by unrial Company already exists on this compare. If any third party applications are using this instance, it is storogly incommended that you exit the instance of using the instance and run Setup again.         Click Yes to continue or No to exit.         Yes       No         Idea password       Be a password for SQL user 'sa'         Please provide a password for SQL user 'sa'
(2) Installe SQL L	For performance reasons, it is strongly recommended not to run any other Applications collware server that make use of these instances.  Lick Yes to continue of No to exit.  Setup detected an instance of SQL Server with the name Company already exits on this computer. If any thirdparty applications are using this instance, it is strongly recommended thay use with ensite, united Company instance and run Setup again.  Click Yes to continue or No to exit.  To be a server with the name Company already exits on the compared thay use with ensite, united Company instance and run Setup again.  Click Yes to continue or No to exit.  Set Password Please provide a password for SQL user 'sa'  SQL user 'sa'  Enter Password:
(2) Installe SQL L	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue of No to exit. Setup detected an instance of SQL Server with the name Company already exists on this computer. If any third party applications are using this instance, it is strongly recommended thay use with ensity. United Company instance and run Setup again. Otherwise, you may continue with the instal. Click Yes to continue or No to exit. Yes No Please provide a password for SQL user 'sa' SQL user 'sa' Enter Password: Enter Password:
(2) Installe SQL L	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue of No to exit. Setup detected an instance of SQL Server with the name Company already exists on this computer. If any third party applications are using this instance, it is strongly recommended thay use with ensity. United Company instance and run Setup again. Otherwise, you may continue with the instal. Click Yes to continue or No to exit. Yes No Please provide a password for SQL user 'sa' SQL user 'sa' Enter Password: Enter Password:
(2) Installe SQL L	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue of No to exit. Setup detected an instance of SQL Server with the name Company already exists on this computer. If any third party applications are using this instance, it is strongly recommended thay use with ensity. United Company instance and run Setup again. Otherwise, you may continue with the instal. Click Yes to continue or No to exit. Yes No Please provide a password for SQL user 'sa' SQL user 'sa' Enter Password: Enter Password:
(2) Installe SQL L	For performance reasons, it is strongly recommended not to run any other Applications software server that make use of these instances. Click Yes to continue of No to exit. Setup detected an instance of SQL Server with the name Company already exists on this computer. If any third party applications are using this instance, it is strongly recommended thay use with ensity. United Company instance and run Setup again. Otherwise, you may continue with the instal. Click Yes to continue or No to exit. Yes No Please provide a password for SQL user 'sa' SQL user 'sa' Enter Password: Enter Password:

**12.** Modify Apache Tomcat Server port number to 82.

### Administration Guide - HP-UX File System iDataAgent

Click Next.

### NOTES:

• Ensure that these port numbers are different and are not already used by any other services or application.

13. Click Next.

14. Select Add programs to the Windows Firewall Exclusion List, to add CommCell programs and services to the Windows Firewall Exclusion List.

### Click Next.

This option enables CommCell operations across Windows firewall by adding CommCell programs and services to Windows firewall exclusion list.

It is recommended to select this option even if Windows firewall is disabled. This will allow the CommCell programs and services to function if the Windows firewall is enabled at a later time.

15. Enter the Web Search Server database installation path.

Click **Browse** to modify the default location.

Click Next.

Installer 🔀
Port Number Selection Please specify the port numbers you want to use for IIS and Apache.
IIS Default WebSite port number: <sup>80</sup> □ Stop IIS default website
Apache Tomcat Server port number: 80
Search Service port number: 81
Installer < Back Cancel
Installer
Download and Install Latest Update Packs Download and Install the latest service pack and post pack from the software provider website.
Download latest update pack(s) Make sure you have internet connectivity at this time. This process may take some time depending on download speed.
Installer < Back Cancel
Installer 🛛
Windows Firewall Exclusion List Allow programs to communicate through Windows Firewall
Windows Firewall is ON
✓ Add programs to the Windows Firewall Exclusion List
If you plan on using Windows Firewall, it is recommended to add the software programs to the exclusion list.
Installer   Kenter Cancel  Cancel
Installer
Database Path Location for database files
Dalabase Path
C\Program Files\MSSQL2008\MSSQL1Browse
Drive List Space Required / Recommended 200 MB / 1024 MB

< Back

Next>

Cancel

16. Click Next.

		Installer
		Web Administration Web Administration for Web Search Client
		Virtual Directories for Web Search Client:
		Compliance site: compliancesearch
		End-user site: search
		Admin site: searchadmin
		Installer  Kaller Cancel
17.	Click <b>Yes</b> .	Installer
		Setup must now stop and restart the World Wide Web Publishing (W3SVC) service.
		Setup must how stop and restart the wond wide web Publishing (w35VC) setvice.     Select Yes to continue or No to continue without restarting the service.
		If you select No, you must manually stop and restart the World Wide Web Publishing
		(W3SVC) service when setup completes.
		Yes No
18.	Click <b>OK</b> .	Installer
10.	Circk OK.	listater
		Before starting any software services, this computer will require a reboot after completion
		of Setup.
19.	Click Next.	Installer
19.	Click Next.	Installer (
19.	Click <b>Next</b> .	Installer Summary Summary of instal selections
19.	Click <b>Next</b> .	Summary Summary of install selections
19.	Click <b>Next</b> .	Summary Summary of install selections
19.	Click <b>Next</b> .	Summary
19.	Click <b>Next</b> .	Summary Summary of install selections
19.	Click <b>Next</b> .	Summary Summary of install selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files.
19.	Click <b>Next</b> .	Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the initial settings, click Next to begin copying files.
19.	Click <b>Next</b> .	Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the initial settings, click Next to begin copying files.
19.	Click <b>Next</b> .	Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the initial settings, click Next to begin copying files.
19.	Click <b>Next</b> .	Summary Summary of install selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files. Destination Path = C\Program Files\ CommServe Host = mpicomputer involvmeny.com Informers and Uob Results Path = C\Program Files\UobResults Chited Efform = 10x Poll generations
19.	Click <b>Next</b> .	Summary Summary of install selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click. Next to begin copying files.  Destination Path = C\Program Files\ Commission Path = C\Program Files\ Co
19.	Click <b>Next</b> .	Summary Summary of initial selections Setup has enough information to start capping the program files. If you are satisfied with the install settings, click Next to begin copying files. Destination Path = C:\Program Files\ CommServe Host = mycomputer.mycompary.com Interface Name = audi.mycompary.com Interface Name = audi.mycompary.com Client = audi. Job Results Path = C:\Program Files\JobResults Giobal Filters = Use Cell evel policy Installer
19.	Click <b>Next</b> .	Summary Summary of initial selections Setup has enough information to start copping the program files. If you are satisfied with the install settings, click Next to begin copying files. Destination Path = C:\Program Files\ CommServe Host = mycomputer.mycompary.com Interface Name = audi.mycompary.com Interface Name = audi.mycompary.com Client = audi. Job Results Path = C:\Program Files\JobResults Gibbol Filters = Use Cell level policy
		Summary Summary of initial selections Setup has enough information to data copying the program files. If you are satisfied with the install settings, click, Next to begin copying files. Destination Path = C\Program Files\ CommServe Host = mycomputer, mycompary, com Interface Name = audi, mycompary, com Interface Vame = audi, mycompary, com Interface Used Filters = Use Cell evel policy Installer
20.	Click Next.	Summary Summary of initial selections Setup has enough information to data copying the program files. If you are satisfied with the install settings, click, Next to begin copying files. Destination Path = C\Program Files\ CommServe Host = mycomputer, mycompary, com Interface Name = audi, mycompary, com Interface Vame = audi, mycompary, com Interface Used Filters = Use Cell evel policy Installer
		Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the instal settings, click Next to begin copying files. Destination Path = CNProgram Files/ Commission Path = CN
		Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files. Destination Path = C\Program Files\ CommServe Host = mycomputer.mycompany.com Interface Name = audi.mycompany.com Interface Name = audi.mycompany.com Interface Use Cell level policy Installer Installer
		Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the instal settings, click Next to begin copying files. Destination Path = CNProgram Files/ Commission Path = CN
		Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files. Destination Path = C\Program Files\ CommGerve Host = mycomputer.mycompary.com Therface Name = audi.mycompary.com Client = audi. Job Results Path = C\Program Files\UcbResults Global Filters = Use Cell level policy Installer Schedule Reminder Job schedule creation reminder
		Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files. Destination Path = C:\Program Files\ CommGene Host = mycomputer.mycompary.com Client = audi Job Renuel Fath = C:\Program Files\JobResults Global Filters = Use Cell level policy Installer Cancel Installer Schedule Reminder Job schedule creation reminder Please note:
		Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files. Destination Path = C\Program Files\ CommGerve Host = mycomputer.mycompary.com Therface Name = audi.mycompary.com Client = audi. Job Results Path = C\Program Files\UcbResults Global Filters = Use Cell level policy Installer Schedule Reminder Job schedule creation reminder
		Summary Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files.  Destination Path = C:\Program Files\ CommGene Velots = mycomputer.mycompary.com Underse Velots = mycomputer.mycompary.com Client = audi Job Renult: Path = C:\Program Files\UcbReatls Global Filters = Use Cell level policy Installer Cencel  Installer Cencel  Please note: Please note: Job Schedule computer. Job Schedule for each D ataAgent that has been installed on this in ead to create a Job Schedule for each D ataAgent that has been installed on this client computer. Job Schedules are required to allow the DataAgents to perform automated backup
		Summary         Summary of initial selections         Setup has enough information to start copying the program files. If you are satisfied with the initial settings, click. Next to begin copying files.         Destination Path = C:\Program Files\         CommGenve Host = mycomputer, mycompary.com         Inferface Anne = audi.mycompary.com         Use Host = mycomputer, mycompary.com         Inferface Anne = audi.mycompary.com         Use Bane = audi.mycompary.com         Installer         Cancel         Installer         Schedule Reminder         Job schedule creation reminder         Please note:         You still need to create a Job Schedule for each DataAgent that has been installed on this client computer.         Job Schedules are required to allow the DataAgents to perform automated backup and restore operations.
		Summary Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files.  Destination Path = C:\Program Files\ CommGene Velots = mycomputer.mycompary.com Underse Velots = mycomputer.mycompary.com Client = audi Job Renult: Path = C:\Program Files\UcbReatls Global Filters = Use Cell level policy Installer Cencel  Installer Cencel  Please note: Please note: Job Schedule computer. Job Schedule for each D ataAgent that has been installed on this in ead to create a Job Schedule for each D ataAgent that has been installed on this client computer. Job Schedules are required to allow the DataAgents to perform automated backup
		Summary         Summary of initial selections         Setup has enough information to start copying the program files. If you are satisfied with the initial settings, click. Next to begin copying files.         Destination Path = C:\Program Files\         CommGenve Host = mycomputer improvement to the filest of the filest and the set of t
		Summary         Summary of initial selections         Setup has enough information to start copying the program files. If you are satisfied with the initial settings, click. Next to begin copying files.         Destination Path = C:\Program Files\         CommGenve Host = mycomputer improvement to the filest of the filest and the set of t
		Summary Summary of initial selections Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files. Destination Path = C\Program Files\ CommServe Host = mpcompute: mpcompany.com Dent = audi uboli Featule Path = C\Program Files\ CommServe Host = mpcompute: mpcompany.com Dent = audi uboli Featule Path = C\Program Files\ CommServe Host = mpcompute: mpcompany.com Dent = audi uboli Featule Path = C\Program Files\ Destination Path = C\Program Files\ CommServe Host = mpcompute: Installer Excludies Path = C\Program Files\ Cancel Installer Please note: Please note: Please note: Please note: Job schedule creation combined for each DataAgent that has been installed on this client compute. Job Schedule creation can be accompliated through the CommCell Console administration interface.
		Summary         Summary of initial selections         Setup has enough information to start copying the program files. If you are satisfied with the initial settings, click. Next to begin copying files.         Destination Path = C:\Program Files\         CommGenve Host = mycomputer, mycompary.com         Inferface Anne = audi.mycompary.com         Use Host = mycomputer, mycompary.com         Inferface Anne = audi.mycompary.com         Use Bane = audi.mycompary.com         Installer         Cancel         Installer         Schedule Reminder         Job schedule creation reminder         Please note:         You still need to create a Job Schedule for each DataAgent that has been installed on this client computer.         Job Schedules are required to allow the DataAgents to perform automated backup and restore operations.

### 21. Click **Reboot** to finish the installation.

X

×

oftware installation completed succe		
VebSearchServer URL: http://dm2search3.dm3.company.com vebSearchClient URLs: http://dm2search3.dm3.company.com http://dm2search3.dm3.company.com http://dm2search3.dm3.company.com	n:81/Search5vc 1:80/search 1:80/search	at this
Installer	[Fini	

# Desktop Browse - Unix File System (Administrator)

Install Setup

Once the Web Search Server and Web Search Client are installed, perform the following configurations:

### SETTING UP PERMISSIONS FOR END USERS

- 1. Obtain the domain name and fully qualified domain name of the Active Directory server.
- 2. Ensure that LDAP is configured on the AD server:
  - From the Active Directory Server, select Start | Run.
  - Type Idp on the Run dialog box and click OK.
  - Click the Connections menu option, and select Connect.
  - From the **Connect** dialog box, enter the following information:
    - Server: Enter the name of the external domain server, e.g., computer.domain.com.
    - Port: Enter 636 as the port number for the external domain server.
    - $\circ~$  SSL: Mark this checkbox to check for the proper certificate.
  - Click OK. If properly configured for LDAP, the external domain server details will be displayed in the LDP windowpane. If not configured for use with LDAP, an error message will appear indicating that a connection cannot be made using this feature.
- 3. From the CommCell Browser, expand the Security node, right-click Name Servers | Add New Domain and click Active Directory.

• Enter the domain name in NetBIOS Name text box, e.g., mydomain.

the Domain Name text box.

• Enter the Fully Qualified Domain Name (FQDN), e.g., mydomain.mycompany.com in

*****	Cornect Server: VentSchurchtoo Port 555 V UK	Correctories Sil Cancel	<u>×</u>
			/
Councel Browser 0 Scrantonol ACCounter	Image: Security > Security > Image: Security >	inew? x	4 b 1 9 🗆 d
concelosome     conceloso	In the function of the second se	(section	
Add New Do	main Controller		X
NetBIOS Name:	mycompany		
Domain Name:	mycompany		
User Account:	gbuilder	Edit	
Resource Doma	in	~	
✓ Enable SSC			
Use Secure	LDAP		
Disable the	use of this controller		
Description			
			J
	0	K Cancel Help	

Previous

- 🗆 ×

Next >

- Click Edit to enter the user account information for the domain.
  - Type Username and Password in Enter User Account Information.
  - Click OK.

4.

5.

Add New Domain Controller
NetBIOS Name:         Domain Name:         User Account:         Edt         Rest         Enter User Account Information         Seer Name:         Q         Gassword:         Grifm Password:         4         Confirm Password:         6         OK         Cancel         Help
Add New Domain Controller
NetBIOS Name:
Domain Name:
User Account:
Resource Domain

Enable SSO
 Use Secure LDAP
 Disable the use of this controller

Description

- Select Use Secure LDAP to enable the secure Lightweight Directory Access Protocol (LDAP) with the external domain.
- Click **OK**.

- 7. Once you have registered the Domain Controller, restart the IIS services on the Web Search Server.
  - From your **CommServe** computer, click the **Start** button on the Windows task bar and then click **Administrative Tools**.
  - Click Services.

6.

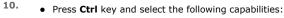
- In the Services window, select and right-click IIS Admin Service and click Restart.
- Restart Other Services dialog will be displayed, click Yes.
- 8. From the CommCell Browser, expand the Security node, right-click CommCell User Groups and select New User Group.

ConvoCel Browner		🖉 🎬 CommCell User Groups 🗵			Constructed User Groups 🛛 🖗
scrantoné4 🔏 Committet	🚴 scrankonéri > 😗	Security > 🌇 ConiniCel User Groups	,	000	
Clerk Computer Groups	User Group	Description	Enabled	¥	New User Group
Cleat Consulters	Contraction (Contraction)	Administrative Group	2	0	
Security	A View All	Members of this group can s	ee al C 🗹		
ConniCel Users	2				
Connected Litter Grams					
Tites Al					
Mame Servers					
Storage Resources					
Policies					
a Reports					
Content Deector					
Cost Analysis					
Con sensitive					
CommCell Browser					
Agents					
	2				
				~	

Cancel Help

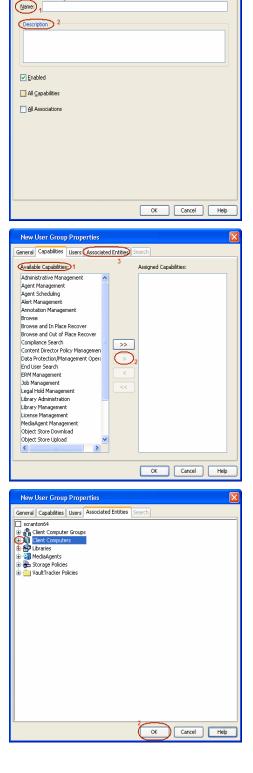
OK

- 9. Type the user group name in **Name** text box.
  - Type a description on the user group in **Description** box.
  - Click Capabilities tab.



- Browse
- $\circ~$  End user search
- Click > to move the selected capabilities to the **Assigned Capabilities** list box.
- Click Associated Entities tab.

- **11.** Expand **Client Computers** node and select the client computers to be browsed.
  - Click OK.



New User Group Properties

General Capabilities Users Associated Entities Search

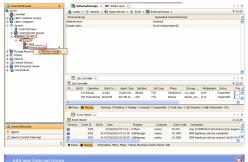
- 12. Ensure that the specific external user group in which the user belongs has Group Scope defined as Globalon the Active Directory Domain:
  - Navigate to Start | Administrative Tools | Active Directory Users and Computers.
  - Right-click the external group and select **Properties**.
  - Select Group from Group Scope and click OK.

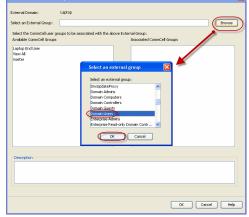
13. From the CommCell Browser, navigate to Security | Name Server |<Domain Name>, right-click External Groups and select Add New Group.

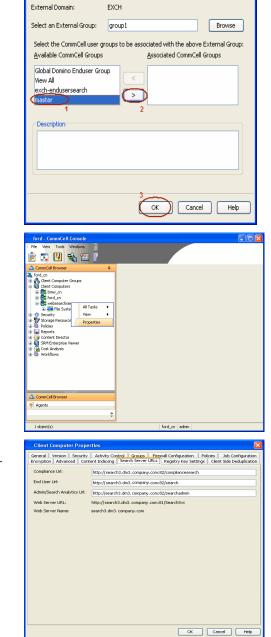
- Click Browse.
  - Select the **<external user group name>** in which the user belongs.

- **15.** Select the **CommCell User Group** to associate with the specified external user group.
  - Click OK.









Add new External Group

**16.** From the CommCell Browser, right-click to **<Client Computer>** on which Web Search Server is installed and click **Properties**.

### 17. Click Search Server URLs tab.

Make a note of  $\ensuremath{\text{End}}$   $\ensuremath{\text{User}}$   $\ensuremath{\text{Url}}$  to provide the URL to the user to browse and recover the data.

### SETTING UP PERMISSIONS FOR COMPLIANCE USERS

- 1. Obtain the domain name and fully qualified domain name of the Active Directory server.
- 2. Ensure that LDAP is configured on the AD server:
  - From the Active Directory Server, select **Start | Run**.
  - Type **Idp** on the **Run** dialog box and click **OK**.
  - Click the **Connections** menu option, and select **Connect**.
  - From the **Connect** dialog box, enter the following information:
    - Server: Enter the name of the external domain server, e.g., computer.domain.com.
    - **Port**: Enter 636 as the port number for the external domain server.
    - **SSL**: Mark this checkbox to check for the proper certificate.
  - Click **OK**. If properly configured for LDAP, the external domain server details will be displayed in the LDP windowpane. If not configured for use with LDAP, an error

message will appear indicating that a connection cannot be made using this feature.

From the CommCell Browser, expand the Security node, right-click Name Serve з. Add New Domain and click Active Directory.

- Enter the domain name in NetBIOS Name text box, e.g., mydomain.
  - Enter the Fully Qualified Domain Name (FQDN), e.g., mydomain.mycompany.co the Domain Name text box.

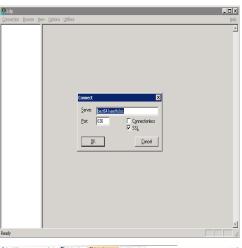
	Ready	<u>Cance</u>	
l	Roduy		
ers	Connect Invoice         0           To antends	Image: Source of the second	
	Connel Users		
	Add rew donain >	Active Directory Domino Directory Service	
	Reports     Content Director	Liamma Landoory Service	
	In the Cost Analysis		
	Consticel Browser		
	:		
	Add New Dom	nain Controller	
• .			
om <b>in</b>			
	NetBIOS Name:	mycompany	
	Domain Name:	mycompany	
	User Account:	gbuilder	Edit
	USEr Account.	gbailder	Luit
	Resource Domain		~
	i contante o ornan		
	Enable SSO		
	Use Secure L	DAP	

Disable the use of this controller

OK Cancel Help

Description

- Click Edit to enter the user account information for the domain.
  - Type Username and Password in Enter User Account Information.
  - Click OK.



- 4.

5.

Add New Domain Controller
NetBIOS Name:         Domain Name:         User Account:         Edt         Res         Enter User Account Information         Verseword:         3         orfrm Password:         4         5         K         Cancel         Help
Add New Domain Controller
NetBIOS Name:
Domain Name:
User Account:
Resource Domain

Enable SSO
 Use Secure LDAP
 Disable the use of this controller

Description

- Select Use Secure LDAP to enable the secure Lightweight Directory Access Protocol (LDAP) with the external domain.
  - Click OK.

6.

- 7. Once you have registered the Domain Controller, restart the IIS services on the Web Search Server.
  - From your **CommServe** computer, click the **Start** button on the Windows task bar and then click **Administrative Tools**.
  - Click Services.
  - In the Services window, select and right-click IIS Admin Service and click Restart.
  - Restart Other Services dialog will be displayed, click Yes.
- 8. From the CommCell Browser, expand the Security node, right-click CommCell User Groups and select New User Group.

so-antone4	A startest > 0	Security > Security > CommCell User Groups >		9 D G	
🖧 CommNet	User Group	Description	Enabled	-	New User Group
Conception Couple Data Company Couple Data	🔯 naster 🛃 New Al	Derojska Administrativa Henders J. His group can se	2	H	
CommCel Drowser					

Cancel Help

OK

- 9. Type the user group name in **Name** text box.
  - Type a description on the user group in **Description** box.
  - Click Capabilities tab.

	OK Cancel Help
	New User Group Properties
	General Capabilities Users Associated Entities Search
ox.	Agent Management Agent Management Agent Management Arnotation Management Browse and In Place Recover Complance Search Context Dreat Policy Management Deta Protection/Management Optic Store Upload
	OK Cancel Hep
ed.	New User Group Properties
	OK Cancel Help

New User Group Properties

Name: 1 Description 2

Enabled

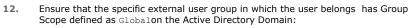
All Capabilities

All Associations

General Capabilities Users Associated Entities Search

- 10. Press Ctrl key and select the following capabilities:
  - $\circ$  Browse
  - o Compliance Search
  - Legal Hold Management
  - Annotation Management
  - Tag Management
  - ERM Management
  - Click > to move the selected capabilities to the **Assigned Capabilities** list box.
  - Click Associated Entities tab.

- 11. Expand Client Computers node and select the client computers to be browsed.
  - Click OK.



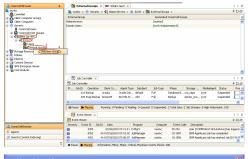
- Navigate to Start | Administrative Tools | Active Directory Users and Computers.
- Right-click the external group and select **Properties**.
- Select Group from Group Scope and click OK.

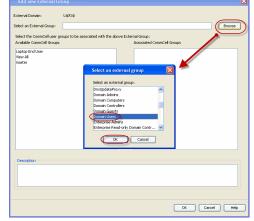
13. From the CommCell Browser, navigate to Security | Name Server |<Domain Name>, right-click External Groups and select Add New Group.

- Click Browse.
  - Select the **<external user group name>** in which the user belongs.

- **15.** Select the **CommCell User Group** to associate with the specified external user group.
  - Click OK.







Add new Externa	al Group 🛛 🔀
External Domain:	EXCH
Select an External Grou	
Select the CommCell u <u>A</u> vailable CommCell Gr	ser groups to be associated with the above External Group: oups <u>A</u> ssociated CommCell Groups
Global Domino Enduse	
View All exc <u>h-en</u> dusersearch	
master	
1 Description	2
Description	
	Cancel Help
Conncil Bousser     Construction     Construction	•
1 object(s)	ford_cn   admin
Client Computer Proper	
	Activity Control Groups Frewall Configuration Policies Job Configuration Int Indexing Search Server URLs Registry Key Settings Client Side Deduplication http://search3.dm3.company.com:82/compilancesearch
	http://search3.dm3.company.com:82/compliancesearch http://search3.dm3.company.com:82/search
Admin/Search Analytics Url:	http://search3.dm3.company.com:82/searchadmin
	http://search3.dm3.company.com:81/SearchSvc search3.dm3.company.com
	OK Cancel Help

**16.** From the CommCell Browser, right-click to **<Client Computer>** on which Web Search Server is installed and click **Properties**.

17. Click Search Server URLs tab.

Make a note of  $\mbox{End}\ \mbox{User}\ \mbox{Url}$  to provide the URL to the user to browse and recover the data.

### **ENABLING SECURED ACCESS FOR WEB SEARCH CLIENT**

Use the following steps to enable secured access on the Web search client. This will allow you to access the Web Console using https instead of http.

#### INSTALL JAVA WITH ALL THE UPDATES

- 1. Stop the Tomcat services
- 2. If UAC is enabled, disable it.
- 3. Download and install the latest version of JAVA with all the updates on the Web client computer.
- 4. Open the command prompt window on the Web client computer, and execute the following command to verify if JAVA has been properly installed on the Web client computer:

#### C:\java -version

If you find that JAVA with the latest updates has not been installed, uninstall JAVA that you have installed and reinstall it again with all the updates.

Navigate to the command prompt on the Web client computer, and run the command specified in step 4 to verify if JAVA has been installed successfully. Skip this step if the updates are installed successfully.

- 5. Start Tomcat services. If the Tomcat fails to start, point the JVM manually to Tomcat using the following steps:
  - Open the command prompt window on the Web client computer, navigate to <product\_INSTALL\_PATH>\Apache\bin folder and execute the following command:
    - C:\<PRODUCT INSTALL PATH>\Apache\bin>tomcat6w.exe //ES//GxTomcatInstance001
    - where, Instance001 is the instance installed on the WebClient computer.
  - On the Tomcat Services Instance properties dialog box, click the Java tab, and clear the Use default check box.
  - Restart Tomcat services

#### CONFIGURE SSL ON THE TOMCAT SERVER

Use the following steps for configuring SSL (Secure Socket layer) on the Tomcat Server:

1. Navigate to command prompt and run the following command:

C:\Program Files\Java\jre6\bin>keytool -genkey -alias cvtomcat -keyalg RSA -keystore "C:\Program Files\company\product\Apache\cert\keystore"

- 2. Backup the server.xml file located in <product\_install\_path>\Apache\conf before making any changes to it.
- 3. In order to setup a JAVA JSSE connector to support SSL, search for the following entry in the server.xml:

<Listener className="org.apache.catalina.core.AprLifecycleListener" SSLEngine="on" />

#### Modify the above entry as following:

<Listener className="org.apache.catalina.core.AprLifecycleListener" SSLEngine="off" />

4. Add the following entry to the server.xml file:

<Connector port="443" protocol="org.apache.coyote.http11.Http11NioProtocol" SSLEnabled="true" maxThreads="150" scheme="https" secure="true" clientAuth="false" keystoreFile="C:/Program Files/CommVault/Simpana/Apache/cert/keystore" keystorePass="mnoettomcat" sslProtocol="TLS" />

5. Save the server.xml file, and restart the Tomcat services.

< Previous Next >>

# **Agentless SRM**

Topics | How To | Support | Related Topics

Overview Pre-Requisites Configuration Reports supported by Agentless SRM Summaries displayed for Agentless SRM Considerations Registry Keys for Agentless SRM

## **OVERVIEW**

Agentless SRM is a compact version of Storage Resource Management (SRM) where a Windows Proxy Agent collects data from remote computers (i.e., managed clients) and operates without having to install Agent software on the managed clients.

The Agentless SRM setup allows for the running of Discovery level jobs and the generation of reports. It requires installing a single SRM File System Agent or Windows File System *i*DataAgent (with SRM Enabled) that can manage one or more remote clients (i.e., managed clients). This SRM Windows File System Agent or Windows File System *i*DataAgent (with SRM Enabled) acts a Windows Proxy agent to gather statistics and run discovery level jobs on the Managed Clients. The Agentless SRM setup is easy to configure as only one SRM File System Agent or Windows File System *i*DataAgent (with SRM Enabled) is required to be installed on a computer that acts as a Proxy and Data Collection can be performed on all the client machines managed by this Windows Proxy Agent without requiring to install the actual software on the managed clients.

The reports available for Agentless clients illustrate some of the basic data representation of the usage patterns of file systems, thus helping plan for growth. The reports can be customized by specifying filter criteria like Client Selection, Column selection, Report Options, Filters, Get SQL Query, etc. to generate a variety of charts and graphs.

Specific summaries are displayed for all the clients. When you select an Agentless SRM entity from the CommCell Console, its summary information appears in the main window.

Note the following terminologies used in this feature:

- Windows Proxy Agent is used to refer to a client computer that has the SRM File System Agent or Windows File System *i*DataAgent (with SRM Enabled) installed.
- Managed Client is used for computers managed by the Windows Proxy Agent.

The Windows Proxy Agent will perform Data Collection operations on the managed clients.

### **PRE-REQUISITES**

#### WMI AND SSH

• On the Managed Clients running Windows, the Windows Management Instrumentation (WMI) service should be running.

For more information on configuring WMI service across firewall, refer to http://msdn.microsoft.com/en-us/library/aa389286(VS.85).aspx.

• On the Managed Clients running Unix, Secure Shell (SSH) needs to be installed and running.

#### LICENSING

Agentless SRM does not requires any license. However you would require a license for the SRM Windows File System Agent that acts as the Windows Proxy Agent, this license is consumed when you install the Agent.

### CONFIGURATION

Agentless Data Collection is a process that involves the following configuration settings:

### INSTALL THE SOFTWARE ON WINDOWS PROXY AGENT

The SRM File System Agent or Windows File System *i*DataAgent (with SRM Enabled) needs to be installed on the Windows Proxy Agent. Deployment provides several methods to deploy SRM File System Agent or Windows File System *i*DataAgent (with SRM Enabled) - choose an appropriate method. See Deployment for step by step instruction on installing the Agent.

#### SETTING UP AGENTLESS SRM POLICY

Managed clients need to be configured/set up from the Windows Proxy Agent. This can be done automatically or manually using the Agentless SRM Policy. Setting up Client Computers using the Agentless SRM policy also creates a new Agentless Client Group.

For step-by-step instructions, see Create Agentless SRM Policy.

Refer to the sections below to determine which method better suits your requirements.

1. Manually enter client computer names

Setting up managed clients by manually entering the client name indicates that you will identify the computers that should be detected for Data Collection operations. This method is useful when it is required to setup one or two computers or groups of computers that must be managed, as it requires typing in the client names one in each line.

For step-by-step instructions, see Enter client names for Agentless SRM Policies.

2. Manual Setup of Client Computers

Setting up managed clients using the manual method indicates that you will identify the computers that should be detected for Data Collection operations. Using the manual method is useful when it is required to setup small or large number of computers or groups of computers that must be managed. If you need to manage all computers in a domain or multiple domains, use **Auto Setup of Client Computers** method.

Identifying the computers for selection can be done in three ways:

• List them individually

This can be done using their fully qualified domain name

Retrieve the list from an existing text file

This file must list the client names as the fully qualified domain name, one in each line.

Select the computers using Active Directory

This can be done by selecting the client computers from within a specified domain by using the Active Directory Import feature. Optionally you could use **LDAP Filters** to perform a wildcard character search within the Active Directory to bring up desired results .

E.g. he following query string will search for all objects of type "computer" with a name that begins with "dev".

&(objectCategory=computer)(name=dev\*))

For step-by-step instructions, see Setup Managed Clients on Windows Manually and Setup Managed Clients on UNIX Manually.

3. Auto Setup of Client Computers

Setting up managed clients using the auto discovery method indicates that you will identify a domain or multiple domains, which comprises the computers that should be detected for Data Collection operations. Using the auto discovery method is useful when it is required to setup all the computers within an entire domain. If you need to manage specific computers, use the **Manual Setup of Client Computers** method. You cannot select specific computers using this method.

For step-by-step instructions, see Setup Managed Clients on Windows Automatically and Setup Managed Clients on UNIX Automatically.

### PERFORM DATA COLLECTION

Data Collection must be performed from the Windows Proxy Agent on all the managed clients before generating the reports. For Data Collection, a Managed Client must be attached to one Windows Proxy Agent - a single managed client cannot be attached to more than one Windows Proxy Agent. Data collection jobs can only be run from the Proxy Agent and not from managed clients. The maximum number of data collection jobs that can be run on the Windows Proxy Agent is 50.



Clients that are unreachable or which do not have WMI or SSH enabled at the time of Data Collection will not be available in client selection column at the time of report generation.

The following Data Collection Options are available for each Agentless Policy:

- Process Information
- Services Information
- Storage Information
- Quotas

• Software Information

It is recommended that you schedule the Data Collection operation on all the Managed Clients on a periodic basis in order to generate up-to-date reports. For step-by-step instructions, see Schedule Agentless SRM policies.

### **REPORTS SUPPORTED BY AGENTLESS SRM**

Using SRM Agentless Data Collection, Discovery level jobs can be run and reports can be generated for the managed clients. Reports allow easy viewing and analyzing of data related to various aspects of different entities in an enterprise. Many pre-configured reports are available for the Agentless SRM Data Collection jobs for clients running on Windows and Unix operating systems that provide information about the resources of the client computers, each tailored to a particular aspect of resource management. Filter criteria can be specified to generate to a variety of customized charts and graphs. The following reports are available for clients running on Windows and Unix operating systems:

#### WINDOWS CLIENTS

For Managed Clients running on Windows operating system, a set of pre-configured reports and customizable reports are available. For the list of reports available for Agentless Data Collection for Windows clients see, SRM Windows File System Agent Reports and SRM for Windows File System - Reports.

#### UNIX CLIENTS

For Managed Clients running on UNIX operating system, a set of pre-configured reports and customizable reports are available. For the list of reports available for Agentless Data Collection for UNIX clients see, SRM UNIX File System Agent Reports.

### SUMMARIES DISPLAYED FOR AGENTLESS SRM

Summaries for Agentless SRM clients displays status information including the resource, memory, and CPU usage, etc. Summary can be available in the images as in bar graphs and pie charts to provide a succinct snapshot of the statistical information or tables showing various columns. While viewing summary, data rows in tables can be sorted by any one of the columns listed in that summary. The following summaries are available at different levels for clients running on Windows and Unix operating systems:

### WINDOWS CLIENTS

For Managed Clients running on Windows operating system, the following summaries are available:

#### CLIENTS

Summary information at the client level shows statistical data for the following:

#### • Software Instances

The summary information for software instances displays details like Package, version and vendor name of all instances of the installed software.

#### • Process Information

The summary information for processes displays details like Image Name, PID, Session ID, CPU Time, CPU Usage, Memory Usage, User Name, etc for each process that runs on the client.

#### • Services

The summary information for services displays details like Name, State, Startup Type, and Log on information for each service that exists on the client.

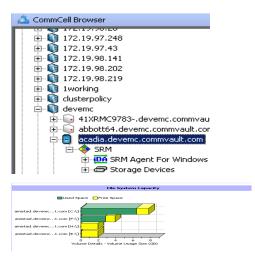
#### VOLUMES

Summary information at the volumes level display charts for **File Count** and **File System Capacity** along with tables displaying details like Volume, Total Space, Used Space, Free Space, Percent Free, Percent Used, Type for the available volumes. Each Volume also displays Properties like Type, Mount Point, Used Space, Free Space, Capacity, etc. along with any Physical Devices if available.

1. From the CommCell Console, select the Client Computer Group with Agentless clients and select the client. Expand SRM and select SRM Agent for Windows File System.

🕰 CommCell Browser	•	acadia.devemc.commvault.c., ×			
smscaletest 🖂 💑 Clerit Computer Groups	- 3	smscaletest > 👸 Client Computer Groups >	🐧 devenc > 🧧 acadia.devenc.com	wault.com >	
- 172,19,126,21		Agent Type		Version	
IT2.19.96.28     IT2.19.96     IT2.19.96     IT2.19.96     IT2.19.96     IT2.19.96     IT2.19.96     IT2.19.96     IT2     IT2.19.96     IT2     IT2.19.96     IT2     IT2	100	8M Agent For Windows File Systems	9.0.0(BLILD652)		NKA
÷ 🛐 172.19.97.248					
÷ 🛐 172.19.97.43					
8 172.19.98.141					
8 🚯 172.19.98.202					
8 🚯 172.19.98.219					
🛞 😫 Iworking					
B Q dusterpolicy					
E-Q devenc					
B 410RMC9783devenic.com/va.					
	a				
😑 🔁 acadia.devenic.commvault.com					
<u>е</u> 🔶 яян					
E SEN Agent For Windows	1				
St. Contraction Devices					

2. Select Volume.



3. The associated Volume Summary will appear in the main window.

#### SHARES

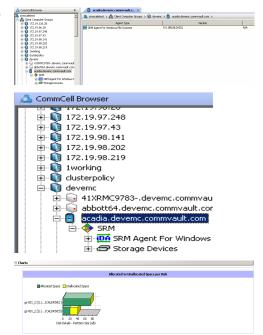
2.

Summary information include tables displaying Table Name, Path Name, and Protocol for the selected share.

#### STORAGE DEVICES

Summary information at the storage devices level include charts for **Allocated Vs Unallocated space per disk.** Each Physical Drive in turn displays charts for **Partition Capacity.** Physical properties like Name, Interface, Manufacturer, Block, Count , etc. are also displayed at this level.

 From the CommCell Console, select the Client Computer Group with Agentless clients and select the client. Expand SRM and select SRM Agent for Windows File System.



Select Storage Devices.

3. The associated **Storage Devices Summary** will appear in the main window.

### UNIX CLIENTS

For Managed Clients running on UNIX operating system, the following summaries are available:

#### CLIENTS

Summary information at the client level shows graphs for the following:

### • CPU Utilization History

• Memory Utilization History

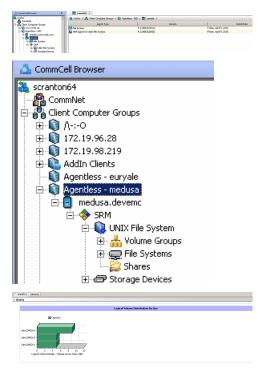
The summary information also displays **Process Information** showing details like CPU Time, CPU Usage, Memory Usage, User Name, etc for each process that runs on the client.

### VOLUME GROUP

Summary information at the Volume Group level Charts include charts for Current Capacity by Volume Group. This chart displays detail like Name, Volume

Group Manager, Capacity, Allocated Space, Unallocated Space, Access Mode, Logical Volume Count, Physical Volume Count, Physical Extent Count for the selected volume group.

- 1. From the CommCell Console, select the Client Computer Group with Agentless clients and select the client. Expand **SRM** and select **UNIX File System**.
- 2. Select Volume Groups.



#### FILE SYSTEMS

з.

Summary information at the File systems level include charts for **File Count** and **File System Capacity**. The **File System Capacity** chart displays detail like Name, Type, Mount Point, Used Space, Free Space, Capacity, Percent Used and Percent Free for the selected volume group.

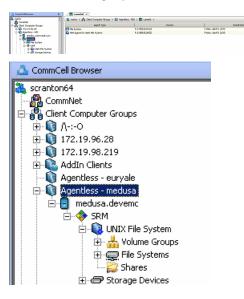
 From the CommCell Console, select the Client Computer Group with Agentless clients and select the client. Expand SRM and select UNIX File System.

The associated Volume Group Summary will appear in the main window.

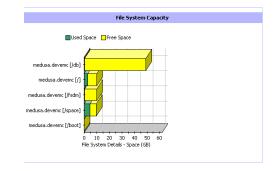
#### 2. Select File Systems.



You may also expand File Systems node and alternatively select any File System to view its summary.



3. The associated File Systems Summary will appear in the main window.



#### SHARES

Summary information include tables displaying Name, Path, Used Space and Billable Entity for the selected share.

#### STORAGE DEVICES

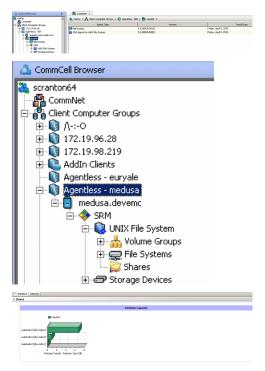
Summary information at the Storage Devices level display charts for **Allocated** vs. **Unallocated space per disk** and **Partition Capacity**. The Charts show details like Name, Interface, Serial Number (S/N), Manufacturer, Block Count, Block Size etc for the selected Storage Device.

1. From the CommCell Console, select the Client Computer Group with Agentless clients and select the client. Expand **SRM** and select **UNIX File System**.

#### 2. Select Storage Devices.



You may also expand Storage Devices node and alternatively select any storage device to view its summary.



3. The associated Storage Devices Summary will appear in the main window.

### **CONSIDERATIONS**

The following important factors must be considered:

• For Agentless SRM jobs, the job details dialog displays the job completion in phases as Discover, Configure, Scan and Data Collection. The job is said to be complete if all the 4 phases complete successfully else the Admin Job History (Attempts) tab displays the completed and pending phases.

### **REGISTRY KEYS FOR AGENTLESS SRM**

The default number of managed clients that can be discovered simultaneously in 10.

You can configure the nSRMACLDCMaxThreads registry key to increase the number of simultaneous discoveries of managed clients. Configure this Registry Key under the SRM folder.

## **SRM for UNIX File System - Reports**

Basic Advanced Filters Summaries

### **TABLE OF CONTENTS**

#### Overview

Configuration Enable SRM for all backups Run a Backup

#### Generate SRM Reports

Running a Report Scheduling a Report Saving a Report

### Send a Notification when an SRM Report Has Run

#### Getting Started with Unix File System Reports

Capacity by File System Current File System Usage Current File System Usage by Subclient

### **OVERVIEW**

Managing storage resources is a critical job for any organization, which can be challenging because these resources are distributed across the network. SRM UNIX File System reports provide a sleek, versatile, and easy-to-use reporting framework that enables you to easily and effectively choose, view, and analyze vital data. Customized reporting is available through the selection of filter criteria e.g., individual columns, specific clients, specific client computer groups, report options, and SQL Queries, a SRM UNIX File System report helps you to:

- Assess used and free storage space to provide improved capacity planning.
- Track historical storage utilization for performance trending and proactively anticipate future resource needs.

### CONFIGURATION

If SRM feature is enabled, SRM reports can be generated for all backup data as soon as the first full backup job has completed. Be sure to perform the following before generating reports:

OPTION	DESCRIPTION
Enable SRM for all backups	SRM can be enabled from the Agent levels for the <i>i</i> DataAgent. When Enable SRM is selected at the Agent level, SRM options get enabled for all subclients.
	1. From the CommCell Browser, right-click the <i>i</i> DataAgent for which you want to enable SRM feature and select <b>Properties</b> .
	2. Enable SRM must be selected from the General tab.
	A Discovery and Analysis Data Collection job is automatically set when you enable SRM.
	3. Then confirm your selection by clicking <b>OK</b> .
Run a Backup	A full backup contains all the data that comprises a subclient's contents. If a client computer has multiple agents installed, then the subclients of each agent require a full backup in order to secure all of the data on that client. If a new subclient is added, a full backup is required on all subclients in order to maintain file level detail integrity.
	1. To perform a full backup, right-click the subclient, and click <b>Backup</b> in the CommCell Browser.
	One of the following options must be selected from the Backup Options dialog box:
	<ul> <li>Backup Type: Select Full.</li> </ul>
	<ul> <li>Backup Schedule: Select Immediate if you want to run the backup now.</li> </ul>
	<ul> <li>Granular Recovery: Select Enable Granular Recovery if you intend to restore individual files and folders from a disk or volume- level backup.</li> </ul>
	2. Then confirm your changes by clicking <b>OK</b> .
	You can track the progress of the backup job from the Job Controller window. When the backup has completed, the Job Controller displays Completed.
	After performing a first full backup you may select any other backup type for performing Data Collection operations.

### **GENERATE SRM REPORTS**

The sections below discuss running, scheduling, and saving a report.

### **RUNNING A REPORT**

You can choose to run a report so that you view it immediately. Alternatively, to view it at a later point in time you can schedule it or save it as a template to a file. When running a report, you can choose an out-of the box template or generate a more customized report by picking and choosing individual columns from a category.

#### TO RUN A SRM REPORT IMMEDIATELY:

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- 2. Expand the applicable tree to view your agent. Then click a template to display the **Options** window.
- 3. Click the **Client Selection** tab and select the client computers or client computer group. This is a required step.



#### 4. Click Column Selection tab.

For an out-of-the-box template, the columns are displayed here. To change the columns, select a category and click **Add** or **Remove** to move the columns between the **Available** and **Selected** boxes. Clicking **Remove All** will remove all previously selected filters for the reports.

Tatenovies: 100 CB1	and Memory Utilization	1 v			
walable:				Selected:	
PU As Of				Computer	
PU Capacity PU Used				Host Power State	
20 Used				CPU Utilization	
femory As Of				OPU Used Capacity	
femory Capacity				CPU Total Capacity	
Remory Used Remory Ublization			<< Remove Al	Memory Utilization Memory Total Capacity	
remory Ubization			CC REILINE AN	Memory Local Capacity Memory Usage	
				Group	

5. Click **Run** to generate the report immediately and view the results.

### SCHEDULING A REPORT

Scheduling allows you to run a report on a user-defined schedule, send it in a different language or format, and configure notifications for specified recipients when the report has run. Reports can be scheduled so that they follow a backup schedule in order to guarantee up-to-date reporting. Scheduling a report involves these tasks:

- Specify a daily, weekly, monthly, yearly, or even one time basis schedule. When scheduling, patterns can be applied to the report so it runs on a specific time, repeated every so many days, or run for a particular number of times.
- Scheduled reports support different languages and formats. Default language is English and default output is HTML. You can even save the report to local
  drive or a network share.
- When scheduled reports are run, notifications can be sent in the form of an email or page, SNMP trap, RSS feed, or Event Viewer message to inform email recipients, computers, or a script that a report has run and is now available.

#### TO SCHEDULE A SRM REPORT:

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- 2. Expand the applicable tree to view your agent. Then click a template to display the **Options** window.
- 3. Click the **Client Selection** tab and select the client computers or client computer group. This is a required step.

Client Selection Column Selection Report Options Filters Get SQL Query	
metsos	
B Clert Computer Groups	
Clert Computers     Const	

#### 4. Click Column Selection tab.

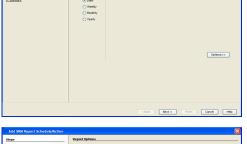
For an out-of-the-box template, the columns are displayed here. To change the columns, select a category and click **Add** or **Remove** to move the columns between the Available and Selected boxes. Clicking **Remove All** will remove all previously selected filters for the reports.

egories: (Inf Circl and Memory United on) 🛩		Selected:	
J Capacity J Used		Host Power State	
JUblization	Ade	CPU Utilization	
nory As Of		OPU Used Capacity	1
nory Capacity	< Ret	CPU Total Capacity Memory Utilization	4
nory Used nory Ublization	<< Reg	www.All Memory Total Capacity	•
		Memory Usage	

5. Click **Schedule** to generate and schedule the report on a daily, weekly, monthly, yearly, or even one time basis.

Optionally, click  ${\bf Report}\ {\bf Options}$  to repeat sending the report every so many days, or run it for a particular number of times.

Click Next.

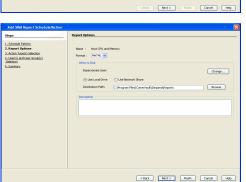


Start Time 8 : 00 AM

6.	Select the report output options, such as:
	<ul> <li>Format - select MHTML, EXCEL, or PDF.</li> </ul>

• Specify a path in **Destination Path** if you want to save the report to a local drive or network share.

Click Next.



7. Configure the notifications for the scheduled report, such as:

- Select the E-Mail/Pager tab and click Select [E-Mail/Pager] for notification. Click either Use default message or add more tokens by selecting Add Token.
- Select the SNMP tab and click Select [SNMP] for notification. Click either Use default message or add more tokens by selecting Add Token. The SNMP Enabler software must be installed on the CommServe. See SNMP Enablers for more information.
- Select the **Event Viewer** tab and click **Select [Event Viewer] for notification**. Click either **Use default message** or add more tokens by selecting **Add Token**.
- Select the Run Command tab and click Select [Run Command] for notification. Click either Run on CommCell or Run on Client. Specify a path in Command Script Location and optionally specify arguments for the script in Arguments.
- Click **Run Data Archiver** tab to write files and directories of the report to a text file.
- Click **RSS Feeds** tab and click **Select [RSS Feeds] for notification**. Click either **Use default message** or add more tokens by selecting **Add Token**. Specify a feed location in **Select/Enter the FeedLocation** field.

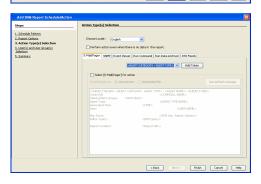
#### Click Next.

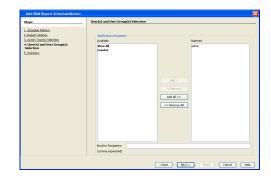
Refer to the Actions documentation for more comprehensive information.

8. In this dialog, select the recipients for the scheduled report.

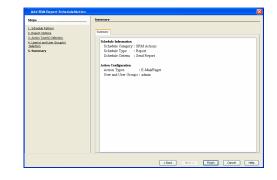
Use the **Add>** or **<Remove** buttons to specify CommCell users as the notification recipients.

Or, enter one or more email addresses in the  ${\bf Email} \ {\bf to} \ {\bf Recipients}$  field. Separate multiple addresses with commas.





9. Review the summary and if satisfied, click **Finish**.



### SAVING A REPORT

Saving a report allows you to save the filter criteria and schedule information, including notifications, to a template so it can be used to generate a report at a later date. All report templates are saved under **My Reports**.

#### TO SAVE A SRM REPORT TO A TEMPLATE:

- 1. Create a report and optionally specify scheduling criteria as explained in Scheduling a Report. Advanced criteria such as Filters will also be saved in the report template.
- 2. In the right-hand corner, click **Save As...** and enter a name for the report and click **OK**.

Save Template	×
Enter Template Name:	
OK Cancel H	elp

3. The report template is saved under My Reports.

### SEND A NOTIFICATION WHEN A SRM REPORT HAS RUN

Configuring notifications is a step when scheduling a report. For example, when scheduled reports are run, an email notification can be sent to inform the recipient that a report has run and is now available. The recipient can be either a CommCell user, a CommCell user group, a domain or external user (e.g., yahoo, gmail, etc.), or a pager address. For a comprehensive description of all notification types, refer to Actions.

#### TO SEND AN EMAIL NOTIFICATION WHEN A SCHEDULED REPORT HAS RUN:

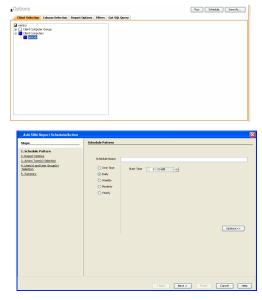
- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- Click Applications or Enterprise. Then click a template to display the Filters window.
- Configure the report by specifying clients and columns, report options, and optionally, ad hoc queries. Refer to Options, Report Options, and Filters respectively.

Click <b>Schedule</b> to generate and schedule the report on a daily, weekly, monthly,
yearly, or even one time basis.
yearly, or even one time basis.

Optionally, click  ${\bf Options}$  to repeat sending the report every so many days, or run it for a particular number of times.

Click Next.

5.



- 6. In this dialog, select the report output options, such as:
  - Format select HTML, EXCEL, or PDF.
  - In Locale, select a report language. See Languages Support for the list of supported languages.
  - Specify a path in **Destination Path** if you want to save the report to a local drive or network share.

TIFF is no longer a supported output format. SRM supports saving Reports in these formats: HTML, EXCEL, and PDF.

Click Next.

- 7. In this dialog, configure the **E-Mail/Pager** notification for the scheduled report as follows:
  - Click Select [E-Mail/Pager] for notification.
  - Either accept default format or add more tokens by selecting a token from the pulldown menu and clicking **Add Token**. The tokens are explained in Alert Tokens. Click **Use default message** to revert back to original default format.

Click Next.

- In the User(s) and User Group(s) Selection dialog, specify the recipients to whom the notification will be sent as follows:
  - To add or remove CommCell users or a CommCell user group, select a user in the Available or Selected boxes and click Add> or <Remove.
  - To specify a domain or external user (e.g., yahoo, gmail, etc.) or a pager address, enter the email address in **Email to Recipients** field. Separate multiple addresses with a comma.

 ebsense
 Add Strat Regard Schedub/Actions

 there
 Add Strat Regard Schedub/Actions

 there
 Internationality

 there
 Add Strat Regard Schedub/Actions

 there
 Internationality

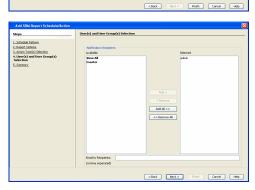
 there
 Internationality

Host OPI MHTML

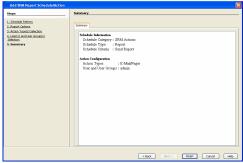
Use Local Drive

Change...

Browse



**9.** Review the summary and if satisfied, click **Finish**.



## **GETTING STARTED WITH UNIX FILE SYSTEM REPORTS**

The following illustrates a few possibilities of how UNIX File System reports can be generated and used. For more information that explains the reports comprehensively and how to generate reports using all possible features, refer to Advanced page.

### CAPACITY BY FILE SYSTEM

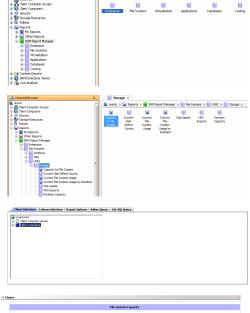
Use this report to display total, free and used space on the basis of File System.

### TO VIEW THIS REPORT:

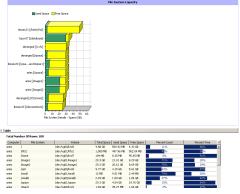
**1.** From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.

- 2. Expand File Systems | UNIX | Storage.
- Click the Capacity by File System template and select the client computers in the Client Selection tab.
- 4. Click Run.

A statistics of file system capacity comprising of but not limited to total space, used space, free space, etc. for clients and client computer groups is displayed in chart and table formats.



💐 metsos > 📓 Reports > 📔 SRI

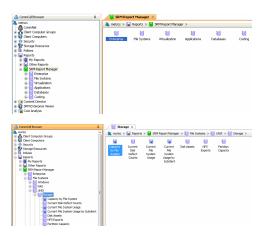


### CURRENT FILE SYSTEM USAGE

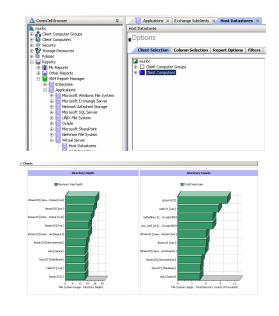
Use this report to display details about files, directories, file size, depth, file count etc. for File System.

### TO VIEW THIS REPORT:

1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.



- 2. Expand File Systems | UNIX | Storage.
- 3. Click the **Current File System Usage** template and select the client computers in the **Client Selection** tab.



4. Click Run.

A statistics of Current File System usage on the basis of files, directories, file size, depth, file count etc. is displayed in chart and table formats.

### CURRENT FILE SYSTEM USAGE BY SUBCLIENT

Use this report to view details about files, directories, file size, depth, file count etc. on the basis of subclient of a file system.

### TO VIEW THIS REPORT:

- **1.** From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- Image: Source in the second in the second

- 2. Expand File Systems | UNIX | Storage.
- Click the Current File System Usage by Subclient template and select the client computers in the Client Selection tab.

4. Click Run.

Details such as files, directories, file size, depth, file count etc. on the basis of subclient of a file system are displayed in chart and table format.

Administration Guide - HP-UX File System iDataAgent

Back to Top

# **SRM for UNIX File System - Reports**

Basic Advanced Filters Summaries

### **TABLE OF CONTENTS**

#### Overview

#### **Report Features**

Options Report Options Filters Actions Forecasting Copy Chart

#### Cost History and Usage Reports

Support

### **OVERVIEW**

SRM reporting provides a sleek, versatile, and easy-to-use reporting framework that enables you to easily and effectively choose, view, and analyze vital data. Enterprise and application-based reports can be rapidly generated with out-of-the-box templates or customized with filter criteria. Reports can be run immediately or scheduled to run daily, weekly, monthly, etc.

In essence, SRM UNIX File System reports provide these features:

- Templates of predefined columns are provided so that a report can be generated quickly. The columns are preselected but can be adjusted as needed.
- Filter criteria. Reports can be customized according to particular criteria, such as client or client group, the columns to display in the report, etc.
- Report options control how the data is displayed in a report or chart. You can control the data size units, number of rows to display in an entire report or before a page break, sorting order, etc.
- Advanced features, such as Ad hoc SQL queries is another type of filter criteria that can also be applied to further refine the report.
- When scheduled, reports can be saved and shared in various formats (HTML, Excel, PDF) or in different languages.
- Notifications. When scheduled reports are run, notifications can be sent in the form of an email or page, SNMP trap, RSS feed, Event Viewer message to inform email recipients, computers, or a script that a report has run and is now available.
- Cost Analysis reports are available to provide Cost History and Usage History information (e.g., Cost History by Application, Usage History by Application).
   Data for these reports are compiled at regular intervals by a background process on the SRM Server.

The following sections describe the SRM UNIX File System reporting features in more detail.

## **REPORT FEATURES**

The following features are provided by SRM Reports.

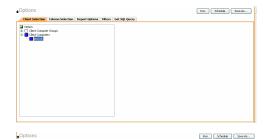
### OPTIONS

Out-of-the box templates provide pre-selected columns and can be run immediately after selecting clients or client computer groups. To generate a customized report, you can start with a template and then alter the pre-selected columns by adding or removing the columns. Note that when selecting clients, SRM data collection must be enabled and a full backup needs to have run for the Agent in order to have up-to-date information presented in the report.

Pay particular attention when specifying filter criteria. Selecting criteria judiciously will aid in generating a useful report. Otherwise, the report may be too cumbersome and cluttered.

#### TO FILTER A SRM REPORT:

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- 2. Expand the applicable tree to view your agent. Then select your agent and click a template to display the **Options** window.
- Click the Client Selection tab and select the client computers or client computer group. This is a required step.



Group....

#### 4. Click Column Selection tab.

For an out-of-the-box template, the columns are displayed here. To change the columns, select a category and click **Add** or **Remove** to move the columns between the **Available** and **Selected** boxes. Clicking **Remove All** will remove all previously selected filters for the reports.

The columns that can be selected are listed in Available Columns.

#### **REPORT OPTIONS**

The report options control how data is presented in the report. Either accept the defaults or modify the options as described below.

#### TO SPECIFY REPORT OPTIONS OF A SRM REPORT:

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- 2. Expand the applicable tree to view your agent. Then select your agent and click a template to display the **Options** window.
- 3. Click the **Report Options** tab and click the **General tab** to modify these options:
  - Determine the **Data Size Unit** in the table section of the report and when building ad hoc queries. You can elect to have them converted for you automatically by selecting **Convert data size automatically** or you can specify the unit (e.g., Bytes, KB, MB, GB, MB, TB, PB). Default is GB.
  - Either accept the default number of 100 rows to display in the entire report or enter a new number in Limit number of rows to output.
  - Specify the number of rows to display in the report before breaking the page. Either accept the default of 100 or enter a new number in Number of rows per page.
  - For the columns selected, use the up and down arrows to move the sorting order of the columns in Set Sorting Order of Rows to Return. Also specify if you want ascending (ASC) or descending (DESC) order. For example, moving a column to the Top of the sorting order will filter the data base on that order first, followed by the rest of the columns. Select OFF to not include the column in the sort.
- 4. Click the **Report Options** tab and click the **Chart Options tab** to modify these options:
  - If you want to switch the X/Y Axes in the charts, click Switch X/Y Axis.
  - Select the columns in Values and Labels that should be displayed in the chart. To
    preserve charting space, only the first 25 characters for a label are visible in the
    report. To see the entire label, hover over the label with the mouse.
  - Specify the Data Size Units in Chart (e.g., BYTES, KB, MB, GB, MB, TB, PB) that you want displayed in the charts.
  - Enter the e Maximum Number of Bar Points Per Chart you want displayed, or click Draw all Bar Points to have all possible bar points drawn. Default is 10.

### FILTERS

For the columns selected, Filters can also be applied to further refine the data in the report.

Selecting the **Get Query** tab will display the SQL query in long notation that will be used to get the data and generate the report. The query that is displayed is Read-only and can be used in a third-party SQL application, such as SQL Server Management Studio.

### ACTIONS

Configuring notifications is a step when scheduling a report. When scheduled reports are run, notifications can be sent in the form of an email or page, SNMP trap, RSS feed, Event Viewer message to inform email recipients, computers, or a script that a report has run and is now available. The possible notifications are explained in the sections below.

#### E-MAIL/PAGER ADDRESS

A notification can be sent to email or pager recipients when a scheduled report has run. The recipient can be either a CommCell user, a CommCell user group, a



Client Selection Column Selection Report Options Filters	s Get SQL Query
General Chart Options	
Seitch X/Y Avis	
Values	Labels
Volume Details - Free Space	Windows Entities - Computer
Volume Details - Used Space	Mindows Erkbies - Volume
Data Size Unit in Chart: 📴 💽	
Maximum Number of Bar Points Per Chart: 10 🚆 🗖 Dra	er all Bar Points

domain or external user (e.g., yahoo, gmail, etc.), or a pager address.

A notification can be e-mailed or sent to a pager to a selected list of recipients when a scheduled report has run. The recipients can be either a CommCell user, a CommCell user group, a domain or external user (e.g., yahoo, gmail, etc.), or a pager address.

#### TO CONFIGURE AN EMAIL/PAGER NOTIFICATION WHEN A SCHEDULED REPORT HAS RUN:

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- 2. Expand the applicable tree to view your agent. Then select your agent and click a template to display the **Options** window.
- Configure the report by specifying clients and columns, report options, and optionally, ad hoc queries.



Sart Tine 8 : 00 AM

Next >

Options>>

Cancel Help

Change...

Browse

 Click Schedule to generate and schedule the report on a daily, weekly, monthly, yearly, or even one time basis.

Optionally, click **Report Options** to repeat sending the report every so many days, or run it for a particular number of times.

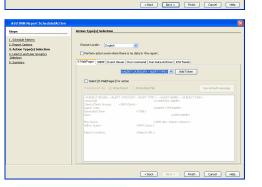
Click Next.

<ol><li>In this dialog, select the report output options, such a</li></ol>	s:
----------------------------------------------------------------------------	----

- Format select MHTML, EXCEL, or PDF.
- Specify a path in **Destination Path** if you want to save the report to a local drive or network share.

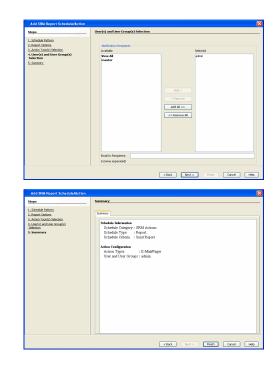
Click Next.

- 7. In this dialog, configure the **E-Mail/Pager** notification for the scheduled report as follows:
  - Click Select [E-Mail/Pager] for notification.
  - Either accept default format or add more tokens by selecting a token from the pulldown menu and clicking **Add Token**. The tokens are explained in Alert Tokens. Click **Use default message** to revert back to original default format.



- 8. In the **User(s) and User Group(s) Selection** dialog, specify the recipients to whom the notification will be sent as follows:
  - To add or remove CommCell users or a CommCell user group, select a user in the **Available** or **Selected** boxes and click **Add>** or **<Remove**.
  - To specify a domain or external user (e.g., yahoo, gmail, etc.) or a pager address, enter the email address in **Email to Recipients** field. Separate multiple addresses with a comma.

Review the summary and if satisfied, click Finish.



#### SNMP TRAPS

9.

A notification can be sent by a CommServe, using the SNMP protocol, to other computers in the form of SNMP traps when a scheduled report has run. This notification type requires that the SNMP Enabler software must be installed on the CommServe computer. See SNMP Enablers for more information.

#### TO CONFIGURE AN SNMP TRAP NOTIFICATION WHEN A SCHEDULED REPORT HAS RUN:

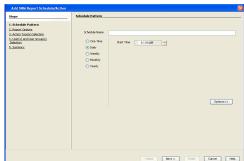
- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- **2.** Expand the applicable tree to view your agent. Then select your agent and click a template to display the **Options** window.
- Configure the report by specifying clients and columns, report options, and optionally, ad hoc queries.



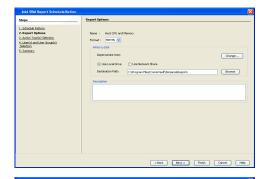
 Click Schedule to generate and schedule the report on a daily, weekly, monthly, yearly, or even one time basis.

Optionally, click **Report Options** to repeat sending the report every so many days, or run it for a particular number of times.

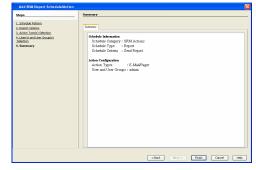
Click Next.



- 5. In this dialog, select the report output options, such as:
  - Format select MHTML, EXCEL, or PDF.
  - Specify a path in **Destination Path** if you want to save the report to a local drive or network share.







Review the summary and if satisfied, click Finish.

• Click Select [SNMP] for notification.

Click the **SNMP** tab and configure this notification type as follows:

• Either accept default format or add more tokens by selecting a token from the

Click **Use default message** to revert back to original default format.

pulldown menu and clicking Add Token. The tokens are explained in Alert Tokens.

**EVENT VIEWER** 

6.

7.

Click Next.

A message can be sent to the Event Viewer on the CommServe when a report is run or scheduled.

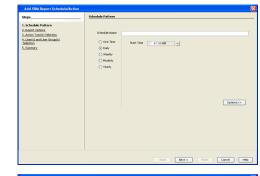
#### TO CONFIGURE AN EVENT VIEWER NOTIFICATION WHEN A SCHEDULED REPORT HAS RUN:

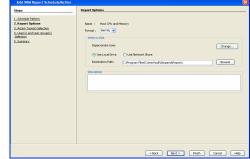
- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- **2.** Expand the applicable tree to view your agent. Then select your agent and click a template to display the **Options** window.
- Configure the report by specifying clients and columns, report options, and optionally, ad hoc queries.

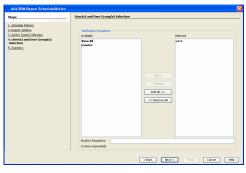
<b>Client Selection</b>	<b>Column Selection</b>	Report Options	Filters 0	Get SQL Query	
netscs					
Cleat Concute	r Groups rs				
Clerk Conpute					

 Click Schedule to generate and schedule the report on a daily, weekly, monthly, yearly, or even one time basis.

Optionally, click **Report Options** to repeat sending the report every so many days, or run it for a particular number of times.







### 5. In this dialog, select the report output options, such as:

- Format select MHTML, EXCEL, or PDF.
- Specify a path in **Destination Path** if you want to save the report to a local drive or network share.

Click Next.

- 6. Click the **Event Viewer** tab and configure this notification type as follows:
  - Click Select [Event Viewer] for notification.
  - Either accept default format or add more tokens by selecting a token from the pulldown menu and clicking **Add Token**. The tokens are explained in Alert Tokens. Click **Use default message** to revert back to original default format.

Click Next.

7. Review the summary and if satisfied, click **Finish**.

#### **RUNNING A SCRIPT**

A notification can be sent to a script when a scheduled report has run. Once receiving the notification, the script can be specified to run on the CommCell or a client computer. Arguments can be specified for the script as well. You can also select an option to read and archive a list of files and directories of a report if a supported Archiver Agent is installed on the client computer and an On Demand Archive Set is configured with SRM enabled.

### TO CONFIGURE A NOTIFICATION TO RUN A SCRIPT WHEN A SCHEDULED REPORT HAS RUN:

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- **2.** Expand the applicable tree to view your agent. Then select your agent and click a template to display the **Options** window.
- Configure the report by specifying clients and columns, report options, and optionally, ad hoc queries.

Start Time 8 : 00 AM

Options>>

4. Click **Schedule** to generate and schedule the report on a daily, weekly, monthly, yearly, or even one time basis.

Optionally, click **Report Options** to repeat sending the report every so many days, or run it for a particular number of times.

Click Next.

- 5. In this dialog, select the report output options, such as:
  - Format select MHTML, EXCEL, or PDF.
  - Specify a path in **Destination Path** if you want to save the report to a local drive or network share.

Click Next.

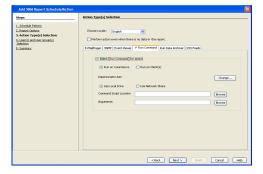
A def Stel Regort Scholauf Accient Uter L. Schola Martine D. Schola Martine D. Annon Level Scholar Martine Scholar Scholar D. Annon Level Scholar Scholar Scholar D. Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Scholar Schola	
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

6. Click the **Run Command** tab and configure this notification type as follows:

- Click Select [Run Command] for notification.
- Select either Run on CommCell or Run on Client to specify where to run the script.
- Click either **Use Local Drive** or **Use Network Share** to specify the location of the script.
- Click Change... if you need to provide user account credentials so the script has
  the correct permissions to run. Specify a Windows User Account with the
  appropriate privileges to access the scripts directory. User impersonation requires
  that the specified user have write permissions to the scripts directory; otherwise,
  the user impersonation account may not take effect. This is especially true if the
  associated computer is not part of a domain and if the user is not a domain user.
- Click **Browse** or enter a path where the script is located in **Command Script** Location.
- Click **Browse** or enter in arguments in **Arguments** to be passed to the script while running.

Click Next.

7. Review the summary and if satisfied, click **Finish**.



Add SRM Report Schedule/Action		1
Bage 1. Senan source 1. Senan source 1. Senan Senan Senan 1. Senan Senan Senan 3. Senan Senan Senan 5. Senan Senan Senan 5. Senan Senan Senan Senan Senan	Sense: State A formation State Topogray: STM Actions Socials Types: #Papert Booland Cines: :San Papert Action: Congours: :San Papert Action: Types: :E Add/Paper Une and Une Congo: : : :San Papert Une and Une Congo: : : : : : : : : : : : : : : : : : :	
	<book next=""> Rinkh Cancel He</book>	6

#### **RUN DATA ARCHIVER**

A notification can be sent to run a Data Archiver operation when a scheduled report has run. You can select an option to read and archive a list of files and

directories of a report if a supported Archiver Agent is installed on the client computer and an On Demand Archive Set is configured with SRM enabled. For the Data Archiver schedule to run successfully, archive rights on the client computer are required.

### TO CONFIGURE A NOTIFICATION TO RUN A DATA ARCHIVER OPERATION WHEN A SCHEDULED REPORT HAS RUN:

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- **2.** Expand the applicable tree to view your agent. Then select your agent and click a template to display the **Options** window.
- Configure the report by specifying clients and columns, report options, and optionally, ad hoc queries.



Sart Tine 8 : 00 AM

Options>>

Change...

Browse

 Click Schedule to generate and schedule the report on a daily, weekly, monthly, yearly, or even one time basis.

Optionally, click **Report Options** to repeat sending the report every so many days, or run it for a particular number of times.

Click Next.

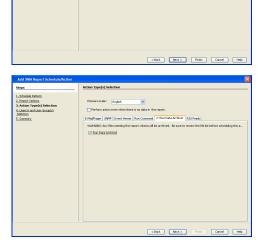
5.	In this dialog,	select the	report ou	utput options	s, such as:
----	-----------------	------------	-----------	---------------	-------------

- Format select MHTML, EXCEL, or PDF.
- Specify a path in **Destination Path** if you want to save the report to a local drive or network share.

Click Next.

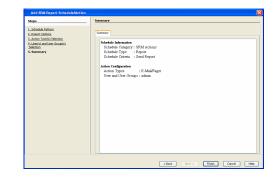
6. Click the Run Data Archiver tab and configure this notification type by selecting Run Data Archiver if a supported Archiver Agent is installed on the client computer and an On Demand Archive Set is configured with SRM enabled. In this case, the list of files and directories of the report will be read and an archive operation will be performed on the default subclient of the archive set.

Click Next.



C:(Program Files)/Com

7. Review the summary and if satisfied, click **Finish**.



#### RSS FEEDS

A notification can be sent in a Really Simple Syndication (RSS) feed when a scheduled report has run. The RSS feed can be automatically integrated with your Web Browser.

#### TO CONFIGURE A RSS FEED NOTIFICATION WHEN A SCHEDULED REPORT HAS RUN:

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- 2. Expand the applicable tree to view your agent. Then select your agent and click a template to display the **Options** window.
- Configure the report by specifying clients and columns, report options, and optionally, ad hoc queries.



ons Filters Get SQL Quer

Run Schedule Save As...

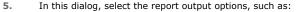
Options>>

Cancel Help

4. Click **Schedule** to generate and schedule the report on a daily, weekly, monthly, yearly, or even one time basis.

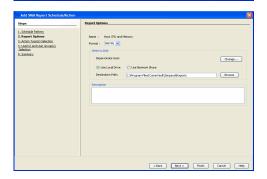
Optionally, click **Report Options** to repeat sending the report every so many days, or run it for a particular number of times.

Click Next.

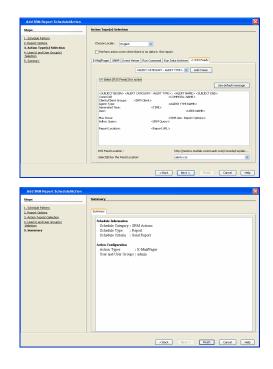


- Format select MHTML, EXCEL, or PDF.
- Specify a path in **Destination Path** if you want to save the report to a local drive or network share.

Click Next.



- 6. Click the **RSS Feeds** tab and configure this notification type as follows:
  - Click Select [RSS Feeds] for notification.
  - Either accept default format or add more tokens by selecting a token from the pulldown menu and clicking **Add Token**. The tokens are explained in Alert Tokens. Click **Use default message** to revert back to original default format.
  - Specify the feed location in **Select/Enter the Feed Location** field.



7. Review the summary and if satisfied, click **Finish**.

### FORECASTING

Forecasting is prediction of data usage in future, based on the usage pattern in the past. Since Prediction allows visualizing data usage in future, it helps make business decisions accordingly. Prediction is available on history reports and it can be done based on Daily/weekly/Monthly data. In the graphs, prediction lines are shown as thin lines while the actual usage is shown as thick lines.

### COPY CHART

When viewing a report in the CommCell Console, you can copy any chart to the clipboard in .bmp format by right-clicking the chart and selecting **Copy Chart**. This allows you to easily copy a chart into other applications. Note that the Copy Charts function is not compatible with Microsoft WordPad.

### CATEGORIES AND COLUMNS

Reports can be used as initial templates or customized by adding or removing columns in the templates or specifying additional Filter Criteria. The following reports support File level Drill Down:

- Capacity by File System
- Current File System Usage
- Current File System Usage by Subclient

The table below lists the available report templates and the categories and columns that can be selected to configure a customized report. The table also shows the job types that are supported by each report.

Category	Column	Description		File System ent	
			Discovery Job	Discovery and Analysis Job	Agentless SRM
Client	Client Computer Group	Displays aspects of each client and their respective subclients on which the SRM Unix File System Agent is installed.	~	~	
	Computer				
	Subclient				
<b>Client Properties</b>	Hostname	Displays aspects of the client computer on which the SRM Unix	<ul> <li>Image: A set of the set of the</li></ul>	~	
	Memory	File System Agent is installed.			
	Operating System				
	OS Vendor				
	OS Version				
	Processors				
			l		l l

	1	1		Ì	1
	Service Pack				
	SP Version				
	Time Zone				
Disk Details	Allocated Space	Displays aspects of physical disks (e.g., capacity, partitions,	✓	✓	
	Block Size	space, etc.)			
	Blocks				
	Capacity				
	Partitions				
	Serial Number				
	Unallocated Space				
	Grown Defects				
	Interface Type Manufacturer				
	Manufacturer				
	Primary Defects				
	Total Defects				
Disk Usage History	As Of	Displays how physical disks have been used for a given time period. Useful for trending purposes and to identify disks that		~	
	Grown Defects	are likely to fail soon.			
	Primary Defects				
	Total Defects				
File Level Analytic Directories		Displays deeper analysis of Directories. Selecting <b>Discovery</b> and <b>Analysis Job</b> is required when running File level analytics.		~	
	Computer	Displays the client computer selected for report generation.			
	Directory	Displays the directory under the file systems which were backed up.			
	Directory Depth	Displays the number of directories away from the root directory.			
	Directory File Count	Displays the number of directories within a directory.			
	Directory Name	Displays actual name of the Directory, e.g., /usr.			
	Directory Size	Displays the file size.			
	File System	Displays the file system name, e.g., /usr.			
	Group Name	Displays the group name for the particular directory.			
	Sub Directory Count	Displays the level from root directory to the subdirectory.			
	Total Directories	Displays the total number of directories.			
	Total Files	Displays the total number of files.			
	User Name	Displays the owner of the files in the directory			
File Level Analytic		Displays deeper analysis of Files. Selecting <b>Discovery and</b> <b>Analysis Job</b> is required when running File level analytics.		~	
Files	Access Time	Displays last time file was used, e.g., 11/11/2009 17:14.			
	Computer	Displays name of the local host, e.g., client1.			
	Creation Time	Displays the time the file was originated, e.g., 1/19/2008			
		4:33.			
	Directory Path	Displays the full path for a directory or file			
	Extension Name	Displays the extension associated with the file, e.g., $\ensuremath{\mathtt{TXT}}$ .			
	File	Displays the number of files in a directory, e.g., 32.			
	File System	Displays the file system name, e.g., /usr.			
	Modification Time	Displays the last changed time, e.g., 9/18/2006 17:37.			
	Size	Displays the file size, e.g., 90.19MB			

I			1 1		I
	User Group	Displays the group to which the owner of the file(s) belong, e.g., bin.			
	User Name	Displays the owner of the file			
File System Details	Free Inodes	Displays file system statistics such as space capacity and file		<ul> <li>Image: A set of the set of the</li></ul>	
The System Details	Free Space	inodes that store information on files (e.g., user and group ownership, access mode, and type of file).			
	Percent Free				
	Percent Used				
	Total Inodes				
	Total Space				
	Туре				
	Used Inodes				
	Used Space				
	Average File Size	Displays the time at which the file was last accessed, read or		✓	
File System File Distribution by Access	Files	written to.			
Time	Total File Size				
	Туре				
<u> </u>	Average File Size	Displays time that the inode information (permissions, name,		~	
File System File Distribution by	Files	etc., the metadata, as it were) was last modified.			
Change Time	Total File Size				
	Type				
	Average File Size	Displays the last time the actual contents of the file ways last		~	
File System File	5	Displays the last time the actual <i>contents</i> of the file were last modified.		•	
Distribution by Modification Time	Files				
	Total File Size				
	Туре				
File System File Distribution by Size	Average File Size	Displays the file distribution of the file system on the basis of size.		~	
······	Files				
	Total File Size				
	Туре				
File System File Distribution by Type	Average File Size	Displays the file distribution of the file system on the basis of file type.		~	
	Files				
	Total File Size				
	Туре				
File System Usage	Average File Size	Displays aspects of files per extension and storage requirements.		~	
	Average Files per Directory	requirements.			
	Average Tree Depth				
	Block Devices				
	Character Devices				
	FIFO Files				
	Max File Size				
	Maximum Tree Depth				
	Sparse File Count				
	Symbolic Link Files				
	Total Directories				
	Total Files				
File Cost of the	As Of	Displays overall file system statistics. Useful for trending		<ul> <li>Image: A set of the set of the</li></ul>	
File System Usage History	Percent Used	purposes.			
-	Used Space				
File by Extension	Average File Size	Displays aspects of files per extension and storage requirements.	~	~	
	1	l	1 I		I

	Futuraian				
	Extension				
	Files				
	Max File Size				
	Total File Size				
Host Files	Accessed	Displays aspects of files that provide name resolution of host	✓	~	
	Created	names with their corresponding IP address.			
	Group				
	Modified				
	Name				
	Owner				
	Size				
Junio Ellas	Accessed	Displays files in each file system that contain "junk" (e.g., core	✓	<ul> <li>✓</li> </ul>	
Junk Files	Created	files, HTML files, swap files). Useful for investigation and/or removal.			
	Group	i entoval.			
	Modified				
	Name				
	Owner				
	Size				
Largest Files	Largest Files Accessed	Displays the top 10 largest files (by default), as per the category selected. However the value can be changed to any		~	<u> </u>
	Largest Files Created	number using the Top 'N' Category for SRM Reports Manager.			
	Largest Files Group				
	Largest Files Modified				
	Largest Files Name				
	Largest Files Owner				
	Largest Files Size				
Least Recently Used	Least Recently Used File Accessed	Displays the top 10 least recently used files (by default), as per the category selected. However the value can be changed to any number using the Top 'N' Category for SRM Reports Manager.		~	<u> </u>
Files	Least Recently Used File Created				
	Least Recently Used File Group				
	Least Recently Used File Modified				
	Least Recently Used File Name				
	Least Recently Used File Owner				
	Least Recently Used File Size				ļ
Logical Volume Details	Access Mode Capacity	Displays detail about the Logical volumes as per the category selected.		~	
- stung	Cost Category				
	Extent Sizes				
	Free Space				
	Name				
	Status				
	Туре				
	Used Space			1	1
	NFS Options	(Network File System) Specifies the file system that have been made shareable and the machines that will have access to that		~	<ul> <li>✓</li> </ul>

Partition Details	Blocks	Summarizes aspects of each partition of the file system.	✓	×
a dition becans	Capacity			
	Туре			
Prohibited Files	Accessed	Displays aspects of files that are not allowed (or forbidden) in	~	
	Created	the UNIX file system		
	Group			
	Modified			
	Name			
	Owner			
	Size			
SGID Files	Accessed	(Set Group ID) Displays aspects of group files in each file	<b>~</b>	
3010 1 1163	Created	system. Useful to manage group permissions on these files for security purposes.		
	Group	····· / F · F · · · ·		
	Modified			
	Name			
	Owner			
	Size			
Subclient File	Average File Size	Displays the time at which the file per subclient was last	~	
Distribution by Access Time	Files	accessed, read or written to.		
	Total File Size			
	Туре			
Subclient File	Average File Size	Displays time that the inode information (permissions, name,	~	
Distribution by Change Time	Files	etc., the metadata, as it were) was last modified.		
5	Total File Size			
	Туре			
Subclient File	Average File Size	Displays the last time the actual <i>contents</i> of the file per	<b>~</b>	
Distribution by Modification Time	Files	subclient were last modified.		
	Total File Size			
	Туре			
Subclient File	Average File Size	Displays the file distribution of the subclient on the basis of	~	
Distribution by Size	Files	size.		
	Total File Size			
	Туре			
Subclient File	Average File Size	Displays the file distribution of the subclient on the basis of file	~	
Distribution by Type	Files	type.		
	Total File Size			
	Туре			
Subclient Usage	Average File Size	Displays Calypso subclient (the logical entity that uniquely	~	
	Average Files per Directory	defines a unit of data on a client computer) information.		
	Average Tree Depth			
	Directories			
	Files			
	Maximum File Size			
	Maximum Tree Depth			
	Sparse File Count			
	Subclient Block Devices			
	Subclient Character Devices			

	Subclient FIFO Files			
	Subclient Symbolic Link Files			
	Accessed	(Set User ID) Displays aspects of user files in each file system.	✓	
SUID Files	Created	Useful to manage group permissions on these files for security		
	Group	purposes.		
	Modified			
	Name			
	Owner			
	Size			
	Disk	Displays overall aspects per each computer selected (e.g.,	<ul> <li>Image: A second s</li></ul>	
UNIX Entities	File System	partition, volume, etc.)		
	Partition			
	Volume			
	Average File Size	Displays file size details (average, maximum, total) created per	~	
User Group Usage	Files	user group.	-	
	GID			
	Maximum File Size			
	Total File Size			
	User Group Name			
User Group Violations	Disk Space Hard	Displays Disk Space (disk space) violations per userto help	<ul> <li>✓</li> </ul>	
User Group Violations	Limit Disk Space Soft	enforce corporate storage usage policies.		
	Limit File Count Hard			
	Limit			
	File Count Soft Limit			
	Files Violation			
	User Group Name Violation Used -			
	Space			
	Violation GID			
User Usage	Average File Size	Displays a summary of files used and their size (average,	✓	
	Files	maximum, total) per user name.		
	Maximum File Size			
	Total File Size			
	UID			
	User Name			
User Violations	Disk Space Hard Limit	Displays quota violations per user to help enforce corporate storage usage policies.	~	
	Disk Space Soft Limit			
	User File Count Hard Limit			
	User File Count Soft Limit			
	User Files Violation			
	User Name			
	Violation - Used Space			
	Violation UID			
Volume Group Details	Access Mode	Displays details about Volume Groups on the basis of category	✓	
	Allocated Space	selected.		
	Free Physical			

1	1		i	i	
	Extents				
	Free Space				
	Group Name				
	Group Type				
	Logical Volumes				
	Maximum Logical Volumes				
	Maximum Physical Volumes				
	Physical Extent Size				
	Physical Volumes				
	Total Physical Extents				
	Used Physical Extents				
	Volume Group Capacity				
	Volume Group Status				
Writable and	Accessed	Displays aspects of files that possess write and execute		~	
Executable Files	Created	permissions in each file system. Useful to manage group and user permissions on these files for security purposes.			
	Group				
	Modified				
	Name				
	Owner				
	Size				

# **COST HISTORY AND USAGE HISTORY REPORTS**

Data for the Cost History and Usage History reports (e.g., Cost History by Application, Usage History by Application) is compiled at regular intervals by a background process on the SRM Server. The default interval is one week, which means the Cost History reports will show one data point per week, no matter how often data collection is scheduled for them; thus, data collection for these reports should be synchronized to the summary interval. You can configure the interval by selecting **SRM Options** in the **Control Panel**.

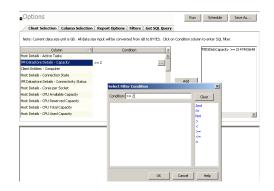
For a newly installed SRM Server, no data will appear in these reports until either the default interval, or a user-specified interval has elapsed from the time of installation, at which time the first summary process will run, and data will be available for these reports.

# TO RUN A COST ANALYSIS REPORT:

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- 2. Click **Enterprise**. Then click **Cost Analysis** to display several out-of-the-box templates. Click on a template to get started.
- 3. For an out-of-the-box template, the columns are displayed here. To change the columns, select a category and click Add or Remove to move the columns between the Available and Selected boxes. Clicking Remove All will remove all previously selected filters for the reports.
- Optionally, click the **Report Options** tab and specify options as explained in Report Options.

ptions			Run Schedule Save	ó
Client Selection Column Selection	Report Options   Filters   Get SQL Quer	6		
ategories Application 💌		Selected:		
namer galotoon - Cost galotoon - Used Space	Add 5 < Arrow < Arrow	Alector Application Hatory - Name Application Hatory - Cost Application Hatory - Cost As Of		
General Chart Options late Size Unit In Table and Adhoc Query imit number of rows to output:	n (se 💌 🗆 Convert data size autor 100 g	aticalij		
Nata Size Unit in Table and Adhoc Quer	100 #	etcoly		
bata Size Unit in Table and Adhoc Query init number of rows to output: Number of rows per page: Set Sorting Order of Rows to Retu	100 관 100 관	eticely		
Lata Size Unit in Table and Adhoc Query ant number of rows to output:	100 월 m C ASC C DESC © OFF C ASC C DESC © OFF	atori		
Nota See Link in Table and Adhoc Query Inik number of rows to output: Auriber of rows per page: Set Sorting Order of Rows to Retu Column Volume Details - Free Space	100 월 100 월 m C ASC C DESC 한 OPP	etxahl		

 Optionally, click the Adhoc Query tab and configure an ad hoc query as explained in Ad Hoc SQL Query.



6. Click **Run** to generate the report immediately and view the results.

# SUPPORT

Back to Top

SUPPORTED FILE SYSTEM	NOT SUPPORTED FILE SYSTEMS
AIX	FreeBSD
Linux	Tru64
HP-UX	
Solaris	

Back to Top

# **SRM for UNIX File System - Reports**

Basic Advanced Filters Summaries

# **TABLE OF CONTENTS**

# Overview

# Generate a Report with Filters

Examples of Queries used in filters Operators Explained Rules to Follow List Current Capacity by File System

# **OVERVIEW**

Customized queries can be applied as additional reporting filters to retrieve specific SRM information from the clients and client groups in your CommCell. These queries are extremely useful if the provided report filters (clients, columns) do not provide the necessary data required for your environment. For example, you could apply SQL query filters to the Allocated Space column to display disks of a certain size, such as 2 GB. This ad hoc query further refines and filters the data to facilitate management of your storage infrastructure.

More examples of why you may want to use filters for SQL queries include:

- You wish to generate a list of users who consume more than 10 MB of disk space.
- You want so see how much space is consumed by Exchange mailboxes on particular clients.
- You need to see a list of volumes on a NAS filer that exceed 5 TB of space.

Since the query will run against the CommServe database to retrieve the requested SRM data, which can be easily configured from the CommCell Console when specifying filter criteria of an SRM report. Any SQL query that is supported by a SQL Server can be used in Filters for SRM reporting. If desired, once the conditions have been defined, you can retrieve the full SQL query for use in third-party applications.

# **GENERATE A REPORT WITH FILTERS**

Filters in the form of SQL queries can be defined during the configuration of an SRM report. You can add a SQL query to the report to filter additional data for a specified column. To configure a report with filters, you must complete the following:

- 1. Select the type of SRM report you wish to generate. An SRM report can be selected from the SRM Report Manager node.
- 2. Determine which client(s) and client computer group(s) from which you wish to collect data.
- 3. Determine and select the type of data to collect for the report (filtering).
- 4. Define the conditions for the SQL query. Queries that include strings are case-sensitive.
- 5. Generate the report.

# **TO GENERATE A REPORT WITH FILTERS:**

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- Expand the applicable tree to view your agent. Then select your agent and click a template to display the **Options** window.
- Click the Client Selection tab and select the client computers or client computer group. This is a required step.



# Click Column Selection tab.

Select a category and **Add** or **Remove** columns between the Available and Selected boxes. The categories and columns differ for each type of report. Clicking **Remove All** will remove all previously selected filters for the reports.

- Click the Report Options tab to configure settings in the report. Click the General tab to:
  - Set the time range of the report.
  - Enable forecasting by clicking **Include Trending** and specifying default trending interval and number of data points on which the trending interval is based.
  - Enter the Maximum number of Bar Points per chart or select Draw All Bar Points.
  - Either accept the default of 100 rows or increase or decrease the rows to display in the report by specifying a number in the **Limit number of rows to output** field.

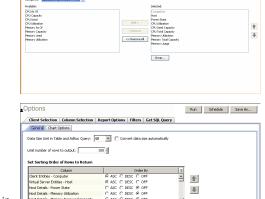
Click the Advanced tab to:

7.

- Set the Data Size Unit to GB for the tables.
- Set the Sorting order of the columns in either ascending or descending order or no sorting order.
- 6. Select **Filters** tab to run real-time SQL queries can also be applied to the data to provide further filtering.
  - Select a column in which you want to specify a condition (e.g., VM Datastore Details - Capacity) and click the Conditions field of Free Space and then click the ellipsis .... button.
  - In the Select Filter Condition dialog box, double-click the operator and in the Condition field, enter the values of the condition, such as >2 and click OK.
     Click Add.

See Examples of Queries used in filters for an explanation of the operators.

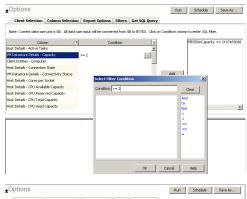
- The full SQL query can be generated if necessary after adding the condition and selecting the Get SQL Query tab.
  - The query that is displayed is Read-only and can be used in a third-party application, such as SQL Server Management Studio and used there to collect and report data.



Report Options Filters Get SQL Query

Client Selection Co

Run Schedule Seve As...





- 8. Generate or save the report with one of these options:
  - Click **Run** to generate the report immediately and view the results in the CommCell Console.
  - Click Schedule to generate and schedule the report on a daily, weekly, monthly, yearly, or even one time basis. Specify the report language (see Languages Support for the list of languages supported in Reports), format (HTML, EXCEL, PDF), and location. Optionally, notifications can be configured so the report can be emailed, sent to an SNMP trap, or RSS feed, etc.

When scheduling, patterns can also be applied to the report so it runs on a specific time, repeated every so many days, or run for a particular number of times. Some reports allow enabling Forecasting by specifying default trending interval and number of data points on which the trending interval is based.

• Click **Save As...** to save the report filter criteria, schedule information, notifications to a template so it can be used to generate a report at a later date. All report templates are saved under **My Reports**.

# **EXAMPLES OF QUERIES USED IN FILTERS**

The sections below explain the operators than can be used in a SQL query as well as real-world examples describing why and how to specify the condition and build the query.

ATORS	

The following explains the operators that can be used in filters using SQL queries. Examples for each are provided. Queries that include strings are casesensitive.

OPERATOR	DESCRIPTION	EXAMPLE
And	Is a binary operator that operates on two <i>operands</i> (data that is manipulated by the operator).	Display a computer group tha
	Works with both numeric and string queries. Displays a result if both operands are TRUE and no result is displayed if either is FALSE.	starts with B and ends with M (e.g., Birmingham).
		1. Select Client Computer Group column.
		2. Enter this query: Starts With B And Ends With M
Or	Is a binary operator that operates on two <i>operands</i> (data that is manipulated by the operator).	Display a computer that starts
	Works with both numeric and string queries. Displays a result if either operand is TRUE and no result is displayed if both are FALSE.	with B or starts with M (e.g., Birmingham, Milwaukee).
		1. Select Computer column.
		2. Enter this query: Starts With B Or Starts With M
Not	An operation on logical values that changes true to false, and false to true. The NOT operator inverts the result of a comparison expression or a logical expression.	Display a computer that does not have less that < 4 GB of used space.
	The specified condition must be false in order to view a result. Example: Display a computer that does not have less that < 4 GB of used space. Therefore, only computers with 4 or more GB of used space will be displayed.	1.Click <b>Report Options</b> tab and set data size unit to GB.
		2. Select Used Space columr
		3. Enter this query: Not < 4
Like	The LIKE operator is used in character string comparisons with pattern matching.	Display a computer that contains eng characters in its
	It can contain the special wild-card pattern matching characters percent '%' and underscore '_'. Underscore matches any <i>single</i> character. Percent matches zero or more characters.	name to identify computers in the engineering department.
		1. Select Computer column.
		2. Enter this query: %eng%
Starts With	The Starts With operator is used in character string comparisons with pattern matching.	All names of computers in the engineering department use the convention of eng Display all computers that sta with E to list computers in th engineering department.
		1. Select Computer column.
		2. Enter this query: Starts With E
Ends With	The Ends With operator is used in character string comparisons with pattern matching.	All names of computers in the System Test department use the convention of system_test. Display a computer that ends with T to list computers in the system_test department. 1. Select Computer column. 2. Enter this query: Ends With T
> (Greater Than)	A comparison operator that tests whether two expressions are the same.	Display file sizes that are larger than 2 GB.
	Works with only numeric queries.	1. Click <b>Report Options</b> tab and set data size unit to GB.
		2. Select Maximum Size column.
		3. Enter this query: > 2
< (Less Than)	A comparison operator that tests whether two expressions are the same. Works with only numeric queries.	Display file sizes that are less than 4 GB.
		1. Click <b>Report Options</b> tab and set data size unit to GB.
		2. Select Maximum Size

>= (Greater Than or Equal To)	A comparison operator that tests whether two expressions are the same. Works with only numeric queries.	Display file sizes that are greater than or equal to 2 TB. 1. Click <b>Report Options</b> tab and set data size unit to TB.
		2. Select Maximum Size column.
		3. Enter this query: >= 2
<=(Less Than or Equal To)	A comparison operator that tests whether two expressions are the same. Works with only numeric queries.	Display computers with less than or equal to 1 GB free space.
		1. Click <b>Report Options</b> tab and set data size unit to GB.
		2. Select Free Space column.
		3. Enter this query: <= 1
= (Equal)	The equals comparison operator compares two values for equality. Works with both numeric and string queries.	Display files that are located in the /usr/bin directory.
		1. Select Path column.
		2. Enter this query: =/usr/bin

# **RULES TO FOLLOW**

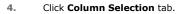
When constructing a filter using SQL query, adhere to these rules:

- Queries that include strings are case-sensitive.
- When a string has a space, enclose it with double quotes. For example, enter "Program Files".

# LIST CURRENT CAPACITY BY FILE SYSTEM

You may want to display specific virtual machines in your virtual storage infrastructure. You can use the following ad hoc query to quickly list and locate the machines.

- 1. From the CommCell Browser, click **Reports**, and then click **SRM Report Manager**.
- 2. Expand the applicable tree to view your agent. Then select your agent and click Capacity by File System template.
- 3. Click the **Client Selection** tab and select the client computers or client computer group. This is a required step.



The **Selected** columns show the **Capacity by File System** columns.

Options					Run	Schedule Save As
Client Selection	Column Selection	Report Options	Filters	Get SQL Query		
a netscs						
Clent Conpute     Clent Conpute     Clent Conpute	r Groups rs					
50 prov36						



 Click the Report Options tab to configure settings in the report. Click the General tab to:

- Set the Data Size Units to GB for the tables.
- Either accept the default of 100 rows or increase or decrease the rows to display in the report by specifying a number in the **Limit number of rows to output** field.
- Set the Sorting order of the columns in either Ascending or Descending order or no sorting order.

Click the Chart Options tab to:

- Provide a different orientation and Switch X/Y Axes by deselecting Values and Labels in the chart for the column selected. To reserve charting space, only the first 25 characters for a label are visible in the report. To see the entire label, hover over the label with the mouse.
- Set the **Data Size Units** (etc. GB, MB) in the chart
- Enter the Maximum number of Bar Points per chart or select Draw All Bar



**Points** if that option is desired.

- 6. Select Filters tab.
  - a. Select the File System Entities.
  - b. Under the **Condition** column, type in the condition directly or click ... to display the **Select Filter Condition** dialog box.
    - O Starts with C
  - c. After specifying the condition, click **Add**.

- 7. Generate or save the report with one of these options:
  - Click **Run** to generate the report immediately and view the results in the CommCell Console.
  - Click Schedule to generate and schedule the report on a daily, weekly, monthly, yearly, or even one time basis. Specify the report language (see Languages -Support for the list of languages supported in Reports), format (HTML, EXCEL, PDF), and location. Optionally, notifications can be configured so the report can be emailed, sent to an SNMP trap, or RSS feed, etc.

When scheduling, patterns can also be applied to the report so it runs on a specific time, repeated every so many days, or run for a particular number of times. Some reports allow enabling Forecasting by specifying default trending interval and number of data points on which the trending interval is based. For more information on trending, see Forecasting.

• Click **Save As...** to save the report filter criteria, schedule information, notifications to a template so it can be used to generate a report at a later date. All report templates are saved under **My Reports**.

Back to Top

# **SRM for UNIX File System - Summaries**

Basic Advanced Filters Summaries

# **TABLE OF CONTENTS**

Overview Subclient Summaries Volume Group Summaries File Systems Summaries Storage Devices Summaries

# **OVERVIEW**

SRM for UNIX File System Summaries provide a concise view of the status of UNIX File System entities with SRM enabled in the CommCell Console. The status information includes the resource, memory, and CPU usage, as well as other resource-related information. Summary information is provided as images in the form of bar graphs and pie charts to provide a succinct snapshot of the statistical information. While viewing summary, data rows in tables can be sorted by any one of the columns listed in that summary.

When you select an UNIX File System entity from the CommCell Console, its summary information appears in the main window. Each section can be expanded or collapsed as desired.

The following section describes the available summary types of SRM UNIX File System Agent at different levels in the CommCell Console:

# **SUBCLIENT SUMMARIES**

Summary at the subclient level include charts for **File System Usage by Subclient.** This chart displays details like Name, Average Tree Depth, Maximum Tree Depth, File Count, Directory Count, Average File Size, etc for the selected subclient.

However at the user defined or default Subclient level **Properties** showing physical information including name, state (enabled or disabled) last modification time and last analysis times, etc. are displayed along with Charts. The SRM UNIX File System Agent at this level displays charts for **File Distribution by Size**, **File Distribution by Type**, **File Distribution by Access Time** and **File Distribution by Modification Time**.

1. From the CommCell Console, select the Client Computer with SRM UNIX File System Agent for which you want to view summaries.



2. Expand SRM and select UNIX File System.



3. The associated **Subclient Summary** will appear in the main window.

# **VOLUME GROUP SUMMARIES**

Summary information at the Volume Group level Charts include charts for **Current Capacity by Volume Group**. This chart displays detail like Name, Volume Group Manager, Capacity, Allocated Space, Unallocated Space, Access Mode, Logical Volume Count, Physical Volume Count, Physical Extent Count for the selected volume group.

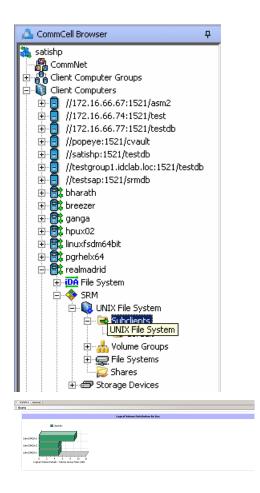
Each volume also displays Properties including physical information like Name, Volume Group Manager, Capacity, Allocated Space, etc. are displayed. Each volume in turn display charts for Logical Volume Distribution by Size. The volume level may also display Physical Devices and Logical Volumes if available.

1. From the CommCell Console, select the Client Computer with SRM UNIX File System Agent for which you want to view summaries.

nCel travser 0	Summary X
e omnitet	🚴 saturby > 🕼 Clent Computers > 😤 realmaded > 💠 SHI > 🎧 UNIC (He System >
Investigation of the second se	II Advisaries
lent Computers	Level Texestanp Description
lent Computer Groups	There are a solution for Advance Way was

2. Expand SRM and select UNIX File System, then select Volume Group.

You may also expand subclients node and alternatively select default or user defined subclient to view its summary.



3. The associated Volume Group Summary will appear in the main window.

# **FILE SYSTEMS SUMMARIES**

Summary information at the File systems level include charts for **Current File System Usage** and **File System Capacity**. The **Current File System Usage** chart displays detail like Name, Type, Average Tree Depth, Maximum Tree Depth, File Count, Directory Count, Average File Size, Maximum File Size, Average Directory Count and Sparse File Count for the selected volume group. The **File System Capacity** chart displays detail like Name, Type, Mount Point, Used Space, Free Space, Capacity, Percent Used and Percent Free for the selected volume group.

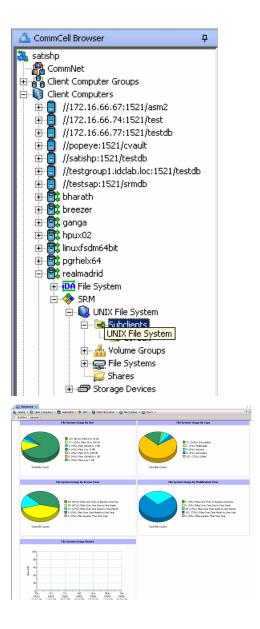
Each File System also displays **Properties** including physical information like Name, Type, Mount Point, Used Space, etc. Charts for **Usage History**, **File Distribution by Size**, **File Distribution by Type**, **File Distribution by Access Time**, **File Distribution by Modification Time** are available for each file system summary. The file system level may also display Physical Devices if available.

1. From the CommCell Console, select the Client Computer with SRM UNIX File System Agent for which you want to view summaries.

ConsoCel Browser 0	Sommary X
state	🐧 satisfie > 🚯 Clerit Computers > 🛱 realmadrid > 🔶 3RH > 🚇 UNIX His System >
Committeet	® Advisaties
Constant	Lever Transmit Desember Transmitter
5 Strenzer 8 Strenzer 9 Strenzer	
Si Shi file System	

2. Expand Agent and select File Systems.

You may also expand File Systems node and alternatively select any File System to view its summary.



3. The associated File Systems Summary will appear in the main window.

# **STORAGE DEVICES SUMMARIES**

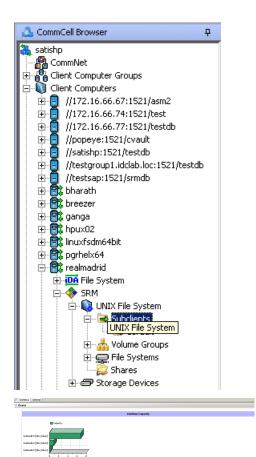
Summary information at the Storage Devices level display charts for **Allocated** vs. **Unallocated space per disk** and **Partition Capacity**. The Charts show details like Name, Interface, Serial Number (S/N), Manufacturer, Block Count, Block Size etc for the selected Storage Device.

1. From the CommCell Console, select the Client Computer with SRM UNIX File System Agent for which you want to view summaries.

mnCell browser 0	Summary X
ote	🚴 satatio > 🚯 Clerct Computers > 🕃 reaknadrid > 🔶 36H > 🚇 UNEC Min System. >
Committee Client Computer Groups	® Advisaties
Client Computers	Level Tmestane Description
Card Copy of a loss Card Copy of a loss Card Copy of a loss of a	The product for the en-

# 2. Expand Agent and select Storage Devices.

You may also expand Storage Devices node and alternatively select any storage device to view its summary.



3. The associated **Storage Devices Summary** will appear in the main window.

# Online Help Topics

# **Agent Properties (General)**

Use this dialog box to obtain or provide general and/or user account information for the agent.

### **Client Name**

Displays the name of the client computer on which this Agent is installed.

#### Billing Department

Displays the name of the billing department, when the Agent is associated with a billing department.

#### iDataAgent

Displays the identity of the Agent that is installed on the client computer.

#### Installed date

Displays the date on which the Agent was installed or upgraded on the client computer.

#### NDMP Restore Enabled

This feature is applicable to Solaris, AIX and Linux iDataAgents. This option specifies whether the NDMP Restore Enabler was installed with the iDataAgent.

• YES indicates that the enabler is installed and the client is an available destination for the restore of data from a Network Attached Storage (NAS) client.

• NO indicates that the enabler is not installed and the client is not an available destination for the restore of data from a NAS client.

#### Enable SRM feature

Select this option to Enable SRM Options.

## Description

Use this field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.

Back to Top

# **Agent Properties (Version)**

Use this dialog box to view the software version.

### Version

Displays the Agent software version installed on the computer.

# Agent Properties (Index)

Use this tab to establish the parameters for creating new index during backups by the agent.

### Create new index on full backup

Specifies whether the system will create a new index with each full backup. If cleared, all backups build upon the index from the previous backup.

# Convert to full backup on indexing failures

Specifies whether the system will create a new index if the index is irretrievable and whether, for agents that support non-full backup types, the system will convert the backup to a full backup. If cleared, the backup will fail if the index is irretrievable.

# Security

Use this tab to:

- Identify the user groups to which this CommCell object is associated.
- Associate this object with a user group.
- Disassociate this object from a user group.

**Available Groups** 

Displays the names of the user groups that are not associated with this CommCell object.

#### Associated Groups

Displays the names of user groups that are associated with this CommCell object.

# **Agent Properties (Activity Control)**

Use this dialog box to enable or disable backups and restores on a selected subclient.

If data management and data recovery operations are disabled at the client computer group or client level, then these operations below these levels will be disabled. If data management / data recovery operations are enabled at the client computer group or client level, then these operations below these levels will be enabled.

## Enable Backup

Specifies whether Backups will occur from this agent or subclient. .

If cleared:

- Backup operations from this agent or subclient cannot be started and are skipped.
- Running and waiting data management operations for this agent or subclient run to completion.
- Stopped data management operations for this agent or subclient cannot be resumed until this option is enabled.
- Pending data management operations for this agent or subclient do not run until this option is enabled.

# **Enable Restore**

Specifies whether Restores will occur from this agent or subclient. .

If cleared:

- Restore operations from this agent or subclient cannot be started and are skipped.
- Running and waiting data recovery operations for this agent or subclient run to completion.
- Stopped data recovery operations for this agent or subclient cannot be resumed until this option is enabled.
- Pending data recovery operations for this agent or subclient do not run until this option is enabled.

# Agent Properties (Storage Device)

Use this tab to view or change the filter storage policy for Erase Data by Browsing

#### Filter Storage Policy

Displays the filter storage policy for Erase Data by Browsing that is associated with this agent. To associate a filter storage policy to a new agent or to change the filter storage policy associated with an existing agent, click one in the list.

# **Subclient Properties (General)**

Use this tab to add, modify or view general information on the selected subclient.

# Client Name

Displays the name of the Client computer to which this subclient belongs.

#### Billing Department

Displays the name of the billing department, when the subclient is associated with a billing department. For more information on Billing and Costing See the *CommNet Books Online*.

#### iDataAgent

Displays the name of the Agent to which this subclient belongs.

#### Backup Set

Displays the name of the Backup Set to which this subclient belongs.

#### Subclient Name

Displays the name of this Subclient. You can use this space to enter or modify the name of the subclient.

### Number of Data Readers

Use this space to specify the number of simultaneous backup data streams allowed for this subclient. For best performance, this should be set no higher than the number of physical drives that hold this subclient's data, except for specialized hardware such as RAID. For more information, see *Automatic File System Multi-Streaming* in Books Online.

### Allow multiple data readers within a drive or mount point

Select this option to specify whether multiple data reads are allowed for Unix mount point during backups on this subclient. This option enables the subclient's contents to be distributed to all the streams, transmitting them in parallel to the storage media. Hence, a subclient whose data is secured using three data streams, utilizes more of the available network resources and can complete in as little as one third the time that the same data would require using a single stream.



You do not have to enable multi-streaming if you have multiple mount points pointing to the same physical drive.

# **Billable Entity**

Select the name of the Billable Entity assigned to this subclient.

### Incremental backup should use

# UNIX mtime

Select this option to determine which files are selected for incremental backup by changes in the mtime timestamp.

#### UNIX ctime

Select this option to determine which files are selected for incremental backup by changes in the ctime timestamp.



When you select **Use Data Classification** in Backup Set Properties, it is recommended not to select "UNIX mtime" and "UNIX ctime" options in this properties box as Incremental Backups for Data Classification scan does not support these options.

## Description

Use this field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.

Back to Top

# **Subclient Properties (Content)**

Use this tab to add, modify or view the contents of a selected subclient.

#### **Contents of subclient**

Displays a list of paths of data/workspaces/categories/documents/folders included as content for this subclient. Special characters (such as "\" "/" "." ",") represent content of the default subclient, that is not assigned to other subclients within the backup set.

When a symbolic link is included in the subclient content, the target of the symbolic link along with the link itself can be displayed.

#### • Delete

Click to delete the selected path/data/folder from the Contents list for this subclient.

Browse

Click to browse for new content that you want to add to this subclient.

# • Add Paths

Click to enter new content path(s).

#### Enable Apple Double Support

The File System iDataAgent backs up Apple Double formatted files as two separate files. Selecting this option will allow you to backup the Apple Double formatted Macintosh files as a single file.

#### Expand symbolic links of subclient content

Select this option to to expand and backup the data paths in the symbolic links of the subclient content.

# Discover

Click to display the data paths to which the symbolic links in the subclient content's data are pointing.

Instead of clicking **Discover**, wait until the backup completes and then refresh the subclient. Then go to **Contents of subclient**. The data contents for the symbolic links should be displayed.

# گ

# **Subclient Properties (Filters)**

Use this dialog box to add or edit data paths to be filtered out of the subclient content and to specify exceptions to the exclusion list.

# **Include Global Filters**

Displays a list of options for enabling or disabling Global Filters which can be used in addition to the filters set at the subclient level to exclude data from data protection operations for this subclient. To change the setting, select one of the following values from the list:

- **OFF** Disables Global Filters for this subclient.
- ON Enables Global Filters for this subclient.
- Use Cell Level Policy Enables or disables Global Filters for this subclient depending on whether the Use Global Filters on All Subclients option is enabled or disabled on the Control Panel (Global Filters) dialog. If the Use Global Filters on All Subclients option is enabled, then the Use Cell Level Policy option will enable Global Filters on this subclient. If the Use Global Filters on All Subclients option is disabled, then the Use Cell Level Policy option will disable Global Filters on this subclient.

#### Exclude these files/folders/directories/patterns

Use this space to add specified file extension(s) for attachment(s) that you want to exclude from data protection operations for this subclient.

### Except for these files/folders/directories/patterns

Use this space to add specified entries that will be included in data protection operations for this subclient in cases where a parent object is listed in the Exclude filter. Wildcards are supported for exception filters. See Supported Wildcards for more information.

#### Add

Click to manually add an entry to be included in, or excluded from, data protection operations for this subclient.

#### Browse

Click to browse for an entry to be included in, or excluded from, data protection operations for this subclient.

#### Edit

Click to manually edit an entry to be included in, or excluded from, data protection operations for this subclient.

# Delete

Click to delete a selected filter entry.

Back to Top

# Subclient Properties (Pre/Post Process)

Use the Pre/Post Process tab to add, modify or view Pre/Post processes for the selected subclient.

#### PreScan process

Displays the name/path of the scan process that you want to run before the respective phase. You can use this space to add or modify PreScan processes for a subclient. These are batch files or shell scripts that you can run before or after certain job phases. For example, you can include a case statement within a script to run specific operations based on the level of the backup job. Click **Browse** to search for and select the name/path of the process. The system allows the use of spaces in the name/path, provided they begin with an opening quotation mark and end with a closing quotation mark.

#### PostScan process

Displays the name/path of the scan process that you want to run after the respective phase. You can use this space to add or modify PostScan processes for a subclient. Click **Browse** to search for and select the name/path of the process. The system allows the use of spaces in the name/path, provided they begin with an opening quotation mark and end with a closing quotation mark.

# Run Post Scan Process for all attempts

Specifies whether this process will execute for all attempts to run the phase. Selecting this option will execute the post scan for all attempts to run the phase, including situations where the job phase is interrupted, suspended, or fails. Otherwise, when the checkbox is cleared the post scan process will only execute for successful, killed, or failed jobs.

#### Pre Backup process

Displays the name/path of the backup that you want to run before the respective phase. You can use this space to enter a path for the backup process that will

execute before this phase on the subclient . Click **Browse** to search for and select the name/path of the process. The system allows the use of spaces in the name/path, provided they begin with an opening quotation mark and end with a closing quotation mark.

#### Post Backup process

Displays the name/path of the backup process that you want to run after the respective phase. You can use this space to enter a path for the backup process that will execute after this phase on the subclient. Click **Browse** to search for and select the name/path of the process. The system allows the use of spaces in the name/path, provided they begin with an opening quotation mark and end with a closing quotation mark.

# Run Post Backup Process for all attempts

Specifies whether this process will execute for all attempts to run the phase. Selecting this option will execute the post backup process for all attempts to run the phase, including situations where the job phase is interrupted, suspended, or fails. Otherwise, when the checkbox is cleared the specified process will only execute for successful, killed, or failed jobs.

### PreSnap process

Displays the name/path of the Snap process that you want to run before the respective phase. You can use this space to add or modify PreSnap processes for a subclient. Click **Browse** to search for and select the name/path of the process. The system allows the use of spaces in the name/path, provided they begin with an opening quotation mark and end with a closing quotation mark.

#### PostSnap process

Displays the name/path of the Snap process that you want to run after the respective phase. You can use this space to add or modify PostSnap processes for a subclient. Click **Browse** to search for and select the name/path of the process. The system allows the use of spaces in the name/path, provided they begin with an opening quotation mark and end with a closing quotation mark.

# On Source

Specifies whether the PreSnap/PostSnap process will execute on the source computer.

#### On Proxy

Specifies whether the PreSnap/PostSnap process will execute on the proxy computer.

Back to Top

# **Subclient Properties (Encryption)**

Use this dialog box to select the data encryption options for the selected subclient content for operations run from the CommCell Console.

#### None

When selected, no encryption will take place during a data protection operations.

# Media Only (MediaAgent Side)

When selected, for data protection operations, data is transmitted without encryption and then encrypted prior to storage. During data recovery operations, data is decrypted by the client.

# Network and Media (Agent Side)

When selected, for data protection operations, data is encrypted before transmission and is stored encrypted on the media. During data recovery operations, data is decrypted by the client.

# Network Only (Agent Encrypts, MediaAgent Decrypts)

When selected, for data protection operations, data is encrypted for transmission and then decrypted prior to storage on the media. During data recovery operations, data is encrypted by the MediaAgent and then decrypted in the client.

# **Storage Device**

Use this dialog box to establish the storage device related settings on the selected subclient. Note that all the options described in this help may not be available and only the options displayed in the dialog box are applicable to the agent or enabler for which the information is being displayed.

The following tabs are displayed:

- (Data) Storage Policy
- Data Transfer Option
- Deduplication

# **STORAGE POLICY**

Use this tab to select or view storage policy settings on the selected subclient.

#### Data/Database/Transaction Log Storage Policy

Displays the storage policy to which this subclient is currently associated. To associate a storage policy to a new subclient or to change the storage policy associated with an existing subclient, click one in the list.

## **Incremental Storage Policy**

Displays the name of the Incremental Storage Policy associated with this subclient, if the storage policy has the Incremental Storage Policy option enabled.

#### Data Paths

Click to view or modify the data paths associated with the primary storage policy copy of the selected storage policy.

#### Number of Data/Database/Transaction Log Backup Streams

Displays the number of streams used for backup operations. To change the number of streams, click one in the list. For DB2 DPF, be sure to set the appropriate number of streams for each database partition by double-clicking the appropriate **Stream** space and typing the desired number.

#### Client/Instance/Status/Stream

Displays the names of the instances according to current backup priority along with other associated information that are included in the Oracle RAC node. To change the backup priority of the instances, click the instance name as appropriate and use the directional arrows provided.

#### **Maximum Backup Streams**

For Informix, displays the maximum number of streams used for database backup operations, which is determined from the ONCONFIG file. The number of streams for backups cannot be set currently from the CommCell Console. Instead, you must set the BAR\_MAX\_BACKUP parameter in the \$ONCONFIG file on the Informix client. Also, the number of streams specified by the storage policy must be greater than or equal to the number specified by the BAR\_MAX\_BACKUP parameter.

#### **Data Threshold Streams**

For Oracle RAC, specifies whether to run the backup job immediately when the total number of reserved streams is greater than or equal to the value in this field. If you click this option, use the space provided to change this value if desired.

# **Create Storage Policy**

Click to launch the Create a Storage Policy wizard. Once the storage policy has been created, it will be displayed in the list of storage policies to which the selected subclient can be associated.

#### **Buffer Size**

Use this space to specify the size (in 4 KB pages) of each buffer to be used for building the backup image. The minimum value is 8, and the default value is 1024. If you select value 0, the value of the backbufz database manager configuration parameter will be used as the buffer allocation size.

# **DATA TRANSFER OPTION**

Use this tab to establish the options for data transfer. Note that all the options described in this help may not be available and only the options displayed in the dialog box are applicable to the agent for which the information is being displayed.

#### Software Compression

Indicates whether software compression for the subclient or instance is enabled or disabled, and if enabled whether it is performed on the client or MediaAgent computer.

#### • On Client

Click to enable software compression on the client computer.

#### • On MediaAgent

Click to enable software compression on the MediaAgent computer.

# • Use Storage Policy Settings

Click to use the settings enabled on deduplicated storage policy copy.

This option applies when subclient is associated with a storage policy copy that is deduplicated. See Copy Properties (Deduplication) - Advanced tab for compression settings on deduplicated storage policy copy.

### • Off

Click to disable software compression.

Note that hardware compression has priority over the software compression. Hardware compression is established in the Data Path Properties dialog box. The above software compression option will take effect when the data path is associated with a disk library, or when hardware compression is disabled in the data path associated with tape libraries.



For non-deduplicated storage policy copy, select **On Client** or **On MediaAgent** options to turn on compression, depending upon your environment.

# **Resource Tuning**

Indicates the processes used by the client to transfer data based and whether bandwidth throttling is enabled or not.

#### • Network Agents

Specifies the number of data pipes/processes that the client uses to transfer data over a network. Increasing this value may provide better throughput if the network and the network configuration in your environment can support it. On non-UNIX computers, the default value is 2 and a maximum of 4 can be established if necessary. On UNIX computers the default value is 1 and a maximum of 2 can be established if necessary.

### • Throttle Network Bandwidth (MB/HR)

Specifies whether the backup throughput is controlled or not. (By default this option is not selected and therefore the throughput is not controlled). When selected, use the space to specify a value for the throughput. By default, this is set to 500. The minimum value is 1 and there is no limit to the maximum value. (In this case the backup throughput will be restricted to the maximum bandwidth on the network.)

Use this option to set the backup throughput, based on the network bandwidth in your environment. Use this option to reduce the backup throughput, so that the entire network bandwidth is not consumed, especially in slow links. Increasing this value will end up consuming the bandwidth with the maximum throughput limited to the network bandwidth capability.

Note that throttling is done on a per Network Agent basis.

#### **Application Read Size**

This option specifies the amount of application data (such as SQL data, Windows File System data, and virtual machine data) backup jobs will read for each unit transferred to the MediaAgent.

The default value for this options is 64KB; however, this value may be increased to reduce the amount of data read from the given application, which in turn reduces the amount of I/O operations performed against it. As a result, overall backup performance may increase. However, backup memory usage may also increase, which may inadvertently consume additional resources from the application. Thus, it is recommended that this value be set at either the default value or match the block size directed by the application.

# DEDUPLICATION

Use this tab to establish the options for deduplication on the subclient. It indicates whether deduplication for the subclient is enabled or disabled, and if enabled whether the signature generation (a component of deduplication) is performed on the client or MediaAgent computer.

Note that deduplication is supported on disk storage devices. So the deduplication options are applicable only if the subclient is associated with a Storage Policy containing disk storage.

#### On Client

Click to enable signature generation on the client computer.

#### On MediaAgent

Click to enable signature generation on the MediaAgent computer.

Back to Top

# Subclient Properties (Activity Control)

Use this dialog box to enable or disable backups on a selected subclient.

## Enable Backup

Specifies whether backups will occur from this subclient.

If cleared:

- Backups from this subclient cannot be started and are skipped.
- Running and waiting backups for this subclient run to completion.
- Stopped backups for this subclient cannot be resumed until this option is enabled.
- Pending backups for this subclient do not run until this option is enabled.

(Job states are indicated in the Job Controller.)

# **Subclient Properties (1-Touch Recovery)**

Use this tab to establish 1-Touch Recovery items. Note that all the options described in this help may not be available and only the options displayed in the dialog box are applicable to the agent for which the information is being displayed.

### 1-Touch Recovery

Click to configure this subclient with 1-Touch Recovery options.

# 1-Touch server

Displays the name of the server that will be used as the 1-Touch (boot) server for this client. You can use this space to add or modify the name of the 1-Touch server. The server must reside within the same subnet as the client. If the server name is changed, the client's name must be manually removed from the previous 1-Touch server's database.

### • 1-Touch server directory

Displays the name of the directory on the 1-Touch server where the files required to boot the client in case of a crash are stored. You can use this space to add or modify the 1-Touch server directory.

- For 1-Touch for AIX, this is the directory where the NIM Master environment is set up and installed.
- $\,\circ\,$  For 1-Touch for HP-UX, this is the directory where the HP-UX Ignite Server files are installed.
- For 1-Touch for Solaris, this is the directory where the Solaris JumpStart files are installed.

# **Subclient Properties (SRM Options)**

Use this dialog box to specify the Data Collection requirements.

#### SRM Data Collection

This option will be enabled if Enable SRM feature option is selected in the agent's Properties tab.

## • Discovery

Select this option for the collection of less detailed information for the client.

# Security

Use this dialog box to:

- Identify the user groups to which this CommCell object is associated.
- Associate this object with a user group.
- Disassociate this object from a user group.

# Available Groups

Displays the names of the user groups that are not associated with this CommCell object.

#### Associated Groups

Displays the names of user groups that are associated with this CommCell object.

Automatically add New Users to the "View All" Group (CommServe Level Only)

Specifies that all new users will automatically be added to the View All user group. This group allows users to view all CommCell objects, regardless of the associations of the other user groups they belong to.

# Require Authentication for Agent Installation (CommServe Level Only)

Enable this option to prompt users for authentication for any agent installation on the CommCell.

#### **Client Owners**

Specify a user to allow CommCell user access to this client computer through CommCell Console and allow permission to run Web Console browse and restore operations on this client. Each user must be listed in a separate line.

# Subclient Properties (SnapProtect Operations)

SnapProtect Backup with hardware Snap Engines | SnapProtect Backup with Data Replicator

Use this tab to enable SnapProtect backup and to establish the options for SnapProtect backup operation, for the selected subclient.

These options are available if you select a hardware Snap Engine. Note that all the options described in this help may not be available and only the options displayed in the dialog box are applicable to the agent for which the information is being displayed.

#### SnapProtect

Specifies whether SnapProtect backup for the selected subclient is enabled or disabled.

# **Available Snap Engines**

Lists the available snapshot engine vendors. To select a snapshot engine vendor, click the pull-down arrow and click the one that you want to use.

#### • Enter Array Credentials

Click to access the Array Management dialog box, which enables you to add or modify access information for a array.

#### Use Proxy

Use this list to specify the name of the proxy server that will be used for performing the SnapProtect backup operations.

#### Use source if proxy is unreachable

Select to use the source machine for SnapProtect backup if the proxy client is not available.

### Use RMAN for Tape Movement

Select to use RMAN for movement to media operations.

### Allow multiple data readers within a drive or mount point

Specifies whether multiple data reads are allowed for a single physical drive or mount point during backups on this subclient. It is recommended that this option is selected for specialized hardware such as RAID, or possibly in the case of spanned volumes. For more information, see Automatic File System Multi-Streaming in Books Online.

#### Number of Data Readers for Backup Copy

Use this space to specify the number of simultaneous backup data streams allowed for this subclient, during the movement to media operation. For best performance, this should be set no higher than the number of physical drives that hold this subclient's data, except for specialized hardware such as RAID.

Back to Top

# **Backup Set Properties (General)**

Use this dialog box to define a New Backup Set or view and modify the properties of an existing Backup Set.

# Client Name

Displays the name of the Client computer to which this Backup Set belongs.

#### **Billing Department**

Displays the name of the billing department, when the backup set is associated with a billing department. For more information on Billing and Costing See the CommNet Books Online.

#### *i*DataAgent

Displays the name of the *i*DataAgent to which this backup set belongs.

#### Backup Set

When creating a new Backup Set, type the name of the Backup Set.

For an existing Backup Set, the name of the Backup Set is displayed.

# On Demand

Displays whether the selected backup set is an On Demand Backup Set.

#### Make this the Default backup set

Use this option to define the selected backup set as the default or a user-defined backup set. Selecting this option asserts this backup set as the default. The previously designated default backup set is automatically reallocated as a user-defined backup set. Clearing this option, is accomplished by opening the Backup Set Properties dialog box of some other backup set and clicking this option there, thereby designating that backup set as the default.

# Subclient Content may contain Wildcard Entries

This option can be enabled or disabled only during backup set creation. This option allows you to select the files with specified extensions that can be backed up during the backup operation.

#### Subclient Policy

Displays the name of the Subclient Policy associated with this backup set. If no Subclient Policy is associated with this backup set, it will display **<None>**.

#### Job Options

• Use Classic File Scan

Select to specify that the classic file scan is used to determine whether files have been modified for all subclients within the backup set.

## **Preserve File Access Time**

if selected, the file access time is preserved and therefore not modified at the time of backup. Selecting this option may increase the time required to complete a backup.

#### • Use Data Classification

Select to specify that the Data Classification Enabler is used to determine whether files have been modified for all subclients within the backup set.

#### Description

Use this field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.

Back to Top

# **Backup Options**

Use this dialog box to schedule or immediately run a backup job.

## Select Backup Type

• Full

Specifies the job as a Full backup, which backs up all data for the selected subclient(s).

Incremental

Specifies the job as an Incremental backup, which backs up only that portion of the data that is new or has changed since the last backup.

Differential

Specifies the job as a Differential backup, which backs up only that portion of the data that is new or has changed since the last full backup.

• Synthetic Full

Specifies the job as a Synthetic Full backup, which creates a Full backup from existing backup data for the selected subclient or backup set (if applicable). The Synthetic Full backup consolidates the backup data; it does not actually back up data from the client computer.

### **Run Incremental Backup**

Specifies the options for running an Incremental backup either immediately before a Synthetic Full backup or immediately after a successfully completed Synthetic Full backup when selected. When cleared, an Incremental backup is not automatically run either immediately before or after the Synthetic Full backup.

- Before Synthetic Full: Specifies the operation will back up any data that is new or changed since the previous backup in order to have it included as part of the Synthetic Full backup.
- After Synthetic Full: Specifies the operation will back up any data that is new or changed since the backup that occurred prior to the Synthetic Full backup.

# Job Initiation

#### • Run Immediately

Specifies this job will run immediately.

Schedule

Specifies this job will be scheduled. Click **Configure** to specify the schedule details.

# Advanced

Click to select advanced backup options, such as follow mount points, catalog, start new media, mark media as full etc.

#### Save As Script

Click to open the Save As Script dialog, which allows you to save this operation and the selected options as a script file (in XML format). The script can later be executed from the Command Line Interface using <code>qoperation execute</code> command.

When you save an operation as a script, each option in the dialog will have a corresponding xml parameter in the script file. When executing the script, you can

modify the value for any of these XML parameters as per need.

To view the XML values for each of the options in the dialog, see the following:

• Command Line XML Options for Unix File System iDataAgents

Back to Top

# Advanced Backup Options (Data)

Use this tab to select advanced backup data options for the backup operation.

### Create new index

Specifies the system will create a new index with a full or On Demand data protection operations. Selecting this option will cause the following to occur for this job only:

- full backup transparent browse capability will be disabled, if it is supported by the agent.
- override the Create new index on full backup option on the Agent Properties (Index) tab
- for an On Demand Data Protection operation, override the Set index cycle to every nn backup jobs setting in the Subclient Properties (General) tab
  of the default subclient.

### Follow Mount Points

When you select this option, the mount point data from the subclient will be included in the backup. When you clear this option, the mount point data will be excluded from the subclient backup.

#### Catalog

Use this section to select index cache sharing and granular restartability options for the job. Note that these options are not applicable for the disaster recovery data protection.

# • Use shared profile if present with transaction logging

Select this option if you wish to use the shared index cache profile of the MediaAgent (if configured) to save a copy of the job's index cache for index cache sharing *with* transaction logging feature for granular job restartbility.

Shared profile with transaction logging provides job restartability in failover situations. This is a recommended configuration.

#### Use shared profile if present without transaction logging

Select this option if you wish to use the shared index cache profile of the MediaAgent (if configured) to save a copy of the index cache for index cache sharing *without* transaction logging feature for granular job restartbility. This is not a recommended configuration.

### • Use transaction logging

Select this option to use transaction logging feature to provide granular job restartbility (without using shared profile for index cache sharing).

None

Select this option to use neither shared profile nor transaction logging.

# Startup

Select from the following options. Note that all the options described in this help may not be available and only the options displayed in the dialog box are applicable to the operation for which the information is being displayed.

# Priority

• Use Default Priority

If selected, the default priority for this type of job will be used in determining how the Job Manager will allocate resources for this job.

Change Priority

Use this option to manually specify the priority for the job, between 0 (highest priority) and 999 (lowest priority). The Job Manager will use the priority setting when allocating the required resources. This is useful if you have jobs that are very important and must complete, or jobs that can be moved to a lower priority.

### Start up in suspended state

Specifies that this job will start in the Job Controller in a suspended state and cannot run until the job is manually resumed using the **Resume** option. This option can be used to add a level of manual control when a job is started. For example, you could schedule jobs to start in the suspended state and then choose which scheduled jobs complete by resuming the operation started in the suspended state.

# Description

Use this field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.

# **Job Retry**

Note that all the options described in this help may not be available and only the options displayed in the dialog box are applicable to the agent or operation for which the information is being displayed.

# **Enable Total Running Time**

The maximum elapsed time, in hours and minutes, from the time that the job is created. When the specified maximum elapsed time is reached, as long as the job is in the "Running" state, it will continue; if the job is not in the "Running" state when the specified time is reached, Job Manager will kill the job.

#### **Enable Number of Retries**

The number of times that Job Manager will attempt to restart the job. Once the maximum number of retry attempts has been reached, if the job has still not restarted successfully, Job Manager will kill the job. Note that this job-based setting will not be valid if restartability has been turned off in the Job Management Control Panel.

### Kill Running Jobs When Total Running Time Expires

Option to kill the job when the specified Total Running Time has elapsed, even if its state is "Running". This option is available only if you have specified a Total Running Time.

# Advanced Backup Options (Media)

You can select advanced backup media options for the operation.

#### Start New Media

This option starts the backup/migration/archive operation on a new media, which causes the following to occur:

- If removable media is used, the current active media is marked as Appendable and a new media is used for the backup/migration/archive.
- If disk media is used, a new volume folder is created for the backup/migration/archive.

If cleared, the operation automatically uses the current active media or volume.

#### Mark Media Full after Successful Operation

This option marks media full, 2 minutes after the completion of the backup/archive operation. If any jobs are initiated within the 2 minutes, they are allowed to write to the media. If the job was associated with the prior media, new media (such as a new tape) will be used for subsequent jobs.

#### Allow other Schedule to use Media Set

This option allows jobs that are part of a schedule policy or schedule and using a specific storage policy to start a new media and also prevent other jobs from writing to the set of media. It is available only when the **Start New Media** and **Mark Media Full** options are enabled, and can be used in the following situations:

- When one scheduled job initiates several jobs and you only want to start new media on the first job.
- When you want to target specific backups to a media, or a set of media if multiple streams are used.

### **Reserve Resources Before Scan**

Normally, media is reserved for a job before the operation phase (backup or archive). When selected, this option will reserve the media before the scan phase. This reserves the media earlier because the scan phase precedes the operation phase.

### **Extend Job Retention**

- Infinite: Select this option to retain this job indefinitely.
- Number of Days: Select this option to prune this job after the number of days specified.
- Storage Policy Default: Select this option to apply the retention rules of the associated storage policy, which is the default option.

# Advanced Backup Options (Data Path)

Select the data path to be used for the backup/archive operation.

Ensure that the Library, MediaAgent, Drive Pool, and Drive selected for this operation is available online and is a part of the associated Storage Policy.

#### Use MediaAgent

Specifies the name of the MediaAgent that will be used to perform the backup operation. If necessary, you can change the name of the MediaAgent.

For example, if the library is shared and you wish to use a specific MediaAgent (instead of the system selected MediaAgent, or a MediaAgent which may be idle, or less critical) or if you know that the library attached to the specified MediaAgent.

# **Use Library**

Specifies the name of the library that will be used to perform the backup operation. Use this option when you wish to backup to a specific library.

#### **Use Drive Pool**

Specifies the name of the Drive Pool that will be used to perform the backup operation. Use this option when you wish to backup using a specific Drive Pool.

#### **Use Drive**

Specifies the name of the Drive that will be used to perform the backup operation. Use this option when you wish to backup using a specific Drive from the selected Drive Pool.

# Vault Tracking

Select options to export and track media, using Vault Tracker.



Vault Tracking Options will be displayed only when a Vault Tracker license is available in the CommServe.

Vault Tracking options are only applicable for data protection operations using a storage policy associated with a library containing removable media (e.g., tape, optical or stand-alone.)

# Export media after the job finishes

Specifies the media used by the data protection operation and media with the specific Media Status (if specified) will be exported and tracked by Vault Tracker.

#### **Exclude Media Not Copied**

When selected, allows you to exclude media with jobs that have to be copied.

#### Media Status

### • All

Click to select all media. Clear this option to select media with a specific status.

#### Active

Click to select media with its status marked as active.

# • Full

Click to select media with its status marked as full.

### • Overwrite Protected

Click to select media with its status marked as read-only .

# • Bad

Click to select media with its status marked as bad.

### **Export Location**

Specifies the destination location and lists the stationary locations entered using the Export Location Details dialog box.

# **Track Transit**

Specifies that transit information must be tracked, and lists the transit locations entered using the Export Location Details dialog box.

# **Use Virtual Mail Slots**

Specifies the exported media is stored within the library in the virtual mail slots defined in the Library Properties (Media) dialog box.

# Filter Media By Retention

Specifies that the system must automatically filter media based on whether the media has extended retention jobs or not.

# Media with extended retention job(s)

Specifies that media with at least one extended retention job will be exported.

Media with no extended retention job(s)

Specifies that media with no extended retention jobs will be exported.

# Alert

Use this tab to configure an alert for a schedule policy.

# **Configure Alert**

• Alert

The currently configured Alert.

• Add/Modify Alert

When clicked, opens the Alert Wizard to configure alerts for this operation.

Delete Alert

When clicked, deletes any existing alerts that are already configured.

# **Restore Options (General)**

Use this dialog box to control how the specified data is to be restored.

# **Restore ACLs**

Specifies that the data will be restored with the original ACLs and therefore its original security attributes. Clear this option to restore without ACLs and consequently the data assumes the ACLs of the parent directory.

#### Data in device node

Specifies that Unix raw devices can be restored to either another raw device or a file. When selected, this activates the **Unconditional Overwrite** option, which is required for raw device restores to complete successfully.

### Unconditionally overwrite only if target is a DataArchiver stub

If selected, this option will unconditionally overwrite a DataArchiver stub during restore.

#### Overwrite

#### • Overwrite if file on media is newer

If selected, this option will overwrite the existing file with the file that was backed up/archived to the media provided the backed up/archived file is newer than the existing file.

# Unconditional Overwrite

Specifies whether the restored data is unconditionally written to the specified location.

If cleared:

- Files/directories whose names are the same as those in the restore path and where the backed up data is as old or older are not restored.
- o files/directories whose names are the same as those in the restore path and where the backed up data is newer are restored.
- $\circ\;$  Files/directories whose names are different from those in the restore path are restored.



Avoid using this option whenever you run a Restore by Jobs. Otherwise, an older version of the files might be retrieved.

# • Restore only if target exists

If selected, this option will only restore files that currently exist in the restore path. Files that exist on the media but not in the restore path will not be restored.

# **Restore Destination**

#### • Destination Client/Computer/Server

Displays the name of the client computer to which the selected data will be restored. To change the destination computer, select one from the list. The list includes clients:

o Which are established as clients within the CommCell.

• Clients with Operating Systems that support the cross-platform restore operation from this client. (Refer to the topic titled **Cross Platform Restore Operations** in Books Online for additional information.)

By default, data is restored to the same computer from which it was backed up.

#### **Restore to Same Folder**

Specifies whether the restore operation will restore data to the same folder from which it was backed up in the **Destination Computer**. (Clear this option to restore to a different path and activate the **Destination folder** box.)

#### Browse

Click to select a path for the **Destination folder**.

### **Preserve Source Paths**

Specifies the action taken when the data is restored to another destination. The options are available only when the Restore to Same Paths option is cleared.

#### • Preserve n levels from end of source path

Specifies whether the restore operation must keep the specified number of levels at the end of source path of the selected data. For example, if the selected data is Documents\Memos\Sales, this option is set to 1 and the **Destination folder** is temp, the data will be restored as \temp\Sales.



However, if this option is used to restore a file in a path that contains any valid wildcard expression (e.g., Documents\\*\*\Sales), the default value of 1 for the option cannot be changed. Therefore, only the last found occurrence of the file is restored, and the restores for all the other occurrences of the file are overwritten.

#### Advanced

Click to select additional restore options.

#### Save As Script

Click to open the Save As Script dialog, which allows you to save this operation and the selected options as a script file (in XML format). The script can later be executed from the Command Line Interface using <code>qoperation execute</code> command.

When you save an operation as a script, each option in the dialog will have a corresponding xml parameter in the script file. When executing the script, you can modify the value for any of these XML parameters as per need.

To view the XML values for each of the options in the dialog, see the following:

• Command Line XML Options for Unix File System iDataAgents

Back to Top

# **Job Initiation**

Select from the following options. Note that all the options described in this help may not be available and only the options displayed in the dialog box are applicable to the operation for which the information is being displayed.

# Immediate

#### **Run This Job Now**

Specifies this job will run immediately.

#### Schedule

Specifies this job will be scheduled. When you click Configure, the Schedule Details dialog box will open and allow you to configure the schedule pattern.

# **Advanced Restore Options (General)**

Use this dialog box to access additional restore options.

### Automatically Detect Regular Expressions

This option allows you to use wildcard characters to specify the patterns for files and folders to be included in the restore. When selected, the system will recognize supported regular expressions (wildcards) in the specified **Source Path**. When cleared, the system will read the specified **Source Path** as literal.

This option is selected by default for direct restore operations. For Browse and Restore operations, the option cannot be enabled as you are selecting definitive paths to restore.

#### Skip Errors and Continue

This option allows a restore job to continue regardless of media errors and outputs a file that lists the full path names of the files that failed to get restored.

#### Restore device files as regular files

This option allows you to restore the actual data in the device node file of the raw partition to a regular file system file.

#### **Use Exact Index**

This option allows you to associate the media with the most recent index available in the CommCell.

### Skip MountPoint Restore

Specifies whether to filter out mount points that are part of the backup data during the file system restore. When enabled, the file system restore will filter out the mount points from the backed up data. When disabled, mount points will also be restored during the file system restore.

#### **Recover Apple Resource Fork Data**

Specifies whether to restore encoded Apple resource fork data to your non-Macintosh file system.

#### **Enforce Label Checking on Trusted Solaris**

This option applies only to Solaris File System *i*DataAgent. This option specifies whether to check the label for the associated Solaris zone during a restore to a Trusted Solaris 10 system and therefore control whether the data will be restored to this system. If this option is enabled, this label is checked, and if the destination for the restored data is a zone other than the zone where the data was originally included, the restore will not complete successfully. If the option is disabled for this scenario, the data will be restored to the specified destination (zone).

This option is enabled by default if the destination client is a Solaris 10 client or higher except for scheduled restores following an upgrade, and it is not displayed if the source client is a non-Solaris client. The option is disabled for all other scenarios.

Back to Top

# Startup

Select from the following options. Note that all the options described in this help may not be available and only the options displayed in the dialog box are applicable to the operation for which the information is being displayed.

#### Priority

# • Use Default Priority

If selected, the default priority for this type of job will be used in determining how the Job Manager will allocate resources for this job.

• Change Priority

Use this option to manually specify the priority for the job, between 0 (highest priority) and 999 (lowest priority). The Job Manager will use the priority setting when allocating the required resources. This is useful if you have jobs that are very important and must complete, or jobs that can be moved to a lower priority.

#### Start up in suspended state

Specifies that this job will start in the Job Controller in a suspended state and cannot run until the job is manually resumed using the **Resume** option. This option can be used to add a level of manual control when a job is started. For example, you could schedule jobs to start in the suspended state and then choose which scheduled jobs complete by resuming the operation started in the suspended state.

#### Description

Use this field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.

# Advanced Restore Options (Pre/Post)

Use this tab to establish pre/post processes for restore jobs.

#### **Pre Recovery Command:**

Displays the name/path of the process to run before the restore. You can use this space to enter a path for the backup process that will execute before this phase on the subclient. Click **Browse** to search for and select the name/path of the process. The system allows the use of spaces in the name/path, provided they begin with an opening quotation mark and end with a closing quotation mark.

#### Post Recovery Command:

Displays the name/path of the process to run after the restore. You can use this space to enter a path for the backup process that will execute before this phase on the subclient . Click **Browse** to search for and select the name/path of the process. The system allows the use of spaces in the name/path, provided

they begin with an opening quotation mark and end with a closing quotation mark.

### **Run Post Restore Process for all attempts**

Specifies whether this process will execute for all attempts to run the phase. Selecting this option will execute the specified process for all attempts to run the phase, including situations where the job phase is interrupted, suspended, or fails. Otherwise, when the checkbox is cleared the specified process will only execute for successful, killed, or failed jobs.

# **Advanced Restore Options (Copy Precedence)**

Choose the copy from which you wish to recover or retrieve. Select from the following options:

#### Restore from copy precedence

When selected, the system recovers or retrieves data from the selected storage policy copy (**Synchronous Copy** or **Selective Copy**). If data does not exist in the specified copy, the data recovery or retrieve operation fails even if the data exists in another copy of the same storage policy.

When cleared, (or by default) the system recovers or retrieves data from the storage policy copy with the lowest copy precedence. If the data was pruned from the primary copy, the system automatically recovers or retrieves from the other copies of the storage policy in the following order:

- 1. Lowest copy precedence to highest copy precedence among all synchronous copies.
- 2. Lowest copy precedence to highest copy precedence among all selective copies (if your agent supports selective copies).

Once the data is found, it is recovered or retrieved, and no further copies are checked.

# Copy Precedence

When selected, the system recovers or retrieves data from the copy with the specified precedence number.

# Advanced Restore Options (Data Path)

Select the data path for the restore/recovery operation. You can specify the MediaAgent, Library, Drive Pool, and Drive from which the restore operation must be performed.

### Use MediaAgent

Specifies the name of the MediaAgent that will be used to perform the restore operation. If necessary, you can change the name of the MediaAgent.

For example, if the library is shared and you wish to use a specific MediaAgent (instead of the system selected MediaAgent, or a MediaAgent which may be idle, or less critical) or if you know that the media containing the data you wish to restore is available in the library attached to the specified MediaAgent.

If the media containing the data is not available in the tape/optical library attached to the MediaAgent, the system will automatically prompt you to insert the appropriate media. In the case of a disk library, the operation will fail if the requested data is not available in the disk library attached to the specified MediaAgent.

# **Use Library**

Specifies the name of the library that will be used to perform the restore operation. Use this option when you wish to restore using a specific library.

For example, if you know that the media containing the data you wish to restore is available in a specific library.

#### Use Drive Pool

Specifies the name of the Drive Pool that will be used to perform the restore operation. Use this option when you wish to restore using a specific Drive Pool.

To restore NAS data, select the drive pool type that was used to perform the backup, *i.e.*, if a drive pool associated with an NDMP Remote Server was used to perform the backup, select a drive pool associated with an NDMP Remote Server. Similarly, if an NDMP drive pool was used, specify an NDMP drive pool.

# Use Drive

Specifies the name of the drive in the drive pool that will be used to perform the restore operation. Use this option when you wish to restore using a specific Drive in the Drive Pool.

# Use Proxy

Specifies the name of the proxy server that will be used to perform the restore operation. Use this option when you wish to restore using a proxy server.

# Advanced Restore Options (Paths/Filters)

# **Modify Paths/Filters**

Use this tab to modify the the paths of the selected data.

#### Source Item

Displays the data that is to be restored. If you previously browsed and selected backed up data for restoration, this pane lists the paths of the selected data. Click the **Add** button to type the path of the data to be restored. Select a listed path and click the **Delete** button to remove the path of data to be restored.

# **Filter Item**

Displays the data that is to be filtered from the restore/recovery. If you previously browsed the backup data and deselected files/folders/directories that are children of **Source Item** directories, then this pane lists the paths of the selected data. You can use this space along with the **Add** button to exclude manually the path of data to be restored/recovered. You can also select an entry in this space and use the **Delete** button to remove a selected entry.

You can also use wildcard characters within this pane to specify file name patterns that you want to exclude from the restore/recover operation. The supported wildcard characters are:

- \* = any number or characters
- ? = any one character
- [] = any range or set of characters

When wildcard characters are utilized in the filter path, they are automatically detected by the system. In the event that the actual file, folder, or directory name in the filter path contains a character that can be used as a wildcard, you can override wildcard auto-detection by adding an exclamation mark as the first character of your path (e.g., <code>!/company/[test]</code> for Unix-based systems). In these example, rather than treating the square brackets as a wildcard, the system would look for (and exclude from the restore/recovery) a folder or directory named <code>[test]</code>.

# **Advanced Restore Options (Encryption)**

#### Pass-Phrase

Enter the pass-phrase that is currently assigned to the client, whose data you are restoring. Note that if you have changed the pass-phrase since you secured the client data, you need to provide the new pass-phrase here, not the old one.

#### Re-enter Pass-Phrase

Re-enter the pass-phrase for confirmation.

If you attempt an immediate restore of encrypted data that was pass-phrase protected without entering the pass-phrase here, the restore operation will fail.

If you have an exported pass-phrase set up, and you enter the pass-phrase under **Decryption**, you over-ride (not overwrite) the client properties pass-phrase. Thus, if you enter the pass-phrase incorrectly, the restore does not complete successfully.

# **Job Retry**

Note that all the options described in this help may not be available and only the options displayed in the dialog box are applicable to the agent or operation for which the information is being displayed.

# **Enable Total Running Time**

The maximum elapsed time, in hours and minutes, from the time that the job is created. When the specified maximum elapsed time is reached, as long as the job is in the "Running" state, it will continue; if the job is not in the "Running" state when the specified time is reached, Job Manager will kill the job.

### **Enable Number of Retries**

The number of times that Job Manager will attempt to restart the job. Once the maximum number of retry attempts has been reached, if the job has still not restarted successfully, Job Manager will kill the job. Note that this job-based setting will not be valid if restartability has been turned off in the Job Management Control Panel.

#### Kill Running Jobs When Total Running Time Expires

Option to kill the job when the specified Total Running Time has elapsed, even if its state is "Running". This option is available only if you have specified a Total Running Time.

# Advanced Restore Options (Map)

Specify the restore of individual files to a specified destination using an external map file. The map file provides the list of files to be restored and the destination to which the files are to be restored. (See **Restore Data Using a Map File** in *Books Online* for detailed information.)

# Use map file

Specifies whether the restore operation must be performed using a mapping file. Enable this option to specify the map file.

# Map File Path

Specifies the name of the map file. Use the space to enter the path and name of the map file. Use the browse button to browse and select the appropriate map file.

### **Restore unmapped files**

Specifies whether the restore operation must restore the unmapped files that were selected for restore, to the specified restore destination. *i.e.*, in-place restore or out-of-place restore. Clear this option to restore only those files that are included in the specified map file.

#### Rename all restore files with suffix

Specify a common suffix to be added to each file as it is restored. For Windows platforms, this suffix is appended to the filename (i.e., before the extension); for Unix/Mac platforms, the suffix is appended after the extension.

# **Advanced Recover Options (Browse Options)**

Use this dialog box to specify advanced restore options.

# **Restore Deleted Items**

Specifies that the restore/recovery operation will include data that was secured during all backup/archive operations, including deleted items.

# Specify Time Range

Specifies to restore/recover data within a specified time zone and time threshold. Select the checkbox to enable this option. Clearing the checkbox disables this option. If this option is enabled, set the following parameters:

- Time Zone Restores/recovers only those jobs within a specified time zone. Click the pull-down list and click the desired time zone.
- Start Time Displays the start time for the restore/recovery operation. Click the pull-down arrow and click a date; use the up and down arrows to specify a time.
- End Time Displays the end time for the restore/recovery operation. Click the pull-down arrow and click a date; use the up and down arrows to specify a time.

# Alert

Use this tab to configure an alert for a schedule policy.

# **Configure Alert**

• Alert

The currently configured Alert.

• Add/Modify Alert

When clicked, opens the Alert Wizard to configure alerts for this operation.

• Delete Alert

When clicked, deletes any existing alerts that are already configured.