

# Features - SRM Exchange Agent

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## TABLE OF CONTENTS

### OVERVIEW

### SYSTEM REQUIREMENTS - SRM EXCHANGE AGENT

### INSTALLATION

- Install the SRM Exchange Agent

### CONFIGURATION

SRM Data Collection

### SRM EXCHANGE AGENT SUMMARIES

### SRM EXCHANGE SERVER REPORTS

### MANAGEMENT

- Admin Job History
  - Data Collection Job History
-

# Overview - SRM Exchange Agent

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- Introduction
  - Supported Job Types for Data Collection
    - Discovery Job
    - Discovery and Analysis Job
  - Tree Level in SRM Exchange Agent
  - License Requirement
- 

## INTRODUCTION

The SRM Exchange Agent gathers statistics on the allocation and usage of storage by Exchange Mailboxes and Public Folders on the local computer.

Data collected by the SRM Exchange Agent is summarized by many types of reports that may be further customized with user-selected filters and charts in the Report Manager.

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## SUPPORTED JOB TYPES FOR DATA COLLECTION

This agent supports two **job types** for data collection:

- Discovery
- Discovery and Analysis

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### DISCOVERY JOB

This job collects basic information about Exchange mailbox stores, public stores, and storage groups present on the server, including their sizes and configurations or properties. Collections using the Discovery level job require minimal processing on the Exchange server and may be run throughout the day. However, because this job does **not** gather detailed information about mailboxes or individual messages, you will not receive meaningful data in certain of the more extensive reports.

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### DISCOVERY AND ANALYSIS JOB

This job collects statistics on the size and properties of each Mailbox Store, Public Store, Storage Group, Folder Tree, and Mailbox on the server. Each Mailbox is also scanned for statistics on message-level attributes such as item sizes, message attachment types, and destinations. Collections using the Discovery and Analysis job should be run during off-peak hours because they require processing that is CPU and disk-intensive on the Exchange Server.

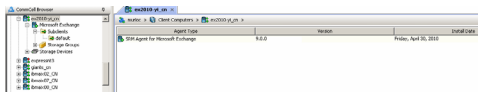
For SRM Exchange Agents running with Exchange 2010, public folder object data is not collected when a Discovery and Analysis type data collection job is run.

See Reports - SRM Exchange Agent for more information about which reports require Discovery and Analysis level data collection.

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## TREE LEVEL IN SRM EXCHANGE AGENT

When the SRM Exchange Agent is installed, the following levels are automatically created in the CommCell Browser.



ex2010-yi\_cn: Client

Microsoft Exchange: Agent

default: Subclients

Storage Groups: This level displays Storage Group information for the SRM Exchange Agent's client computer. Public Folder and Mailbox databases associated with the client computer are populated under this level after completion of the first Data Collection operation. For more information, see SRM Exchange Agent Summaries.

Storage Devices: Storage Devices

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## LICENSE REQUIREMENT

To perform a data collection operation using this Agent, you need a *SRM Exchange Agent* license, available in the SRM server. This license is consumed when you install the Agent. See License Administration for more details on license requirements.

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[Back to Top](#)

# System Requirements - SRM Exchange Agent

[System Requirements](#) | [Supported Features](#)

The following requirements are for the SRM Agent for Microsoft Exchange Server.

## APPLICATION

Microsoft Exchange 2003 Server up to the latest service pack  
Microsoft Exchange 2007 Server up to the latest service pack  
Microsoft Exchange 2010 Server up to the latest service pack

## OPERATING SYSTEM

### WINDOWS SERVER 2008

Microsoft Windows Server 2008 x64 Editions\*

\*Core Editions not supported

### WINDOWS SERVER 2003

Microsoft Windows Server 2003 32-bit and x64 Editions with a minimum of Service Pack 1

## 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

104 MB minimum of hard disk space for software/ 148 MB recommended  
100 MB of additional hard disk space for log file growth  
716 MB of temp space required for install or upgrade (where the `temp` folder resides)

## MEMORY

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

## PROCESSOR

All Windows-compatible processors supported

## PERIPHERALS

DVD-ROM drive  
Network Interface Card

## MISCELLANEOUS

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### NETWORK

TCP/IP Services configured on the computer.

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### NET FRAMEWORK

.NET Framework 2.0 is automatically installed. Note that .NET Framework 2.0 can co-exist with other versions of this software. These requirements are in addition to the disk requirements set for the operating system.

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### MICROSOFT VISUAL C++

Microsoft Visual C++ 2008 Redistributable Package is automatically installed. Note that Visual C++ 2008 Redistributable Package can co-exist with other versions of this software.  
SRM Exchange Agent supports 32 and 64 bit MAPI

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## **EXCHANGE SERVER 2010 REQUIREMENTS**

Mailbox Server Role and Client Access Server (CAS) role must be configured on the Exchange Server.

### **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

# Install the SRM Exchange Agent

## TABLE OF CONTENTS

### Install Requirements

#### Before You Begin

#### Install Procedure

- Getting Started
- Cluster Selection
- Select Components for Installation
- Configuration of Other Installation Options
- Client Group Selection
- Schedule Automatic Update
- Configure Exchange Mailbox
- Verify Summary of Install Options
- Install Remaining Cluster Nodes
- Setup Complete

#### Post-Install Considerations

## INSTALL REQUIREMENTS

The following procedure describes the steps involved in installing the SRM Exchange Agent on both clustered and non-clustered environment.

The SRM Exchange Agent is installed on the Exchange Server. (This computer is referred to as the *Client* computer in this install procedure.)

Verify that the computer in which you wish to install the software satisfies the minimum requirements specified in System Requirements - SRM Exchange Agent.

For Exchange Server 2007, prior to installing SRM Exchange Agent on Windows 2008 x64 platform with Exchange Server 2007; MAPI must be manually configured on Exchange Server by installing Microsoft Outlook 2007.

Review the following Install Requirements before installing the software:

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### GENERAL

- Agents should be installed only after the CommServe and SRM Server has been installed in the CommCell. Also, keep in mind that the CommServe and SRM Server must be installed and running (on the same computer), before you can install the Agent.
- Close all applications and disable any programs that run automatically, including anti-virus, screen savers and operating system utilities. Some of the programs, including many anti-virus programs, may be running as a service. Stop and disable such services before you begin. You can re-enable them after the installation.
- Ensure there is an available license on the CommServe for the Agent.
- Verify that you have the software installation disc that is appropriate to the destination computer's operating system.  
Make sure that you have the latest software installation disc before you start to install the software. If you are not sure, contact your software provider.
- You must have a mailbox already created for the user you specify in Configure Exchange Mailbox, or the install will fail.

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### CLUSTER SPECIFIC

Check the following on the cluster computer in which you wish to install the software:

- Cluster software is installed and running.
- Active and passive nodes are available.
- Disk array devices configured with access to the shared array.
- Public Network Interface Card is bound first, before the private Network Interface Card. (Does not apply to NetWare Cluster.)
- In DAG configuration, the software must be installed on each node.

## BEFORE YOU BEGIN

- Log on to the client as local Administrator or as a member of the Administrators group on that computer.
- On a clustered computer, ensure that you are logged on to the **active node** as the Domain User with administrative privileges to all nodes on the cluster.

## INSTALL PROCEDURE

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### GETTING STARTED

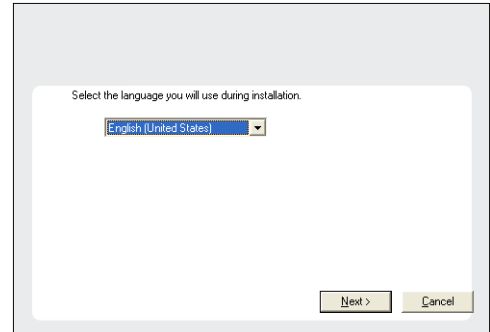
1. Place the Software Installation Disc for the Windows platform into the disc drive.  
After a few seconds, the installation program is launched.

If the installation program does not launch automatically:

- Click the **Start** button on the Windows task bar, and then click **Run**.
- Browse to the installation disc drive, select **Setup.exe**, click **Open**, then click **OK**.

**NOTES**

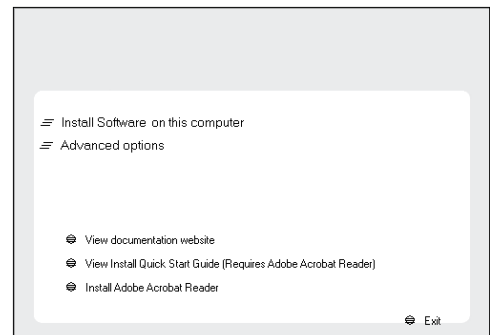
- If you are installing on Windows Server Core editions, mount to Software Installation Disc through command line, go to the **AMD64** folder and run **Setup.exe**.
2. Choose the language you want to use during installation. Click the down arrow and select the desired language from the drop-down list, and click **Next** to continue.



3. 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.



4. Read the license agreement, then select **I accept the terms in the license agreement**.  
Click **Next** to continue.

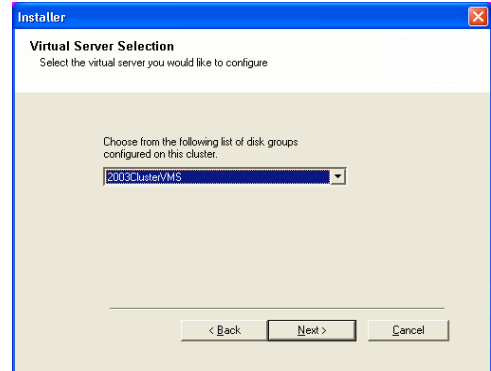
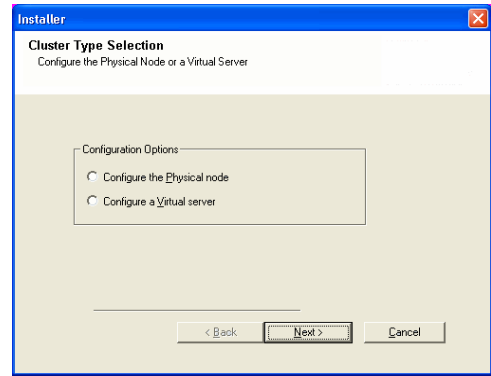


**CLUSTER SELECTION**

If you are installing in clustered environment, follow the steps below. For non-clustered environment, skip to Select Components for Installation.

5. Select **Configure a Virtual Server**.  
Click **Next** to continue.

6. Select the disk group in which the cluster group resides.  
Click **Next** to continue.



## SELECT COMPONENTS FOR INSTALLATION

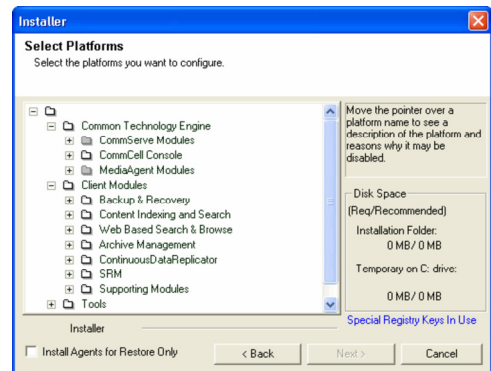
7. Select the component(s) to install.

### NOTES

- Your screen may look different from the example shown.
- Components that either have already been installed, or which cannot be installed, will be dimmed. Hover over the component for additional details.
- If you wish to install the agent software for restore only, select **Install Agents for Restore Only** checkbox. See Installing Restore Only Agents for more information.
- The **Special Registry Keys In Use** field will be highlighted when `GalaxyInstallerFlags` registry key is enabled. Move the mouse pointer over this field to see a list of registry keys that have been created in this computer.

Click **Next** to continue.

To install the SRM Exchange Agent, expand the `SRM` folder and then select `SRM Exchange Agent`.

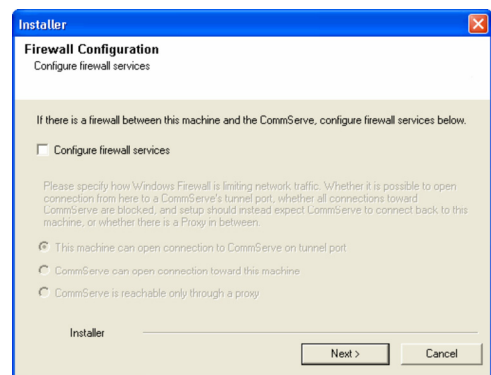


## CONFIGURATION OF OTHER INSTALLATION OPTIONS

8. If this computer and the CommServe is separated by a firewall, select the **Configure firewall services** option and then click **Next** to continue.

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

If firewall configuration is not required, click **Next** to continue.



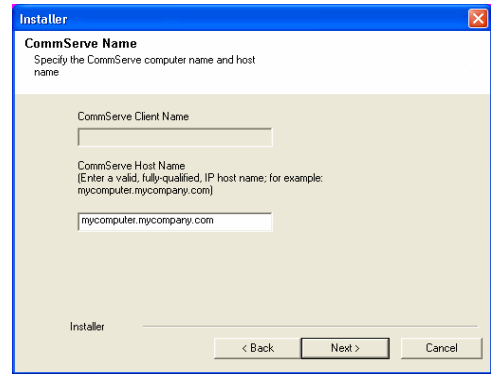
9. Enter the fully qualified domain name of the CommServe Host Name. This should be TCP/IP network name. e.g., `computer.company.com`.

### NOTES



- The CommServe client name is the name of the computer. This field is automatically populated.
- Do not use space and the following characters when specifying a new name for the CommServe Host Name:  
`\|`~!@#$$%^&*()+=<>/?,[\]{};:;'"`
- If a computer has already been installed, this screen will not be displayed; instead the installer will use the same Server Name as previously specified.
- If you do not specify the CommServe Host Name, a window will be prompted to continue in decouple mode. Click **Yes** to continue to Decoupled Install. Click **No** to specify a CommServe Name and continue with the installation.

Click **Next** to continue.

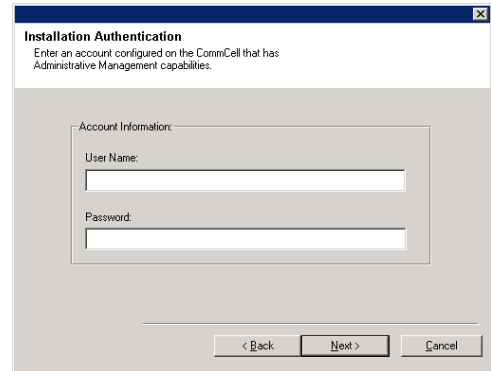


10. Enter the **username** and **password** associated with an external domain user account or a CommCell user account to authorize the installation of this agent.

**NOTES**

- This window will be displayed when the **Require Authentication for Agent Installation** option is selected in the **CommCell Properties**. For more information, see Authentication for Agent Installs.

Click **Next** to continue.



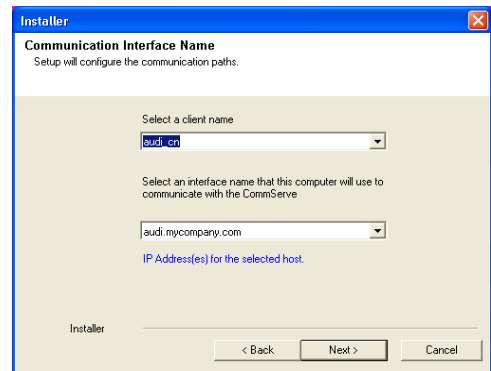
11. Enter the following:

- The local (NetBIOS) name of the client computer.
- The TCP/IP IP host name of the NIC that the client computer must use to communicate with the CommServe Server.

**NOTES**

- Do not use spaces when specifying a new name for the Client.
- The default network interface name of the client computer is displayed if the computer has only one network interface. If the computer has multiple network interfaces, enter the interface name that is preferred for communication with the CommServe Server.
- If a component has already been installed, this screen will not be displayed; instead, the install program will use the same name as previously specified.

Click **Next** to continue.



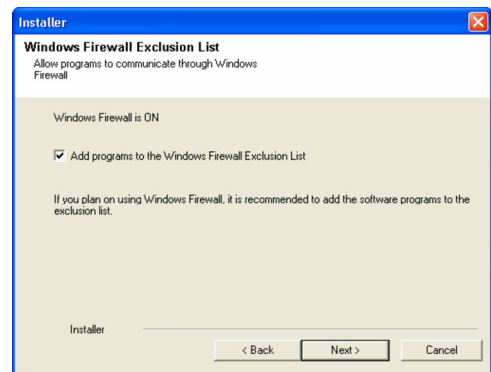
12. Select **Add programs to the Windows Firewall Exclusion List**, if you wish to add CommCell programs and services to the Windows Firewall Exclusion List.

**NOTES:**

- If Windows Firewall is enabled on the computer, this option is selected by default and must be enabled to proceed with the installation.
- If Windows Firewall is disabled on the computer, you can select this option to add the programs and services to enabled CommCell operations across the firewall, if the firewall is enabled at a later time.

You can either select this option during install or add the programs and services after installation. For adding the programs and services after installation, see Configure Windows Firewall to Allow CommCell Communication.

Click **Next** to continue.



13. Specify the location where you want to install the software.

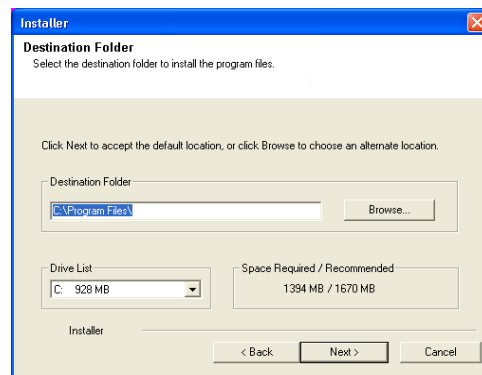
**NOTES**

- Do not install the software to a mapped network drive.
- Do not use the following characters when specifying the destination path:  
`/ : * ? " < > | #`  
 It is recommended that you use alphanumeric characters only.
- If you intend to install other components on this computer, the selected installation directory will be automatically used for that software as well.

- If a component is already installed in this computer, this screen may not be displayed. The software will be automatically installed in the same location that was previously specified.

Click **Browse** to change directories.

Click **Next** to continue.



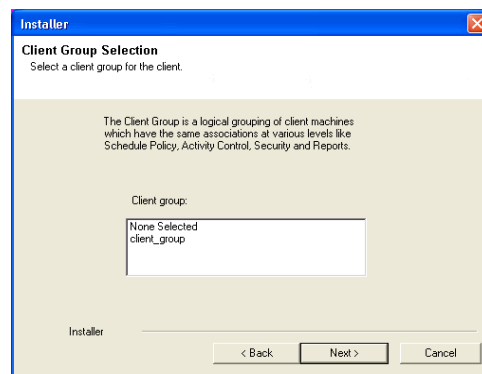
## CLIENT GROUP SELECTION

14. Select a Client Group from the list.

Click **Next** to continue.

### NOTES

- This screen will be displayed if Client Groups are configured in the CommCell Console. For more information, see Client Computer Groups.



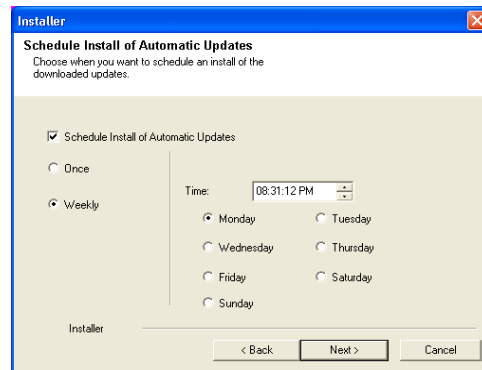
## SCHEDULE AUTOMATIC UPDATE

15. If necessary, select this option to schedule an automatic installation of software updates.

### NOTES

- Schedule Install of Automatic Updates allows automatic installation of the necessary software updates on the computer on a single or weekly basis. If you do not select this option, you can schedule these updates later from the CommCell Console.
- To avoid conflict, do not schedule the automatic installation of software updates to occur at the same time as the automatic FTP downloading of software updates.
- If a component has already been installed, this screen will not be displayed; instead, the installer will use the same option as previously specified.

Click **Next** to continue.



## CONFIGURE EXCHANGE MAILBOX

16. Enter the following Exchange Administrator information then click **Next** to continue:

Enter the following information:

**Account Name:** The user name that must be used by SRM to logon to the Exchange Server.

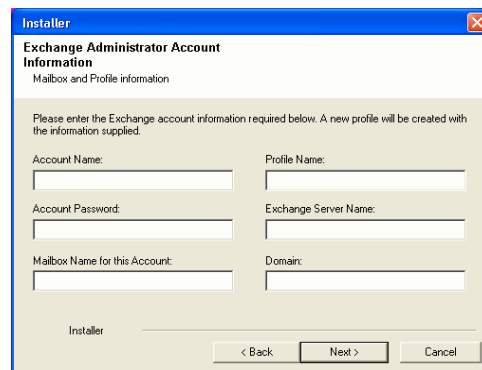
**Account Password:** The password for the user account.

**Mailbox Name for this Account:** The mailbox name for the user account.

**Profile Name:** The profile name that must be used by SRM to access the Exchange Server.

**Exchange Server Name:** The name of the client in which the SRM Agent for Exchange Server is installed.

**Domain:** The domain name associated with the client.



Click **Next** to continue.

**NOTES**

- The user must be a member of the following groups:
  - Domain Users
  - Exchange Enterprise Servers
  - Exchange Domain Servers
- The user must also be a member of the Local Administrators on the Exchange Server.

**VERIFY SUMMARY OF INSTALL OPTIONS**

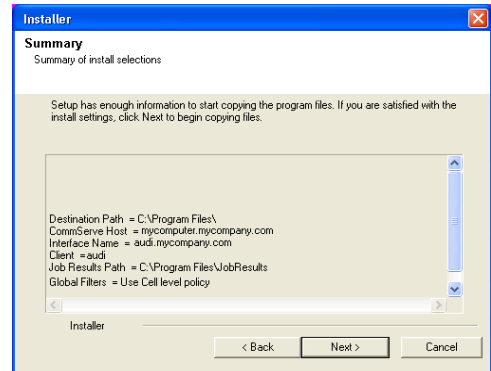
17. Verify the summary of selected options.

**NOTES**

- The **Summary** on your screen should reflect the components you selected for install, and may look different from the example shown.

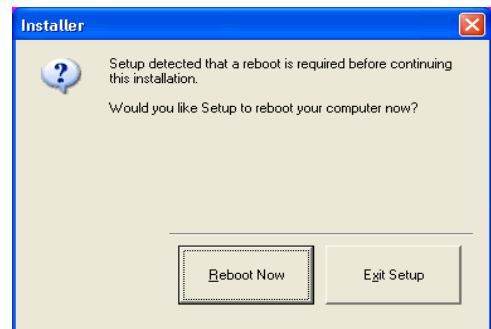
Click **Next** to continue or **Back** to change any of the options.

The install program now starts copying the software to the computer. This step may take several minutes to complete.



18. The System Reboot message may be displayed. If so, select one of the following:

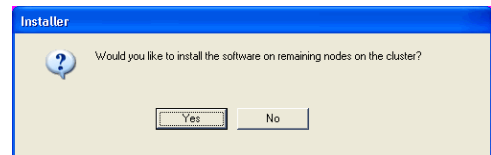
- **Reboot Now**  
If this option is displayed without the **Skip Reboot** option, the install program has found files required by the software that are in use and need to be replaced. If **Reboot Now** is displayed without the **Skip Reboot** option, reboot the computer at this point. The install program will automatically continue after the reboot.
- **Exit Setup**  
If you want to exit the install program, click **Exit Setup**.



**INSTALL REMAINING CLUSTER NODES**

If you are installing in clustered environment, follow the steps below to install on remaining nodes of the cluster. For non-clustered environment, skip to Setup Complete.

19. To install/upgrade the software on the remaining nodes of the cluster, click **Yes**.  
To complete the install for this node only, click **No**.

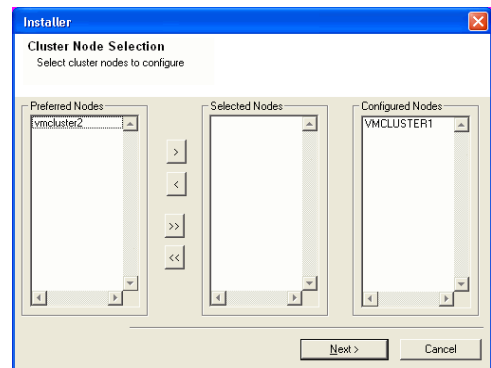


20. Select cluster nodes from the **Preferred Nodes** list and click the arrow button to move them to the **Selected Nodes** list.

**NOTES**

- The list of **Preferred Nodes** displays all the nodes found in the cluster; from this list you should only select cluster nodes configured to host this cluster group server.
- Do not select nodes that already have multiple instances installed. For more information, see Multi Instancing.

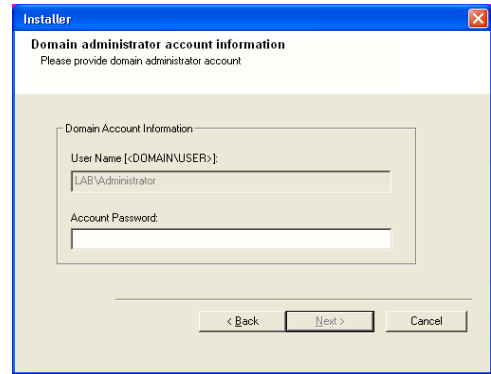
When you have completed your selections, click **Next** to continue.



21. Type the **User Name** and **Password** for the Domain Administrator account, so that

the installer can perform the remote install/upgrade of the cluster nodes you selected in the previous step.

Click **Next** to continue.



- 22. The progress of the remote install for the cluster nodes is displayed; the install can be interrupted if necessary.

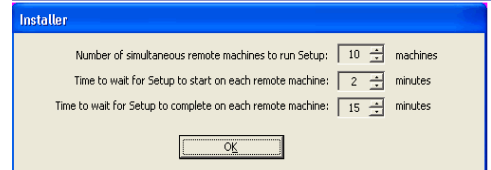
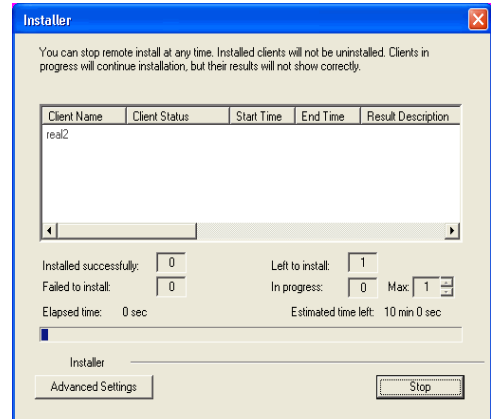
Click **Stop** to prevent installation to any nodes after the current ones complete.

Click **Advanced Settings** to specify any of the following:

- Maximum number of nodes on which Setup can run simultaneously.
- Time allocated for Setup to begin executing on each node, after which the install attempt will fail.
- Time allocated for Setup to complete on each node, after which the install attempt will fail.

**NOTES**

- If, during the remote install of a cluster node, setup fails to complete or is interrupted, you must perform a local install on that node. When you do, the install begins from where it left off, or from the beginning if necessary. For procedures, see *Manually Installing the Software on a Passive Node*.

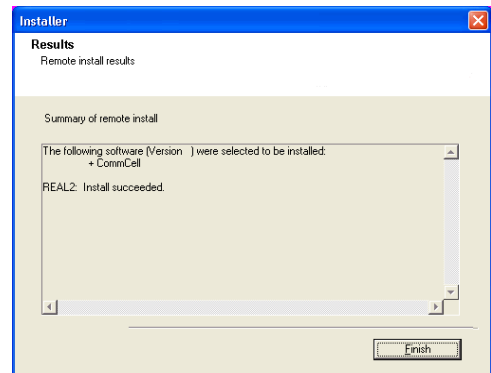


- 23. Read the summary for remote installation to verify that all selected nodes were installed successfully.

**NOTES**

- If any node installation fails, you must manually install the software on that node once the current installation is complete. (See *Manually Installing the Software on a Passive Node* for step-by-step instructions.)
- The message displayed on your screen will reflect the status of the selected nodes, and may look different from the example.

Click **Next** to continue.



**SETUP COMPLETE**

- 24. Click **Next** to continue.

**NOTES**

- Schedules help ensure that the data protection operations for the Agent are automatically performed on a regular basis without user intervention. For more information, see *Scheduling*.

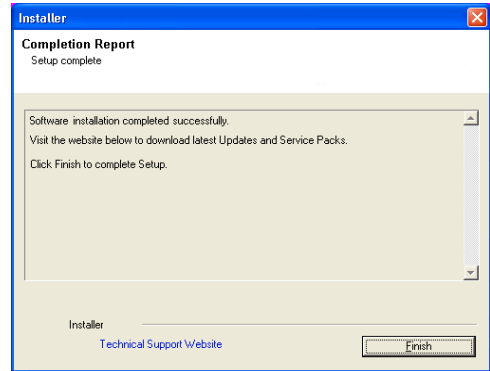
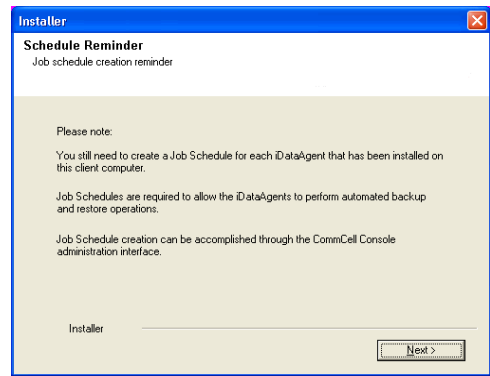
25. Setup displays the successfully installed components.

**NOTES**

- The **Setup Complete** message displayed on your screen will reflect the components you installed, and may look different from the example shown.
- If you install an Agent with the CommCell Console open, you need to refresh the CommCell Console (F5) to see the new Agents.
- If **Reboot Now** button is displayed make sure to reboot the computer before performing any other operations from the computer.

Click **Finish** to close the install program.

The installation is now complete.



## POST-INSTALL CONSIDERATIONS

### GENERAL

- Install post-release updates or Service Packs that may have been released after the release of the software. When you are installing a Service Pack, ensure that it is the same version as the one installed in the CommServe Server. Alternatively, you can enable Automatic Updates for quick and easy installation of updates in the CommCell component.

# SRM Data Collection

Topics | How To | Troubleshoot | Related Topics

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Overview

Scheduling Data Collection jobs

Considerations

Best Practices

- Solaris
  - NAS
  - Enabling Reverse Lookup
  - SharePoint
  - Oracle
- 

## OVERVIEW

After installing the SRM Server, the SRM Agent software must be installed on your selected client computers before you can collect data from them. When data collection is performed, this information populates the SQL database on the SRM Server's repository with current statistics, for the purpose of generating summaries and reports.

When you configure data collection for a client, from the SRM node you have the options of choosing which Agent(s) to use (if more than one is available on the client), the type of data collection to be performed (determined by selecting either an Analysis or Discovery Job Type), a Schedule Policy, and a start date. You can exclude volumes and directories from the data collection process for Subclients filters. You can also balance the collection load across different subclients, each with a different schedule policy.

Data collection jobs run automatically according to the parameters you have selected, and will appear in the Job Controller as a scheduled job. The system can also be configured to generate advisories, a brief text message describing an actual or potential problem and the suggested corrective action.

Reports and SRM Summaries viewed through the console are generated from the data collected and stored on the SRM Server. Schedule your first reports to run after your first data collection jobs have completed. Note that data collection and Report Generation jobs are scheduled independently, at different times and intervals. Thus, you can, for example, collect data nightly, hourly, or on-demand, but generate reports only once per week if desired.

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## SCHEDULING DATA COLLECTION JOBS

Data Collection jobs can be scheduled to regularly collect data at specified intervals. Data Collection jobs can be scheduled from the SRM agent level in the CommCell Browser. In addition, Analysis Data Collection jobs can be scheduled for the individual subclients at the subclient level. When the Data Collection job is scheduled the job will be displayed in the Job Controller. After the successful completion of the Data Collection job, the client information is gathered at the SRM Server and the job status is shown as completed in the Job Controller. For more information on scheduling, see Scheduling. For step-by-step instructions on scheduling a Data Collection job see Run/Schedule Data Collection.

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## CONSIDERATIONS

- Data Collection is not performed for mounted network drives, volumes, or directories. If you want to collect data for network file systems, install the appropriate SRM Agent on the local computer for those file systems.
- SRM Exchange Agent based Analysis Data Collection job will report storage groups only if the storage groups are mounted.
- For NAS Data Collection, all CIFS and NFS content will be included as content in the default subclient, unless some or all of it is specifically listed as content in a user-defined subclient.
- For NAS Data Collection, if subclient SubB is child of subclient SubA meaning that SubB's paths are contained in paths of SubA, then when collecting SubA none of the contained paths of SubB will be collected. Instead they will be collected by Data Collection of SubB.
- For NAS, data collection jobs are not supported for vfilers. If you enable data collection on a vfiler, then the data is not collected.
- For UNIX file systems, all mount points (comprised of a logical volume or partition) will be included as content in the default subclient, unless they are specifically listed as content in a user-defined subclient.  
Consider this example:
  - You have created a subclient named `sub1`.
  - You have defined a directory named `/mount_points` as contents for `sub1`.
  - Within `/mount_points` there are three mount points, `mnt1`, `mnt2`, and `mnt3`.

- Data will not be collected on those three mount points as part of `sub1`; instead, they are part of the content of the default subclient.
- To collect data on those mount points as part of `sub1`, you must specify each mount point, `/mount_points/mnt1`, `/mount_points/mnt2`, and `/mount_points/mnt3`, as content for `sub1`.
- If you would like to configure the SRM Exchange Agent for cross-domain mailbox access for data collection purposes, this can be accomplished by creating the `AdServerList` key in the registry.
- After adding, editing or removing a subclient, you must run an Analysis data collection job on all subclients associated with an agent for reports to reflect the changes.
- For the SRM Agent for SharePoint only - ensure that all necessary SharePoint services are running and that the configuration and content databases are online; otherwise, installation may appear successful, but a subsequent Data Collection will fail.
- For SRM Windows File System Agent, Summary pages may show different file count than the actual count as the Agent will skip junction points.
- Using the integrated File System Agent, if DDR or Snap Protect is selected as the backup method, SRM Data Collection will be skipped.
- For SRM Exchange Agents running with Exchange 2010, public folder object data is not collected when a Discovery and Analysis type data collection job is run.

## BEST PRACTICES

### SOLARIS

Ensure that the NFS client specifies the soft option when mounting NFS shares, or else data collection for NFS data will hang whenever the NFS server is down or not accessible. Also, increase the value for the `retrans` and `timeo` options; this will compensate for the soft option limiting the number of retries that the client can attempt to access the NFS server.

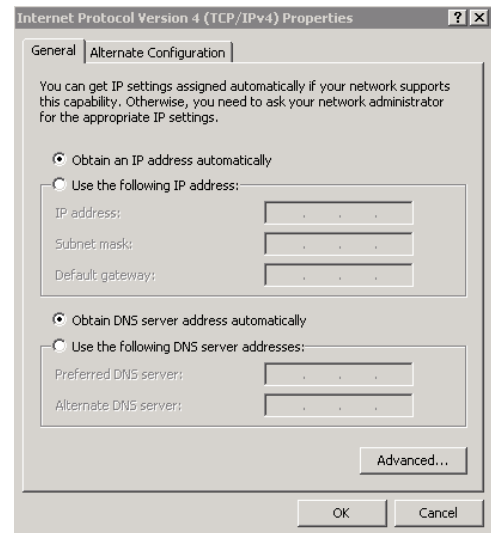
### NAS

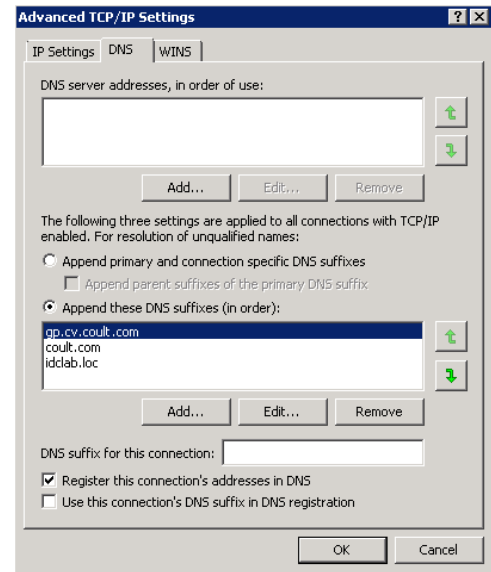
Configure NAS filer (including NetApp vFiler, EMC Celerra CIFS Servers and Data Movers) with DNS server in a way that reverse DNS lookup (from NAS filer to SRM NAS proxy) is resolved. If that is not the case then CIFS connection or NFS mount from SRM NAS proxy to NAS filer will fail.

### ENABLING REVERSE LOOKUP

Use the following steps to enable Reverse DNS lookup on a client computer:

1.
  - Logon to the computer as an Administrator.
  - Click **Start**, click **Control Panel** and then select **Network and Internet**.
  - Click **Network and Sharing Center**.
  - Under **Tasks**, Select **Manage network connections**.
  - Right-click the **Local Area Connection** icon, and then click **Properties**.
  - On the **Local Area Connection Properties** dialog box, select **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.
  - If you have a DHCP Server in your network environment, then select **Obtain DNS server address automatically**. Else, select **Use the following DNS server addresses** and follow the below steps:
    - In the **Preferred DNS server** box, type the IP Address of the DNS server.
    - In the **Alternate DNS server** box, type the IP Address of the alternate DNS server.
2.
  - Click **Advanced**.
  - On the **Advanced TCP/IP Settings** dialog box, click the **DNS** tab.
  - Click **Append these DNS suffixes (in order)**.
  - Click **Add**, in the **Domain suffix** box, type the Domain suffix, and then click **Add**. Repeat this step to add all the DNS suffixes in order.
  - Click **OK**, and then click **OK**.
  - Click **OK**.





In case the DNS is not configured or not supported, then the client computer will not be able to perform IP/Name resolution and will not be able to communicate with the remote computers by using the host names. You can overcome this temporarily by adding the IP addresses and the fully qualified domain names in the host file of the client computer. It is not recommended to add Hosts file entries as these create communications control points that may impact other server operations and are difficult to maintain and manage. These should be used only as temporary solutions until the larger network or DNS issues can be resolved. You can use the following steps to add entries to the host file of the client computer with Windows operating system:

1. Logon to the computer as an Administrator.
2. Click **Start**, and then click **Run**.
3. In the **Open** box, type **drivers**, and then click **OK**.
4. Double-click **etc** folder, open **hosts** file with Notepad, and then type the IP address, the fully qualified domain name and the host name of the remote computer. You can add additional entries on separate lines. Save the `hosts` file after adding the entries.

Example:

```
172.32.xxx.xxx dbwin1.idclab.loc dbwin1
172.14.xxx.xxx dbwin2.idclab.loc dbwin2
```

Similarly, to enable reverse lookup on a remote computer, repeat step 1 through step 3 for adding IP address of the client computer in the `hosts` file of the remote computer.

For more information, see: [http://technet.microsoft.com/en-us/library/cc780585\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc780585(WS.10).aspx)

For a Unix computer, the entries should be added in the `host` file located under `etc` folder.

---

## SHAREPOINT

"Usage Analysis" must be enabled in SharePoint for SRM to collect data about hits, for those reports that include this information. Refer to Microsoft SharePoint documentation for information about enabling "Usage Analysis".

---

## ORACLE

Consider the following configuration items before running data collection from the Oracle Agent:

- Verify that Oracle databases are in OPEN status before running a data collection job.
- Verify that the Oracle databases are running properly, and that there are no database-related memory issues.
- Verify that the `shared_pool_size` parameter in the `init<SID>.ora` file is set to the maximum valid value so that SQL queries can run successfully for data collection.
- Data collection by the appropriate file system SRM Agent must be scheduled to occur *before* data collection by the SRM Oracle Agent.

[Back to Top](#)

# SRM Data Collection - How To

[Topics](#) | [How To](#) | [Troubleshoot](#) | [Related Topics](#)



---

Run/Schedule a Data Collection Job for an SRM Instance, Agent or Subclient

Schedule Agentless SRM policies

---

## RUN/SCHEDULE A DATA COLLECTION JOB FOR AN SRM INSTANCE, AGENT OR SUBCLIENT

*Required Capability:* See Capabilities and Permitted Actions

▶ To run/schedule a Data Collection job for an SRM instance, agent or subclient:

1. From the CommCell Browser, right-click the SRM instance, agent or subclient, and then click **Data Collection** from the short-cut menu.
2. From the Schedule Data Collection Job dialog box, select the agent for which you want to run the Data Collection job from the **Agent** list. (This option is not applicable at the SRM agent and subclient levels.)
3. Choose the **Job Type**. (This option is not applicable at the SRM subclient level.)
  - If you select **Discovery**, basic information on file system assets is collected and minimal processing on the server is required.
  - If you select **Discovery and Analysis**, detailed statistics is collected and these jobs require more processing throughput on the server.
  - If you select **Discovery and Analysis**, and if the agent has more than one subclient, click the name of the subclient you want from the **Subclient** list. (This option is not applicable at the SRM subclient level.)
4. Choose **Schedule** or **Immediate** from the **Job Initiation** area.
5. Configure any other options as appropriate.
6. Click **OK**.

If you have selected the **Immediate** option, you can track the progress of the job from the **Job Controller** window.

For more information on Scheduling, see Scheduling.

---

## SCHEDULE AGENTLESS SRM POLICIES

*Required Capability:* See Capabilities and Permitted Actions

▶ To schedule an exiting SRM Agentless Policy:

1. From the CommCell Browser, expand **Policies** and select **Agentless SRM Policies**.
2. In the main window right-click the Policy that needs to be scheduled and click **Create Schedule**.
3. In the Job Initiation dialog box, choose **Immediate** or **Schedule**.



If you have selected the **Run Immediately** option, you can track the progress of the job from the **Job Controller** window.

4. Click **Configure** and select the required scheduling options.
5. Click **OK**.

For more information on Scheduling, see Scheduling.

---

# SRM Exchange Agent Summaries

Overview

Client Summaries

Agent Summaries

Subclient Summaries

Storage Groups Summaries

Public Folder Database and Mailbox Database Summaries

## OVERVIEW

SRM Exchange Agent Summaries provide a concise view of the status of Exchange Server entities in the CommCell Console. 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 Exchange Server 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 Exchange Agent at different levels in the CommCell Console:

## CLIENT SUMMARIES

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.

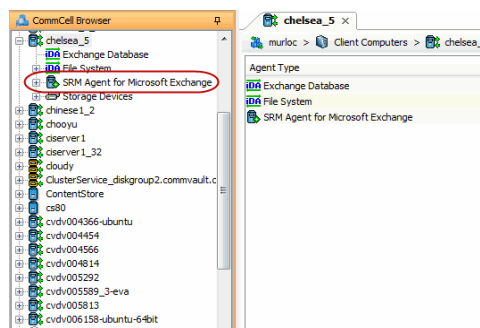
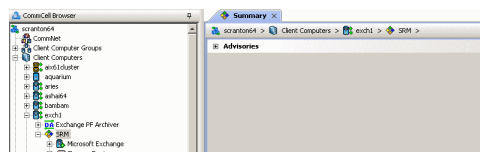
- **Services**

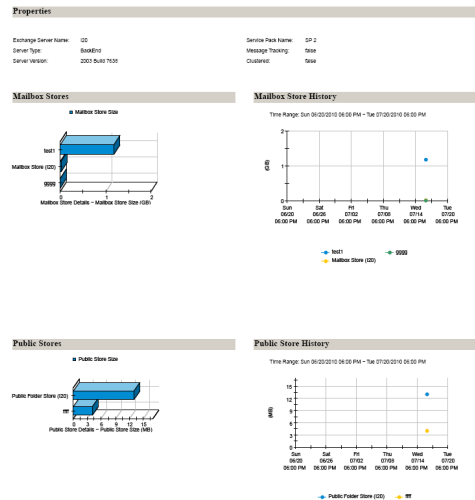
The summary information for services displays details like Name, State, Startup Type, and Log on information for each service that exists on the client.

## AGENT SUMMARIES

Summary information includes Properties at the agent level showing physical information like Exchange Server Name, Server Type, Server Version, Service Pack Name, etc. for the associated Exchange Server. Summary information at this level also displays graphs for Mailbox Stores, Mailbox Store History, Public Store and Public Store History.

1. From the CommCell Console, select the Client Computer with SRM Exchange Agent for which you want to view summaries.
2. Expand **SRM** and select **Microsoft Exchange**.
3. The associated **Agent Summary** will appear in the main window.





## SUBCLIENT SUMMARIES

Summary at the subclient level include charts for **Current Capacity by Exchange Subclient**.

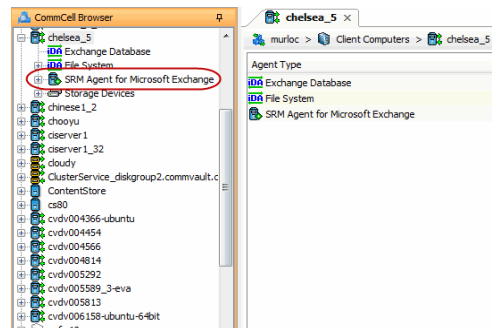
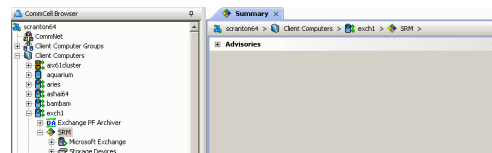
However at the User defined or default Subclient level, properties showing physical information including name, state (enabled or disabled) last modification time and last analysis times, etc. are also displayed in summaries along with Charts.

- From the CommCell Console, select the Client Computer with SRM Exchange Agent for which you want to view summaries.

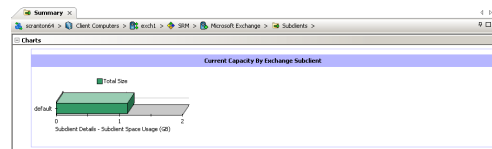
- Expand **SRM** and select **Microsoft Exchange**, then select **Subclients**.



You may also expand subclients node and alternatively select default or user defined subclient to view its summary.



- The associated **Subclient Summary** will appear in the main window.



## STORAGE GROUPS SUMMARIES

Summary at the Storage Groups level display charts for **Current Capacity by Exchange Storage Group**. Summary information includes Advisories with severity level, the time stamp, and a brief description. Each storage group also display Properties including physical information like Name, Transaction Log, System Path, Circular Logging, etc.

Each store in turn displays Properties (including Name, Database Path, Mount status, warning quota, etc.) and Advisories (including severity level, the time stamp, and a brief description).

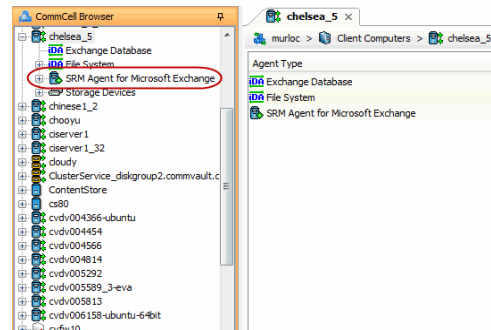
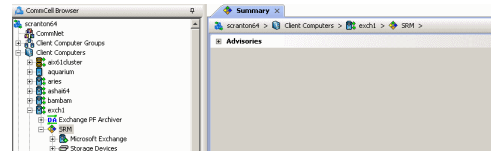
For Mailbox Databases, the charts would be displayed on the basis of **Mailbox Storage Database Usage History** and **Mailbox Distribution by Size** however for Public Folder databases it would be **Public Folder Database Storage Usage History** and **Public Folder Distribution by Size**. The storage group level may also display Physical devices if available.

- From the CommCell Console, select the Client Computer with SRM Exchange Agent for which you want to view summaries.

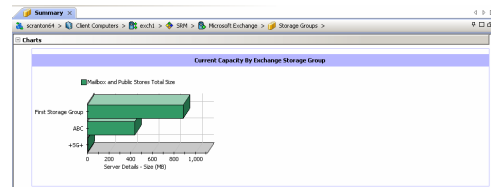
- Expand **Agent** and select **Storage Groups**.



You may also expand Storage Groups node and alternatively select any storage group to view its summary.



- The associated **Storage Groups Summary** will appear in the main window.



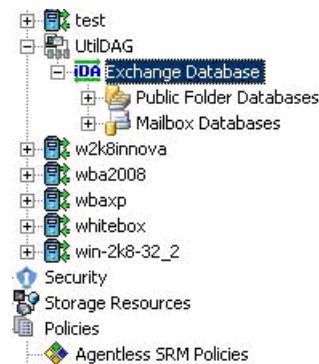
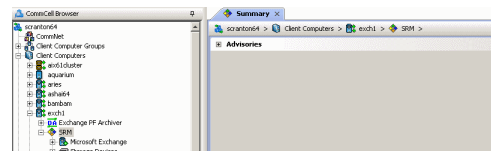
## PUBLIC FOLDER DATABASE AND MAILBOX DATABASE SUMMARIES

The integrated SRM Agent with Exchange Database iDataAgent displays store information details in summaries (e.g. on which server it was mounted, copy status and number of copies, etc.) of all the clients which are configured with the DAG client. If the copies column display the value 1 then they belongs to local stores and if the value displayed is 2, it indicates they are shared (i.e. DAG configured). Store information on individual clients displays the local store information as well as shared ones of the selected clients.

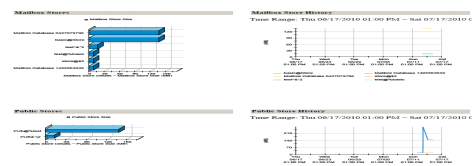


Clients using Exchange 2010 will not display the storage groups information in summary.

- From the CommCell Console, select the Client Computer with SRM for Exchange Agent for which you want to view summaries.
- Expand **Agent** and select **Public Folder Database** or **Mailbox Database**.



- The associated **Summary** will appear in the main window.



# SRM Exchange Server Reports

Topics | How To | Related Topics

SRM 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, etc.) and filters as described in SRM Reports.

From the CommCell Console, the SRM Report Manager provides these types of reports:

- Computer Inventory
- Cost Analysis
- Applications

Initial templates are provided for each type (e.g., Cost History by Application, Capacity by File System, etc.) where columns have been preselected. The only requirement before generating and displaying the report is to specify one or more client computers. For most reports, a data collection job must also have been run prior to generating the report.

Reports can be customized by adding or removing columns in the initial templates or specifying additional Filter Criteria.

This following table lists:

- The category/columns that can be selected.
- A description of the category.
- For each type of data collection job, if data is collected for the column, it is marked with a ✓. Running an Discovery and Analysis Job may be required to produce complete and accurate data. An Analysis Job also includes the data collected by a Discovery Job.

For step-by-step instructions on generating reports, see Display, Run, or Schedule a Report Manager Report for step-by-step instructions.

Category/Column	Description	SRM Exchange Agent	
		Discovery Job	Discovery and Analysis Job
<b>Client Properties</b>	Displays aspects of the client computer on which the SRM Exchange Server Agent is installed.		
Hostname		✓	
Memory		✓	
Operating System		✓	
OS Vendor		✓	
OS Version		✓	
Processors		✓	
Service Pack		✓	
SP Version		✓	
Time Zone		✓	
<b>DAG</b>	Displays information of mailbox servers as part of a database availability group (DAG), which provides automatic recovery at the individual mailbox database level instead of at the server level.		
Admin Display Name		✓	
Alternate Witness Server		✓	
Alternate Witness Directory		✓	
Database Availability Group IPv4 Addresses		✓	
Datacenter Activation Mode		✓	
Distinguished Name		✓	
Exchange Version		✓	
GUID		✓	
Is Valid		✓	

Name		✓	
Network Compression		✓	
Network Encryption		✓	
Network Names		✓	
Object Category	Exchange -2010 do not support Public Folder Object Category.	✓	
Object Class		✓	
Operational Servers		✓	
Organization Id		✓	
Originating Server		✓	
Primary Active Manager		✓	
Replication Port		✓	
Runspace Id		✓	
Servers		✓	
Started Mailbox Servers		✓	
Stopped Mailbox Servers		✓	
Third Party Replication		✓	
When Changed		✓	
When Created		✓	
Witness Directory		✓	
Witness Server		✓	
<b>Exchange Entities</b>	Displays overall aspects per each computer selected (e.g., computer name, host group, etc.).		
Administration Group		✓	
Client Computer Group		✓	✓
Collection Status		✓	
Collection Time		✓	
Computer		✓	
Exchange Server Name		✓	
Folder Tree		✓	
Mailbox Store		✓	
Public Folder			✓
Public Store		✓	
Storage Group		✓	
<b>Mailbox Distribution by Message Count</b>	Displays a list of mailboxes per message counts (e.g., computer name, host group).		
Group			✓
Item Count			✓
Total Size			✓
Type			✓
<b>Mailbox Distribution by Size</b>	Displays sizes of mailboxes (total size, type, item count, and group).		
Group			✓
Item Count			✓
Total Size			✓
Type			✓
<b>Mailbox Store Details</b>	Summarizes aspects of mailbox stores (i.e.		

	database that contains the mailboxes) and compares the relative sizes of the mailbox stores in your enterprise.		
Copies		✓	
Copy Servers		✓	
Database		✓	
Healthy Copy Servers		✓	
Mailbox			✓
Mailbox Archived Item Count			✓
Mailbox Archived Space Saved			✓
Mailbox Item Count			✓
Mailbox Size			✓
Mailbox Store Size		✓	
Mailboxes Total Size			✓
Mounted Server		✓	
Prohibit Send Quota		✓	
Prohibit Send Receive Quota		✓	
Streaming Database		✓	
Total Mailboxes Archived Space Saved			✓
Warning Quota		✓	
<b>Mailbox Store History</b>	Displays store size and mount status from past data collections of each mailbox store over time. Used for trending purposes.		
As Of		✓	
Mounted		✓	
Size		✓	
<b>Message Distribution by Age</b>	Displays graphs showing message age distribution by total count and total size as well as a list of mailboxes by computer, exchange server, storage group, mailbox store, mailbox, group, count, size, and type.  Message Categories are not supported for Exchange Database integrated SRM Agents.		
Group		✓	
Item Count		✓	
Total Size		✓	
Type		✓	
<b>Message Distribution by Attached File Type</b>	Displays graphs showing message attached file type distribution by total size and by file count.		
Group		✓	
Item Count		✓	
Total Size		✓	
Type		✓	
<b>Physical Devices</b>	Displays graphs showing partition count, block counts, unallocated space, cost category, and allocated space.		
Allocated Space		✓	
Block Counts		✓	
Block Size		✓	
Capacity		✓	

Computer		✓	
Cost Category		✓	
Disk Name		✓	
Interface		✓	
Manufacturer		✓	
Partition Count		✓	
Serial Number		✓	
<b>Public Folder Distribution by Size</b>	Displays graphs showing public folder total size and public count distribution by size.		
Group		✓	
Item Count		✓	
Type		✓	
Total Size		✓	
<b>Public Folder Object Distribution by Modification Age</b>	Displays graphs showing public folder object modification age distribution by total size and by object.		
Group		✓	
Item Count		✓	
Total Size		✓	
Type		✓	
<b>Public Folder Object Distribution by Type</b>	Displays graphs showing public folder object space usage distribution by type and count distribution by type.		
Group		✓	
Item Count		✓	
Total Size		✓	
Type		✓	
<b>Public Store Details</b>	Summarizes aspects of public stores and compares the relative sizes and other characteristics of the public stores present in your enterprise.		
Database		✓	
Maximum Item Size		✓	
Mounted		✓	
Prohibit Post Quota		✓	
Public Folder Item Count			✓
Public Folder Size			✓
Public Folders Total Size			✓
Public Store Size		✓	
Server Name		✓	
Streaming Database		✓	
Warning Quota		✓	
<b>Public Store History</b>	Displays store size and mount status from past data collections of each public store over time. Used for trending purposes.		
As Of		✓	
Mounted		✓	
Size		✓	
<b>Server Details</b>	Summarizes aspects of the Exchange server.		
Back End Type		✓	



Circular Logging Enabled		✓	
Client Access Type		✓	
Edge Transport Type		✓	
Front End Type		✓	
Hub Transport Type		✓	
Log File		✓	
Mailbox and Public Stores Total Size		✓	
Mailbox Stores		✓	
Mailbox Stores Total Size		✓	
Mailbox Type		✓	
Message Tracking Enabled		✓	
Public Stores		✓	
Public Stores Total Size		✓	
Service Pack		✓	
Storage Group Size		✓	
Storage Group Volume		✓	
Subject Logging Enabled		✓	
System File		✓	
Unified Messaging Type		✓	
Version		✓	
Zero Database Enabled		✓	
<b>Storage Group History</b>	Displays storage group size (including the log files and system size) from past data collections and growth tracking of each storage Group over time. Used for trending purposes.		
As Of		✓	
Size		✓	
<b>Subclient Details</b>	Displays total size and count of mailboxes and public folders on each Exchange Server, per subclient.		
Mailboxes			✓
Public Folders			✓
Subclient			✓
Total Mailbox Size			✓
Total Public Folder Size			✓
Total Size			✓

[Back to Top](#)

## SRM Exchange Server Reports - How To

[Topics](#) | [How To](#) | [Related Topics](#)

[Display, Run, or Schedule a Report Manager Report](#)

[File Categories for Reports](#)

[Time Categories for Reports](#)

[Top 'N' Category Counts for Reports](#)

[Configure IIS for Windows Server 2008](#)

[Save a Report Template](#)

---

## RUN, SCHEDULE, OR SAVE A SRM REPORT MANAGER REPORT

### Before You Begin

*Required Capability:* Capabilities and Permitted Actions

▶ To generate, save, or schedule an SRM Report Manager Report:

1. In the **CommCell Browser**, expand **Reports** and then **SRM Report Manager**, click a report type.
2. Select one or more **Client Computers** or **Client Computer Groups** from the **Client Selection** tab. This is a required step.
3. Click the **Column Selection** tab, select a **Category** and then one or more **Available** category/columns and click on **Add**.

To remove a previously selected category, click on the selected filter from **Selected** column and click **Remove**.

**Remove All** will remove all previously selected categories for the reports.

4. Click the **Report Options** tab and configure these settings in the report:
  - From the **General** tab set **Select Time Range** and **Include Trending options**.

These two options apply to history charts.

For all reports, the **Maximum number of Bar Points Per Chart** may be increased or decreased from the default value of 10 and **Draw All Bar Points or Lines** option may be selected. The default of 100 rows to output may be increased or decreased by specifying a number in **Limit number of rows to output**. The default of 5000 rows per page may be increased or decreased by specifying the desired number in **Limit number of rows per page**.

- Click the **Advanced Options** tab and set the **Data Size Unit** for the Table and/or Chart (GB, MB, etc.). Also, the **Output Locale** may be changed from the default that is English. The ordering of the report may be changed by moving columns in **Set Sorting Order of Rows to Return**.
5. Optionally, click the **Get SQL Query** tab to generate the query for the filter criteria specified. This will display the SQL query 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.
  6. Choose one of these options to generate the report:
    - 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.

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**.

---

## FILE TYPE CATEGORIES FOR REPORTS

*Required Capability:* Capabilities and Permitted Actions

▶ To configure file type categories for reports:

1. In the **CommCell Browser** expand **Reports** and right-click **SRM Report Manager** and select **File Type Categories**.
  2. In the Configure File Categories dialog box:
    - Select the agent for which you want to configure File Categories.
    - Select a **File Category** to add, delete, or edit associated extensions.
      - To add an extension, type the new extension, and click **Add** to save it.
      - To delete an extension, select it from the list, and click **Delete**.
      - To edit an extension, select it from the list, make the changes, then click **Edit** to save your changes.
    - Optionally, click **Reset** to return all categories to their default configuration (see Default File Categories).
  3. Click **OK** to save your changes and close the Configure File Categories dialog box. You can also click **Apply** to save any changes to the current Agent configuration, and then repeat this procedure from step 2 to configure File Categories for other agents.
-

## TIME CATEGORIES FOR REPORTS

*Required Capability:* Capabilities and Permitted Actions

▶ To configure Time Categories for reports:

1. In the **CommCell Browser** expand **Reports** and right-click **SRM Report Manager** and select **Time Categories**.
  2. In the Configure Time Categories dialog box, select an Agent for which you want to modify Time Categories.
  3. For each Interval:
    - Specify a Name for each custom Time Category.
    - Select the minimum number of days in the time range, or select **None**.
    - Select the maximum number of days in the time range, or select **Unlimited**.
  4. Click **OK** to save your changes and close the Configure Time Categories dialog box, or click **Apply** to save your changes for the currently selected Agent, and repeat this procedure from Step 2 to configure Time Categories for other Agents.
- 

## TOP 'N' CATEGORY COUNTS FOR REPORTS

*Required Capability:* Capabilities and Permitted Actions

▶ To configure category counts for Top 'N' reports:

1. In the **CommCell Browser** expand **Reports** and right-click **SRM Report Manager** and select **Top 'N' Categories**.
  2. In the Configure Top 'N' Category Counts dialog box, change the count for each Agent for which you want to modify the Category Count in reports.
  3. Click **OK** to save your changes and close the Configure Top 'N' Category Counts dialog box.
- 

## CONFIGURE IIS FOR WINDOWS SERVER 2008

*Required Capability:* Capabilities and Permitted Actions

▶ To configure IIS and enable appropriate roles for Windows Server 2008:

1. Click **Start**, and then click **Server Manager**.
2. In **Server Manager**, right click **Roles**, and then click **Add roles**. The **Add Roles Wizard** window is displayed.
3. In the **Add Roles Wizard**, click **Server Roles**.
4. Select the **Web Server (IIS)** check box from Server Roles, and click **Next** to continue.

When the **Web Server (IIS)** check box is selected, the **File Server** check box is automatically selected due to role dependency.

5. On the **Role Services** page, expand **Common HTTP Features**, and select the following check boxes:
  - Static Content
  - Default Document
  - Directory Browsing
  - HTTP Errors
  - HTTP Redirection
6. Expand **Application Development**, and select the **ASP.NET**, **ASP**, and **CGI** check boxes.

If you are prompted to add required role services, click **OK**.

7. Expand **Security**, and select the **Basic Authentication** and **Windows Authentication** check boxes.
8. Expand **Management Tools**, expand **IIS 6 Management Capability**, and select the following check boxes:
  - IIS Metabase Compatibility
  - IIS 6 WMI Compatibility
  - IIS 6 Scripting Tools
  - IIS 6 Management Console

9. Click **Next**, and then click **Install**.
- 

## SAVE A REPORT TEMPLATE

*Required Capability:* Capabilities and Permitted Actions

▶ To save a report template:

1. In the **CommCell Browser**, expand **Reports** and then select **SRM Report Manager** and select a report type.  
The specified Report Window will appear.
  2. At the top of the window, click **Save As...**
  3. In the Save Template dialog box, enter the name of the report and click **OK** to exit the screen.  
The report template name displays in the **My Reports** node of the CommCell Browser.
-

# Job Management

[Topics](#) | [How To](#) | [Support](#) | [Related Topics](#)

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## Overview

### Viewing Job Information

- [Job Errors](#)
- [Flags](#)
- [Viewing Additional Job Details](#)

### Controlling Jobs

- [Controlling the Number of Simultaneously Running Streams](#)

### Viewing Job Status

- [Job Status for SAP for Oracle iDataAgent](#)
- [Job Status Changes](#)

### Customizing Completed with Errors Condition

- [Supported Agents](#)
- [Creating Decision Rules](#)
- [Common Error Codes](#)

### Job Filters

### Important Considerations for Running Jobs

### Preempting Jobs

- [Preemptible and Non-Preemptible Jobs](#)
- [Controlling Job Preemption for the CommCell](#)
- [Configuring Preemptibility for Select Job Types](#)
- [What happens when a job is Preempted](#)

### Restarting Jobs

- [Restartable and Non-Restartable Jobs](#)
- [Configuring Job Restarts for the CommCell](#)
- [QR Volume Creation Restartability](#)

### Retrying Jobs

### Resuming Jobs

### Resubmitting Jobs

### Job Results Directory

- [Calculating the Space Required for the Job Results Directory](#)
- [Using UNC Paths for Job Results Directory](#)
- [User Impersonation for Accessing the Job Results Directory](#)
- [Changing the Job Results Path of a Client](#)
- [Changing the Retention of the Job Results of a Client](#)

### Job Management for Smart Devices

### Other Considerations

- [Hardware Considerations for Data Recovery Operations](#)
- [Job Alive Check Interval](#)
- [Job Update Interval](#)
- [Job Running Time](#)
- [Job Queuing](#)
- [When a Non-Full Backup is Automatically Converted to a Full Backup](#)
- [What happens When There are no Resources for a Job](#)

## OVERVIEW

The Job Controller allows you to manage and monitor the following types of jobs:



- Data protection operations
- Data recovery operations
- Administration operations
- Data Collection & Report operations in SRM
- Content Indexing and Search Operations
- Media Refresh operations



The Job Controller window displays all the current jobs in the CommCell. A status bar at the bottom of the job controller shows the total amount of jobs; the amount of jobs that are running, pending, waiting, queued and suspended; and the high and low watermarks. The watermarks indicate the minimum and maximum number of streams that the Job Manager can use simultaneously.



## VIEWING JOB INFORMATION

Information about a job is continually updated and available in the Job Controller or Job History window. When a job is finished, the job stays in the Job Controller for five minutes. Once a job is finished, more information about that job is obtainable using the Job History.

The following job information is displayed, depending on the selected Job History:

<b>Job ID</b>	A unique number allocated by the Job Manager that identifies the data protection, data recovery, or administration operation.
<b>Operation</b>	The type of data protection, data recovery, or administration operation being conducted.
<b>Client/Client Computer</b>	For data protection operations, the client computer to which the backup set and subclient belong. For data recovery operations, the computer from which the data originated.
<b>Destination Client</b>	The destination client to which the recovered data will be stored.
<b>Agent Type</b>	The agent that is performing the operation. (e.g., Windows 2000 File System).
<b>Instance/Partition</b>	The instance/partition in the client computer that represents the database that was included in this operation.
<b>Subclient</b>	The subclient that was protected during the operation. Note that a deleted subclient will have a Unix time stamp appended to its name in cases where another subclient is currently using the same name as the deleted subclient.
<b>Job Type</b>	The type of operation that is being conducted on data.
<b>Backup Type</b>	The type of backup that was conducted: <b>Differential</b> , <b>Full</b> , <b>Incremental</b> or <b>Synthetic</b> .
<b>Failed Folders</b>	The number of folders that were not included in the operation.
<b>Failed Files</b>	The number of files that were not included in the operation.
<b>Storage Policy</b>	The storage policy to which the operation is being directed.
<b>MediaAgent</b>	The MediaAgent to which the operation is being directed.
<b>Status</b>	The status of the operation. For job status descriptions, see Job Status Levels
<b>Progress</b>	A status bar indicating its progress. The progress bar is not visible for certain operations (e.g., data aging) or for the initial phases of some data protection operations.   The Job Controller progress bar will not display the progress of SAP for MAXDB backup and restore jobs accurately. This is true because Calypso cannot detect data or objects transferred by SAP for MAXDB due to the way SAP for MAXDB transfers these items.
<b>Errors</b>	Displays any errors that have occurred during the operation, such as a hardware problem or the job has run outside of an operation window. (See Job Errors for more information.)
<b>Backup Set</b>	The backup set that was protected/recovered during the operation and to which the subclient belongs.
<b>Index</b>	Displays <b>New Index</b> to indicate a new index was created during the operation. If blank, a new index was not created.
<b>Instance/Partition</b>	The instance/partition in the client computer that represents the database that was included in this operation.
<b>Phase</b>	The current phase of the operation. The number of phases varies depending on the operation.
<b>User Name</b>	The name of the user who initiated the operation.
<b>Priority</b>	The priority that is assigned to the operation. (For more information, see Job Priorities and Priority Precedence).
<b>Start/Start Time</b>	The date and time on the CommServe when the operation started.
<b>End Time</b>	The date and time on the CommServe when the operation was completed.
<b>Elapsed</b>	The duration of time consumed by the operation.
<b>Libraries</b>	The libraries that is being used by the operation.
<b>Drives/Mount Paths</b>	The drives/mount paths that are being used by the operation. For more information about media, see Media Operations.
<b>Last Update Time</b>	The last time the Job Manager received job updates for the operation.
<b>Transferred</b>	The amount of data that has been transferred for the operation at the present time.
<b>Estimated Completion Time</b>	The time that the Job Manager estimates for this job to be completed. The estimated time will be based on time zone of the CommServe computer.
<b>Size on Media</b>	The total size of data that was transferred to the media (excluding duplicated data).   <ul style="list-style-type: none"> <li>• The amount displayed is the compressed amount (if compression is enabled) and includes valid and invalid attempts of the backup jobs.</li> <li>• Application data that is backed up may include sparse files, metadata, inode security data, etc. As a result, the displayed size of the data may be greater than expected.</li> </ul>

	<ul style="list-style-type: none"> <li>If viewing from the storage policy copy level, amount displayed may be less if job is partially copied.</li> </ul>
<b>Size of Application</b>	<p>The amount of the application data that has been protected.</p>  <ul style="list-style-type: none"> <li>Application data that is backed up may include sparse files, metadata, inode security data, etc. As a result, the displayed size of the data may be greater than expected.</li> <li>If job has completed with multiple attempts, the amount displayed may be larger.</li> </ul>
<b>Size of Backup</b>	The amount of compressed data that has been protected, which includes all application data and metadata.
<b>Content Indexed</b>	<p>Displays <b>Full</b>, <b>Partial</b>, or <b>No</b> to indicate whether content indexing was used for the operation. Operations performed with older releases of the software may display <b>Yes</b> or <b>No</b>.</p> <p>Note that if a job is displayed as partially content indexed, not all of the data protected in the job was content indexed successfully. Rerun content indexing on this job so that the protected data is fully content indexed.</p>
<b>Delay Reason</b>	The description of the reason why the operation may be pending, waiting, or failing.
<b>Alert</b>	The name of the job-based alert, if configured for the job.
<b>Job Initiation</b>	The origin of the operation: the CommCell Console ( <b>Interactive</b> ), a schedule ( <b>Scheduled</b> ), or a third party interface ( <b>Third Party</b> ).
<b>Maximum Number of Readers</b>	The maximum number of readers that can be used for the operation.
<b>Automated Content Classification Policy</b>	Name of the Automated Content Classification Policy.
<b>Legal Hold Name</b>	The Name specified for the Legal Hold data.
<b>Legal Hold Retention Time</b>	The time frame for which the Legal Hold Data will be retained.
<b>Number of Readers in Use</b>	The number of readers currently in use for the operation.
<b>Number of Objects</b>	<p>The total number of objects including successful, failed and skipped.</p>  <p>For a Unix File System iDataAgent backup job that includes hard links and for which the <code>HLINK</code> registry key is set to <code>Y</code> and the appropriate hard link updates are applied, the value in this field will also account for the number of hard links and hard link groups that were backed up.</p> <p>See the Service Pack documentation for more information on hard link updates.</p>
<b>Restart Interval</b>	The amount of time the Job Manager will wait before restarting a job that has gone into a pending state. This is set in the Job Management (Job Restarts) tab.
<b>Max Restarts</b>	The maximum number of times the job will be restarted after a phase of the job has failed. This is set in the Job Management (Job Restarts) tab.
<b>Error Code</b>	Error Code for job pending or job failure reason. (See Job Errors for more information.)
<b>Retained By</b>	The type of retention rules defined for the job, basic or extended. For more information, see Data Aging.
<b>Description</b>	A brief description of the running job.

The Pause  and Play  buttons allow you to control how the Job Controller displays real time information from active jobs. The Pause button stops the Job Controller from displaying real time information collected from jobs. The play button allows the Job Controller to display real time job updates.

To see all the columns in the Job Controller window, use the scroll bar at the bottom of the window.

## JOB ERRORS

If a job has not completed successfully, the **Error Code** column will display a unique code linking to available troubleshooting and knowledgebase article(s) relevant to that error from the customer support website. These articles may include special considerations for the type(s) of job(s) you are running, suggested workarounds for issues, and common causes for that particular error.

If an error code pertains to more than one issue, the customer support website will display links to all articles for which the code is relevant. Conversely, if an error code does not have any articles associated with it, the customer support website will display a message indicating that no articles exist for that code.

Error codes may also be obtained from several other windows and dialog boxes, including:

- The Job History windows
- The Job Summary Report
- Events
- Alerts

Note the following when obtaining troubleshooting articles using error codes:

- The Error Code field will only contain a code if a job has not completed successfully.
- In the Job History windows and Job Summary Report, you can access troubleshooting articles by simply click on the linked error code.
- In the Events and Alerts windows, error codes do not provide direct links to troubleshooting articles. However, you can search the customer support website for related articles by typing the appropriate error code in the search field.

Note that jobs which fail Data Integrity Validation will be moved to pending status. Review the error code and description of the pending job from the job controller to identify the reason for failure. See Data Integrity Validation - Troubleshoot for troubleshooting Data Integrity validation errors.

For step-by-step instructions on viewing information about job errors, see View Troubleshooting Article(s) Available from the Customer Support Website.

## FLAGS

The Job Controller window also provides a **Flags** column, which is located on the left-hand side of the Job Controller window. The **Flags** column displays an icon for any running jobs that encounter one of the following scenarios:

- A required media cannot be found in the library. This scenario requires user intervention for the job to complete successfully.
- The job has not sent an update (such as bytes or files received) in over 60 minutes. This scenario may or may not require user intervention; for example, if the delay in receipt of updates is caused by insufficient network bandwidth, the job may complete successfully once additional network bandwidth is available. Conversely, if the delay in receipt of updates is caused by a hardware issue, the job will not complete successfully until the user has resolved the hardware issue.
- The job is a high-priority job with a priority level of less than 100.



In order to activate this flag, the `JobHighPriorityMarkEnable` entry must be configured in the `GXGlobalParam` table with a value of 1. When this entry is present, all jobs with a priority of less than 100 will be given a flag in the Job Controller.

To change the default priority for which flags will be shown, the `JobHighPriorityMark` entry can be added and configured with the desired priority level. Note that the `JobHighPriorityMarkEnable` entry must still be present and configured.

If neither of the above scenarios are present, the **Flags** column will remain empty.

## VIEWING ADDITIONAL JOB DETAILS

To view additional details about a particular job, right click the job in the Job Controller window and select **Detail**.

- The **General** tab of a Job Details dialog box provides general information about the selected job, such as the subclient, storage policy, etc.
- The **Progress** tab of a Job Details dialog box of the selected job provides more specific statistical information about the selected job's current phase.
- The **Streams** tab of a Job Details dialog box of the selected job provides data transferred by stream on the MediaAgent the job is using.
- The **Attempts** tab of a Job Details dialog box includes information on each attempt of each phase of the selected job, such as the status of each phase of the job. Each phase has a corresponding client log that can aid in troubleshooting data protection problems. Note that the **Data Size/Transferred** field amount includes metadata, and therefore, will be larger than the actual size of the backed up data.
- The **Phase Details** tab of a Job Details dialog box provides information on each phase of the Information Management operations, such as Search, Legal Hold, ERM Connector, Restore to Review Set, and Tagging.
- The **Retention** tab of a Job Details dialog box provides the retention information for the data protection job's storage policy. The associated storage policy copies will be listed with their defined retention rules. From here, you can quickly identify whether the storage policy copies are defined with basic or extended retention rules, and the date(s) until which the data will be retained for each storage policy copy.
- For Oracle specific backup and restore jobs, you can also view the RMAN log for the selected job in the Job Details dialog box.

The Job Controller also provides the facility to view job information using other CommCell Console features, including:

- **Job Events**, which can be viewed using the All Found Events window. For more information about events, see the Event Viewer.
- **Log Files**, which can be viewed for any active job. For more information about viewing log files, see Log Files.

## VIEWING LIST OF BACKED UP FILES IN A JOB

Use the `ListFilesForJob` utility to generate a list of files which are backed up during a specific job. Follow the steps give below to create a file which contains the list of files:

1. Open the Command Prompt and navigate to following location:

```
<Software_Installation_Directory>\calypso\Base\
```

2. Enter the following command:

```
ListFilesForJob.exe -job <JOBID> -ma <MAName> [-vm <Instance>] [-flag <ArchiveBitFlag>] [-tmpdir <TMPDIRPATH>] [-o <OUTFILENAME>]
```

Where:

JobID	the job id of the job for which you are generating the list.
MAName	Name of the MediaAgent which is used to perform the backup job.
Instance	Name of the instance which you have used to instal the Windows File System ;DataAgent This is an optional argument. If you do not specify any value, the job in Instance001 will be used by default to generate the list of files.
ArchiveBitFlag	1 to set the Archive Bit 0 to reset the Archive Bit This is an optional argument. If you do not specify any value, the archive bit will not change and the file that contains the list of files can be deleted.
TMPDIRPATH	The directory in which you want to create the file. This argument is optional. If you do not specify any directory, the file will be created in the default temporary directory.



	The default temporary directory for the software is set using the dGALAXYTEMPDIR registry key. When you install Windows File System iDataAgent, the dGALAXYTEMPDIR registry key gets created at the following location: HKEY_LOCAL_MACHINE\SOFTWARE\CommVault Systems\Galaxy\Instance<xxx>\Base
OUTFILENAME	The name of the file in which you want to store the list

3. Navigate to the directory specified in `TMPDIRPATH` and open the `<OUTFILENAME>` file to view the list of files.

## CONTROLLING JOBS

You can select a job in the Job Controller and perform a control action on that job individually. You can also control multiple jobs simultaneously in two ways:

- Select each of the desired jobs in the Job Controller window simultaneously, and then right-click any one of the selected jobs. You can then select the appropriate action from the menu displayed, which will be executed for each of the selected jobs.
- Use the Multi-Job Control dialog box.

Either method allows you to perform actions on:

- All jobs in the Job Controller.
- All selected jobs in the Job Controller providing you have the correct security associations at the proper level for each job selected.
- All data protection operations/data recovery operations/data collection operations running for a particular client or client/agent.
- All data protection operations running for a particular MediaAgent.

You can perform the following actions on jobs:

<b>Suspend</b>	Temporarily stops a job. A suspended job is not terminated; it can be restarted at a later time. Only preemptible jobs can be suspended.
<b>Commit</b>	Gracefully completes the current backup job, as of that point-in-time. Applicable only for Silo backup jobs. See Commit a Job for details.
<b>Resume</b>	Resumes a job and returns the status to Waiting, Pending, Queued, or Running depending on the availability of resources or the state of the operation windows and activity control settings.
<b>Kill</b>	Terminates a job.
<b>Change Priority</b>	Change the priority of a job or a group of jobs that are currently active. Note that the lower the priority number, the higher priority the Job Manager gives to the job when allocating resources.

When you suspend or resume a job, a dialog box appears offering you the ability to provide a reason for suspending or resuming a job. This reason, if entered, will be included in the **Description** field of the **Job Details** dialog box.

## CONTROLLING THE NUMBER OF SIMULTANEOUSLY RUNNING STREAMS


The Job Controller window displays all the current jobs in the CommCell. A status bar at the bottom of the job controller shows the total amount of jobs; the amount of jobs that are running, pending, waiting, queued and suspended; and the high and low watermarks. The watermarks indicate the minimum and maximum number of streams that the Job Manager can use simultaneously.



- The high watermark has a default value of 10 for SRM Reports.
- The high watermark has a default value of 100 for WorkStation backup jobs running to one destination. You can use the `SetKeyIntoGlobalParamTbl.sql` qscript with the `JMReplicationJobActivityLevelHighWaterMark` global parameter to change the default value. For more information, see Command Line Interface - QScripts.

## VIEWING JOB STATUS

The following table describes the status levels that may appear in the Job Controller window for a particular job:

<b>Completed</b>	The job has completed successfully. Note that pop-up messages for reporting job completion can be enabled or disabled using the F12 key.  For a 1-Touch Recovery for Unix job, two jobs are listed as completed if the job is successful. The first job is the operating system recovery, and the second job is the data recovery. The 1-Touch Recovery job is completed once the data recovery is completed.
<b>Completed With Warning</b>	The job has completed successfully but with a notification to the user.
<b>Completed With One or More Errors</b>	The job has completed with errors. The following administration conditions will result in the <b>Completed With One or More Errors</b> status level. <ul style="list-style-type: none"> <li>• <b>Disaster Recovery Backup</b> <ul style="list-style-type: none"> <li>○ During the operation, Phase 1 failed and Phase 2 completed, or Phase 1 completed and Phase 2 failed.</li> </ul> </li> <li>• <b>Data Aging</b> <ul style="list-style-type: none"> <li>○ During the operation, one or more components failed, e.g., subclients failed to be aged or job history failed to be removed.</li> </ul> </li> <li>• <b>Install Updates</b></li> </ul>

	<ul style="list-style-type: none"> <li>○ During the operation, one or more clients failed to be updated.</li> <li>● <b>Offline Content Indexing</b> <ul style="list-style-type: none"> <li>○ During the offline content indexing operation, one or more backup data failed to be content indexed.</li> </ul> </li> <li>● <b>Information Management</b> <ul style="list-style-type: none"> <li>○ During an information management operation, if the operation defined in the Automated Content Classification Policy is partially successful.</li> </ul> </li> </ul> <p>The following iDataAgent-specific conditions will result in the <b>Completed With One or More Errors</b> status level.</p> <ul style="list-style-type: none"> <li>● <b>Exchange Compliance Archiver</b> <ul style="list-style-type: none"> <li>○ During a retrieve operation, one or more files failed to be retrieved.</li> </ul> </li> <li>● <b>Exchange Mailbox Archiver and Exchange Public Folder Archiver</b> <ul style="list-style-type: none"> <li>○ During a recovery operation, one or more files failed to be recovered.</li> </ul> </li> <li>● <b>Microsoft Windows File System</b> <ul style="list-style-type: none"> <li>○ During a system state backup operation, one or more non-critical components failed to be backed up.</li> <li>○ During a file system restore operation, one or more files failed to restore or were locked.</li> <li>○ During a system state restore operation, one or more non-critical components failed to be restored.</li> </ul> </li> <li>● <b>Microsoft Exchange Server</b> <ul style="list-style-type: none"> <li>○ During a backup operation of a storage group assigned to a subclient, one or more databases failed to be backed up.</li> <li>○ During a restore operation, one or more databases failed to be restored.</li> </ul> </li> <li>● <b>Informix</b> <ul style="list-style-type: none"> <li>○ During a backup operation, one or more files failed to be backed up.</li> </ul> </li> <li>● <b>Oracle, Oracle RAC</b> <ul style="list-style-type: none"> <li>○ During a backup operation, one or more files failed to be backed up.</li> </ul> </li> <li>● <b>SAP for Oracle, SAP for MAXDB</b> <ul style="list-style-type: none"> <li>○ During a backup operation, one or more files failed to be backed up.</li> </ul> </li> <li>● <b>SharePoint Server iDataAgent</b> <ul style="list-style-type: none"> <li>○ During a backup operation, one or more elements in the subclient content failed to be backed up.</li> <li>○ During a restore operation, one or more elements in the subclient content failed to be restored.</li> </ul> </li> <li>● <b>SharePoint Archiver</b> <ul style="list-style-type: none"> <li>○ During a migration archiving operation, one or more elements in the subclient content failed to be archived.</li> <li>○ During a recovery operation, one or more elements in the subclient content failed to be recovered.</li> </ul> </li> <li>● <b>Sybase</b> <ul style="list-style-type: none"> <li>○ During a backup operation, one or more files failed to be backed up.</li> </ul> </li> <li>● <b>UNIX File System</b> <ul style="list-style-type: none"> <li>○ During a backup operation, one or more files failed to be backed up.</li> </ul> </li> </ul>
<b>Dangling Cleanup</b>	A job phase has been terminated by the job manager, and the job manager is waiting for the completion of associated processes before killing the job phase.
<b>Failed</b>	The job has failed due to errors or the job has been terminated by the job manager.
<b>Interrupt Pending</b>	The job manager is waiting for the completion of associated processes before interrupting the job due to resource contention with jobs that have a higher priority, etc.
<b>Kill Pending</b>	The job has been terminated by the user using the <b>Kill</b> option, and the job manager is waiting for the completion of associated processes before killing the job.
<b>Killed</b>	The job is terminated by the user using the <b>Kill</b> option or by the Job Manager.*
<b>Pending</b>	The Job Manager has suspended the job due to phase failure and will restart it without user intervention.
<b>Queued</b>	<ul style="list-style-type: none"> <li>● The job conflicted with other currently running jobs (such as multiple data protection operations for the same subclient), and the <b>Queue jobs if other conflicting jobs are active</b> option was enabled from the General tab of the Job Management dialog box. The Job Manager will automatically resume the job only if the condition that caused the job to queue has cleared.</li> <li>● The activity control for the job type is disabled, and the <b>Queue jobs if activity is disabled</b> option was enabled from the General tab of the Job Management dialog box. The Job Manager will automatically resume the job only if the condition that caused the job to queue has cleared.</li> <li>● The <b>Queue Scheduled Jobs</b> option was enabled from the General tab of the Job Management dialog box. Scheduled Jobs can be resumed manually using the Resume option or resumed automatically by disabling the <b>Queue Scheduled Jobs</b> option.</li> <li>● The job started within the operation window's start and end time.</li> <li>● The running job conflicted with the operation window and the <b>Allow running jobs to complete pass the operation window</b> option was not enabled from the General tab of the Job Management dialog box. (This is only applicable for jobs that can be restarted. See Restarting Jobs for more information.)</li> </ul>
<b>Running</b>	The job is active and has access to the resources it needs.
<b>Running (Cannot be verified)</b>	During a running operation, the <b>Job Alive Check</b> failed. See Job Alive Check Interval for more information.
<b>Suspend Pending</b>	A job is suspended by a user using the Suspend option, and the Job Manager is waiting for the completion of associated processes before stopping the job.
<b>Suspended</b>	<ul style="list-style-type: none"> <li>● A running, waiting or pending job has been manually stopped by a user using the <b>Suspend</b> option. The job will not complete until it is restarted using the Resume option.</li> <li>● A job has been started in a suspended state using the <b>Start Suspended</b> or <b>Startup in Suspended State</b> options available from the dialog box of the job that was initiated. Restore jobs from Search Console can be started in the suspended state</li> </ul>

	using the <b>Start End User restores in suspended state</b> and <b>Start Compliance restores in suspended state</b> options in the Browse/Recover Option Dialog box in the Control Panel.
<b>System Kill Pending</b>	The job has been terminated by the Job Manager*, and the Job Manager is waiting for the completion of associated processes before killing the job.
<b>Waiting</b>	The job is active, waiting for resources (e.g., media or drive) to become available or for internal processes to start.
<b>Destination Client</b>	The restore client machine name. This allows users to verify if the restore data is being written to the correct machine/target.

\*The Job Manager will terminate a job when:

- The number of job retries has exceeded the value set in the Job Retry dialog box.
- The total running time has exceeded the amount of time set in the **Job Retry** dialog box.
- Conflicting jobs overlap, i.e., a new backup job is initiated for the same subclient as a job that is currently running.



The Job Manager will only terminate a conflicting job if the new backup job encompasses the earlier job and if the earlier started job has yet to transfer any data to media. If these conditions exist, then the earlier job will be killed by the system and replaced by the newer job. To be more encompassing indicates that a FULL backup can kill jobs such as incrementals, differentials and other fulls; however, incrementals will not be able to kill fulls. If the current job has already started transferring data, then the normal queue rules for the new job will apply.

This feature must be enabled on the CommServe with the `JMKillPreviousBackupJobForSameSubclient` registry key.

- The free space is less than 25MB in the CommServe installation directory.

### JOB STATUS FOR SAP FOR ORACLE /DATAAGENT

In the case of SAP for Oracle iDataAgent, the job status is displayed depending on the BRTOOLS error codes.

BRTools Error Code	Message	Job Status
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In the case of SAP for Oracle iDataAgent, the job status is displayed depending on the BRTOOLS error codes.

### JOB STATUS CHANGES

The status of a job and the preemptibility of the phase of the job in the Job Controller determines the actions (Kill, Suspend, or Resume) that you can perform. The following table describes the status of a job after an action has been performed on it:

Original Status	Actions Available	New Status
<b>Running</b>	Suspend	<b>Suspended</b>
	Kill	<b>Killed</b>
<b>Waiting</b>	Suspend	<b>Suspended</b>
	Kill	<b>Killed</b>
<b>Interrupt Pending</b>	N/A	N/A
<b>Pending</b>	Suspend	<b>Suspended</b>
	Resume	Returns to original state, resources and other conditions permitting
	Kill	<b>Killed</b>
<b>Suspend Pending</b>	N/A	N/A
<b>Queued</b>	Suspend	<b>Suspended</b>
	Resume (scheduled jobs only)	Changes into a state of an active job, resources and other conditions permitting
	Kill	<b>Killed</b>
<b>Suspended</b>	Resume	<ul style="list-style-type: none"> <li>• Returns to original state, resources and other conditions permitting</li> <li>• Changes into a state of an active job, resources and other conditions permitting</li> </ul>
	Kill	<b>Killed</b>
<b>Kill Pending</b>	N/A	N/A
<b>Dangling Cleanup</b>	N/A	N/A



Jobs that are pending or have failed, will be killed after being in that state for more than 24 hours.

### CUSTOMIZING COMPLETED WITH ERRORS CONDITION

You can control the overall status of a backup job by defining error decision rules. You can define multiple decision rules for an agent based on the following criteria:

- File path pattern
- Error codes
- Decision to mark the job with a specific status

The available job status you can select from the decision rule allows you to:  
 (the list below also reflects the job status priority used by the decision rules)

- Mark the Job as Failed
- Mark the Job as Completed with Errors
- Mark the Job as Complete

Once created, the agent applies the error decision rules at the end of the backup operation. During this process, the agent traverses the `failures.csv` file to match the decision rules based on the priority of the rules. The `failures.csv` file includes information of all the backup files that failed along with their associated error code. When a file and its error codes match a rule, the file is marked with the defined status, and the agent continues to traverse the `failures.csv` file. However, if a file matches a rule that will mark the job as failed, the backup job ends immediately with the failed status. See the graph on the right to understand the process.

Here are some examples that show when it is useful to define error decision rules:

**Example 1**

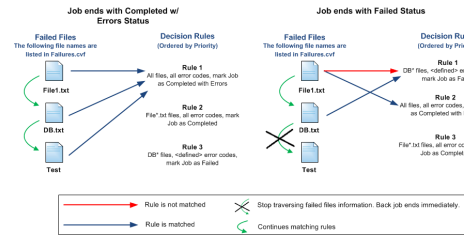
You create a decision rule to ignore any error found in temporary files.

File Pattern: `C:\temp\*`  
 System Error Code: All Error Codes  
 On error mark Job as: `Complete`

**Example 2**

You create a decision rule to mark the backup job as failed when an error is found in system data files.

File Pattern: `/**/*.dat`  
 System Error Code: `1 - 10`  
 On error mark Job as: `Failed`



**SUPPORTED AGENTS**

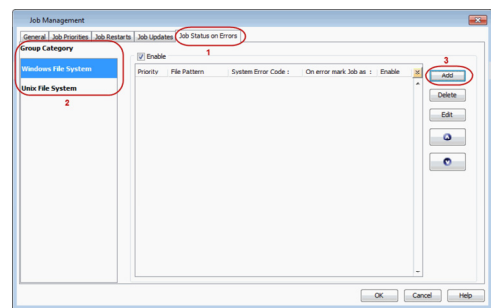
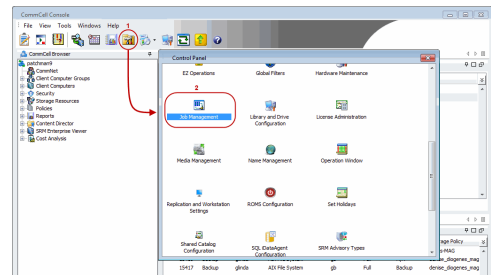
This feature is supported by the following agents:

- Windows File System
- Unix File System

**CREATING DECISION RULES**

Follow the steps below to add a decision rule for any errors that may occur during a backup operation:

- From the toolbar in the CommCell Console, click **Control Panel**.
  - Double-click **Job Management**.
- Click the Job Status on Errors tab.
  - From the **Group Category** pane, select the agent to add the decision rules for.
  - Click **Add**.
- By default, in the Add Job Error Decision Rule dialog box, all file patterns are considered for the new decision rule.



You can define a file pattern by clearing the **All File Pattern** checkbox and entering a specific file pattern in the **User Defined Pattern** field.

- From the **System Error Code** area:
  - If you want to include all errors, click **All Error Codes**.
  - If you want to define a specific set of error codes, enter the error code range.
- Select the job status from the **On Error mark Job as** drop-down list to update the job if the rule is matched.

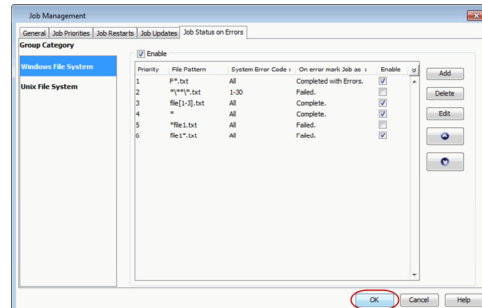
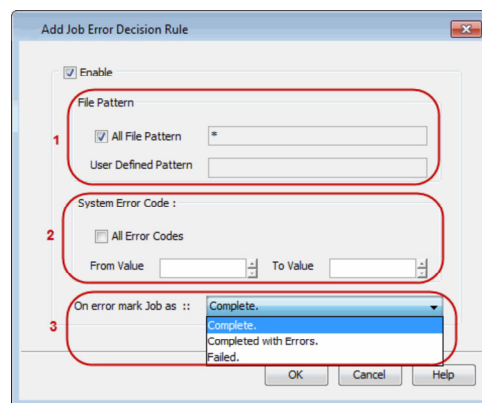
For a SnapProtect backup job, if a decision rule with the "Completed with Errors" status is matched, the job status will be marked as "Complete".

- Click **OK**.

4. Click **OK**.

You can add more error decision rules for the selected agent, or choose a different agent to add new decision rules.

You can also set the priority for the decision rules you created by moving a rule up (higher priority) or down (lower priority) using the arrow buttons.



## COMMON ERROR CODES

The following table displays common error codes examples for Windows and Solaris computers:

ERROR CODE VALUE	SYSTEM ERROR MESSAGE
1	Operation not permitted
2	No such file or directory
3	No such process
5	I/O Error
6	No such device or address
13	Permission denied
16	Mount device busy
32	Broken pipe

Please refer to the operating system vendor documentation for a comprehensive list of error codes.

## JOB FILTERS

You can filter the jobs that are displayed in the Job Controller by creating a job filter from the Filter Definition dialog box. You can filter by Data Protection, Data Recovery, Data Collection (for SRM jobs), and Administration operations. The filter can also be based on an active job for a particular CommCell entity.

CommCell Administrators can utilize filters created by all users. All other users can only utilize the filters that they create. If a user account is deleted, their filters will automatically be deleted as well.

## IMPORTANT CONSIDERATIONS FOR RUNNING JOBS

- If a user is not part of the `View All` user group, then that user will not see CommCell objects for which the user's member user group(s) does not have associations. Furthermore, users will not be able to view the Job Controller or Event Viewer details associated with the CommCell objects for which they do not have permissions. Note that a user will not be able to view these CommCell objects upon logging onto the CommCell Console after the restrictions have been set.
- For the File Archiver Agents, multiple stub recoveries from disk media or tape are submitted to the Job Controller as one job. For such stub recoveries, only one job will display in the Job Controller.

## JOB PREEMPTION CONTROL

Jobs or operations fall into two main phases:

<b>Preemptible Phase</b>	In a preemptible phase, the job can be interrupted by the Job Manager or suspended by the user and then restarted without having to start the phase over again from the beginning. Preemption is defined by the Job Manager at each phase of a job. A File System backup phase is one example of a preemptible phase; the Job Manager can interrupt this phase when resource contention occurs with a higher priority job. You can also suspend this phase in progress and resume it later.
<b>Non-preemptible Phase</b>	A non-preemptible phase is one that cannot be interrupted by the Job Manager or suspended by the user. It can only run to completion, be killed by administrative action, or be failed by the system. For example, the data recovery operations of database agents are non-preemptible.

Both preemptible and non-preemptible jobs can also be defined in terms of their restartability; preemptible jobs are always restartable. In addition, even jobs that are not preemptible might fail to start and be in a "waiting" state; these are restartable as well. For more specific information on this topic, see Job Restart.

## PREEMPTIBLE AND NON-PREEMPTIBLE JOBS

The following table lists the types of preemptible and non-preemptible jobs:

<b>Preemptible and Restartable</b>	<b>Non-preemptible and Non-Restartable</b>	<b>Non-preemptible but Restartable</b>
<ul style="list-style-type: none"> <li>• Data protection operations for most non-database agents.</li> <li>• DataArchiver archive jobs during the Archive Index and Archive Content Index phases of the job.</li> <li>• Data recovery operations for most File System-like (indexing-based) agents during the restore phase.</li> <li>• Data recovery operations from the Search Console.</li> <li>• Most administration jobs including Install Automatic Updates and Download Automatic Updates.</li> <li>• Silo backup and restore operations.</li> <li>• Media refresh operations.</li> <li>• Deduplication database reconstruction job.</li> </ul>	<ul style="list-style-type: none"> <li>• Data recovery operations for database-like agents.</li> <li>• Media export, erase media, and inventory jobs.</li> <li>• SAN volume data protection jobs (non-preemptible in its scan phase).</li> <li>• All QR jobs on Unix platforms.</li> <li>• Disk volume reconciliation jobs.</li> </ul>	<ul style="list-style-type: none"> <li>• Data protection operations for database agents.</li> <li>• The system state phase of Windows File System data protection operations.</li> <li>• Offline Content Indexing jobs.</li> <li>• Data Collection operations for SRM Agents.</li> </ul>

For information on Agents that support Job Restarts, see the following:

- Job Restart - Data Protection - Support
- Job Restart - Data Recovery - Support
- Job Restart - Data Collection - Support

## CONTROLLING JOB PREEMPTION FOR THE COMMCELL

You can specify that certain operations will preempt other operations based on their job priority, in cases where multiple jobs are competing for media and drives.

If a running job is preemptible, the Job Manager can interrupt the running job and allocate the resources to a higher-priority job. (The interrupted job enters a waiting state and resumes when the resources it needs becomes available.)

You can:

- Allow restores and browse backup data index restores to preempt other jobs of lower priority such as backups, synthetic fulls, and auxiliary copy operations.
- Allow backups (including Disaster Recovery backups) to preempt other backups of lower priority.
- Allow backups (including Disaster Recovery backups) to preempt auxiliary copy jobs of lower priority.

See Set Job Preemption Control for the CommCell.

## CONFIGURING PREEMPTIBILITY FOR SELECT JOB TYPES

You can specify which of the following types of jobs are preemptible:

- Data Protection and Data Recovery operations of indexing-based file system-like agents.
- Disaster Recovery backup
- Auxiliary Copy

To configure preemptibility in the CommCell for specific job types, see Specify Preemptibility of Job Types.

## WHAT HAPPENS WHEN A JOB IS PREEMPTED

The following table provides information on the Status of the job in the Job Controller window and the Reason for job delay displayed in the Job Details dialog box when a job is preempted. In addition, a brief explanation on what happens when a job is preempted is also provided.

Job	Status in the Job Controller	Reason for Job Delay	Additional Information
Data Protection Operation	Interrupt Pending	No Job Delay	Once interrupted, job does not hold on to resources and returns to Waiting status. The job retries for resources. (The Status of the job in the Job Controller window and messages in the Reason for job delay are discussed in What Happens When There are no Resources for a Job.)
	Waiting	No resources available	
Data Recovery Operations (for File System-like agents)	Interrupt Pending	No Job Delay	Once interrupted, job does not hold on to resources and returns to Waiting status. The job retries for resources. (The Status of the job in the Job Controller window and messages in the Reason for job delay are discussed in What Happens When There are no Resources for a Job.)
	Waiting	No resources available	
Data Recovery Operation (for Database-like agents)	Not Preemptible		
Index Restore (Browse Backup Data)	Not Preemptible		
Auxiliary Copy	Interrupt Pending	No Job Delay	Once interrupted, job does not hold on to resources and returns to Waiting status. The job retries for resources. (The Status of the job in the Job Controller window and messages in the Reason for job delay are discussed in What Happens When There are no Resources for a Job.)
	Waiting	No resources available	
Synthetic Full	Interrupt Pending	No Job Delay	Once interrupted, job does not hold on to resources and returns to Waiting status. The job retries for resources. (The Status of the job in the Job Controller window and messages in the Reason for job delay are discussed in What Happens When There are no Resources for a Job.)
	Waiting	No resources available	
Media Refresh	Waiting	No resources available	Once interrupted, job does not hold on to resources and returns to Waiting status. The job retries for resources.



The higher priority job that is doing the preemption for resources will display the Reason for Job delay as follows:  
Waiting for job[ ] to release the resources.

### IMPORTANT CONSIDERATIONS

- For the Image Level and Image Level ProxyHost /DataAgents, if a backup job is suspended either by the user or the Job Controller during metadata collection, the job will automatically resume from the scan phase.
- For Oracle and Oracle RAC /DataAgents, selective online full backup jobs are not preemptible nor restartable. Similarly, oracle log backup jobs that are submitted during selective online full backups (data phase) also cannot be preempted nor restarted.

### RESTARTING JOBS

Restartable jobs can be restarted either by a user or automatically by the Job Manager. Job Restartability can be configured in the Job Management Control Panel; restartability can be turned on or off, the maximum number of restart attempts can be specified, and the time interval between each restart attempt can be configured. These settings are for the entire CommCell, so that all jobs in the CommCell of a selected type will behave according to the Job Restart settings you have specified.

### RESTARTABLE AND NON-RESTARTABLE JOBS

Both preemptible and non-preemptible jobs can be restartable; preemptible jobs are always restartable after they are suspended; jobs that are not preemptible might fail to start and be in a "waiting" state and can be restartable as well. Additional insight about jobs that fail to start can be gained from reviewing What Happens When There are no Resources for a Job.

The following types of operations can be restarted, if so configured:

- Auxiliary Copy
- Data Aging
- Data Protection operations of indexing-based, file system-like agents, and certain database-like agents\*\*
- Data Recovery operations of indexing-based, file system-like agents\*\*

- Disaster Recovery backup
- Erase Stubs (a job-based setting is available)
- Online and Offline Content Indexing jobs
- Data Collection (for SRM Agents only)
- Media Refresh

The Job Restarts tab in Job Management Control Panel lists all agents that can be configured for restartability for data protection, data collection and data recovery operations. For more information see, Specify Job Restartability for the CommCell.

For a specific job, you can override one of these settings, the maximum number of restart attempts, by specifying the Number of Retries in the Job Retry tab of the job initiation dialog box for that particular job. See How to Configure Job Restarts for more specific direction on this.

In all cases, whether the Max Restarts setting is used in the Job Management Control Panel, or the Number of Retries setting in the Job Retry tab, once the maximum number of retries has been reached, if the job has still not restarted successfully, the Job Manager will kill the job.



1. The job-based setting will have no affect unless restartability has been turned on in the Job Management Control Panel.
2. You can not configure the interval between restart attempts for an individual job, only the number of attempted restarts.
3. Data Aging restartability can only be set in the Job Management Control Panel; you cannot set it in the Job Retry tab of the job initiation dialog box for that particular job.
4. The restartability of Unix raw partition backup jobs either manually or by the system is not supported. Therefore, you should run such jobs under high priority.
5. Data Protection/Data Collection Jobs that enter a **Running (Cannot be verified)** job state during a temporary network or CommServe service outage will not be restarted. These jobs do not enter a pending state; they will continue, without interruption, when the network or CommServe services become available. For more information, see Fault Tolerance.
6. Restarting an Oracle On Demand backup job for multiple scripts for the same instance will cause the instance, whose backup was interrupted, to be backed up again from the beginning of the script which was running. Because of this restart behavior, if the archive files for that instance were successfully backed up before the restart, they will be backed up again after the restart. As a result, Job Manager may count the data size of archive files twice for the instance that the Oracle On Demand backup job was restarted from. Therefore, the size of data reported as backed up for this job (in the Job Details and Backup Job History) will reflect the duplicate size of the archive files that were backed up twice for that instance. The scripts should be updated to prevent this behavior before resuming the job.
7. If a data management job for the DB2 DPF iDataAgent goes to a pending state, and if the job has completed on some of the nodes, the restart option will start the job on all the nodes unless the `SBKPRESTARTFAILEDNODESTimeOut` registry key is set appropriately.

## CONFIGURING JOB RESTARTS FOR THE COMMCELL

1. Using the Job Management control panel, Job Restarts are configured for the entire CommCell. For each job, Specify Job Restartability for the CommCell.
2. For Agents that support the capability, to override the CommCell's **Max Restart** setting for a particular job, you can specify the **Number of Retries** in the **Job Retry** tab of the job configuration dialog box for the following types of jobs:

JOB NAME	HOW TO CONFIGURE JOB RESTARTS	NOTES
Auxiliary Copy	In the <b>Auxiliary Copy</b> dialog, click <b>Advanced</b> , then select the <b>Job Retry</b> tab and specify <b>Number of Retries</b> .	See Start an Auxiliary Copy or Schedule an Auxil Copy for step-by-step instructions.
Data Protection	In the <b>Backup Options</b> or <b>Archive Options</b> dialog, click <b>Advanced</b> , then select the <b>Job Retry</b> tab and specify <b>Number of Retries</b> .	Refer to information specific to your Agent, beginning with the Compliance Archiving, Backup Data, or Migration Archiving page.
Data Recovery	In the <b>Restore Options</b> or <b>Recover Options</b> dialog, click <b>Advanced</b> , then select the <b>Job Retry</b> tab and specify <b>Number of Retries</b> .	Refer to information specific to your Agent, beginning with the Retrieve Data - Exchange Compliance Archiver Agent, Restore Backup Data: Recover Archived Data page.
Data Collection	In the <b>Schedule Data Collection Job</b> dialog, click <b>Advanced</b> , then select <b>Job Retry</b> tab and specify <b>Number of Retries</b> .	See, Data Collection and Run/Schedule a Data Collection Job for an SRM Instance, Agent or Subclient for detailed information.
Disaster Recovery Backup	In the <b>Disaster Recovery Backup Options</b> dialog, select the <b>Job Retry</b> tab and specify <b>Number of Retries</b> .	See Starting a Disaster Recovery Backup or Scheduling a Disaster Recovery Backup for step-step instructions.
Erase Stub/Erase Data jobs	In the <b>Erase Stubs selected for deletion</b> dialog, select the <b>Job Retry</b> tab and specify <b>Number of Retries</b> .	See Erase Data from Outlook Add-In and Erase I by Stubs for step-by-step instructions.
Offline Content Indexing	In the <b>Content Indexing</b> dialog box, click <b>Advanced</b> , then select the <b>Job Retry</b> tab and specify <b>Number of Retries</b> .	See Start or Schedule Offline Content Indexing Operations for step-by-step instructions.
Media Refresh	In the <b>Media Refresh Options</b> dialog box, click	See Media Refresh for step-by-step instructions.



**Advanced**, then select **Job Retry** tab and specify the **Number of Retries**.

## QR VOLUME CREATION RESTARTABILITY

QR Volume Creation restartability is only supported on Windows platforms. See [Create a QR Volume](#) for more information.

### SINGLE VOLUME SUBCLIENT

The Quick Recovery Agent maintains a restart string during the Volume Creation (copying) phase of full and incremental copy jobs to keep track of the progress made on each volume being copied. This restart string is updated on the CommServe database every time 1 GB of data is copied per volume. If a job is resumed from a suspended or pending state, this restart string will be retrieved and used to identify the location in the volume from where to resume the copying. For example, a job was suspended with 2.8 GB of the data copied for a particular volume; since the restart string on the volume was last updated when 2 GB completed copying, the job resumed from that point.

### MULTI-VOLUME SUBCLIENT

In the QR Volume Creation phase, volumes are copied sequentially (i.e., not in parallel). This affects job restartability behavior for a multi-volume subclient. When a QR Volume Creation job is interrupted (suspended or pending), some of the volumes in the subclient may be completely copied while others may not be copied yet at all. If the job is restarted (either manually or automatically), the behavior toward each volume in the subclient will depend on the condition of the volume at the time of job interruption. Refer to the following table for the expected behavior (for each volume) when resuming an interrupted QR Volume Creation job for a multi-volume subclient.

Volume Condition at the Time of Job Interruption	Behavior when Job Restarts
volume was successfully copied	The Quick Recovery Agent copies any changes to the volume that occurred after the starting point of the original job up to the time of the restart. <i>For example: A job was initiated at 2:00 P.M. At 2:30 P.M., you suspended the job. This job was suspended in the QR Volume Creation (copying) phase, after the volume was successfully copied. At 3:00 P.M. you restarted the job. Upon the resume, the Quick Recovery Agent copied the changes made to the volume from 2:00 to 3:00 P.M.</i>
volume was partially copied	The Quick Recovery Agent runs the full or incremental copy, and then copies any changes to the volume that occurred after the starting point of the original job up to the time of the restart. <i>For example: A job was initiated at 2:00 P.M. At 2:30 P.M., you suspended the job. This job was suspended in the QR Volume Creation (copying) phase, during the copying of the volume. At 3:00 P.M. you restarted the job. Upon the resume, the Quick Recovery Agent ran the initial copy job and then copied the changes made to the volume from 2:00 to 3:00 P.M.</i>
volume was not yet copied	<b>If it's a full copy</b> , the Quick Recovery Agent runs a normal full copy. <i>For example: A job was initiated at 2:00 P.M. At 2:02 P.M., you suspended the job. This job was suspended in the QR Volume Creation (copying) phase, before it copied any parts of the volume. At 3:00 P.M. you restarted the job. Upon the resume, the Quick Recovery Agent ran a full copy job, copying all the data in the volume up to 3:00 P.M.</i> <b>If it's an incremental copy</b> , the Quick Recovery Agent copies any changes that the original incremental would have copied as well any changes to the volume that occurred after the starting point of the original incremental copy job up to the time of the restart. <i>For example: A job was initiated at 2:00 P.M. At 2:02 P.M., you suspended the job. This job was suspended in the QR Volume Creation (copying) phase, before it copied any parts of the volume. At 3:00 P.M. you restarted the job. Upon the resume, the Quick Recovery Agent copied the data that the original incremental copy would have copied, as well as the changes made to the volume from 2:00 to 3:00 P.M.</i>

## RETRYING JOBS

The Job Initiation dialog box provides several configuration options for retrying jobs, including:

- **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.
- **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.

## RESUMING JOBS

Jobs that have been in a waiting or pending state can be resumed by right-clicking on the job itself in the Job Controller and selecting **Resume Job**.

## RESUBMITTING JOBS

If necessary, you can resubmit a job from the job history windows. This is useful if a job has failed, and you want to run it again. This removes the need to reconfigure a job with the same options. You can resubmit the same job directly from the job history windows. Once you resubmit the job, you will also have the ability to edit the schedule pattern (e.g., daily, weekly, monthly, etc.) and the job options, (e.g., if it is a schedule for a backup job, then the job options would be the the type of backup, full, differential, etc.).

For step-by-step instructions, see:

- Resubmit an Admin Job
- Resubmit a Backup Job
- Resubmit a Data Protection Job for a Client
- Resubmit a Data Recovery Job for a Client



Resubmitting jobs can only be executed for jobs that have run utilizing the current release of this software.

## JOB RESULTS DIRECTORY

The Job Results directory stores the job results files from backup and restore operations of a client. The following sections describe the steps to configure this directory.

### CALCULATING THE SPACE REQUIRED FOR THE JOB RESULTS DIRECTORY

Use the steps below to calculate the required space for the Job Results directory:

SIZE VALUES	HOW TO CALCULATE	EXAMPLE
<b>Step 1:</b> For backup jobs, identify the value for the directory size of the subclients.	$6 * (\text{number of files}) * (\text{subclient average filename size})$	<p>Assume you have the following for all your subclients:</p> <ul style="list-style-type: none"> <li>• 2000 files like /dir1/dir2/filename1. The filename size of these files is 20.</li> <li>• 1000 files like /dir1/dir2/dir3/filename2. The filename size of these files is 25.</li> </ul> <p>Using the values above, you can find that:</p> <ul style="list-style-type: none"> <li>• the number of files is 3000</li> <li>• the subclient average filename size is</li> </ul> $(20*2000 + 1000*25)/3000 = 21.67$ <p>So, you can conclude that the directory size of the subclients is:</p> $6*3000*21.67 = 390060 \text{ bytes} = 0.372 \text{ MB}$
<b>Step 2:</b> For restore jobs, identify the value for the average size of a restore job.	$1.5 * (\text{number of restore files}) * (\text{average filename size})$	<p>Assume you have the following;</p> <ul style="list-style-type: none"> <li>• 1500 restore files like /dir1/dir2/filename1. The filename size of these files is 20.</li> <li>• 1000 restore files like /dir1/dir2/dir3/filename2. The filename size of these files is 25.</li> </ul> <p>Using the values above, you can find that:</p> <ul style="list-style-type: none"> <li>• the number of restore files is 2500</li> <li>• the average filename size is</li> </ul> $(20*1500 + 1000*25)/2500 = 22$ <p>So, you can conclude that the average size of a restore job is:</p> $1.5*2500*22 = 82500 \text{ bytes} = 0.079 \text{ MB}$
<b>Step 3:</b> For each subclient configured for SnapProtect operations, identify the value for the size of the snapshot copy job.	$7 * (\text{number of files}) * (\text{subclient average filename size})$	<p>Assume you have the following for all your SnapProtect subclients:</p> <ul style="list-style-type: none"> <li>• 1000 files like /dir1/filename1. The filename size of these files is 15.</li> <li>• 500 files like /dir1/dir2/filename2. The filename size of these files is 20.</li> </ul> <p>Using the values above, you can find that:</p> <ul style="list-style-type: none"> <li>• the number of files is 1500</li> <li>• the subclient average filename size is</li> </ul> $(15*1000 + 500*20)/1500 = 16.67$ <p>So, you can conclude that the directory size of the subclients is:</p>

		$7*1500*16.67 = 175035 \text{ bytes} = 0.167 \text{ MB}$
<b>Step 4:</b> If using deduplication, identify the value for the size of the Source Side Database.	This value is controlled from the <b>Client Side Deduplication</b> tab of the client properties in the CommCell Console. The default size is 4 GB.	Assuming the default size is being used, then 4 GB are 4096 MB.
<b>Step 5:</b> Using the size values identified in the previous steps, obtain the required space for the Job Results Directory.	<p>directory size of the subclients + (average size of a restore job * A) + (size of the snapshot copy job * B) + size of the Source Side Database</p> <p>where A is the number of restore results to be stored for longer time and B is the number of snapshot copy jobs to be run.</p>	<p>Assume you plan to have:</p> <ul style="list-style-type: none"> <li>• 20 restore results to be stored for longer time.</li> <li>• 10 snapshot copy jobs to be run.</li> </ul> <p>Using the size values from the examples above, the required space is:</p> $0.372 + 0.079*20 + 0.167*10 + 4096 = 4099.62 \text{ MB}$

The minimum space required for the Job Results directory is the size value obtained from **Step 1**. If using SnapProtect backups, the minimum space required is the addition of **Step 1** and **Step 3**.

## USING UNC PATHS FOR JOB RESULTS DIRECTORY

UNC paths are supported for job results directory by the Exchange Database *iDataAgent* 2007 and above when configured in Cluster Continuous Replicator environment. The Windows File System *iDataAgent* is also supported when configured in this environment.

When assigning UNC paths, the designated directory must be ONE level below the directory which is shared for this purpose. Examples:

\\machine1\<share\_name>\job\_results\ is shared. Then specify \\machine1\<share\_name>\job\_results\job\_results\_1 as the job results directory.

\\machine1\<share\_name>\job\_results\ is shared. Then specifying \\machine1\<share\_name>\job\_results as the job results directory is not supported.

## USER IMPERSONATION FOR ACCESSING THE JOB RESULTS DIRECTORY

On a Windows client, you need to specify a Windows User Account with the appropriate privileges to access the job results directory.

User impersonation requires that the specified user have write permissions to the product installation folders; 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. Additionally, users will need full permissions (registry rights) to the following registry key: \\HKEY\_LOCAL\_MACHINE\SOFTWARE\CommVault Systems.

In addition, if UNC paths are used for job results and subclient contents are specified as UNC paths, the user impersonation account used for the job results directory must have access to both paths.

For the File System *iDataAgent*, the user impersonation occurs only once; therefore, the user impersonation account specified for the job results directory will take precedence and will be used to back up the contents of the UNC path included in the subclient content.

For the Virtual Server *iDataAgent*, the user impersonation account specified for the job results directory will take precedence and will be used to backup and restore data from a virtual machine. This may result into file access related issues during the backup. Therefore, it is recommended to use a local folder on the client computer as the job results directory.

For the Exchange *iDataAgent*, the account must have the following:

- The account must have the Remote Access rights to the UNC path.

Remote Access can be granted by right-clicking **My Computer** | **Properties** | **Remote** | **Select Remote Users** | **Add** and then specifying the domain\user in the **Select User** dialog box in the computer hosting the UNC path.

- In addition, the Exchange Administrator account specified in the Agent Properties dialog box must have write access permissions to the share used for job results.

Follow the steps below to change the user account for accessing the Job Results directory for the client:

1. From the CommCell Browser, right-click the icon of the client computer whose job results path user account you want to change, and then click **Properties**.
2. From the Job Configuration tab of the **Client Computer Properties** dialog box, click **User Name/Password**.
3. In the Change User Account dialog box, enter the appropriate User Impersonation account information.
4. Click **OK** to save your changes.

## CHANGING THE JOB RESULTS PATH OF A CLIENT

1. From the CommCell Browser, right-click the icon of the client computer whose job results path you want to change, and then click **Properties**.
2. From the Job Configuration tab of the **Client Computer Properties** dialog box, if necessary or desired, click **User Name/Password** to establish or change the Impersonate User account to access the Job Results Directory. If you do this, click **OK** once you have administered the account.
3. From the Job Configuration tab, type a new job results path in the **Job results path** field.

You can also click **Browse** to browse to a new job results path from the **Browse for Job Result Path** dialog box. Click **OK**.

4. Click **OK** to save your changes.

---

## CHANGING THE RETENTION OF THE JOB RESULTS OF A CLIENT

1. From the CommCell Browser, right-click the icon of the client computer whose job results retention criteria you want to change, and then click **Properties**.
  2. From the Job Configuration tab of the **Client Computer Properties** dialog box, select the number of days job results should be pruned from the **Prune job results after** field.
  3. Select a disk capacity after which job results should be pruned from the **Prune job results when disk capacity reaches** field.
  4. Click **OK** to save your changes.
- 

## JOB MANAGEMENT FOR SMART DEVICES

The mobile application allows you to manage and monitor jobs remotely from any mobile device with internet connection. This application is available on Apple and Android devices. For more information, see the Overview page for this application.

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## OTHER CONSIDERATIONS

Several additional job management capabilities are available. These capabilities are described in the following sections.

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### HARDWARE CONSIDERATIONS FOR DATA RECOVERY OPERATIONS

The occurrence of a hardware failure during a restore operation puts the job in a device wait state for indefinite time. If a hardware failure occurs, you need to kill the job and start it at a later time when the hardware is available.

When a hardware failure occurs during a restore, the restore job will go into a device wait state indefinitely and will need to be killed.

---

### JOB ALIVE CHECK INTERVAL

The Job Alive Check Interval option within the General tab of the Job Management dialog box allows you to specify the time interval by which the Job Manager will check active jobs to determine if they are still running.

---

### JOB UPDATE INTERVAL

The Job Update Interval allows you to view or modify how often information must be updated for data protection and data recovery operations in the Job Details.

The Job Updates tab of the **Job Management** dialog box displays the:

- Available Agent Types
- Protection Time (in Minutes)
- Recovery Time (in Minutes)

It also includes:

- Update interval time for the ContinuousDataReplicator.

---

### JOB RUNNING TIME

At the time of job initiation, you can determine the total amount of time a job can run before it is killed by the Job Manager. The configurable parameters for Job running time allow you to control the following:

- **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.

*Example:* Total Running Time for a job is specified as 1 hour.

- If the job is still running at the 1 hour point, it will continue to run.
- If the job is still running at the 1 hour point, but 30 minutes later you suspend the job, Job Manager will kill the job.
- If the job begins running, and 15 minutes later is suspended and left in that state, 45 minutes later (when the specified Total Running Time of 1 hour has elapsed) Job Manager will kill the job.
- If the job is started in the suspended state and left in that state, 1 hour later (when the specified Total Running Time of 1 hour has elapsed) Job Manager

will kill the job.

- **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.

You can configure the **Total Running Time** and whether to **Kill running jobs when total running time expires** in the **Job Retry** tab of the job initiation dialog box for the following types of jobs:

- For an Auxiliary Copy job, see Start an Auxiliary Copy or Schedule an Auxiliary Copy. In the Auxiliary Copy dialog, click **Advanced**, then select the **Job Retry** tab.
- For a Data Aging job, see Data Aging. In the Data Aging dialog, select the **Job Retry** tab.
- For a Data Protection operation, in the Backup Options or Archive Options dialog, click **Advanced**, then select the **Job Retry** tab. Refer to information specific to your Agent, beginning with the Archive, Backup Data, or Migration Archiving page.
- For a Data Recovery Operation, in the Restore Options or Recover Options dialog, click **Advanced**, then select the **Job Retry** tab. Refer to information specific to your Agent, beginning with the Retrieve Data - Exchange Compliance Archiver Agent, Restore Backup Data, or Recover Archived Data page.
- For a Data Collection Operation, in the Schedule Data Collection Job dialog, click **Advanced**, then select **Job Retry** tab and specify **Number of Retries**. See, Data Collection and Run/Schedule a Data Collection Job for an SRM Instance, Agent or Subclient for detailed information.
- For a Disaster Recovery Backup operation, see Starting a Disaster Recovery Backup or Scheduling a Disaster Recovery Backup. In the Disaster Recovery Backup Options dialog, select the **Job Retry** tab.
- For an Erase Stubs job for Exchange Mailbox Archiver, see Erase Stubs. In the **Erase Stubs selected for deletion in Outlook** dialog, select the **Job Retry** tab.

---

## JOB QUEUING

Setting jobs to be queued allows a job that would otherwise fail to remain in the Job Controller in a **Queued** state, i.e., waiting. Once the condition that caused the job to be queued clears, the Job Manager will automatically resume the job. Jobs can be queued if:

- they conflict with other currently running jobs (such as multiple data protection operations for the same subclient).
- the activity control for the job type is disabled.

You can also set scheduled jobs to be queued. If jobs are scheduled and the **Queue Scheduled Jobs** option is enabled, these jobs will start in the Job Controller in a **Queued** state at their scheduled time. These jobs can be manually resumed or, if the **Queue Scheduled Jobs** option is disabled, these jobs will resume automatically. Selecting this option is especially useful during times of maintenance. Rather than suspend each job manually after it has started, you can enable the **Queue Scheduled Jobs** option, which will start all the scheduled jobs in the Job Controller in a **Queued** state. Once you have completed the maintenance, you can manually resume specific scheduled jobs, or simply deselect the **Queue Scheduled Jobs** option to automatically resume all the scheduled jobs.

The following types of jobs can be queued:

- Data Protection
- Data Recovery
- Data Collection
- Administration Operations

You can set the jobs to be queued from the **General** tab of the **Job Management** dialog box. The following types of jobs can be queued:

- Jobs that are conflicting with other active jobs.
- Jobs that cannot run because activity control for the job type(s) is disabled.
- Scheduled jobs.

---

## WHEN A NON-FULL BACKUP IS AUTOMATICALLY CONVERTED TO A FULL BACKUP

Under the following conditions, a non-full backup is automatically converted to a full backup:

- If it is the first backup of the subclient.
- If you re-associate a subclient to another storage policy.
- If you 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.
- If a new content path is added to the subclient.
- If you switch from a SnapProtect backup to a traditional backup or vice versa.
- After CommCell Migration (for some agents).

Some agents have additional scenarios in which a non-full backup is also automatically converted to a full backup:

- **Exchange Database /DataAgents**
  - If an Exchange Database has been restored

- If an Exchange Database has been auto-discovered
- If the Pre-Selected backup type has been changed
- **Image Level and Image Level ProxyHost iDataAgents**
  - After a failover occurs in a clustered environment, without having CXBF bitmap persistence enabled. For more information, see Configure Persistence.
  - After an in-place Volume Level restore
- **Oracle iDataAgent**
  - If an incremental backup is selected for an Oracle subclient that includes Archive Logs and/or control files only
- **SQL Server iDataAgent**
  - See Default Subclient Backup Conversion Rules and File/File Group Subclient Backup Conversion Rules for complete listings.
- **NetWare File System iDataAgent**
  - The first NetWare File System backup run after having selected the backup set option **Decompress Data Before Backup** is converted to a full backup for all subclients that belong to that backup set.
- **Workstation Backup Agent**
  - After an ungraceful shutdown of the source client computer.

**WHAT HAPPENS WHEN THERE ARE NO RESOURCES FOR A JOB**

Each job requires certain resources for its successful completion. Absence of these resources has different impact on different type of jobs. The following table discusses the resources required by each job, the status of the job in the Job Controller window when there are no resources and the corresponding examples of the Reason for job delay displayed in the **Job Details** dialog box. In addition, a brief explanation on what happens when a job does not have the required resources is also provided.

By default the Bull Calypso Media & Library Manager service on the CommServe cleans up any media and drive reservation that is held by a job which failed to release the resource when it was abruptly terminated, every 1440 minutes. You can modify the frequency using the nRESOURCERELEASEINTERVALMIN registry key.

Job	Resources	Status in the Job Controller	Reason for Job Delay	Additional Information
Data Protection Operation	Streams, Active Media, Drive	Waiting	See Example 1.	Job checks for necessary resources.
		Waiting	See Example 2.	If the resources are not available the job retries to reserve the resources when ever they are freed.
				Does not hold on to any resource until all the necessary resources are available.
Data Recovery Operations (for File System-like agents)	Drive	Pending	The media is already reserved by some other job(s).	If the resources are not available the job retries to reserve the resources when ever they are freed.
Data Recovery Operation (for Database-like agents)	Drive	Failed	See Example 1.	Job checks for necessary resources.
		Running	See Example 2.	If the resources are not available it retries every 2 minutes to reserve the resources.
				Does not hold on to any resource until all the necessary resources are available.
Index Restore Operation (Browse Backup Data)	Drive	Failed	See Example 1.	Job checks for necessary resources.
		Running	See Example 2.	If the resources are not available it retries every 2 minutes to reserve the resources.
				Does not hold on to any resource until all the necessary resources are available.
Auxiliary Copy	Destination Drives	Pending	See Example 1.	Job checks for necessary resources.
		Waiting		Job reserves 2 drives for source and destination media.
		Waiting	See Example 2.	If the above resources are not available, it retries every 2 minutes to reserve these resources.
				Does not hold on to any resource until all the necessary resources are available.
		Running		

	Source Media			Once the 2 drives and destination media is obtained job reserves the source media.
		Pending	See Example 2.	If the job encounters resource contention while reserving the source media, (Example 2) it retries every 20 minutes and a maximum of 144 times to obtain the source media.
				Holds on to the 2 drives and destination media as long as it is not interrupted and as long as the source media is available.
Synthetic Full	Streams, Destination Drives, Destination Media	Waiting	See Example 1.	Job checks for necessary resources.
		Waiting		Job reserves streams, marks active media full, reserves 2 drives and destination media.
		Waiting	See Example 2.	If the resources are not available the job retries to reserve the resources whenever they are freed.
				Does not hold on to any resource until all the necessary resources are available.
	Source Media	Running		Once the 2 drives and destination media is obtained job reserves the source media.
		Pending	See Example 2.	If the job encounters resource contention while reserving the source media, (Example 2) it retries every 20 minutes and a maximum of 144 times to obtain the source media.
				Holds on to the 2 drives and destination media as long as it is not interrupted.

Back to Top

# Admin Job History

[Topics](#) | [How To](#) | [Related Topics](#)

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The **Admin Job History Filter** dialog box allows you to view detailed, historical information about the following administration job types:

- All
- Data Aging
- Export Media
- Auxiliary Copy
- Inventory
- Disaster Recovery Backup
- Data Verification
- Offline Content Indexing
- Erase Media
- Erase Backup/Archived Data
- Drive Validation
- Drive Cleaning
- Stamp Media
- Install Updates
- Download Updates
- Disk Library Maintenance
- SRM Reports
- Information Management

Once chosen, your filter options are then displayed in the Admin Job History window. From this window you can view more detailed information such as the:

- Details of the administration job.
- Events of the administration job.
- Log files of the administration job.

For information on Job Details displayed in the Job History, see [Viewing Job Information](#).

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[Back to Top](#)

## Admin Job History - How To

[Topics](#) | [How To](#) | [Related Topics](#)

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[View Admin Job History](#)

[View Job History Details](#)

[View the Events of a Job History](#)

[Viewing the Log Files of a Job History](#)

[Resubmit an Admin Job](#)

---

### VIEW ADMIN JOB HISTORY

*Required Capability:* See [Capabilities and Permitted Actions](#)

▶ 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 JOB HISTORY DETAILS

*Required Capability:* See Capabilities and Permitted Actions

▶ To view the details of a job history:

1. From the CommCell Browser, right-click the entity (e.g., subclient, client computer, etc.) whose job history you want to view, click **View**, and then click job history.
2. From the Job History Filter dialog box, select the filter options that you want to apply and click **OK**.
3. From the Data Management Job History window, right-click the job whose job details you want to view, and then click **View Job Details**.
4. The Job Details dialog box appears, displaying detailed job history in General, Details, Phase Details and Attempts tabs for the selected job.
5. Click **OK**.



If viewing the details of a job with a pending or failed status, the **Reason for Job Delay** field will contain an Error Code, which, if clicked, will launch the customer support website displaying troubleshooting article(s) related to the specific issue.

---

## VIEW THE EVENTS OF A JOB HISTORY

*Required Capability:* See Capabilities and Permitted Actions

▶ To view the events associated with a job:

1. From the CommCell Browser, right-click the entity (e.g., subclient, client computer, etc.) whose job history you want to view, click **View**, and then click **Job History**.
  2. From the Job History Filter dialog box, select the filter options that you want to apply and click **OK**.
  3. From the Data Management Job History window, right-click the job whose job details you want to view, and then click **View Events**.
  4. The All Found Events window gets displayed. If no events were found for the back up, a message is displayed to that effect.
  5. Click **Close**.
- 

## VIEW THE LOG FILES OF A JOB HISTORY

*Required Capability:* See Capabilities and Permitted Actions

▶ To view the log files of a Job History:

1. From the CommCell Browser, right-click the entity whose job history you want to view, and then click to view a job history.
  2. From the job history filter window select the filter options, if any, that you want to apply, and then click **OK**.
  3. From the job history window, right-click the job whose log files you want to view, and then click **View Logs**.
  4. The contents of the log file related to the selected job history are displayed in the **Log File for Job n** window.
- 

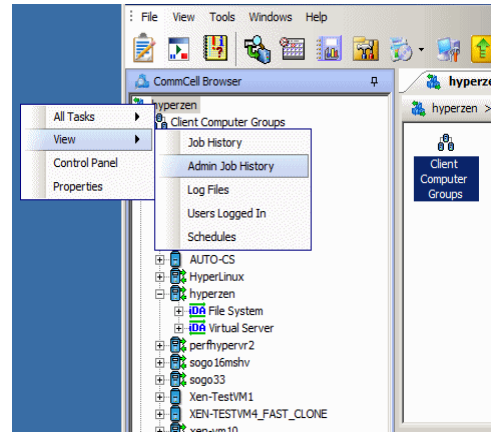
## RESUBMIT AN ADMIN JOB

*Required Capability:* See Capabilities and Permitted Actions

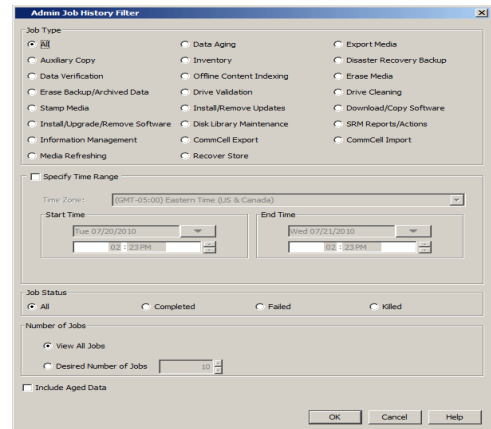
▶ To resubmit an admin job:

1. From the CommCell Browser, right-click the CommServe, click **View**, and then click **Admin Job History**.

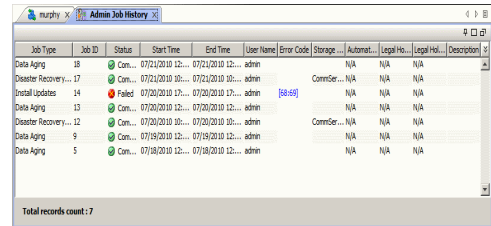
- From the Admin Job History Filter dialog box, select the filter options that you want to apply and click **OK**.



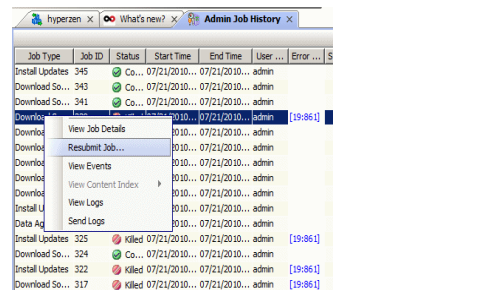
- The Admin Job History window displays with the specified filter options.



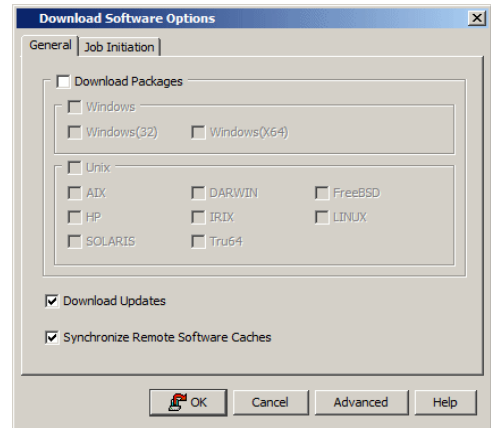
- Right-click on any job (e.g., Download Software), and select **Resubmit**.



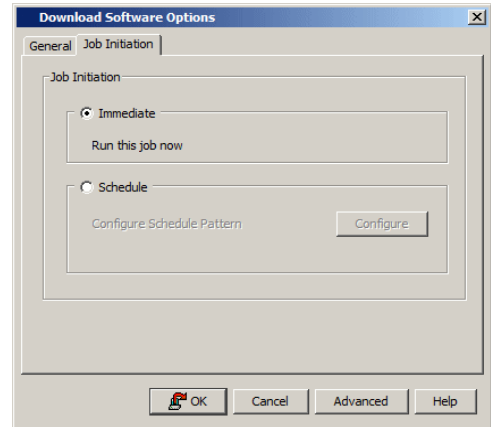
- Select the job options appropriate for the job you want to restart.



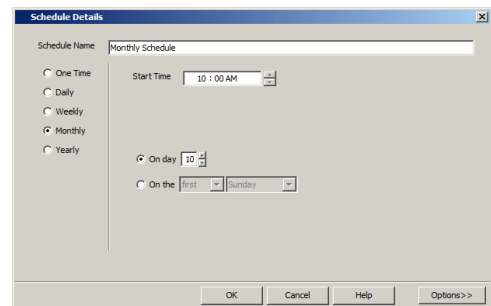
- If you need to run the backup operation immediately, select **Immediate** from the **Job Initiation** tab. Go to step 11.



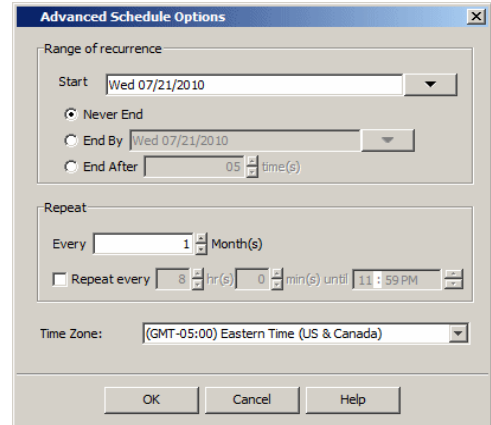
- If you need to schedule the restore operation, select **Schedule** from the Job Initiation tab and click **Configure**.
- From the **Schedule Details** dialog box that appears, select the appropriate scheduling options.  
Click **Options** to view the Advanced Schedule Options dialog box.



- From the **Advanced Schedule Options** dialog box:
    - Range of recurrence:** Specify the date on which you want this schedule to take effect.
    - Repeat:** Select the value for which you want to run the job repeatedly on the day in which the job is scheduled to run.
    - Time Zone:** Select a specific time zone from which the job schedule time will be based.
- Click **OK** to close the **Advanced Schedule Options** dialog box.



- Click **OK** to close the **Schedule Details** window.
- Click **OK** to close the job restart window.



[Back to Top](#)

# SRM Data Collection Job History

Topics | How To | Related Topics

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The **Data Collection History Filter** dialog box allows you view detailed, historical information about data collection jobs for the selected SRM entity. Data collection jobs run automatically according to the parameters you have selected, and appear in the Job Controller as a scheduled job. After the successful completion of the Data Collection job, the client information is gathered at the SRM Server and the job status is shown as completed in the Job Controller.

For information on Job Details displayed in the Job History, see Viewing Job Information.

Once chosen, your filter options are then displayed in the Data Collection Job History Window of the SRM entity. From this window you can view more detailed information such as:

- Viewing the Events of a Job History
  - Viewing the Log Files of a Job History
- 

## SRM Data Collection Job History - How To

Topics | How To | Related Topics

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View Job History Details

View the Events of a Job History

View the Log Files of a Job History

---

### VIEW JOB HISTORY DETAILS

*Required Capability:* See Capabilities and Permitted Actions

▶ To view the details of a job history:

1. From the CommCell Browser, right-click the entity (e.g., subclient, client computer, etc.) whose job history you want to view, click **View**, and then click job history.
2. From the Job History Filter dialog box, select the filter options that you want to apply and click **OK**.
3. From the Data Management Job History window, right-click the job whose job details you want to view, and then click **View Job Details**.
4. The Job Details dialog box appears, displaying detailed job history in General, Details, Phase Details and Attempts tabs for the selected job.
5. Click **OK**.



If viewing the details of a job with a pending or failed status, the **Reason for Job Delay** field will contain an Error Code, which, if clicked, will launch the customer support website displaying troubleshooting article(s) related to the specific issue.

---

### VIEW THE EVENTS OF A JOB HISTORY

*Required Capability:* See Capabilities and Permitted Actions

▶ To view the events associated with a job:

1. From the CommCell Browser, right-click the entity (e.g., subclient, client computer, etc.) whose job history you want to view, click **View**, and then click **Job History**.
  2. From the Job History Filter dialog box, select the filter options that you want to apply and click **OK**.
  3. From the Data Management Job History window, right-click the job whose job details you want to view, and then click **View Events**.
  4. The All Found Events window gets displayed. If no events were found for the back up, a message is displayed to that effect.
  5. Click **Close**.
- 

### VIEW THE LOG FILES OF A JOB HISTORY

*Required Capability:* See Capabilities and Permitted Actions

▶ To view the log files of a Job History:

1. From the CommCell Browser, right-click the entity whose job history you want to view, and then click to view a job history.
  2. From the job history filter window select the filter options, if any, that you want to apply, and then click **OK**.
  3. From the job history window, right-click the job whose log files you want to view, and then click **View Logs**.
  4. The contents of the log file related to the selected job history are displayed in the **Log File for Job *n*** window.
- 

[Back to Top](#)

