

# Bull

## HACMP Cluster Management Knowledge Module™ for PATROL User Guide

AIX

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## HACMP Cluster Management Knowledge Module™ for PATROL User Guide

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Software

June 2000

**BULL CEDOC  
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# Chapter 1. Introduction

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## About this Guide

The HACMP Cluster Management Knowledge Module for PATROL contains detailed information about the application, commands and parameters provided by the Knowledge Module. This Guide also contains instructions for installing, configuring and loading the HACMP Cluster Management Knowledge Module for PATROL.

Use this Guide with the appropriate PATROL user guide for your console, which describes how to use PATROL to perform typical tasks.

This chapter discusses the following.

- About this guide 1-1
- Who should read this manual ? 1-1
- How this manual is organized ? 1-1
- Related publications 1-3
- Where to look for information 1-4

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## Who should read this manual ?

This manual is intended for cluster administrators and anyone who monitors HACMP configuration.

This manual assumes that you are familiar with the HACMP product and your host operating system. You should also know how to perform a basic set of actions in a window environment, including:

- choosing menu commands
- moving and resizing windows
- opening icon windows
- dragging and dropping icons
- using mouse controls for your system

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## How this manual is organized ?

This guide is organized as follows:

Chapter	Title	Purpose
1	"Introduction"	Provides an overview of the features and components of the KM.
2	"Getting Started"	Provides information on setting up and accessing the KM and provides basic information about the KM.
3	"Menu Summary"	Discusses the menus that the KM offers.
4	"Parameters"	Discusses the parameters that the KM offers.
5	"HACMP Cluster Management Specificities"	Describes how HACMP Cluster Management KM works.
6	"Using the HACMP Cluster Management KM for PATROL"	Describes tasks that you can perform with the HACMP Cluster Management Knowledge Module for PATROL.
7	"Event Messages"	Event messages
	"Index"	

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## Related publications

PATROL product documentation consists of both hardcopy and online publications. PATROL hardcopy documentation is divided into the following categories based on function:

Category	Document	Purpose
PATROL Base Documents	PATROL for Unix Getting Started	Provides procedures and examples to introduce PATROL Console for Unix.
	PATROL Agent Reference Manual	Describes the PATROL Agent and explains how it interacts with other PATROL components. It also describes configuration utilities and Management Information Base (MIB) tables used with the Agent.
	PATROL for Unix User Guide	Contains task-oriented information on how to complete appropriate dialog boxes to manage the computers, applications and parameters that PATROL is able to manage using the PATROL console for Unix.
	PATROL for Windows NT User Guide (volumes 1,2,3)	Contains task-oriented information on how to complete appropriate dialog boxes to manage the computers, applications and parameters that PATROL is able to manage using the PATROL console for Windows NT.
	PATROL Command Line Interfaces Reference Manual	Describes the PATROL command line interfaces for the PATROL Agent and the PATROL console.
PATROL Installation Documents	PATROL Installation Guides	Describes how to run the installation program to load the platform-specific PATROL Agents, PATROL Consoles, and PATROL KMs.
PATROL Integration Documents	PATROLVIEW User Guides	Describes the PATROLVIEW products. PATROLVIEW allows you to fully integrate PATROL with leading enterprise management products.
	PATROLINK for CA-Unicenter Reference Manual	Provides information about installing and configuring the PATROLINK product for your particular site. PATROLINK allows you to connect to PATROL from the CA-Unicenter console.
PATROL Event Manager	PATROL Event Manager Console for Unix User Guide	Describes the stand-alone Event Manager Console for Unix provided with the PATROL product. The PEM Console is a graphical user interface that allows you to manage the events generated by PATROL and Knowledge Modules.
	PATROL Event Manager Console for Windows User Guide	Describes the stand-alone event Manager for Windows NT.
PATROLWATCH	PATROLWATCH for Web Browsers User Guide	Provides the ability to view PATROL monitored hosts and applications using the Internet and platform-specific browsing technology.
PATROL Knowledge Modules (KM) Documents	Specific PATROL Knowledge Module user guides	Contains task-oriented information for loading and modifying individual PATROL KMs used in monitoring and managing your specific applications.

PATROL Software Developer Kit (SDK)	PATROL Script Language Reference Manual	describes the PATROL Script Language (PSL) data types, syntax, operators, statements and built-in functions.
	PATROL Script Language Debugger for Unix Reference Manual	Discusses the PSL debugger available through the PATROL developer console for Unix. The PSL debugger provides an interactive GUI environment for debugging PSL processes and scripts.
	PATROL Online Help Developer's Guide	Provides guidelines and procedures for implementing a BMC Software Help File. This guide includes elements of style, design and presentation.
	PATROL Knowledge Module Developer's Guide	Presents the objectives, methods and requirements of PATROL Knowledge Module development and includes elements of KM style, setup application, packaging, structure, efficiency and usage.
	PATROL API Reference Manual	Describes how you can incorporate your KM customizations into the current version.
Utility Document	PATROL KM Migrator User Guide	Describes how you can incorporate your KM customizations into the current version.
Supplement Documents	Release Notes and Technical Bulletins	Explains the latest updates to PATROL products.

These hardcopy publications can be requested from BMC Software, Inc., or can be viewed on BMC Software's Internet World Wide Web site (<http://www.bmc.com/>) when you have registered for Customer Support. Each PATROL Console and each Knowledge Module come with an extensive online help facility that is available through the PATROL Console Help menu option. The online documentation contains reference information about PATROL features and options and about KM parameters.

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## Where to look for information

The following table summarizes where to look for more information on using PATROL, Knowledge Modules and PATROL integration products to perform typical tasks.

If you want information about...	See the...
Adding computers to PATROL	PATROL for Unix Getting Started or PATROL for Windows NT User Guide (vol 1)
Changing the behavior of the PATROL Console or the PATROL Agent by using a script or operating system command line	PATROL Command Line Interface Reference Manual
Changing the PATROL Agent configuration	PATROL Agent Reference Manual
Charting various parameters in a real-time environment	PATROL Console Charting Server Reference Manual or PATROL for Windows NT User Guide (vol 2)
Connecting to PATROL from a network manager	PATROLVIEW User Guide and PATROLINK for CA-Unicenter Reference Manual
Defining your monitoring environment	PATROL for Unix Getting Started or PATROL for Windows NT User Guide (vol 1)
Generalities on KMs	PATROL for Unix Getting Started or PATROL for Windows NT User Guide (vol 1)
KM versioning and customizations	PATROL for Unix Getting Started or PATROL for Windows NT User Guide (vol 3)

Managing monitored objects	PATROL for Unix Getting Started or PATROL for Windows NT User Guide (vol 3)
Specific applications	appropriate Knowledge Module's User Guide and Online Help
Specific menu commands	appropriate Knowledge Module's User Guide and Online Help
Specific parameters	appropriate Knowledge Module's User Guide and Online Help
Starting and stopping the PATROL Console	PATROL installation guides, PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 1)
Starting and stopping the PATROL Agent	PATROL installation guides, PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 1)
Managing Events	PATROL Event Manager for Unix User Guide, PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 2)
The PATROL interface	PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 1)
The PATROL Script Language (PSL)	PATROL Script Language Reference Manual
Working with menu commands	PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 2)
Working with parameters	PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 2)
Working with tasks	PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 2)
Unloading a KM	appropriate Knowledge Module's User Guide, PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 1)
Customizing commands (PATROL Developer Console required)	PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 3)
Customizing a computer class (PATROL Developer Console required)	PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 3)
Customizing an Info Box (PATROL Developer Console required)	PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 3)
Defining an application (PATROL Developer Console required)	PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 3)
Defining a parameter (PATROL Developer Console required)	PATROL for Unix Getting Started and PATROL for Windows NT User Guide (vol 3)
PSL commands and writing PSL scripts (PATROL Developer Console required)	PATROL Script Language Reference Manual
Debugging your PSL scripts (PATROL Developer Console required)	PATROL Script Language Debugger for Unix Reference Manual or PATROL for Windows NT User Guide (Vol 2)

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## Where to Go from Here

The following table suggests topics that you should read next:

<b>if you want information on...</b>	<b>See...</b>
How to load the PATROL KM	Chapter 2, "Getting Started."
What a certain menu command does	Chapter 3, "Menu Summary" and the help.
What a certain parameter does	Chapter 4, "Parameter Summary" and the help.
How HACMP Configuration element are represented	Chapter 5, "HACMP Cluster Management Specificities" and the help.
The tasks you can perform with the HACMP Cluster Management Knowledge Module for PATROL	Chapter 6, "Using the HACMP Cluster Management KM for PATROL" and the help.
Event messages	Chapter 7, "Event Messages" and the help.

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## Chapter 2. Getting Started

This chapter provides information that you will need to get started with the PATROL Knowledge Module™ for Bull Cluster.

This chapter discusses the following:

- HACMP Cluster Management KM for PATROL 2-2
- Applications and Icons 2-3
- InfoBoxes 2-7
- Installing HACMP Cluster Management KM for PATROL 2-11
- Preparing to use the HACMP Cluster Management KM for Patrol 2-15
- Customizing HACMP Cluster Management KM for Patrol 2-16
- Loading HACMP Cluster Management KM for Patrol 2-19
- Verifying Configuration 2-19
- Help 2-20
- Softcopy Documentation 2-20
- Resetting Event Alarms 2-22
- Deinstalling HACMP Cluster Management KM for Patrol 2-22

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## HACMP Cluster Management KM for PATROL

The HACMP Cluster Management KM for PATROL contains the knowledge that PATROL uses during HACMP monitoring, analysis and management activities.

A Knowledge Module is a file containing knowledge in the form of command descriptions, application, parameters and recovery actions that PATROL can use to monitor HACMP events.

The HACMP Cluster Management KM for PATROL application classes instances show you an exact representation of your HACMP configuration.

The HACMP Cluster Management KM for PATROL parameters allow you to survey HACMP critical resources easily because they can provide a detailed report of all resources used by HACMP. Moreover, you will have a global view of your cluster, bringing to you more pertinent information on your systems.

By enabling you to detect problems, optimize systems, analyze trends, plan capacity and manage multiple hosts simultaneously, the HACMP Cluster Management KM for PATROL helps you ensure that your HACMP applications run efficiently 24 hours a day.



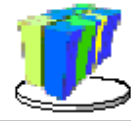




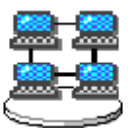







## Applications and Icons

Table 1 contains information on each application in the HACMP Cluster Management KM for PATROL

You can force an update of the parameters in the BCL\_COLLECT application class. All other applications contain only consumer parameters which you cannot directly update.

Table 1. HACMP Cluster Management KM for PATROL Applications, Icons and Descriptions

Icon	Definition
	BCL_ADAPTER application instance: Represents an adapter in HACMP configuration.
	BCL_APPLICATIONSERVER application instance: Represents an application server in HACMP configuration.
	BCL_CLUSTER application instance: Represents a cluster in HACMP configuration. These instances appear directly in the PATROL console main window, like other computer instances.
 BCL_COLLECT	BCL_COLLECT application instance: Maintains all of the collector parameters, and allows you to refresh them. A unique instance is available for this class on a cluster node.
 EVENT	BCL_EVENT application instance: Represents an HACMP predefined event. An class Icon regroups all instances of this type.
	BCL_FILESYSTEM application instance: Represents a filesystem used in HACMP configuration.
 HACMP	BCL_HACMP application instance: Represents the main entrance point for all local resources configured on a cluster node. A unique instance is available in the system window.
	BCL_NETWORK application instance: Represents a network configured in HACMP. Regroups all adapter instances.
 HA	BCL_NODE application instance: Represents a node configured in HACMP. Shows the state of HACMP daemons on the target system, PATROL agent presence and local resources state.
	BCL_PHYSICALVOLUME application instance: Represents a physical volume used in HACMP configuration.

	<p>BCL_RESOURCEGROUP application instance: Represents a group of resources defined in HACMP configuration. Indicates the state and location of this item into the cluster.</p>
	<p>BCL_RESOURCES application instance: Represents a set of local resources used by a group of resources in HACMP configuration. Regroups application servers and volume groups instances.</p>
	<p>BCL_VOLUMEGROUP application instance: Represents an AIX volume group used in HACMP configuration.</p>

## Application Hierarchy

The HACMP Cluster Management KM for PATROL is arranged in a hierarchical structure. Moreover, its applications are separated in two different trees, according to their nature:

The first tree of applications represents icons under a system window, e.g. they are available on the system window of each cluster node. These are applications corresponding to local elements encountered on a system:

BCL\_HACMP instance represents the state of HACMP application on a given cluster node

BCL\_COLLECT instance represents the state of all collector parameters on a given cluster node

BCL\_EVENT instances represent the state of HACMP events on a given cluster node

BCL\_RESOURCES instances represent the state of all resources defined in a resource group on a given cluster node. These are composed of:

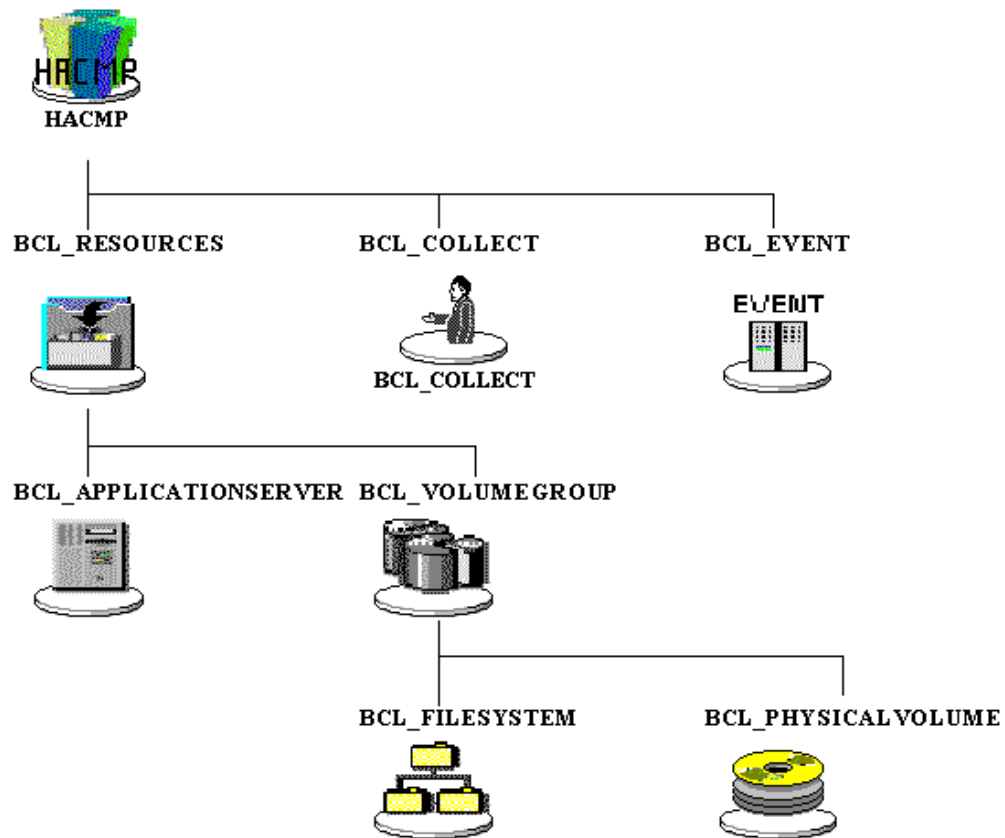
BCL\_APPLICATIONSERVER instances represent the application servers on a given cluster node

BCL\_VOLUMEGROUP instances represent the state of volume groups, defined into HACMP configuration, on a given cluster node. These are composed of:

BCL\_FILESYSTEM instances represent the state of filesystems, used in HACMP configuration, on a given cluster node

BCL\_PHYSICALVOLUME instances represent the state of physical volumes, used in HACMP configuration, on a given cluster node

### BCL\_HACMP



The second tree of applications represents icons under the main PATROL console window and represents global information about a cluster state. These are applications corresponding to global elements encountered on a cluster:

BCL\_CLUSTER instance represents the general state of the cluster defined in HACMP configuration

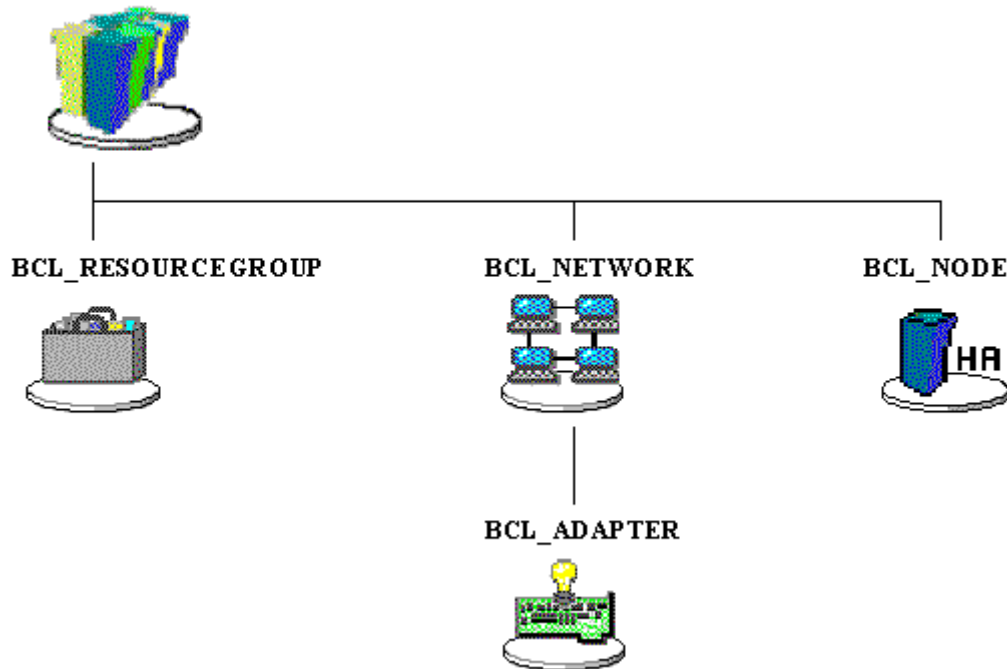
BCL\_NODE instances represent the state of the cluster nodes defined in HACMP configuration

BCL\_RESOURCEGROUP instances represent the state of resource groups defined in HACMP configuration.

BCL\_NETWORKS instances represent the state of networks defined in HACMP configuration. These are composed of:

BCL\_ADAPTER instances represent the adapters defined in HACMP configuration

### **BCL\_CLUSTER**



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## InfoBoxes

InfoBoxes display summary information about an instance or application.

### BCL\_ADAPTER Application InfoBox

InfoBox Item	Definition
Adapter Type	The type of adapter defined in HACMP configuration (IP, atm, ether, fddi, hps, rs232, tm SCSI, tmssa, token)
IP Address	Dotted IP address defined in HACMP configuration for this adapter
Hardware Address	When defined in cluster configuration, indicates the hardware address to configure with this adapter on any IP interface used
Interface	If used, the IP interface name using this HACMP object NB: This information can change in the case of a takeover
Node	If used, the actual node using the IP address indicated for this adapter NB: This information can change in the case of a takeover
Function	The function defined for this object in HACMP configuration (service, boot, standby)

### BCL\_APPLICATIONSERVER Application InfoBox

InfoBox Item	Definition
Start Script	The script used to start the application described in the resource group HACMP concept
Stop Script	The script used to stop the application described in the resource group HACMP concept
Rolling Address	When used in rolling application style, indicates the dotted IP address used to configure on appropriate node when a move of corresponding resource group is required by HACMP or by user.
Rolling Address Name	The label for the rolling address described above

### BCL\_CLUSTER Application InfoBox

InfoBox Item	Definition
Cluster Name	The name of the cluster defined in HACMP configuration
Cluster ID	The identifier defined for the cluster in HACMP configuration
Nodes	The participating node list, according to HACMP configuration
Primary Node	The node name elected by all available nodes of the cluster to represent its state
Cluster Security	The security defined for the cluster in HACMP configuration
Number of Nodes	The number of nodes for the cluster
IP Aliasing	Flag for IP aliasing usage: 1 if IP aliasing is used, 0 else
Specific Configuration	The indication of specific configuration for the cluster (Standard, CRM, Native HA, Disaster Recovery, Rolling)

## BCL\_COLLECT Application InfoBox

InfoBox Item	Definition
KM Log Maximum Size	The maximum size for the HACMP Cluster Management Knowledge Module in Kilobytes

## BCL\_EVENT Application InfoBox

InfoBox Item	Definition
Event State	The last state for the event (STARTED, COMPLETED, STARTED). If this event are not occurred, this field is empty
Date of last occurrence	The date and time of last occurrence for this event
Arguments	The arguments used by this event during its last occurrence

## BCL\_FILESYSTEM Application InfoBox

InfoBox Item	Definition
Logical Volume	The logical volume used by this file system
Mounting Point	The mounting point used for accessing the file system
Size	The occupied size of the file system (in Kilobytes)
Options	The optional arguments used for the file system
Filesystem Type	The type of this file system (jfs, nfs,...)
Remote Node Name for NFS	If NFS type, the server name that exports this mounted NFS file system. N/A for other type of file systems.

## BCL\_HACMP Application InfoBox

InfoBox Item	Definition
Clstrmgr	The state of clstrmgr daemon (started, stopped)
Clinfod	The state of clinfod daemon (started, stopped)
Clsmuxpd	The state of clsmuxpd daemon (started, stopped)
Cllockd	The state of cllockd daemon (started, stopped)
AIX Level	The level of AIX operating system (based on bos.mp fileset)
HACMP Level	The level of HACMP package (based on cluster.es.server.utils fileset)
Bullcluster Level	The level of Bullcluster package (based on bullcluster.admin.monitoring fileset)
KM Version	The version of HACMP Cluster Management KM for PATROL
Debug Mode	The actual debugging mode (normal, verbose)
Maintenance Mode	The actual maintenance mode (enabled, disabled)

## BCL\_NETWORK Application InfoBox

InfoBox Item	Definition
Network Type	The type of network defined in the HACMP configuration (IP, atm, ether, fddi, hps, rs232, tm SCSI, tmssa, token)

## BCL\_NODE Application InfoBox

InfoBox Item	Definition
HACMP State	The state of HACMP services on the node (started, stopped)
Patrol Agent State	The state of PATROL Agent on the node (started, stopped)
Local Resources State	The state of local resources defined in HACMP configuration and owned by the node (worst state among events state, resources state, file systems state, volume groups state and physical volumes state)

## BCL\_PHYSICALVOLUME Application InfoBox

InfoBox Item	Definition
pvid	The physical volume identifier given for this disk
Volume Group	The volume group that owns the physical volume
Physical Location	The operating system physical location of the physical volume
Description	The description provided to name the physical volume
Manufacturer	The manufacturer of that type of physical volume
Scsi Parent	The scsi parent that drives the physical volume

## BCL\_RESOURCEGROUP Application InfoBox

InfoBox Item	Definition
Actual Node	The node(s) name(s) that actually owns the resource group. For concurrent resource groups, this field contains all nodes names that actually run the resource group
Participating Nodes	The priority list of nodes involved in takeover relationship for the resource group
Relationship	The takeover relationship among the cluster nodes for the resource group (cascading, concurrent, rotating)
Sticky Location	The node name that owns the sticky location set by a "sticky move" of this resource group. Sticky location has priority on "participating nodes list" for takeover relationship
Current State	The actual state of this resource group (UP, DOWN, ???)

## BCL\_RESOURCES Application InfoBox

InfoBox Item	Definition
Service Label	The service address attached to the resource group. Not available for shared resource groups (CRM configurations)
Original Node	The node name on which the resource group is started initially
Filesystems Consistency Check	The check method for filesystems consistency
Filesystems Recovery Method	The recovery method for filesystems consistency
AIX Connections Services	See specific information in HACMP guides if you use AIX connections services
AIX Fast Connect Services	See specific information in HACMP guides if you use AIX fast connect services
HACMP Communication Links	See specific information in HACMP guides if you use CS/AIX communications links
Miscellaneous Data	A text string to put additionnal information in resource group environment
Inactive Takeover Activated	Flag for cascading resource group (false [default], true).If 'true', it allows the first node in the resource group participating node list to join the cluster (i.d. to start HACMP services) to acquire the resource group
9333 Disk Fencing Activated	Specific flag for managing IBM 9333 disk subsystem. See HACMP guides for more information
SSA Disk Fencing Activated	Specific flag for managing SSA disk subsystem. See HACMP guides for more information
FS mounted before IP	The order of configuration between filesystem mount and IP adresses setup

## BCL\_VOLUMEGROUP Application InfoBox

InfoBox Item	Definition
Mode	The volume group mode declared in HACMP configuration (concurrent, not concurrent)
Actual State	The actual activation state for the volume group (varied on, varied off)



---

## Installing HACMP Cluster Management KM for PATROL

This section describes the procedures for setting up your system to work with HACMP Cluster Management KM for PATROL. This Knowledge Module is to be installed on each cluster node to survey and on the Patrol console which will manage the clusters.

### PATROL Version Requirements

HACMP Cluster Management KM for PATROL requires PATROL version 3.3 or above.

PATROL agent or PATROL console must be already installed and configured in order to install HACMP Cluster Management KM and \$PATROL\_HOME variable must be set correctly on UNIX systems.

### System Requirements

Your system operating level must be AIX version 4.3.3 or higher on all your cluster nodes.

You can verify this by using the command: `# lspp -cL bos.mp`

You must have already installed HACMP version 4.3.1 or above. You can verify this by using the command: `# lspp -cL cluster.es.server.utils`

Even if you may use HACMP Cluster Management KM for PATROL without using HACMP Cluster Management software, it is recommended to install it for using various useful tools and commands on your cluster.

If you have installed it on your cluster, it must be version 4.3.1 or higher. You can verify this by using the command: `# lspp -cL bullcluster`.

### Compatibility with Previous HACMP Cluster Management KM for PATROL

The present KM is not compatible with the one delivered on Cluster Assistant CD-ROM (bullcluster.patrol.km 4.3.2.0). However, the present KM is usable directly on cluster nodes instead of the Power Console. If you do not use the Power Console as a Patrol Console, you need not to follow the procedure below for installing the current software.

If you want to install the current software on a Power Console, which will be used as a Patrol Console, and have done several customizations on the previous HACMP Cluster Management KM for PATROL, it is recommended to save this KM by recording the modified files to retrieve information later.

You can verify if the previous KM is installed on your system by using the command:

```
# lspp -cL bullcluster.patrol.km
```

If you have already installed the HACMP Cluster Management KM for PATROL package "bullcluster.patrol.km 4.3.2.0" and you want to replace it by the new one, you must previously desinstall this old software before installing this version:

Type: smit remove

Press (F4-Esc4) to get a list of package to desinstall.

Select: *SOFTWARE name: [bullcluster.patrol.km]*

Follow the instructions given on the screen

When the procedure is completed exit smit (F10-Esc0)

## Disk and Memory usage

During installation of HACMP Cluster Management KM for PATROL, you must have at least 8 Mbytes of free space in the filesystem containing PATROL.

This amount of free space includes HACMP Cluster Management KM for Patrol log file with its default maximum size (100 Kb).

The filesystems /usr and the one containing PATROL may not be used at 100% of their capacities (you can verify by using the *df* command).

## Preparing to install the HACMP Cluster Management KM for PATROL

Before installing the HACMP Cluster Management KM for PATROL, you must perform certain tasks before you can use the KM on UNIX (including AIX) system.

Log in PATROL user.

- Reserve enough space in PATROL user directory to install the KM (8 Mbytes).
- Expand /usr and PATROL user filesystem if 100% full (*df* command)
- Verify your PATROL environment, especially the PATROL\_HOME variable. If not set, configure it by editing the .profile file and adding at end of file the lines:
  - "cd ./PATROL3.3" ### For PATROL Version 3.3
  - ". ./patrolrc.sh"

Then log out and log in PATROL user back : \$PATROL\_HOME is set correctly.

Previously to configure the KM itself, it is recommended to use **IP aliasing** facility (if available) to get an address always available (HACMP running or not): the boot address. To activate this feature: use "smit bcl\_alias" command and change flag to "yes".

IP aliasing is a Bull feature for HACMP. You must have bullcluster.basic\_soft.ha\_cmp package installed to use it.

If you have not or if you do not want to configure it, you can use an **administration address** on each node, that cannot be modified by HACMP.

If you have no administration address, HACMP Cluster Management KM cannot fulfill its work correctly by retrieving continuously information about the cluster.

## Installing HACMP Cluster Management KM for an AIX PATROL console

This section indicates the steps for installing this knowledge module on an AIX PATROL console.

Insert the "HACMP Cluster Management KM for PATROL" CD-ROM into your CD-ROM drive.

Use smit interface to correctly install the HACMP Cluster Management KM for PATROL package.

– Log in root user.

Type: *smit install\_selectable\_all*

Select: *INPUT device/directory for software: [/dev/cd0]*

Press F4 or Esc-4 to get a list of filsets to install

Select "bullcluster.kmpatrol" package

When the procedure is complete, exit smit (F10-Esc0)

Type: *cd /usr/lpp/bullcluster.kmpatrol*

Type: *./install\_km*

Follow instructions of this script: enter PATROL user and PATROL\_HOME directory. Choose a PATROL Console installation.

– Installation is complete.

## Installing HACMP Cluster Management KM for a NT console

This section indicates the steps for installing this knowledge module on a NT PATROL console.

Insert the "HACMP Cluster Management KM for PATROL" CD-ROM into your CD-ROM drive.

Double click on the CD-ROM icon in your Windows NT desktop

Change directory to: NT

Execute the BCL\_NT\_console.exe file

Follow the instructions: enter your PATROL\_HOME directory (default is C:\PATROL3.3), and press the Unzip button.

Installation is complete: press the Close button to close the window.

## Installing HACMP Cluster Management KM for an unix PATROL console

This section indicates the steps for installing this knowledge module on an UNIX PATROL console, if your UNIX operating system is not AIX.

Reserve 2 additional Mbytes for copying the tar file containing PATROL console information for the KM into PATROL user directory.

Insert the "HACMP Cluster Management KM for PATROL" CD-ROM into your CD-ROM drive.

– Log in the PATROL user.

– Verify \$PATROL\_HOME variable is set correctly. If not set, add

Use the *mount* command with appropriate options depending on your OS to mount your CD-ROM device on a temporary mount point.

Change current directory to the CD-ROM mount point (*cd* command).

Change current directory to NT directory on CD-ROM (*cd* command).

Copy the BCL\_UNIX\_console.tar file into \$PATROL\_HOME

Type: *tar -xovf BCL\_UNIX\_console.tar*

Remove temporary file: *rm BCL\_UNIX\_console.tar*

Installation is complete: you can now unmount your CD-ROM drive.

## Installing HACMP Cluster Management KM for an AIX PATROL agent

This section indicates the steps for installing this knowledge module on an AIX PATROL agent, in order to monitor a cluster node (AIX – RS6000 platform).

Insert the "HACMP Cluster Management KM for PATROL" CD-ROM into your CD-ROM drive.

Use smit interface to correctly install the HACMP Cluster Management KM for PATROL package.

– Log in root user.

Type: *smit install\_selectable\_all*

Select: *INPUT device/directory for software: [/dev/cd0]*

Press F4 or Esc-4 to get a list of filsets to install

Enter "ALL" for SOFTWARE to install field

When the procedure is complete, exit smit (F10-Esc0)

Type: `cd /usr/lpp/bullcluster.kmpatrol`

Type: `./install_km`

Follow instructions of this script: enter PATROL user and PATROL\_HOME directory. Choose a PATROL Agent installation.

**Note:** You will have to enter root password several times in order to set access rights correctly to all binaries used by the KM.

– Installation is complete.

---

## Preparing to use the HACMP Cluster Management KM for PATROL

Operations described below are only to be done on cluster nodes, for PATROL agent configuration.

There is different information to provide to the HACMP Cluster Management KM for PATROL to make it work correctly:

- Identifies **PATROL user names** on each node of the cluster: if they are different from PATROL user name on the local node, indicate it by updating KM configuration file: insert a new line:

```
"Patrol_User_node=patrol_user"
```

for each remote node *node* for which PATROL user *patrol\_user* is different from on local node.

- Identifies **administration addresses** (addresses available with or without HACMP running): if you do not use IP aliasing, configure it in KM configuration file: insert a new line:

```
"Admin_Addr_node=admin_address"
```

for each remote node *node* for which administration address is *admin\_address*.

- Configure **.rhosts file** in PATROL user directory to allow PATROL users from remote cluster nodes to connect and share information with the local node. This can be done by adding a new line:

```
"addr_node patrol_user"
```

in *.rhosts* file for each address *addr\_node* potentially used by remote node to access local node by PATROL user *patrol\_user*.

This can also be done by using the Remote Users Configuration menu command from BCL\_HACMP application, when KM will be loaded.

### Note:

- If you want to monitor properly your cluster, it is recommended to use your administration addresses (the boot addresses defined in the HACMP configuration if you have activated the IP aliasing facility) as host connections to your cluster nodes: since PATROL agent can be accessed with or without HACMP running, connection addresses should be reachable at any time.
- It could be interesting to configure PATROL agent in order to start it automatically at each cluster node reboot. You can do this by adding a new line in each cluster node */etc/inittab* file like:

```
"PatrolAgent:2:once:<your PATROL home directory>/../PatrolAgent &"
```

# Customizing HACMP Cluster Management KM for PATROL

All durable configuration settings are saved in the KM configuration file: BCL\_conf.

**Location:**

This file is in \$PATROL\_HOME/BCL\_KM/config directory

**Function:**

This file registers all configuration modifications using a set of variables. It may be modified manually by a PATROL user, or you can use the menu command from the Developer console to modify it.

If you change manually a variable in the configuration file, use the Refresh => ALL menu command from BCL\_HACMP application, to take changes into account.

**Syntax:**

Lines of this file must of the form:

<variable name>=<value>

All variable not set in this configuration file is set to "\_\_\_default\_\_\_" (default value) for KM.

**Example:**

```
#### Example of file for a cluster node
# KM binaries files are in $PATROL_HOME/BCL_KM/bin/ directory
BCLBINPATH=$PATROL_HOME/BCL_KM/bin/
# Maximum log size for KM is 500 Kb
BCL_KM_Max_Log_Size=500
# Current node is in maintenance mode
BCL_KM_Maintenance_Mode=1
# Primary node for the cluster is node_name
BCL_Primary_Node=node_name
```

Table 2. Configuration Variables

Variable Name	Description	Default Value
BCL_KM_Max_Log_Size	Size in Kilobytes for HACMP Cluster Management KM log	100
BCL_KM_Debugging_Mode	Flag for debugging mode	0 (no debug)
BCL_Maintenance_Mode_node	Flag for maintenance mode on node <i>node</i>	0 (no maintenance)
BCLBINPATH	Path for binaries directory (used by the KM)	\$PATROL_HOME/BCL_KM/bin/
BCLREMOTEPath	Path for shared files directory	\$PATROL_HOME/remote/BCL_shared_info/
BCLLOGPATH	Path for HACMP Cluster Management KM log file directory	\$PATROL_HOME/log/
BCL_ADAPTER_Max_Instances	Maximum number of BCL_ADAPTER application instances to monitor	0 (all instances monitored)

<b>Variable Name</b>	<b>Description</b>	<b>Default Value</b>
BCL_ADAPTER_Pattern	Pattern (1) of BCL_ADAPTER application instances not to monitor	"__default__" (all instances monitored)
BCL_APPLICATIONSERVER_Max_Instances	Maximum number of BCL_APPLICATIONSERVER application instances to monitor	0 (all instances monitored)
BCL_APPLICATIONSERVER_Pattern	Pattern (1) of BCL_APPLICATIONSERVER application instances not to monitor	"__default__" (all instances monitored)
BCL_EVENT_Max_Instances	Maximum number of BCL_EVENT application instances to monitor	0 (all instances monitored)
BCL_EVENT_Pattern	Pattern (1) of BCL_EVENT application instances not to monitor	"__default__" (all instances monitored)
BCL_FILESYSTEM_Max_Instances	Maximum number of BCL_FILESYSTEM application instances to monitor	0 (all instances monitored)
BCL_FILESYSTEM_Pattern	Pattern (1) of BCL_FILESYSTEM application instances not to monitor	"__default__" (all instances monitored)
BCL_NETWORK_Max_Instances	Maximum number of BCL_NETWORK application instances to monitor	0 (all instances monitored)
BCL_NETWORK_Pattern	Pattern (1) of BCL_NETWORK application instances not to monitor	"__default__" (all instances monitored)
BCL_NODE_Max_Instances	Maximum number of BCL_NODE application instances to monitor	0 (all instances monitored)
BCL_NODE_Pattern	Pattern (1) of BCL_NODE application instances not to monitor	"__default__" (all instances monitored)
BCL_PHYSICALVOLUME_Max_Instances	Maximum number of BCL_PHYSICALVOLUME application instances to monitor	0 (all instances monitored)
BCL_PHYSICALVOLUME_Pattern	Pattern (1) of BCL_PHYSICALVOLUME application instances not to monitor	"__default__" (all instances monitored)
BCL_RESOURCEGROUP_Max_Instances	Maximum number of BCL_RESOURCEGROUP application instances to monitor	0 (all instances monitored)
BCL_RESOURCEGROUP_Pattern	Pattern (1) of BCL_RESOURCEGROUP application instances not to monitor	"__default__" (all instances monitored)
BCL_RESOURCES_Max_Instances	Maximum number of BCL_RESOURCES application instances to monitor	0 (all instances monitored)
BCL_RESOURCES_Pattern	Pattern (1) of BCL_RESOURCES application instances not to monitor	"__default__" (all instances monitored)

<b>Variable Name</b>	<b>Description</b>	<b>Default Value</b>
BCL_VOLUME- GROUP_Max_Instances	Maximum number of BCL_VO- LUMEGROUP application instances to monitor	0 (all instances monitored)
BCL_VOLUMEGROUP_Pattern	Pattern (1) of BCL_VOLUME- GROUP application instances not to monitor	"__default__" (all instances monitored)
Patrol_User_node	PATROL user name on node node	same as on local node
Admin_Addr_node	Administration address (always available with or without HACMP running) to access remote node node	boot address
BCL_Primary_Node	Primary node name	"__default__" (prima- ry node is elected by all available nodes)



---

## Loading HACMP Cluster Management KM for Patrol

**Step 1** Choose **File => Load KM** from the PATROL Console menu bar.

A list of available Knowledge Modules for your site appears.

**Step 2** Click on the BCL\_ALL.kml file from the list.

**Step 3** Click on **OK**.

When the KM is loaded, PATROL enters into a discovery phase.

---

## Verifying Configuration

Make sure your remote node addresses are correctly configured on each node of your cluster:

- Open your system window by double clicking the system icon in the main PATROL console window.
- Use Remote Users Configuration menu command from BCL\_HACMP icon. A window appears indicating to you all addresses not configured.
- Press Configure button.

If you use addresses not defined in your HACMP configuration, add lines to the .rhosts file for user PATROL on each node to allow PATROL user from remote node to use it. Lines will match the syntax:

```
<node_address_on_remote_node> <PATROL_user_on_remote_node>
```

This configuration will allow the use of any available address to reach remote node.

---

## Help

Help describes the function of the currently displayed window or dialog box and the use of its elements. You can display a list of help topics and search for a specific topic. The tasks in this section describe how to access help topics and context-sensitive help from a PATROL Console for Unix and a PATROL Console for Windows NT.

You can access PATROL KM help topics, context-sensitive application help and context-sensitive parameter help.

### Accessing Help from the PATROL Console for Unix

This task describes how to access PATROL KM Help topics. From the list of Help topics, you can browse through a number of Help topics or search for a specific topic. You can also access PARTOL KM context-sensitive Help for applications and parameters.

#### To access KM Help Topics

##### Step 1

Choose Help => On Knowledge Modules from the PATROL Console menu bar.

A dialog box appears listing the loaded PATROL KM Help files.

##### Step 2

Select HACMP Cluster Management KM for PATROL and click Go To.

The KM Help Topics screen is displayed.

#### To Access Context-Sensitive Application Help

Perform one of the following actions:

- Select an application from Choose Help => This Application from the List of Applications Classes window.
- Click the Show Help button on the Application Definition dialog box.

#### To Access Context-Sensitive Parameter Help

Perform one of the following actions:

- Choose Help On from a parameter pop-up menu.
- Choose Help from a parameter window.
- Click the Show Help button on the Parameter Definition dialog box.

### Accessing Help from the PATROL Console for Windows NT

This task describes how to access PATROL KM Help topics. From the list of Help topics, you can browse through a number of Help topics or search for a specific topic. You can also access PARTOL KM context-sensitive Help for applications and parameters.

#### To Manually Open Help

Double Click \\lib\help\WinHelp\BCL\_help.hlp from the PATROL home directory.

The HACMP Cluster Management KM for PATROL Help system appears.

#### To Access Context-Sensitive Application Help

Perform one of the following actions:

- Choose Help On from an application pop-up menu.
- >From the Application Definition dialog box, click the Help tab; then click the Show Help button.

### To Access Context–Sensitive Parameter Help

Perform one of the following actions:

- Choose Help On from a parameter pop–up menu.
- Choose Help from a parameter window.
- >From the Parameter dialog box, click the Help tab; then click the Show Help button.

---

## Softcopy Documentation

The documentation you are actually reading is available on the HACMP Cluster Management KM for PATROL CD–ROM as a PDF file named "BCL\_User\_Guide.pdf", under base directory for the CD\_ROM (example for Windows NT: D:\BCL\_User\_Guide.pdf). To reach it, insert this CD–ROM into your drive. For Unix (including AIX) systems, mount the CD–ROM using the appropriate "mount" command.

This documentation needs Acrobat Reader software to be viewed. The tasks below indicate how to install Acrobat Reader software according to your operating system:

### Installing Acrobat Reader for AIX

- Log on root user.
- Insert your HACMP Cluster Management KM for PATROL CD–ROM into your drive.
- Mount a temporary CD–ROM filesystem: `mount -rv cdrfs /dev/cd0 /mnt.`
- Type: `cd /mnt/Acrobat/AIX.`
- Launch smit interface: `smit install_selectable_all.`
- Select "." as INPUT device/directory for software.
- Select "ALL" as SOFTWARE to install.
- Wait for completeness of installation.
- Exit smit interface by pressing F4 or ESC–4.
- Type: `cd /usr/Adobe/acrobat.`
- Type `./INSTALL` and follow instructions for installation. By default, Acrobat Reader binary is installed in `/usr/lpp/Acrobat3/bin` directory. You can view the KM User Guide by typing: `/usr/lpp/Acrobat3/bin/acroread /mnt/BCL_User_Guide.pdf.`

### Installing Acrobat Reader for Windows NT

- Insert the HACMP Cluster Management CD–ROM into your drive.
- Double Click on your CD–ROM icon (into your Desktop).
- Change directory to Acrobat\NT.
- Double click on "rs405eng" icon and follow instructions for installation (a reboot of your system is recommended). An "Acrobat Reader" icon appears in your Windows NT desktop.
- Double click on it to start Acrobat Reader and open BCL\_User\_Guide.pdf file in your CD–ROM drive directory to view the KM User Guide.

### Installing Acrobat Reader for Unix (except AIX)

Acrobat Reader software is not included in the HACMP Cluster Management CD–ROM

- Download Acrobat Reader for your operating system from Adobe world wide web site: <http://www.adobe.com>.
- Follow the instructions for installation.

---

## Resetting Event Alarms

After loading HACMP Cluster Management KM, the cluster node agent enters a discovery phase. All KM applications will be displayed, when the appropriate information has been would be collected (some minutes could be necessary to collect all information).

In some cases, alarms could be detected about HACMP events (BCL\_EVENT application instances). This means that there have been events that were in an alarm state or had still been running a long time ago.

You can use menu commands for events to determine the cause of the alarm.

Refer to your HACMP administrator to verify that the problem no longer exists.

Then use can you the “Reset Alarm” menu command from BCL\_EVENT application to cancel these alarms.

For example, just after having installed the HACMP Cluster Management on my cluster, an alarm indicates that the “config\_too\_long” event is running. Using the “last lines for this event” menu command, it is easy to understand that this alarm has occurred several days previously and is no longer applicable. Verifying this fact with the HACMP administrator. I can use the “Reset Alarm” menu command to cancel it.

---

## Deinstalling HACMP Cluster Management KM for Patrol

Before deinstalling the KM, make sure to delete all HACMP Cluster Management KM files on PATROL consoles using it.

To delete KM files from a PATROL console:

**Step 1** Choose **Attributes => Application Classes** from the PATROL Console menu bar.

A list of KM files loaded on your console appears.

**Step 2** Click on any KM file beginning by the prefix “BCL\_”.

**Step 3** Choose **Edit => Delete** from the menu bar.

**Step 4** Click “yes” in the deletion confirmation window.

**Step 5** Repete from the step 2 until you have no KM file beginning by the prefix “BCL\_”.

HACMP Cluster Management KM deinstallation is done manually by removing all files included in the Knowledge Module.

If you want to deinstall the HACMP Cluster Management KM for PATROL:

Log in PATROL user

Change directory to \$PATROL\_HOME

Remove:

`./lib/psl/BCL_* files`

`./lib/knowledge/BCL_* files`

- For a PATROL Agent configuration:

`./BCL_KM directory`

`./remote/BCL_shared_info directory`

- For an UNIX PATROL Console configuration:

`./lib/images/BCL_*`

`./lib/help/BCL_help.hlp file`

`./lib/help/BCL_help directory`

- For a NT PATROL Console configuration:

.lib\images\BCL\_\*

.lib\help\WinHelp\BCL\_help.\*

To remove completely HACMP Cluster Management KM from your system, on AIX platforms, remove “bullcluster.kmpatrol” package:

Type: *smit remove*

Press F4 or Esc-4 to choose fileset to remove

Select “bullcluster.kmpatrol” package

Enter “no” for PREVIEW only field

Exit from smit when the operation is complete

---

## Where to Go from Here

The following table suggests topics that you should read next:

if you want information on...	See...
What a certain menu command does	Chapter 3, “Menu Summary” and the help.
What a certain parameter does	Chapter 4, “Parameter Summary” and the help.
How HACMP Configuration element are represented	Chapter 5, “HACMP Cluster Management Specificities” and the help.
The tasks you can perform with the HACMP Cluster Management Knowledge Module for PATROL	Chapter 6, “Using the HACMP Cluster Management KM for PATROL” and the help.
Event messages	Chapter 7, “Event Messages” and the help.



---

## Chapter 3. Menu Summary

This chapter summarizes the menus and menu commands for the PATROL Knowledge Module™ for HACMP.

The following topics are discussed in this chapter:

- BCL\_ADAPTER Menu 3-1
- BCL\_APPLICATIONSERVER Menu 3-1
- BCL\_CLUSTER Menu 3-2
- BCL\_COLLECT Menu 3-3
- BCL\_EVENT Menu 3-4
- BCL\_FILESYSTEM Menu 3-4
- BCL\_HACMP Menu 3-5
- BCL\_NETWORK Menu 3-7
- BCL\_NODE Menu 3-7
- BCL\_PHYSICALVOLUME Menu 3-7
- BCL\_RESOURCEGROUP Menu 3-8
- BCL\_RESOURCES Menu 3-8
- BCL\_VOLUMEGROUP Menu 3-8

---

### BCL\_ADAPTER Menu

To access the BCL\_ADAPTER menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_ADAPTER icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_ADAPTER icon.

The BCL\_ADAPTER menu has the following menu commands:

Menu Command	Action
Stop Monitoring	Stops monitoring the selected instance.

---

### BCL\_APPLICATIONSERVER Menu

To access the BCL\_APPLICATIONSERVER menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_APPLICATIONSERVER icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_APPLICATIONSERVER icon.

The BCL\_APPLICATIONSERVER menu has the following menu commands:

Menu Command	Action
Stop Monitoring	Stops monitoring the selected instance.

## BCL\_CLUSTER Menu

To access the BCL\_CLUSTER menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_CLUSTER icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_CLUSTER icon.

The BCL\_CLUSTER menu has the following menu commands:

Menu Command	Action
<b>Verify Cluster</b>	Verifies HACMP configuration of the cluster
<b>Show Topology</b>	Displays cluster topology
<b>Configure Monitored Items</b>	Configures monitoring for instances depending on the cluster (adapters, networks, nodes, resourcegroups)
Adapters	Configures adapter instances monitoring for the entire cluster
Set Maximum Number Monitored	Configures a maximum number of adapter instances to display for the entire cluster. This command is only available from a PATROL developer console
Set Pattern Not Monitored	Configures a pattern of adapter instances not to display for the entire cluster. This command is only available from a PATROL developer console
Networks	Configures network instances monitoring for the entire cluster
Set Maximum Number Monitored	Configures a maximum number of network instances to display for the entire cluster. This command is only available from a PATROL developer console
Set Pattern Not Monitored	Configures a pattern of network instances not to display for the entire cluster. This command is only available from a PATROL developer console
Nodes	Configures node instances monitoring for the entire cluster
Set Maximum Number Monitored	Configures a maximum number of node instances to display for the entire cluster. This command is only available from a PATROL developer console
Set Pattern Not Monitored	Configures a pattern of node instances not to display for the entire cluster. This command is only available from a PATROL developer console



Resource Groups	Configures resource group instances monitoring for the entire cluster
Set Maximum Number Monitored	Configures a maximum number of resource group instances to display for the entire cluster. This command is only available from a PATROL developer console
Set Pattern Not Monitored	Configures a pattern of resource group instances not to display for the entire cluster. This command is only available from a PATROL developer console

## BCL\_COLLECT Menu

To access the BCL\_COLLECT menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_COLLECT icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_COLLECT icon.

The BCL\_COLLECT menu has the following menu commands:

Menu Command	Action
<b>Refresh</b>	Refreshes HACMP Cluster Management KM collector parameters values and launches application discovery
ALL	Refreshes all collector parameters values and starts discovery for each HACMP Cluster Management KM application
HACMP Configuration	Refreshes COLL_HACMP collector parameter values
Local Resources	Refreshes COLL_Errlog, COLL_Disk, COLL_Event, COLL_LVM, COLL_PROCESS collector parameters values and starts discovery for BCL_HACMP, BCL_EVENT, BCL_RESOURCES, BCL_VOLUMEGROUP, BCL_PHYSICALVOLUME, BCL_APPLICATIONSERVER applications
Network Informations	Refreshes COLL_Network, COLL_PROCESS collector parameters values and starts discovery for BCL_CLUSTER, BCL_NETWORK, BCL_ADAPTER, BCL_RESOURCEGROUP, BCL_NODE applications
<b>Display KM Log</b>	Creates a report for information search through HACMP Cluster Management KM log
<b>Trace KM Log</b>	Allows dynamic display of HACMP Cluster Management KM log
Enable KM Log Trace	Activates the text parameter COLL_KMLog which produces a dynamic report that shows new lines added in HACMP Cluster Management KM log
Disable KM Log Trace	Deactivates the text parameter COLL_KMLog
<b>Set KM Debug</b>	Set debugging for HACMP Cluster Management KM
Normal Mode	Set debugging mode to normal: only messages for PATROL object management are stored in HACMP Cluster Management KM log. No display in system output.

Verbose Mode	Set debugging mode to verbose: all debug messages are stored in HACMP Cluster Management KM log and also displayed in system output.
<b>Set KM Log Size</b>	Allows you to change maximum size of HACMP Cluster Management KM log

---

## BCL\_EVENT Menu

To access the BCL\_EVENT menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_EVENT icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_EVENT icon.

The BCL\_EVENT menu has the following menu commands:

Menu Command	Action
<b>Last Lines for this event</b>	Generates a report containing lines of last occurrence of this event in more recent hacmp.out HACMP log where event has started
<b>All lines for this event</b>	Generates a report containing all lines for this event in more recent hacmp.out HACMP log where event has started
<b>Reset Alarm</b>	Allows you to manually stop the alarm for the event. Can be done if you have corrected problem on the system in the alarm state and the event still appears in the alarm state
<b>Stop Monitoring</b>	Stops monitoring the selected instance

---

## BCL\_FILESYSTEM Menu

To access the BCL\_FILESYSTEM menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_FILESYSTEM icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_FILESYSTEM icon.

The BCL\_FILESYSTEM menu has the following menu commands:

Menu Command	Action
<b>Stop Monitoring</b>	Stops monitoring the selected instance

---

## BCL\_HACMP Menu

To access the BCL\_HACMP menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_HACMP icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_HACMP icon.

The BCL\_HACMP menu has the following menu commands:

<b>Menu Command</b>	<b>Action</b>
<b>Show Topology</b>	Displays the topology of the node corresponding to the current system
<b>Display Logs</b>	Generates reports for the selected logs
Display cluster.log	Generates report on cluster.log HACMP log with keywords given and without exclusion keywords
Display hacmp.out	Generates report on selected hacmp.out HACMP log with keywords given and without exclusion keywords
System Errlog	Generates report on system error log with keywords given and without exclusion keywords
<b>Trace Logs</b>	Allows dynamic display of HACMP logs
cluster.log	Allows dynamic display of cluster.log HACMP log
Enable Log Trace	Activates the text parameter HACMP_ClusterLog which produces a dynamic report that shows new lines added in cluster.log HACMP log
Disable Log Trace	Deactivates the text parameter HACMP_ClusterLog
hacmp.out	Allows dynamic display of latest hacmp.out HACMP log
Enable Log Trace	Activates the text parameter HACMP_Out which produces a dynamic report that shows new lines added in latest hacmp.out HACMP log
Disable Log Trace	Deactivates the text parameter HACMP_Out
<b>Maintenance Mode</b>	Sets maintenance mode for the system
Enable Maintenance Mode	Activates maintenance mode for the system
Disable Maintenance Mode	Deactivates maintenance mode for the system

<b>Menu Command</b>	<b>Action</b>
<b>Configure Monitored Items</b>	Configures monitoring for instances depending on the node (application servers, events, filesystems, physical volumes, resources, volume groups)
Application Servers	Configures application server instances monitoring for the node
Set Maximum Number Monitored	Configures a maximum number of application server instances to display for the node. This command is only available from a PATROL developer console
Set Pattern Not Monitored	Configures a pattern of application server instances not to display for the node. This command is only available from a PATROL developer console
Events	Configures event instances monitoring for the node
Set Maximum Number Monitored	Configures a maximum number of event instances to display for the node. This command is only available from a PATROL developer console
Set Pattern Not Monitored	Configures a pattern of event instances not to display for the node. This command is only available from a PATROL developer console
Filesystem	Configures filesystem instances monitoring for the node
Set Maximum Number Monitored	Configures a maximum number of filesystem instances to display for the node. This command is only available from a PATROL developer console
Set Pattern Not Monitored	Configures a pattern of filesystem instances not to display for the node. This command is only available from a PATROL developer console
Physical Volumes	Configures physical volume instances monitoring for the node
Set Maximum Number Monitored	Configures a maximum number of physical volume instances to display for the node. This command is only available from a PATROL developer console
Set Pattern Not Monitored	Configures a pattern of physical volume instances not to display for the node. This command is only available from a PATROL developer console
Resources	Configures resource instances monitoring for the node
Set Maximum Number Monitored	Configures a maximum number of resource instances to display for the node. This command is only available from a PATROL developer console

Menu Command	Action
Set Pattern Not Monitored	Configures a pattern of resource instances not to display for the node. This command is only available from a PATROL developer console
Volume Groups	Configures volume group instances monitoring for the node
Set Maximum Number Monitored	Configures a maximum number of volume group instances to display for the node. This command is only available from a PATROL developer console
Set Pattern Not Monitored	Configures a pattern of volume group instances not to display for the node. This command is only available from a PATROL developer console
<b>Remote Users Configuration</b>	Allows access configuration for remote users on this node. This command is only available from a PATROL developer console
<b>Set Primary Node</b>	Allows user to specify which node would show cluster information among all nodes, if available. This command is only available from a PATROL developer console

---

## BCL\_NETWORK Menu

To access the BCL\_NETWORK menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_NETWORK icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_NETWORK icon.

The BCL\_NETWORK menu has the following menu commands:

Menu Command	Action
<b>Stop Monitoring</b>	Stops monitoring the selected instance.

---

## BCL\_NODE Menu

To access the BCL\_NODE menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_NODE icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_NODE icon.

The BCL\_NODE menu has the following menu commands:

Menu Command	Action
<b>Show Local Resources Problems</b>	Displays instances in alarm or warning state
<b>Stop Monitoring</b>	Stops monitoring the selected instance

---

## BCL\_PHYSICALVOLUME Menu

To access the BCL\_PHYSICALVOLUME menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_PHYSICALVOLUME icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_PHYSICALVOLUME icon.

The BCL\_PHYSICALVOLUME menu has the following menu commands:

Menu Command	Action
Stop Monitoring	Stops monitoring the selected instance

---

## BCL\_RESOURCEGROUP Menu

To access the BCL\_RESOURCEGROUP menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_RESOURCEGROUP icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_RESOURCEGROUP icon.

The BCL\_RESOURCEGROUP menu has the following menu commands:

Menu Command	Action
Stop Monitoring	Stops monitoring the selected instance

---

## BCL\_RESOURCES Menu

To access the BCL\_RESOURCES menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_RESOURCES icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_RESOURCES icon.

The BCL\_RESOURCES menu has the following menu commands:

Menu Command	Action
Stop Monitoring	Stops monitoring the selected instance

---

## BCL\_VOLUMEGROUP Menu

To access the BCL\_VOLUMEGROUP menu, perform one of the following actions:

- **With the PATROL Console for Unix**, click and hold MB3 on the BCL\_VOLUMEGROUP icon.
- **With the PATROL Console for Windows NT**, right-click the BCL\_VOLUMEGROUP icon.

The BCL\_VOLUMEGROUP menu has the following menu commands:

Menu Command	Action
Stop Monitoring	Stops monitoring the selected instance

---

## Where to Go from Here

The following table suggests topics that you should read next:

<b>if you want information on...</b>	<b>See...</b>
What a certain parameter does	Chapter 4, "Parameter Summary" and the help.
How HACMP Configuration element are represented	Chapter 5, "HACMP Cluster Management Specificities" and the help.
The tasks you can perform with the HACMP Cluster Management Knowledge Module for PATROL	Chapter 6, "Using the HACMP Cluster Management KM for PATROL" and the help.
Event messages	Chapter 7, "Event Messages" and the help.





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# Chapter 4. Parameters

This chapter describes the parameters used in the PATROL Knowledge Module™ for HACMP.

The following topics are discussed in this chapter:

- Functional Parameter Summary 4-2
- Parameter Defaults 4-5
- Collector–Consumer Dependencies 4-8

## Functional Parameter Summary

The PATROL KM for HACMP has various parameters that provide statistical information about resources, operating status and performance.

The following table provides information that you can use when selecting or reviewing the parameters that are used in monitoring.

It lists application classes and parameters alphabetically.

Table 3. Functional Parameters

Parameter	Description
<b>BCL_ADAPTER Application Class</b>	
ADAP_State	State of adapter: 0=Down, 1=Up
<b>BCL_APPLICATIONSERVER Application Class</b>	
<b>BCL_CLUSTER Application Class</b>	
CL_MaxNetwork	Indicates that all the BCL_NETWORK application instances are not monitored by the PATROL Agent on the node.
CL_MaxNode	Indicates that all the BCL_NODE application instances are not monitored by the PATROL Agent on the node.
CL_MaxRG	Indicates that all the BCL_RESOURCEGROUP application instances are not monitored by the PATROL Agent on the node.
CL_NetworkNotMonitored	Indicates the BCL_NETWORK applications instances are not monitored by the PATROL Agent on the node.
CL_NodeNotMonitored	Indicates the BCL_NODE applications instances are not monitored by the PATROL Agent on the node.
CL_RGNotMonitored	Indicates the BCL_RESOURCEGROUP applications instances are not monitored by the PATROL Agent on the node.
<b>BCL_COLLECT Application Class</b>	
COLL_Disk	Retrieves information about disks: verifies access to disks and reports system errors about disks.
COLL_Errlog	Retrieves system error logs.
COLL_Event	Retrieves information about Events.
COLL_HACMP	Retrieves information about HACMP configuration.
COLL_KMLog	Provides text windows for KM log file trace.
COLL_LVM	Retrieves information about LVM (logical volume manager).
COLL_LogWarning	Indicates the HACMP Cluster Management KM log maximum size has been reached.
COLL_Network	Retrieves information about adapter availability.
COLL_Process	Retrieves information about HACMP processes.
<b>BCL_EVENT Application Class</b>	
EV_State	Represents state of event 0=complete, 1=started, 2=potential error of event.
EV_TimeElapsed	Represents time elapsed since last start. This parameter is set up to zero if Event passes in state COMPLETED.

Parameter	Description
<b>BCL_FILESYSTEM Application Class</b>	
FS_FreeSpace	Represents free 512bytes blocks for this Filesystem
FS_SpaceUsed	Represents percentage of used blocks in Filesystem
FS_State	Indicates status of the filesystems. 0=unmounted, 1=mounted.
<b>BCL_HACMP Application Class</b>	
ExtraFilesList	Specifies a list of files mandatory to the HACMP Cluster Management KM for Patrol comittment, especially libraries for the KM.
HACMP_ClusterLog	Provides traces about cluster.log log file
HACMP_EventNotMonitored	Indicates the BCL_EVENT applications instances not monitored by the PATROL Agent on the node.
HACMP_MaxEvent	Indicates that all the BCL_EVENT applications instances are not monitored by the PATROL Agent on the node.
HACMP_MaxResources	Indicates that all the BCL_RESOURCES applications instances are not monitored by the PATROL Agent on the node.
HACMP_Out	Provides traces about hacmp.out log file
HACMP_ResourcesNotMonitored	Indicates the BCL_RESOURCES applications instances are not monitored by the PATROL Agent on the node.
<b>BCL_NETWORK Application Class</b>	
NET_AdapterNotMonitored	Indicates the BCL_ADAPTER applications instances are not monitored by the PATROL Agent on the node.
NET_MaxAdapter	Indicates that all the BCL_ADAPTER applications instances are not monitored by the PATROL Agent on the node.
<b>BCL_NODE Application Class</b>	
NODE_LocalRes	State of local Resources on Node (This parameter is disabled in maintenance mode)
NODE_PatrolAgent	State of Patrol Agent on Node (This parameter is disabled in maintenance mode only if Node is unreachable)
NODE_Services	State of HACMP services on Node (This parameter is disabled in maintenance mode)
NODE_State	State of Node 1=reachable, 3=unreachable.
<b>BCL_PHYSICALVOLUME Application Class</b>	
PV_State	Indicates state of Physical Volume: OFFLINE=not activated OK = available for Resources on this Node ALARM = an error has ocured
<b>BCL_RESOURCEGROUP Application Class</b>	
RG_State	Indicates state of this Resource Group. Values : 0=not running, 1=running normaly, 2=running not on its original node, 3=error.
<b>BCL_RESOURCE Application Class</b>	
RES_AppServNotMonitored	Indicates the BCL_APPLICATIONSERVER application instances are not monitored by the PATROL Agent on the node.
RES_MaxAppServ	Indicates that all the BCL_APPLICATIONSERVER applications instances are not monitored by the PATROL Agent on the node.
RES_MaxVG	Indicates that all the BCL_VOLUMEGROUP applications instances are not monitored by the PATROL Agent on the node.
RES_ServAddr	Service address availability. If no Service address is defined for the associated Resource Group, this parameter is not available.

Parameter	Description
RES_VGNotMonitored	Indicates the BCL_VOLUMEGROUP applications instances are not monitored by the PATROL Agent on the node.
<b>BCL_VOLUMEGROUP Application Class</b>	
VG_FileSystemNotMonitored	Indicates the BCL_FILESYSTEM applications instances are not monitored by the PATROL Agent on the node.
VG_FreeSpace	Shows percentage of free space left on the volume group.
VG_MaxFilesystem	Indicates that all the BCL_FILESYSTEM applications instances are not monitored by the PATROL Agent on the node.
VG_MaxPhysicalVolume	Indicates that all the BCL_PHYSICALVOLUME applications instances are not monitored by the PATROL Agent on the node.
VG_PVNotMonitored	Indicates the BCL_PHYSICALVOLUME applications instances are not monitored by the PATROL Agent on the node.
VG_State	Indicates status of volume group. 0=deactivated, 1=activated

See also Table 4 Parameter default, on page 4-6

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## Parameter Default Values

The following table lists default values of parameters. Interpret the column headings as follows. Some information is not applicable for a particular parameter; these instances are denoted by N/A in the table.

Parameter	specifies the parameter name.
Active?	specifies whether the parameter is active or inactive when discovered.
Type	specifies whether the parameter is a standard (Std.), a Consumer (Con.), or a Collector (Coll.) parameter.
Alarm 1	specifies the threshold for the first alarm. This information is not applicable to collector parameters.
Alarm 2	specifies the threshold for the second alarm. This information is not applicable to collector parameters.
Border Alarm	specifies the threshold for border alarms. This information is not applicable to collector parameters.
Scheduling	specifies the time interval in the poll cycle. This information is not applicable to consumer parameters. The time is expressed in seconds unless otherwise stated.
Icon	specifies whether the icon is a graph, gauge, text box, check box (boolean), or stoplight.
Units	specifies the type of unit in which the parameter output is expressed, such as a percentage, a number, text, Boolean, kilobytes or megabytes, seconds, milliseconds, minutes.
Annotated?	specifies whether the parameter is annotated.

Table 4. Parameter default

Parameter	Active?	Type	Alarm 1	Alarm 2	Border Alarm	Scheduling (seconds)	Icon	Units	Annotated?
ADAP_State	Y	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N
CL_MaxNetwork	N (1)	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
CL_MaxNode	N (1)	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
CL_MaxRG	N (1)	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
CL_NetworkNotMonitored	N (1)	Con.	N/A	N/A	N/A	none	Text	N/A	N
CL_NodeNotMonitored	N (1)	Con.	N/A	N/A	N/A	none	Text	N/A	N
CL_RGNotMonitored	N (1)	Con.	N/A	N/A	N/A	none	Text	N/A	N
COLL_Disk	Y	Coll.	2 to 2	N/A	N/A	600	Stoplight	N/A	N
COLL_Errlog	Y	Coll.	2 to 2	N/A	N/A	60	Stoplight	N/A	N
COLL_Event	Y	Coll.	2 to 2	N/A	N/A	300	Stoplight	N/A	N
COLL_HACMP	Y	Coll.	2 to 2	N/A	N/A	300	Stoplight	N/A	N
COLL_KMLog	N (2)	Coll.	N/A	N/A	N/A	none	Text	N/A	N
COLL_LVM	Y	Coll.	2 to 2	N/A	N/A	300	Stoplight	N/A	N
COLL_LogWarning	N (3)	Coll.	0 to 0	1 to 1	N/A	none	Stoplight	N/A	N
COLL_Network	Y	Coll.	2 to 2	N/A	N/A	60	Stoplight	N/A	N
COLL_Process	Y	Coll.	2 to 2	N/A	N/A	60	Stoplight	N/A	N
EV_State	Y	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N
EV_TimeElapsed	Y	Con.	4003 to 5000	2508to 4003	0–5000	none	Graph	Seconds	N
FS_FreeSpace	Y	Con.	0 to 50	50to 100	N/A	none	Graph	Mbytes	N
FS_SpaceUsed	Y	Con.	80to90	90to 100	N/A	none	Gauge	%	N
FS_State	Y	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N
ExtraFilesList	N	Con.	N/A	N/A	N/A	none	Text	N/A	N
HACMP_ClusterLog	N (2)	Con.	N/A	N/A	N/A	none	Text	N/A	N
HACMP_EventNotMonitored	N (1)	Con.	N/A	N/A	N/A	none	Text	N/A	N
HACMP_MaxEvent	N (1)	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
HACMP_MaxResources	N (1)	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
HACMP_Out	N (2)	Con.	N/A	N/A	N/A	none	Text	N/A	N
HACMP_ResourcesNotMonitored	N (1)	Con.	N/A	N/A	N/A	none	Text	N/A	N
NET_AdapterNotMonitored	N (1)	Con.	N/A	N/A	N/A	none	Text	N/A	N
NET_MaxAdapter	N (1)	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
NODE_LocalRes	Y	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N
NODE_PatrolAgent	Y	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N
NODE_Services	Y	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N
NODE_State	Y	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N

Parameter	Active?	Type	Alarm 1	Alarm 2	Border Alarm	Scheduling (seconds)	Icon	Units	Annotated?
PV_State	Y	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N
RG_State	Y	Con.	2 to 2	2 to 3	N/A	none	Stoplight	N/A	N
RES_AppServNotMonitored	N	Con.	N/A	N/A	N/A	none	Text	N/A	N
RES_MaxAppServ	N	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
RES_MaxVG	N	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
RES_ServAddr	Y (4)	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N
RES_VGNotMonitored	Y	Con.	N/A	N/A	N/A	none	Text	N/A	N
VG_FileSystemNotMonitored	N (1)	Con.	N/A	N/A	N/A	none	Text	N/A	N
VG_FreeSpace	N (1)	Con.	0to10	10to20	N/A	none	Gauge	%	N
VG_MaxFilesystem	N (1)	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
VG_MaxPhysicalVolume	N (1)	Con.	1to100	N/A	0–100	none	Stoplight	N/A	N
VG_PVNotMonitored	N (1)	Con.	N/A	N/A	N/A	none	Text	N/A	N
VG_State	Y	Con.	2 to 2	3 to 3	N/A	none	Stoplight	N/A	N

See also Table 3 Functional Parameter Summary, on page 4-4

- (1) Activated only if not all instances of indicated type are monitored.
- (2) Activated by uses, with appropriate menu command.
- (3) Activated if HACMP Cluster Management KM log file size is greater than configured maximum size.
- (4) Present only into resources owned by resource groups where an IP address is defined.

## Collector–Consumer Dependencies

Many of the parameters in the PATROL KM are consumer parameters. Consumer parameters depend on a collector parameter, or a standard parameter used as a collector, to set their value or to collect information.

Disabling a collector parameter also disables the dependent consumer parameter.

The following table lists of the collector parameters and their dependent consumer parameters.

Consumer Parameter	COLL_Disk	COLL_Errlog	COLL_Event	COLL_HACMP	COLL_LVM	COLL_Network	COLL_Process
<b>Poll Time (in seconds)</b>	600	60	300	300	300	60	60
ADAP_State						X	
CL_MaxNetwork				X			
CL_MaxNode				X			
CL_MaxRG						X	
CL_NetworkNotMonitored				X			
CL_NodeNotMonitored				X			
CL_RGNotMonitored						X	
COLL_KMLog							
COLL_LogWarning		X					
EV_State			X				
EV_TimeElapsed			X				
FS_FreeSpace					X		
FS_SpaceUsed					X		
FS_State					X		
ExtraFilesList							
HACMP_ClusterLog							
HACMP_EventNotMonitored			X				
HACMP_MaxEvent			X				
HACMP_MaxResources				X			
HACMP_Out							
HACMP_ResourcesotMonitored				X			
NET_AdapterNotMonitored						X	
NET_MaxAdapter						X	
NODE_LocalRes						X	
NODE_PatrolAgent						X	
NODE_Services							X
NODE_State						X	



<b>Consumer Parameter</b>	<b>COLL_Disk</b>	<b>COLL_Errlog</b>	<b>COLL_Event</b>	<b>COLL_HACMP</b>	<b>COLL_LVM</b>	<b>COLL_Network</b>	<b>COLL_Process</b>
PV_State	X						
RG_State						X	
RES_AppServNotMoni- tored				X			
RES_MaxAppServ				X			
RES_MaxVG					X		
RES_ServAddr						X	
RES_VGNotMonitored					X		
VG_FileSystemNotMoni- tored					X		
VG_FreeSpace					X		
VG_MaxFilesystem					X		
VG_MaxPhysicalVolume	X						
VG_PVNotMonitored	X						
VG_State					X		



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## Chapter 5. HACMP Cluster Management Specificities

This chapter describes how HACMP Cluster Management KM works, how it represents HACMP configuration elements, its concepts and its functionalities.

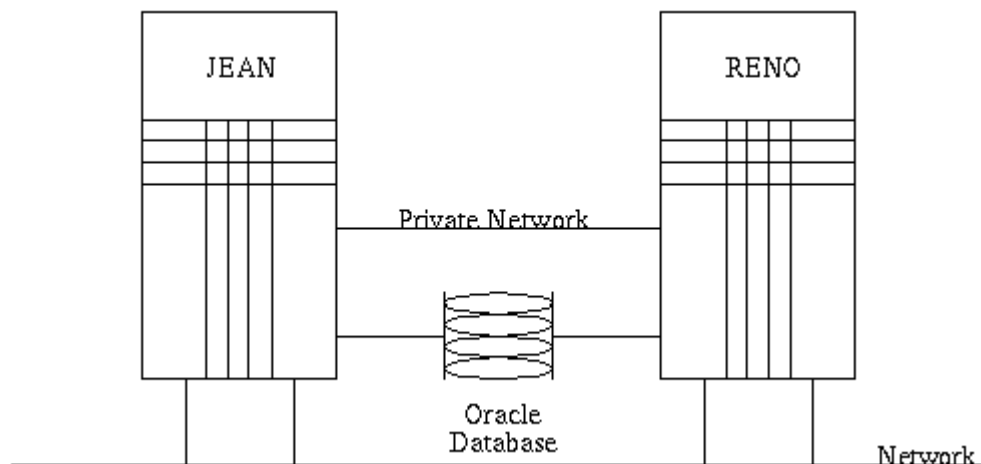
The following topics and procedures are explained:

Understanding Display of the HACMP Cluster Management KM Icons	5-2
Election of a Primary Node	5-5
Maintenance Mode	5-6
Monitoring Functions	5-7
Debugging	5-8
About performances	5-9

## Understanding Display of the HACMP Cluster Management KM Icons

For understanding how the HACMP Cluster Management KM represents elements of a cluster, we will work on a real HACMP configuration.

“Jean” and “Reno” are two RS6000 platforms. They access concurrently to a shared Oracle database. They have access to an ethernet public network and a fddi private network.



To warrant high availability of this configuration, HACMP has been installed and configured as followed.

The cluster name is “visiteur”.

It has two nodes: “jean” and “reno”.

They are connected to a public network: “ETH\_PUB”, and to a private network “INTERCONNECT”.

Adapter to connect to “jean” when HACMP is not running is “jean\_boot” (boot adapter).

Adapter to connect to “jean” when HACMP is running is “jean\_srv” (service adapter).

Adapter to connect to “jean” when service adapter is not available is “jean\_stby” (standby adapter)... and so on for node “reno”

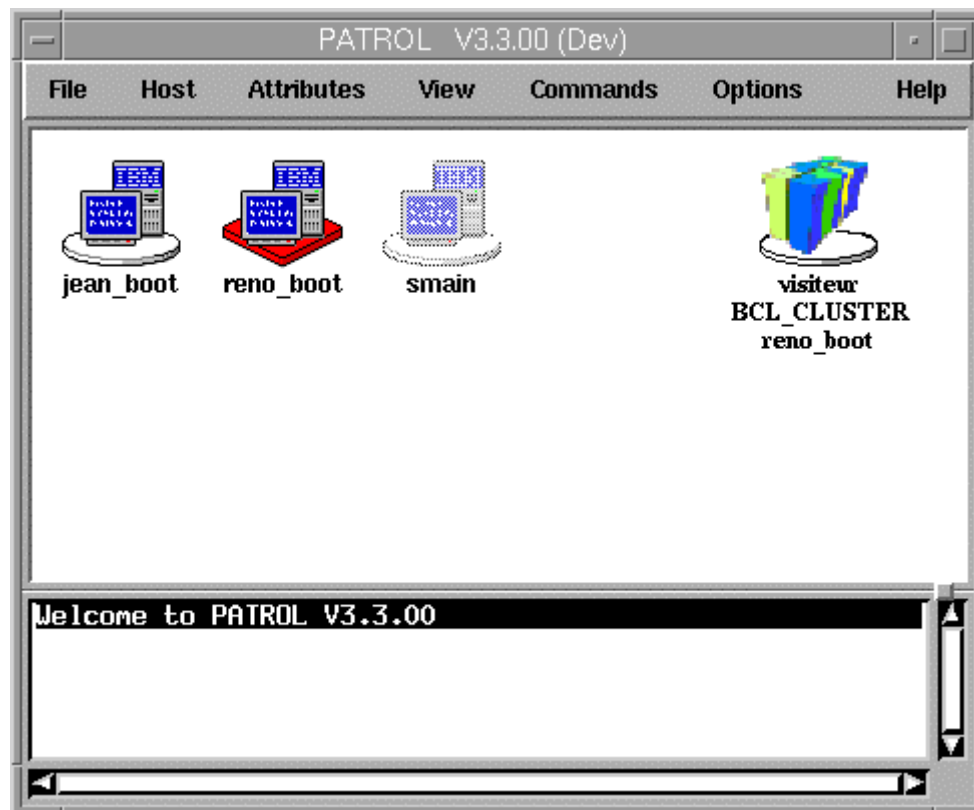
About applications:

Oracle must run on both nodes, but the database can either be accessed through “jean” or “reno”.

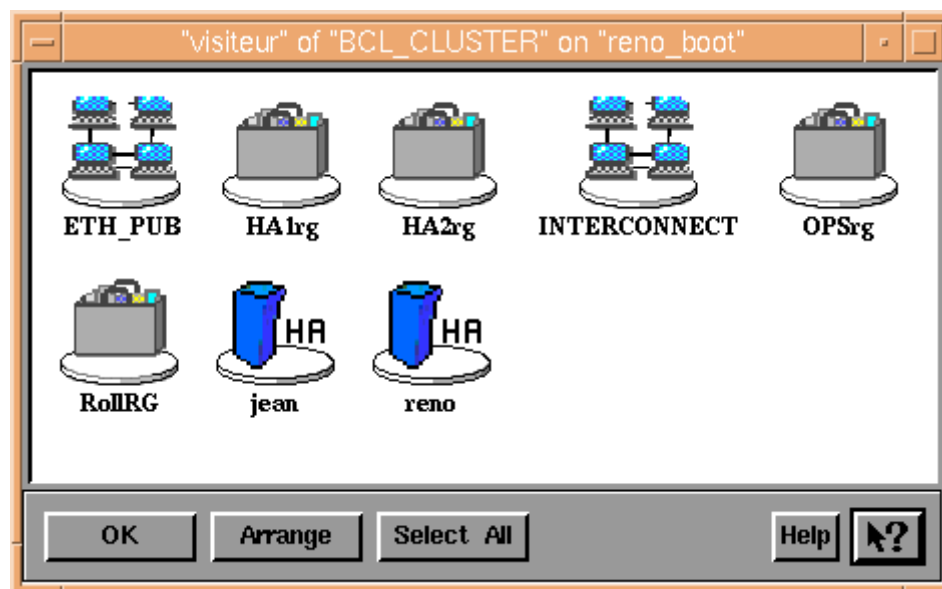
3 resource groups are created:

- HA1rg containing service adresse of “jean”: type cascading
- HA2rg containing service adresse of “reno”: type cascading
- ORArg (type concurrent) containing application server “ORA\_as” (starts and stops Oracle application) and volume groups shared for Oracle database: ORA1vg, ORA2vg, ORA3vg.

For the example described above, the representation is:



Instances contained in the cluster are: Locally to a node, supervised elements are:



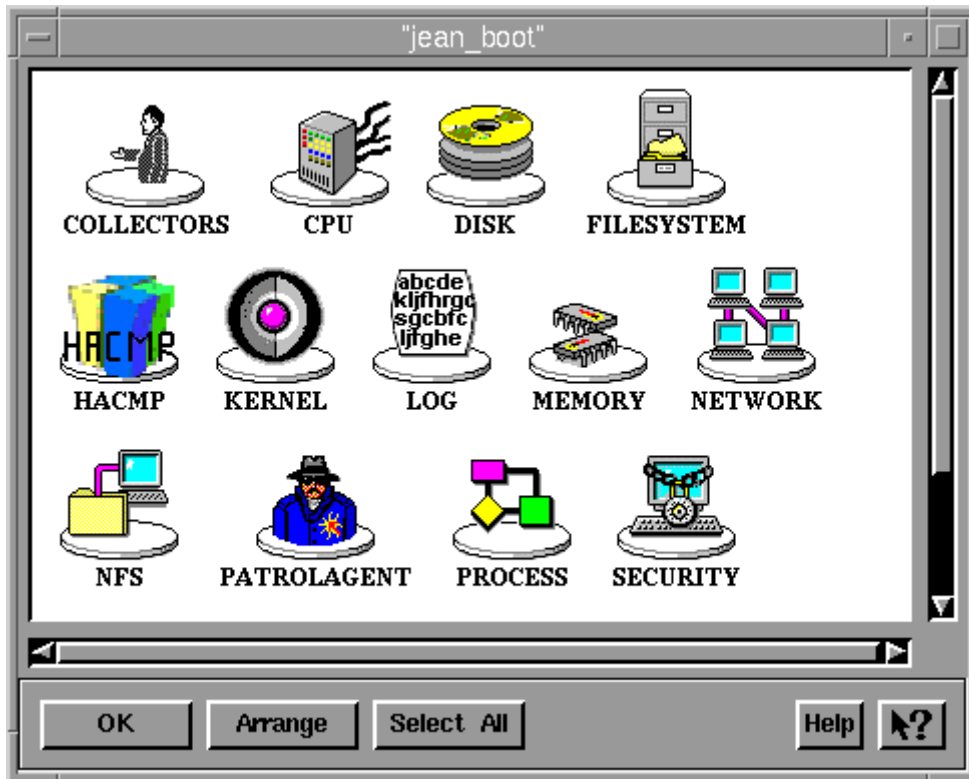
What is contained by these resource groups are named "resources" in the KM, and represented locally on each node, because the state of these objects is only available on the nodes owning them. Similarly, HACMP events are local to the nodes.

In order to supervise more closely the Logical Volume Manager elements, the KM also observes all components of defined physical resources:

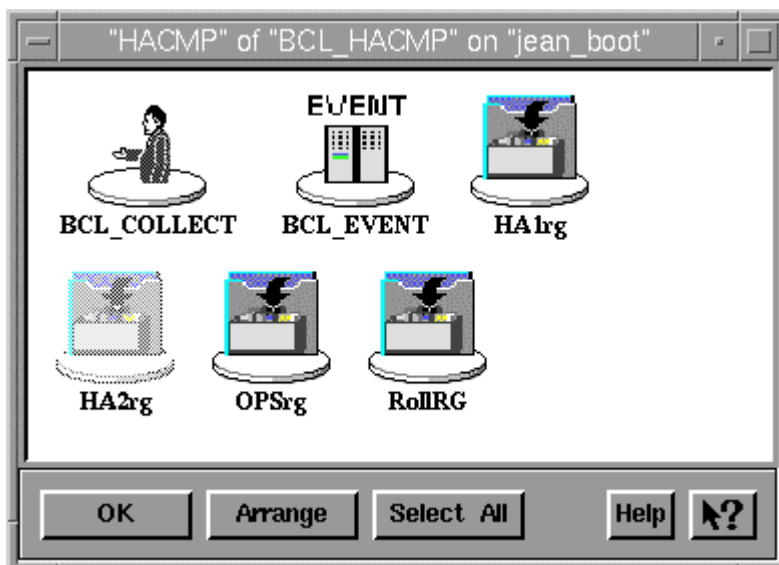
- physical volumes containing defined volume groups are represented to detect any hardware problem.

- volume groups, if not explicitly defined in HACMP configuration and filesystems indicated, are represented as parent of defined filesystems.
- however, not explicitly defined filesystems are not shown by the KM.

For the example, locally represented objects are all accessible through System window, via the HACMP icon.



You can retrieve in the window corresponding to this icon:



Thus, all components of HACMP configuration declared are represented: locally for resources depending directly of a cluster node or globally, for elements accessed by the whole cluster (cluster itself, cluster nodes, resource groups, networks and adapters included in them).

Moreover, information depending on the HACMP application itself are also included (events).

## Election of a Primary Node

As described in the previous paragraph, there is only one icon representing the cluster at a moment. This gives a more realistic representation of HACMP concepts and simplifies the management.

However, for the HACMP application, cluster is an abstract concept joining several systems, called nodes, to run applications described in the configuration. Which is shared by all systems included in the cluster, but only one of them must display this information.

In order to give you a unique representation of a cluster, cluster nodes exchange information to determine which one is the most capable of providing the cluster state. They process an election of a node which will display all information about the cluster. This node is called in the HACMP Cluster Management KM: a **primary node**.

The election mechanism is used by each cluster node, based on the HACMP configuration (synchronized), and ends with designation of the same cluster node as primary node.

This one is the first node in the HACMP configuration nodes list which is seen by the greatest number of PATROL consoles. This rule allows you to keep information even if a node becomes unavailable or if its communication with a PATROL console becomes impossible.

**Note:** To permit the election to process normally, all cluster nodes included in a cluster configuration should be connected to a PATROL console at the same time.

### How to know which node is the primary node ?

Open Infobox of cluster instance from BCL\_CLUSTER application.

On any cluster node System Output, you can type: %PSL print(get("/BCL\_CLUSTER/clPrimary"))

### How to set manually the primary node ?

A user, from a developer PATROL console, can defined a cluster node as a primary node, by using the appropriate menu command (see Menu Summary chapter for more detail), or by defining it in the appropriate configuration variable (see Configuration variables table into Getting Started chapter).

Election process is used if selected primary node is no longer available.

#### **CAUTION:**

If you use this functionality, the rule used for election is no longer used and the primary node set manually has priority. If your console is not connected to the selected node, you may not see the cluster instance from BCL\_CLUSTER application.

### I get several instances of my cluster in main window...

During startup of a PATROL agent or connection of a PATROL console, it takes a short time to coordinate all cluster node information.

During that time, you can get several icons of your cluster. If the problem persists, verify the synchronization of your cluster.

### I get no instance of my cluster in main window...

During startup of a PATROL agent, no cluster instance is created until all information about it is collected. Wait until all collector parameters are refreshed.

Several other events could cause the loss or the non–presence of the cluster instance:

- previous primary node has become unavailable: wait until election for primary node process designs a new primary node.

- connection with primary node from your PATROL console is not available: try to update connection. If still unreachable:
  - If you have set the primary node manually, the only way to retrieve information is to set a new primary node manually or to return to the automatic election process (see Menu Command Summary).
  - Otherwise, a new election is in progress. Wait a short time to see your cluster icon.
- PATROL agents on cluster nodes have detected that a new PATROL console is connecting to them. In that case, wait until shared information between cluster nodes becomes stable. Then, a new unique primary node will be available, and you will retrieve all information.

## Maintenance Mode

This mode is usable for not reporting alarms about cluster information during a maintenance operation. For example, if you have decided to make a takeover of a cluster node because it will be used for an operation that necessitates reboot of the system, entering in maintenance mode will not show you all alarms generated by this operation on this node.

Under maintenance mode:

- No alarm/warning is generated by stopping HACMP services, nor by local Resources: parameters `NODE_Services` and `NODE_LocalRes` from `BCL_NODE` application are always de-activated in maintenance mode (an event indicates that an abnormal state of the parameter has been detected but cannot be displayed).
- The parameter `NODE_PatrolAgent` belonging to `BCL_NODE` application is still managing warnings on Patrol Agent status on remote Nodes. If Node is unreachable, Node instance becomes OFFLINE and no more warnings about Patrol Agent status on this node will be managed.
- Any adapter instance unreachable becomes OFFLINE (an event indicates that an abnormal state of the adapter has been detected but no alarm is displayed).
- Any service address used in a Resource Group that becomes unreachable changes status to OFFLINE (an event indicates that an abnormal state of the adapter has been detected but no alarm displayed).
- All information about Resource Groups are still displayed. For example, if a HACMP takeover has been done, warnings will be viewed for Resource Groups that have change of original Node, because they are not in a normal state compared with HACMP configuration.

As you can see, maintenance mode is practice to mark alarms that have been planned. But remember that it is a manual operation, and when not necessary, you should not use it, and return to normal mode when the planned operation has been completed.

## How to enter in maintenance mode ?

Use "Maintenance Mode – Enable Maintenance Mode" menu command of HACMP instance of `BCL_HACMP` application.

This command requires *root* authority on the node to be enabled for maintenance mode. Confirm your order.

Take care when using this command on the cluster Node representing the Cluster if you want to hide alarms from adapters, HACMP services and Local Resources. To identify it, in main Patrol Console window, instance with the choosen cluster name is noted "<cluster name> BCL\_CLUSTER <node name>".

You can also open info box of the instance with the choosen cluster name in main Patrol Console window: node name to select is given by "Primary Node" information. Then, open the system window sharing the sane node name, and use menu command of the "HACMP" object.



## How to stop maintenance mode ?

Choose node in maintenance mode. Use "Maintenance Mode – Disable Maintenance Mode" menu command of HACMP instance of BCL\_HACMP application.

## How to know if a node is in maintenance mode ?

Open info box of "HACMP" object in the system window of the selected cluster node. Look at "Maintenance Mode" information.

This field indicates whether maintenance mode is "enabled" or "disabled" on this node.

## Monitoring Functions: limiting application instances

HACMP Cluster Management KM for PATROL provides you with all facilities to monitor only PATROL objects you choose.

By default all instances from all application classes are created, but using monitoring functions, you can hide some application instances.

## What applications can be monitored?

All HACMP Cluster Management KM applications can be monitored by limiting the number of their instances, except three:

- BCL\_CLUSTER: only one instance representing global state of the cluster.
- BCL\_COLLECT: only one instance representing state of all collector parameters.
- BCL\_HACMP: only one instance representing the HACMP application state locally on a cluster node.

Each other application instance can be customized not to be displayed on a PATROL console, for a given node.

## How to monitor application instances?

There are three ways to limit the number of application instances:

- 'Stop Monitoring' menu: available on each instance, allows you to hide the selected instance on the node for all PATROL consoles.

Example:

You do not wish to display the application server instance "ORA\_AS" from BCL\_APPLICATIONSERVER application class: you use 'Stop Monitoring' menu command available directly onto this item.

- Limiting number of instances from a type: use the 'Set Monitored Items' menu command from BCL\_CLUSTER or BCL\_HACMP application instances (the parent of instance you want to limit the number). Then, choose corresponding application instance type in submenu, and use 'Set Maximum Number Monitored' menu command in subsubmenu.

Example:

You want to limit disk instances number to 5.

Parent of physical volume instances is BCL\_HACMP. You use 'Set Monitored Items => Physical Volumes => Set Maximum Number Monitored' menu command from BCL\_HACMP application, then you change maximum number to 5.

- Limiting instances by specifying a pattern of instances not to monitor: use the 'Set Monitored Items' menu command from BCL\_CLUSTER or BCL\_HACMP application instances (the parent of instance you want to limit the number). Then, choose the corresponding application instance type in the submenu, and use 'Set Pattern not Monitored' menu command in subsubmenu.

The pattern used is a regular expression, like those used by the *grep* shell command.

Example:

You do not wish to monitor boot adapters (their names are suffixed by “\_boot” in your configuration) or standby adapters (suffixed by “\_stby” in your configuration).

Parent of adapters instances is BCL\_CLUSTER. You use ‘Set Monitored Items => Physical Volumes => Set Pattern not Monitored’ menu command from BCL\_CLUSTER application, then you change pattern to “.\*\_boot|.\*\_stby”.

## Debugging

To help you to analyse more finely the HACMP Cluster Management KM reporting, a special log file is generated in the \$PATROL\_HOME/log directory. The log file name is BCL\_log. HACMP Cluster Management KM records information about cluster state with two levels of debugging:

- a normal debugging mode, that is set by default and records Patrol objects state (creation, deletion and status changes) and consoles information.
- a verbose debugging mode, you can dynamically activate, which stores more details about new values for variables, event messages generated and application class discoveries.

This file is automatically managed by HACMP Cluster Management KM to avoid saturation of user Patrol filesystem : a variable (set by default to 100 Kb) can be changed to set a maximum log size for this file. If log file size passes this trigger, log is copied into a “.bak” file and a new log is started.

Take care, however, to set maximum log file size to an appropriate number according to your debugging mode (it is recommended not to set maximum log size less than 500Kb if you use verbose debugging model. This file can be traced using menu commands (see below).

### How to display information in log file ?

- Use “Display KM Log” menu command of BCL\_COLLECT application.
- Choose the number of ending lines you want to display (default is the whole file).
- Optionally choose keywords to search in these lines.
- Optionally choose exception keywords.
- Press OK.

A text window is generated with the result of this command.

### How to trace log file ?

You can trace the KM log file using the “Trace KM LOG – Enable Log Trace” menu command of BCL\_COLLECT application.

The COLL\_KMLog parameter under BCL\_COLLECT instance is activated.

When double clicking on it, you open a text window that displays new lines generated in the KM log file.

Take care to close this window, if you do not wish to lose previous information in it (Patrol creates a new window and erases buffered information in it).

To stop trace, use the “Trace KM LOG – Disable Log Trace” menu command of BCL\_COLLECT application: the COLL\_KMLog parameter under BCL\_COLLECT instance is deactivated.

### How to change debugging mode ?

Use “Set KM Debug” menu command of BCL\_COLLECT application. Choose “Normal Mode” or “Verbose Mode” in submenus.

## How to know the debugging mode ?

Open info box of BCL\_HACMP object in the system window. Look at "Debug Mode" information.

## How to show maximum log file size ?

Open info box of BCL\_COLLECT application and see "KM Log Maximum Size" information. Or you can look after the "BCL\_KM\_Max\_Log\_Size" variable in \$PATROL\_HOME/lib/BCL/BCL.conf file.

## How to change maximum log file size ?

Use "Set KM Log Size" menu command of BCL\_COLLECT application. Enter the new maximum log file size and press OK.

## About Performances

During its conception, a great effort has been dedicated to make HACMP Cluster Management KM for Patrol easier to supervise the HACMP application, retaining management of all components of clusters.

HACMP Cluster Management Knowledge Module for Patrol is dedicated to the supervision of HACMP clusters. Considering that this administration tool must not take CPU and memory resources of running critical applications, it has been built not to take a minimum of system resources during its execution.

However, in view of the large number of components managed by this KM, Patrol Agent can use more resources during startup, in particular the parameter PAWorkRateExecsMin of PATROLAGENT application class from Unix KM could enter into an alarm state; this is temporary and will return to normal after a few minutes.

This increase of resources usage could also appear during HACMP configurations and problems. A great number of parameters and information are modified, causing the KM to refresh all this information. Considering these events are not usual for an HACMP cluster and that this state does not last more than few minutes, it will not disturb administration of your clusters.

If you still have problems with performance, for example with the cumulated resources consumption of other installed KM, you could:

- tune HACMP Cluster Management KM collector parameters in BCL\_COLLECT application class. Increasing default polltime for these parameters, you will launch executables for cluster state with more time between and therefore decrease KM resource consumption.
- tune other KM collector parameters. For the same reasons explained above, you will improve the critical application resources share.
- reduce the number of KM application instances by using monitoring functions.
- increase alarm rates for parameter PAWorkRateExecsMin of PATROLAGENT application class from Unix KM.



---

# Chapter 6. Using the HACMP Cluster Management KM for PATROL

This chapter describes tasks that you can perform with the HACMP Cluster Management Knowledge Module for PATROL.

The following topics and procedures are explained:

Display Logs	6-2
Show Topology	6-8
Trace Logs	6-12
Maintenance Mode	6-18
Monitoring Functions	6-22
Primary Node	6-32
Configure Remote Accesses	6-35
Refreshing information	6-37
Display KM log	6-42
Tracing KM log	6-44
Stop Tracing KM log	6-46
Debugging Mode	6-47
Changing HACMP Cluster Management KM log size	6-50
Verifying Cluster Topology	6-52
Event Monitoring	6-54
Localizing Local Resources problems in cluster	6-59

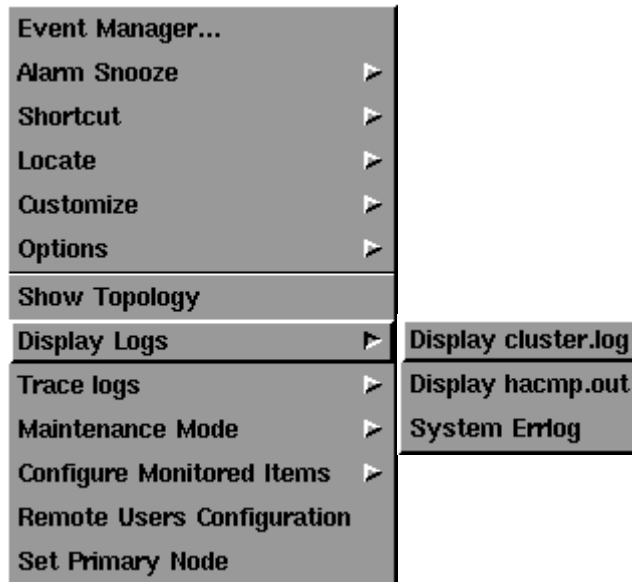
# Display Logs

The following steps explain how to display the different logs for HACMP reporting.

## Display cluster.log

### Step 1

Choose Display Logs => Display cluster.log from BCL\_HACMP application menu.



### Step 2

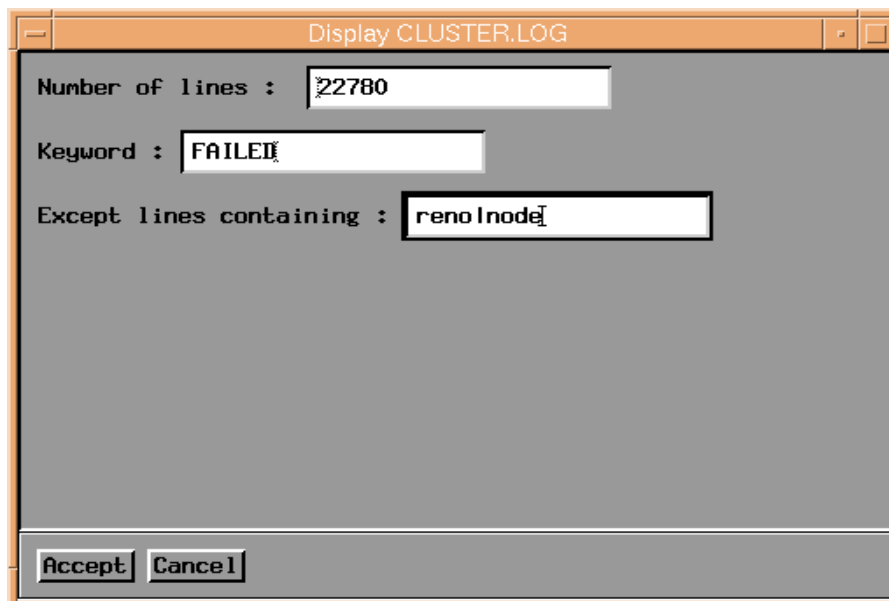
From the next window, indicate the number of latest lines in this file you want to display (default is the whole file).

Optionally, you can indicate a keyword to search in lines and/or a keyword to avoid.

When user choices are defined, press the Accept button.

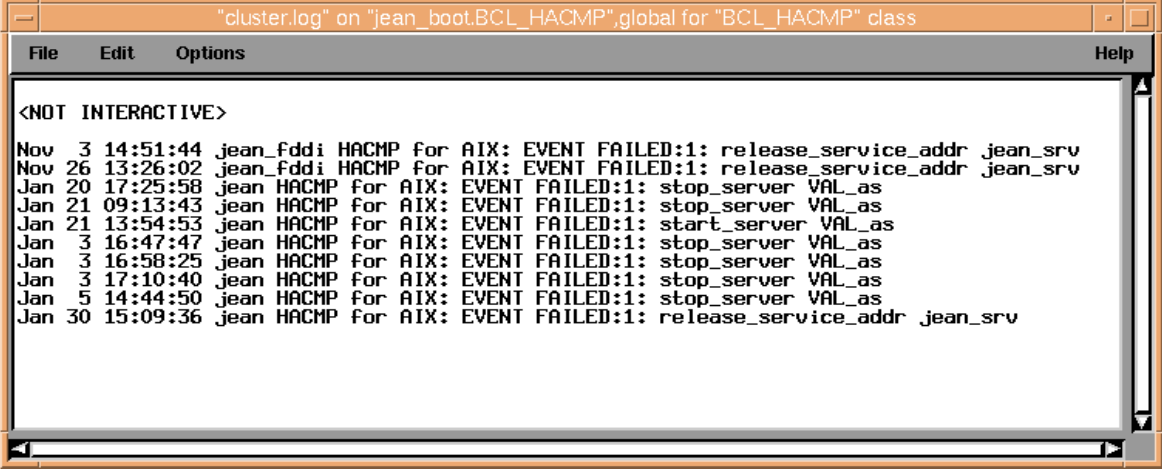
**Note:** Take care of the number of lines to display. Result windows are limited by a buffer, whose size is 500Kb by default.

Limit the number of lines to display or change buffer size in main PATROL console options.



### Step 3

The command output window appears.



```
"cluster.log" on "jean_boot.BCL_HACMP", global for "BCL_HACMP" class
File Edit Options Help
<NOT INTERACTIVE>
Nov 3 14:51:44 jean_fddi HACMP for AIX: EVENT FAILED:1: release_service_addr jean_srv
Nov 26 13:26:02 jean_fddi HACMP for AIX: EVENT FAILED:1: release_service_addr jean_srv
Jan 20 17:25:58 jean HACMP for AIX: EVENT FAILED:1: stop_server VAL_as
Jan 21 09:13:43 jean HACMP for AIX: EVENT FAILED:1: stop_server VAL_as
Jan 21 13:54:53 jean HACMP for AIX: EVENT FAILED:1: start_server VAL_as
Jan 3 16:47:47 jean HACMP for AIX: EVENT FAILED:1: stop_server VAL_as
Jan 3 16:58:25 jean HACMP for AIX: EVENT FAILED:1: stop_server VAL_as
Jan 3 17:10:40 jean HACMP for AIX: EVENT FAILED:1: stop_server VAL_as
Jan 5 14:44:50 jean HACMP for AIX: EVENT FAILED:1: stop_server VAL_as
Jan 30 15:09:36 jean HACMP for AIX: EVENT FAILED:1: release_service_addr jean_srv
```

### Step 4

Use File => Exit menu from the command output window to close it.

A report is generated and available in the window containing BCL\_HACMP icon.



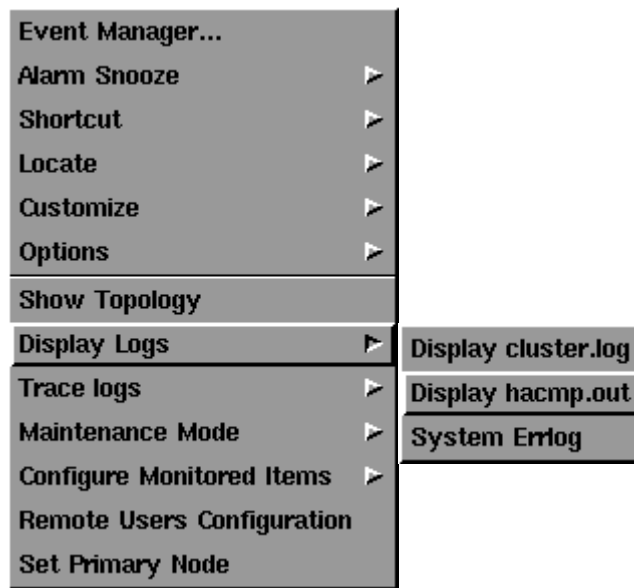
**cluster.log**  
**BCL\_HACMP**  
**jean\_boot**

You can destroy it by clicking on this icon with the right mouse button and selecting the Destroy menu.

## Display hacmp.out

### Step 1

Choose Display Logs => Display hacmp.out from BCL\_HACMP application menu.



### Step 2

From the next window, choose the hacmp.out from all available in /tmp filesystem.

This file is a log for HACMP activity and is stored daily (if HACMP is started).

All logs are sorted by date: the most recent is top of the list (normally "hacmp.out").

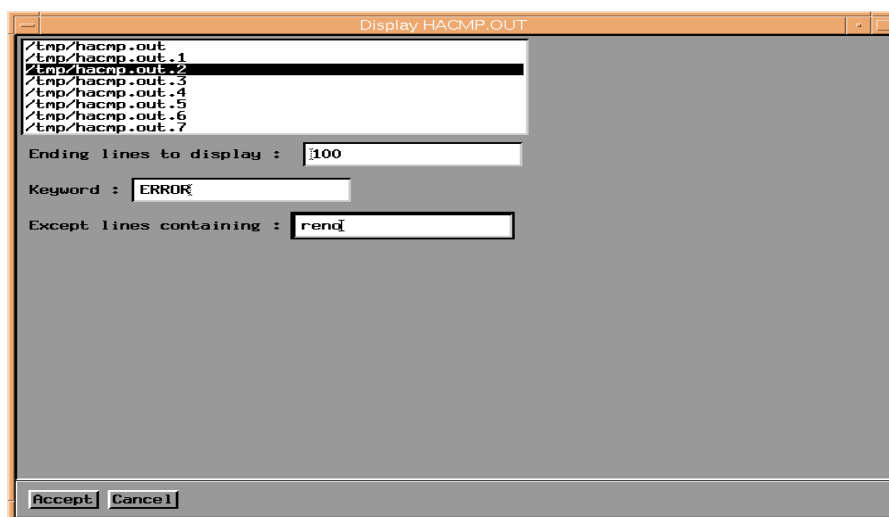
So, if you want to show information about HACMP activity from the day before, you will choose "hacmp.out.1".

Indicate the number of latest lines in this file you want to display (default is the whole file).

Optionally, you can indicate a keyword to search in lines and/or a keyword to avoid.

When user choices are defined, press the Accept button.

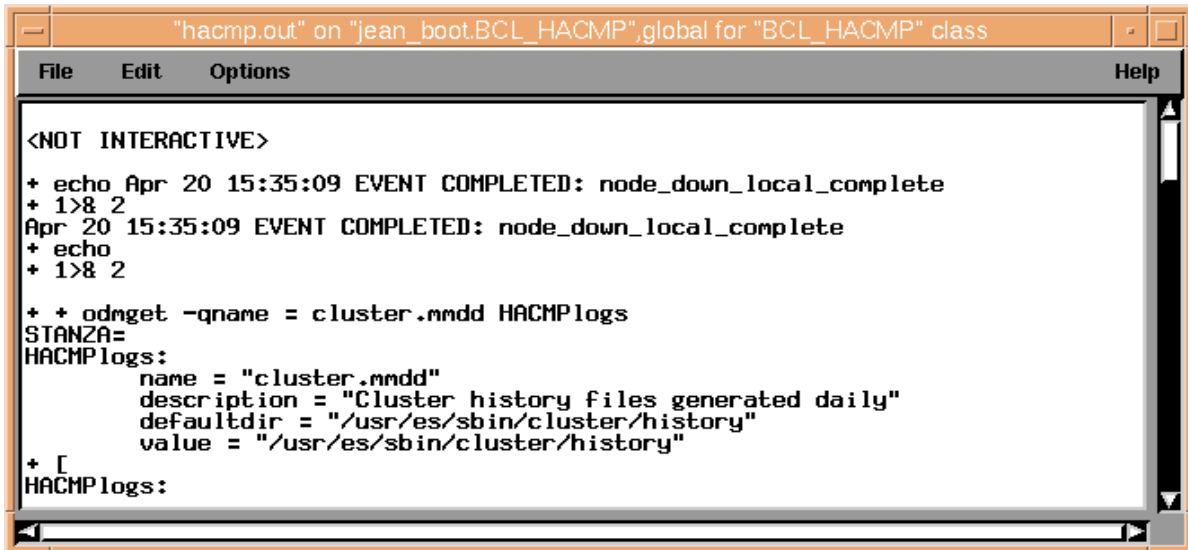
**Note:** Take care of the number of lines to display. Result windows are limited by a buffer, whose size is 500Kb by default. Limit number of lines to display or change buffer size in main PATROL console options.





### Step 3

The command output window appears.



```
"hacmp.out" on "jean_boot.BCL_HACMP",global for "BCL_HACMP" class
File Edit Options Help
<NOT INTERACTIVE>
+ echo Apr 20 15:35:09 EVENT COMPLETED: node_down_local_complete
+ 1>& 2
Apr 20 15:35:09 EVENT COMPLETED: node_down_local_complete
+ echo
+ 1>& 2
+ + odmget -qname = cluster.mdd HACMPlogs
STANZA=
HACMPlogs:
    name = "cluster.mdd"
    description = "Cluster history files generated daily"
    defaultdir = "/usr/es/sbin/cluster/history"
    value = "/usr/es/sbin/cluster/history"
+ [
HACMPlogs:
```

### Step 4

Use File => Exit menu from the command output window to close it.

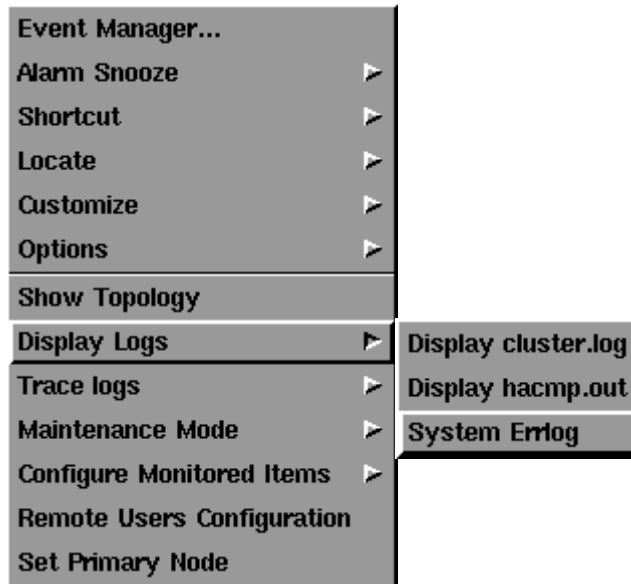
A report is generated and available in window containing BCL\_HACMP icon.



You can destroy it by clicking on this icon with the right mouse button and selecting the Destroy menu.

# System Errlog

## Step 1



Choose Display Logs => System Errlog from BCL\_HACMP application menu.

## Step 2

From the next window, choose the hacmp.out from all available in /tmp filesystem.

This file is a log for HACMP activity and is stored daily (if HACMP is started).

All logs are sorted by date: the most recent is top of the list (normally "hacmp.out").

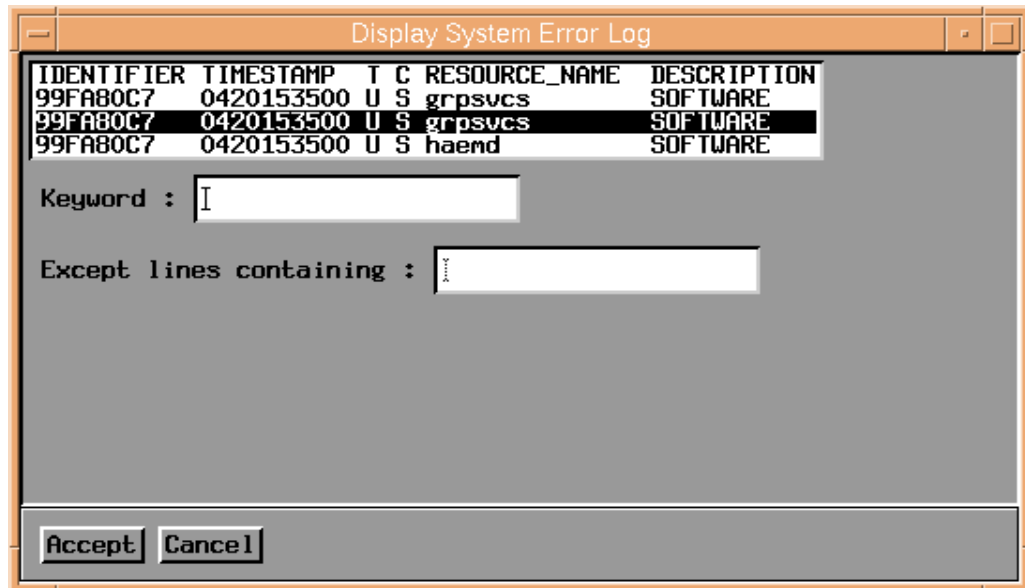
So, if you want to show information about HACMP activity from the day before, you will choose "hacmp.out.1".

Indicate the number of latest lines in this file you want to display (default is the whole file).

Optionally, you can indicate a keyword to search in lines and/or a keyword to avoid.

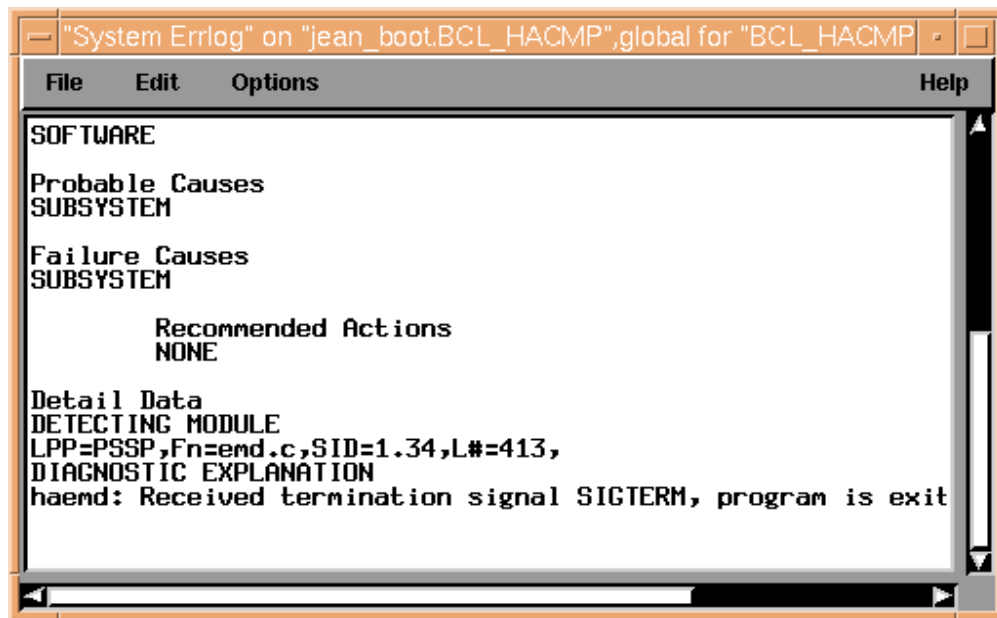
When user choices are defined, press Accept button.

**Note:** Take care of number of lines to display. Result windows are limited by a buffer, whose size is 500Kb by default. Limit number of lines to display or change buffer size in main PATROL console options.



### Step 3

The command output window appears.



### Step 4

Use File => Exit menu from the command output window to close it.

A report is generated and available in window containing BCL\_HACMP icon.



You can destroy it by clicking on this icon with the right mouse button and selecting Destroy menu.

# Show Topology

The following steps explain how to get the topology information defined in HACMP configuration.

The menu is available through two applications: BCL\_CLUSTER and BCL\_HACMP.

## Show cluster topology

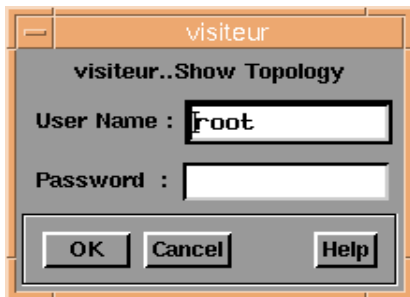
### Step 1

Choose Show Topology from BCL\_CLUSTER application menu.



### Step 2

The login and password dialog box appears.



### Step 3

The command output appears and is dynamically updated as the show topology command is running.

```
"Show Topology" on "reno_boot.visiteur",global for "BCL_CLUSTER" c
File Edit Options Help
<NOT INTERACTIVE>
Cluster Description of Cluster visiteur
Cluster ID: 9411
Cluster Security Level StandardThere were 2 networks define
There are 2 nodes in this cluster
NODE jean:
  This node has 2 service interface(s):
  Service Interface jean_srv:
    IP address: 130.183.1.230
    Hardware Address: 0x400000e815c2
    Network: ETH_PUB
    Attribute: public
  Service Interface jean_srv has a possible boot conf
```

**Step 4**

Use File => Exit menu from the command output window to close it.

A report is generated and available in the window containing main PATROL window.



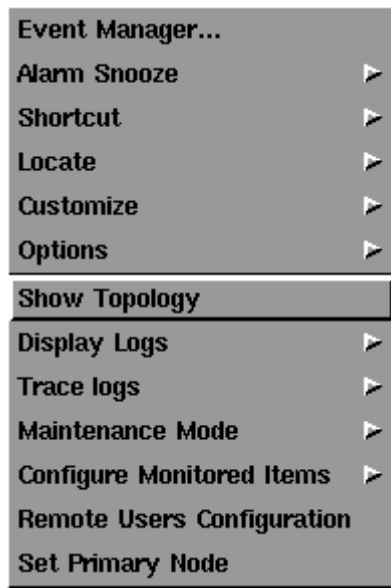
**ShowTopology**  
**visiteur**  
**reno\_boot**

You can destroy it by clicking on this icon with the right mouse button and selecting Destroy menu.

## Show topology for a given node

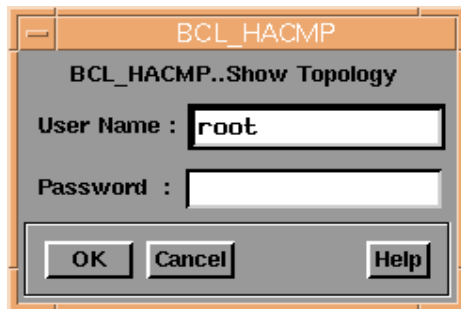
### Step 1

Choose Show Topology from BCL\_HACMP application menu.



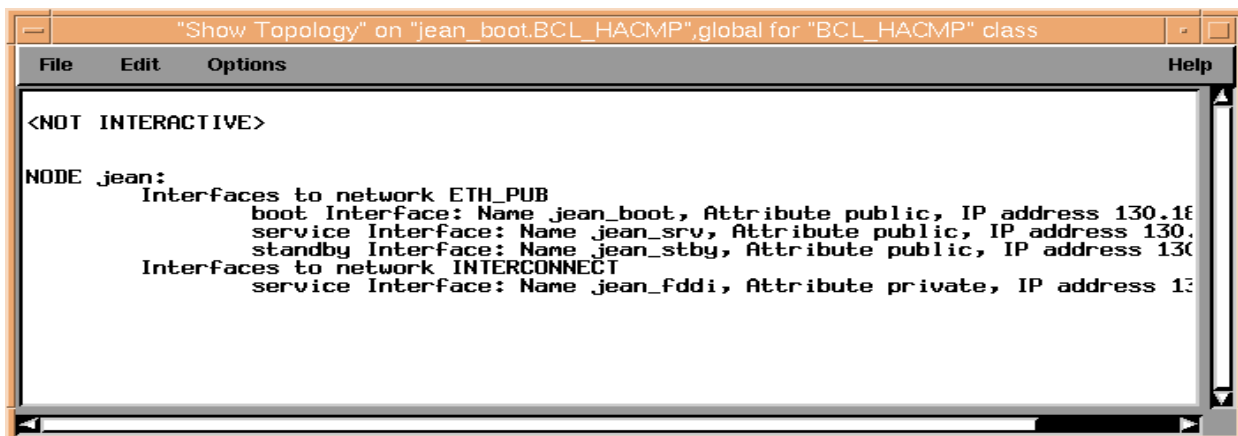
### Step 2

The login and password dialog box appears.



### Step 3

The command output appears and is dynamically updated as the show topology command is running.



#### Step 4

Use File => Exit menu from the command output window to close it.

A report is generated and available in window containing BCL\_HACMP icon (system window).



**ShowTopology**  
**BCL\_HACMP**  
**jean\_boot**

You can destroy it by clicking on this icon with the right mouse button and selecting Destroy menu.

# Trace Logs

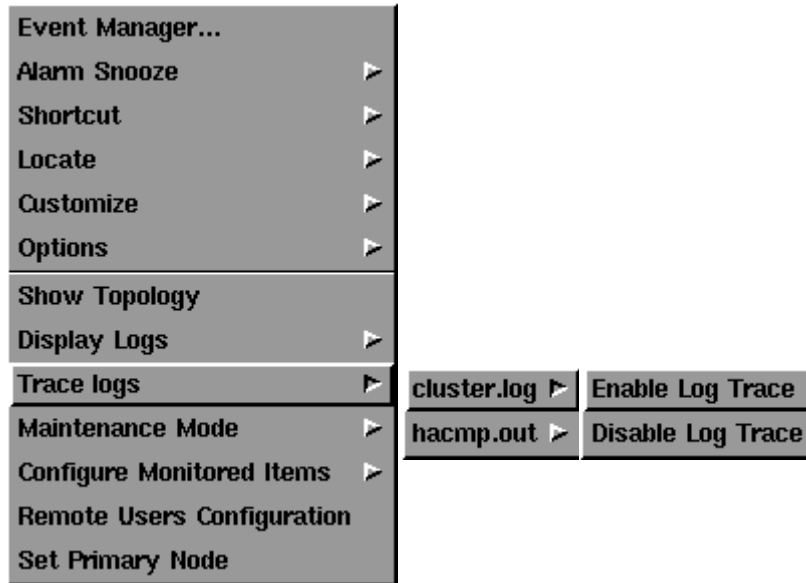
The following steps explain how to get/stop the dynamic update of HACMP logs.

This allows you to follow HACMP activity and to track potential problems.

## Tracing cluster.log

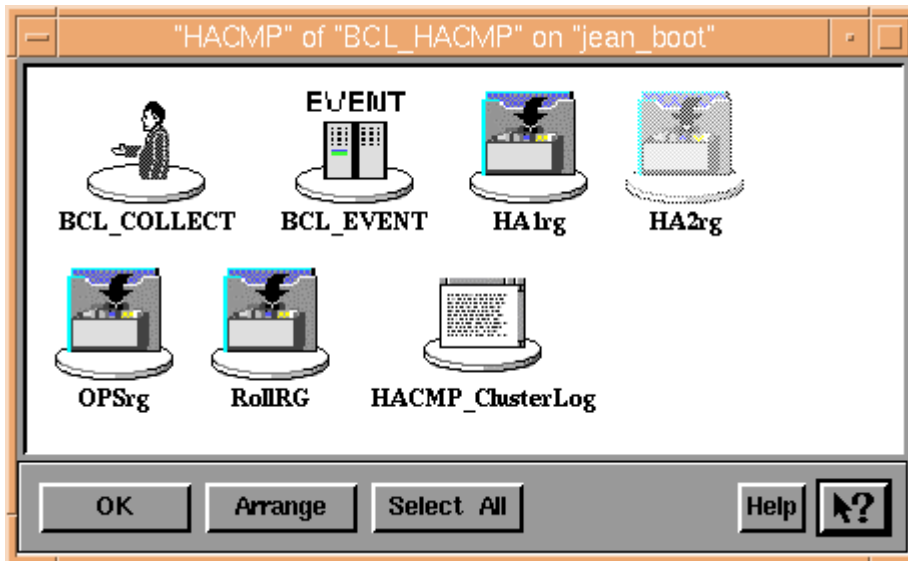
### Step 1

Choose Trace Logs => cluster.log => Enable Log Trace from BCL\_HACMP application menu.



### Step 2

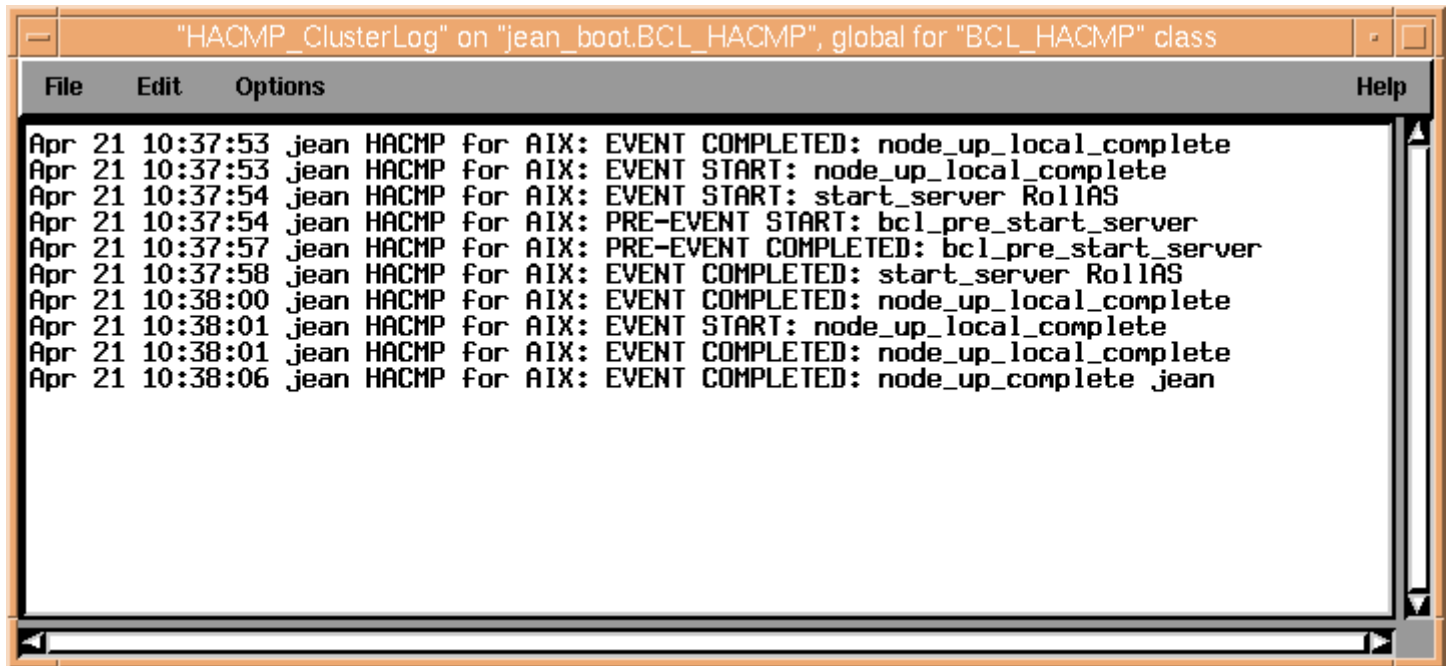
The HACMP\_ClusterLog text parameter appears into BCL\_HACMP window.





### Step 3

Double click on HACMP\_ClusterLog to open a text window containing lines of cluster.log HACMP log, updated dynamically as the file is filled.



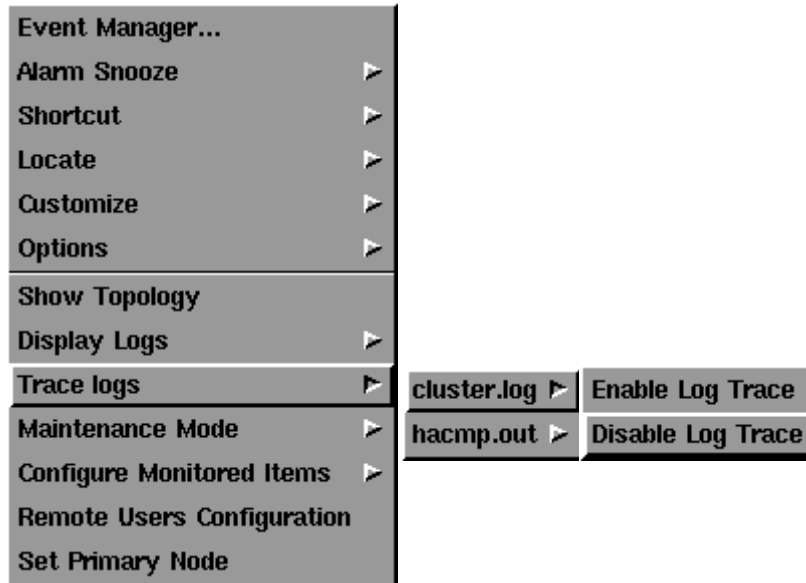
The screenshot shows a window titled '"HACMP\_ClusterLog" on "jean\_boot.BCL\_HACMP", global for "BCL\_HACMP" class'. The window has a menu bar with 'File', 'Edit', 'Options', and 'Help'. The main area contains the following log entries:

```
Apr 21 10:37:53 jean HACMP for AIX: EVENT COMPLETED: node_up_local_complete
Apr 21 10:37:53 jean HACMP for AIX: EVENT START: node_up_local_complete
Apr 21 10:37:54 jean HACMP for AIX: EVENT START: start_server RollAS
Apr 21 10:37:54 jean HACMP for AIX: PRE-EVENT START: bcl_pre_start_server
Apr 21 10:37:57 jean HACMP for AIX: PRE-EVENT COMPLETED: bcl_pre_start_server
Apr 21 10:37:58 jean HACMP for AIX: EVENT COMPLETED: start_server RollAS
Apr 21 10:38:00 jean HACMP for AIX: EVENT COMPLETED: node_up_local_complete
Apr 21 10:38:01 jean HACMP for AIX: EVENT START: node_up_local_complete
Apr 21 10:38:01 jean HACMP for AIX: EVENT COMPLETED: node_up_local_complete
Apr 21 10:38:06 jean HACMP for AIX: EVENT COMPLETED: node_up_complete jean
```

## Stop tracing cluster.log

### Step 1

Choose Trace Logs => cluster.log => Disable Log Trace from BCL\_HACMP application menu.



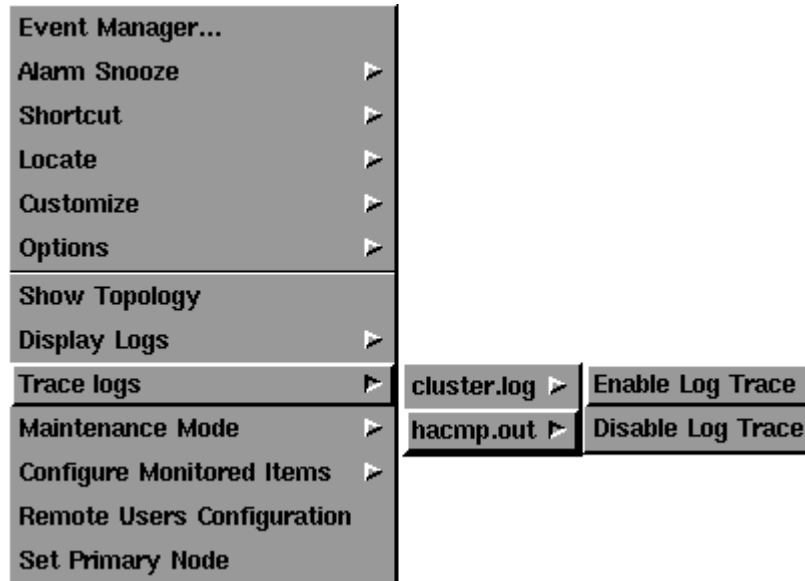
### Step 2

The HACMP\_ClusterLog text parameter is inactivated. Its icon disappears from BCL\_HACMP window.

## Tracing hacmp.out

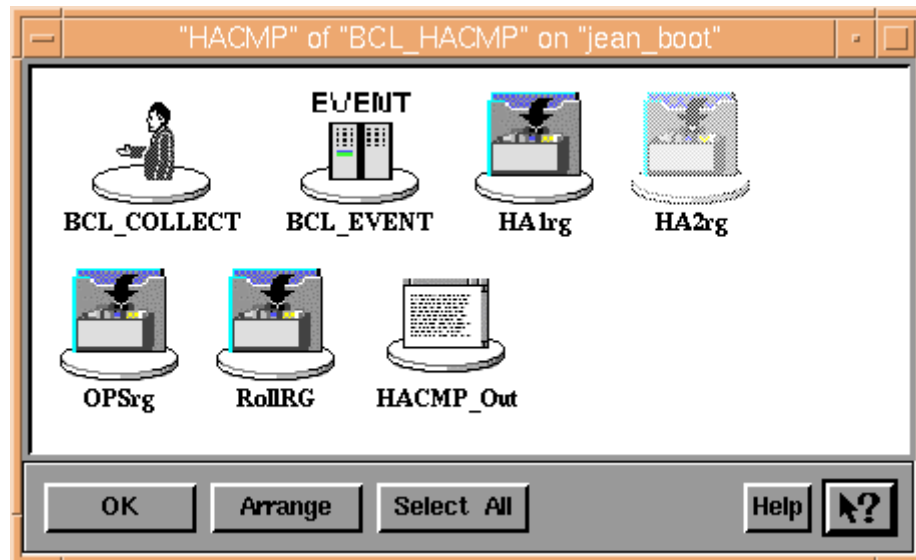
### Step 1

Choose Trace Logs => hacmp.out => Enable Log Trace from BCL\_HACMP application menu.



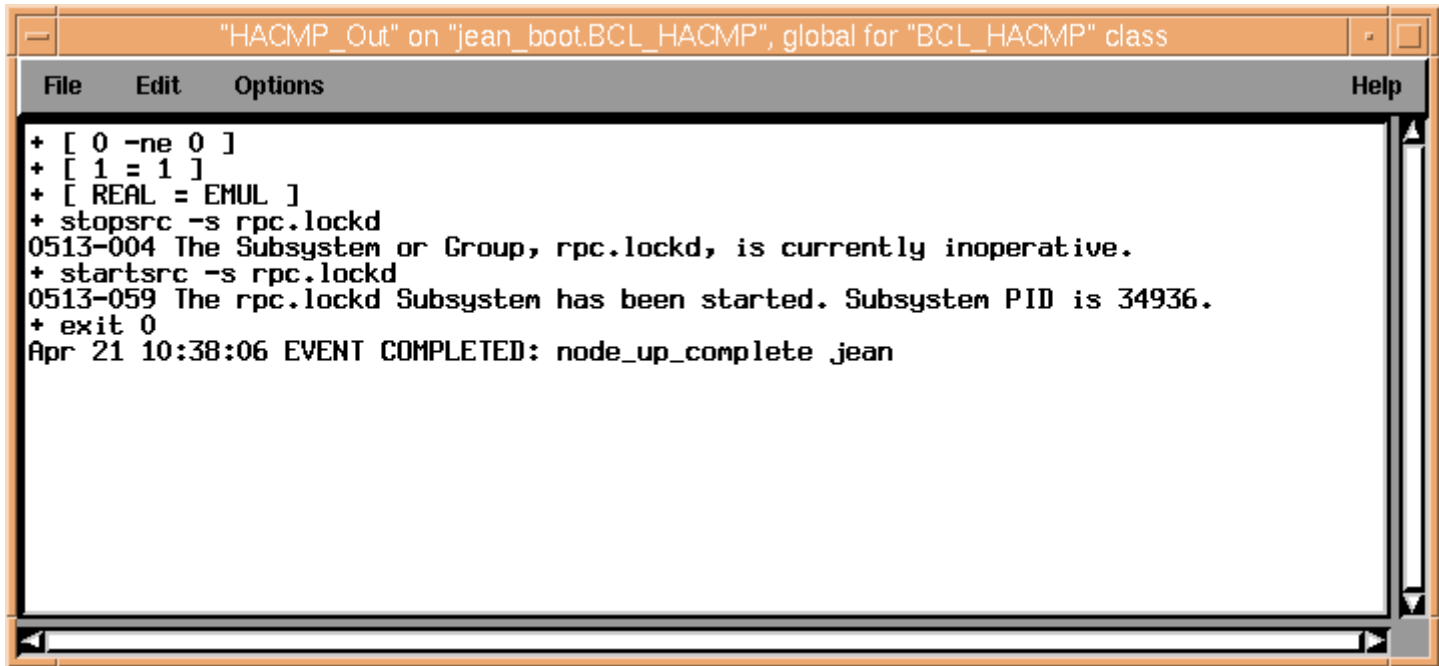
### Step 2

The HACMP\_Out text parameter appears into BCL\_HACMP window.



### Step 3

Double click on HACMP\_Out to open a text window containing lines of more recent hacmp.out HACMP log, updated dynamically as the file is filled.

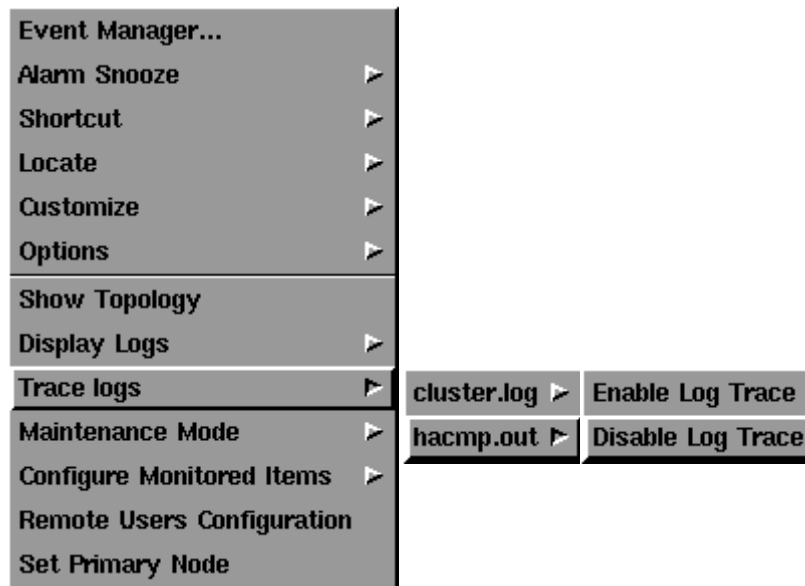


```
"HACMP_Out" on "jean_boot.BCL_HACMP", global for "BCL_HACMP" class
File Edit Options Help
+ [ 0 -ne 0 ]
+ [ 1 = 1 ]
+ [ REAL = EMUL ]
+ stopsrc -s rpc.lockd
0513-004 The Subsystem or Group, rpc.lockd, is currently inoperative.
+ startsrc -s rpc.lockd
0513-059 The rpc.lockd Subsystem has been started. Subsystem PID is 34936.
+ exit 0
Apr 21 10:38:06 EVENT COMPLETED: node_up_complete jean
```

## Stop tracing hacmp.out

### Step 1

Choose Trace Logs => hacmp.out => Disable Log Trace from BCL\_HACMP application menu.



### Step 2

The HACMP\_Out text parameter is inactivated. Its icon disappears from BCL\_HACMP window.

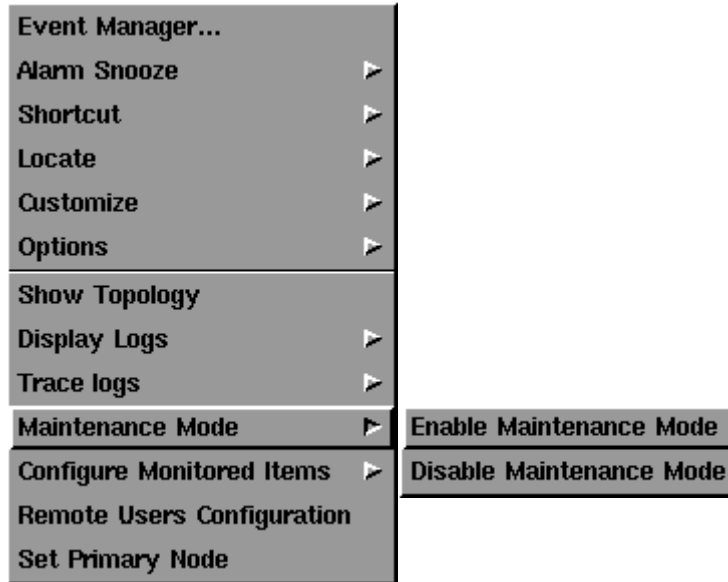
# Maintenance Mode

The following steps describes how to activate/disable maintenance mode.

## Activating Maintenance Mode

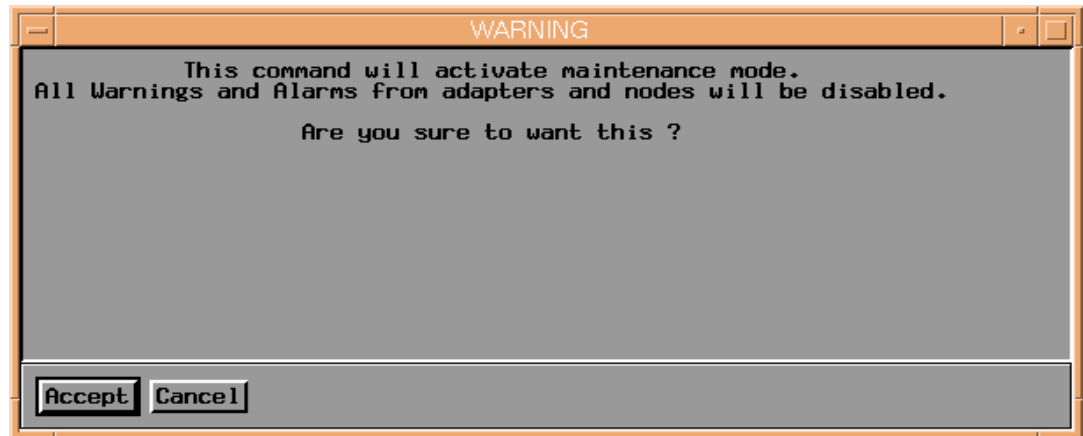
### Step 1

Choose Maintenance Mode => Enable Maintenance Mode from BCL\_HACMP application menu.



### Step 2

The confirmation dialog box appears. Press Accept button to enable maintenance mode.

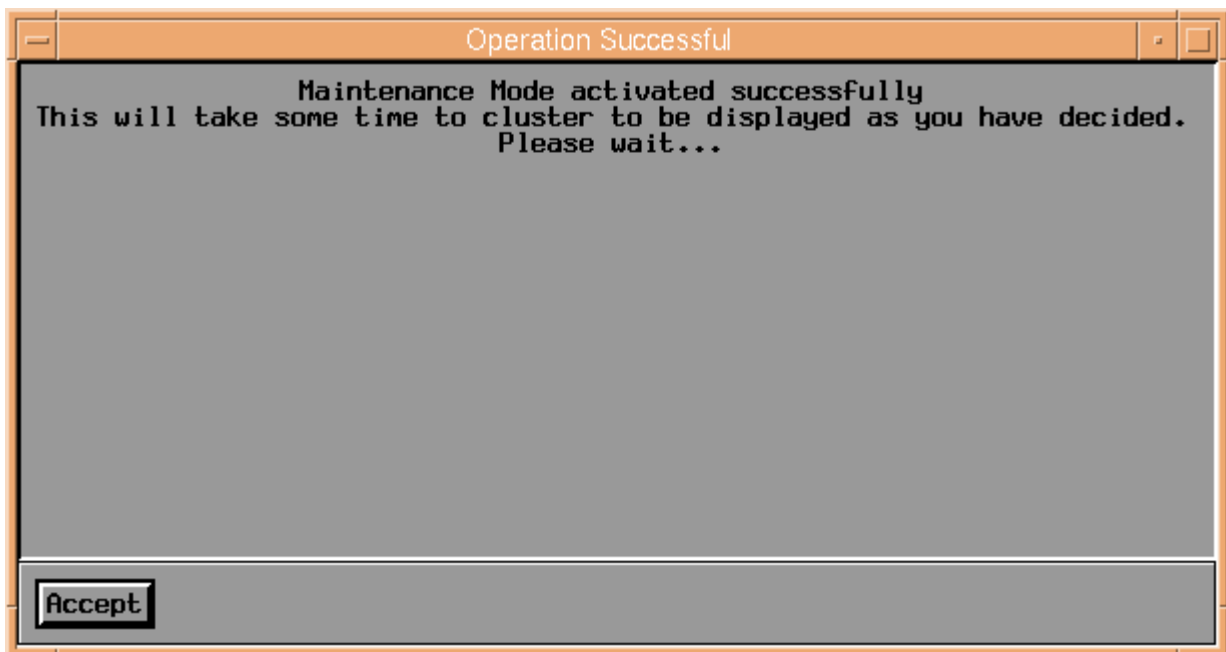


### Step 3

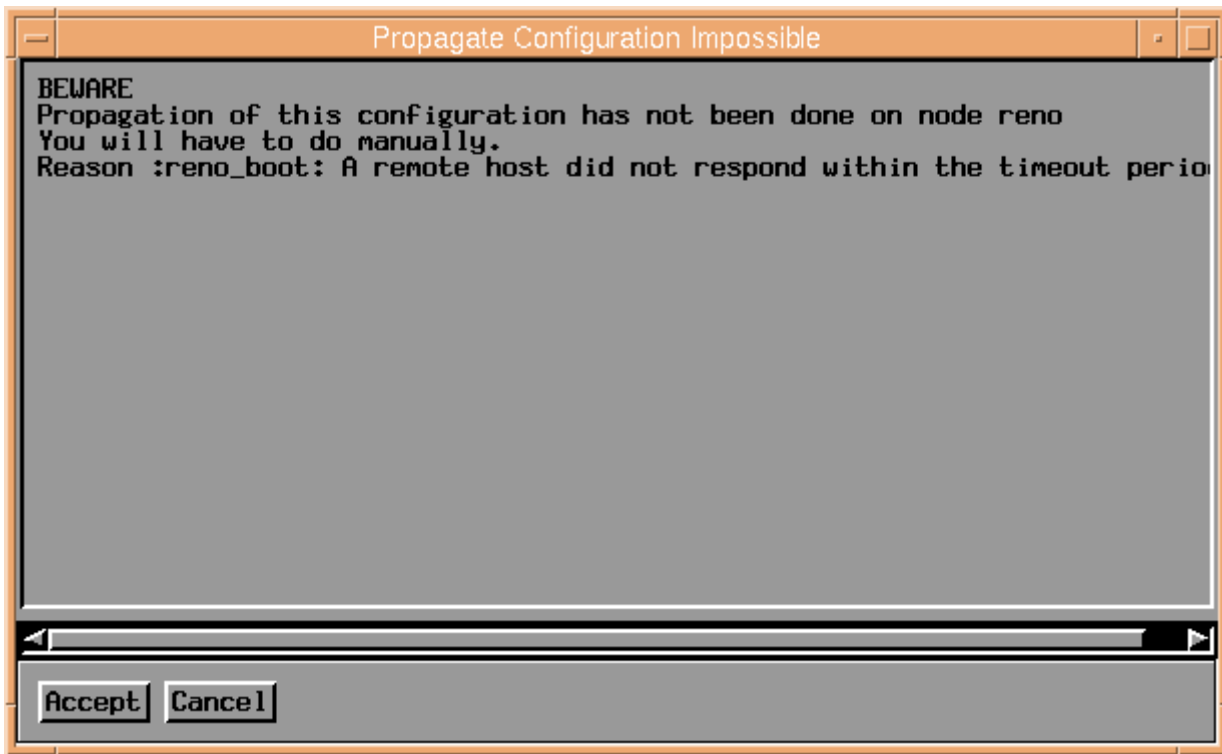
The next window indicates the result of operation.

If the maintenance mode has been set correctly the following window appears.

Wait for the new application discovery phase for applying modifications.

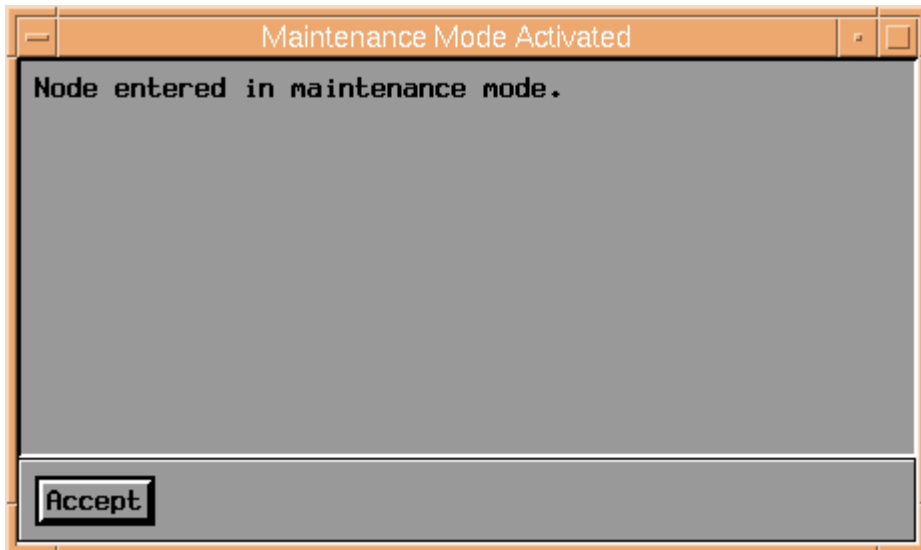


Otherwise, a window indicating error appears.



#### Step 4

The acknowledgement dialog box appears.



#### Step 5

Maintenance Mode is now activated.

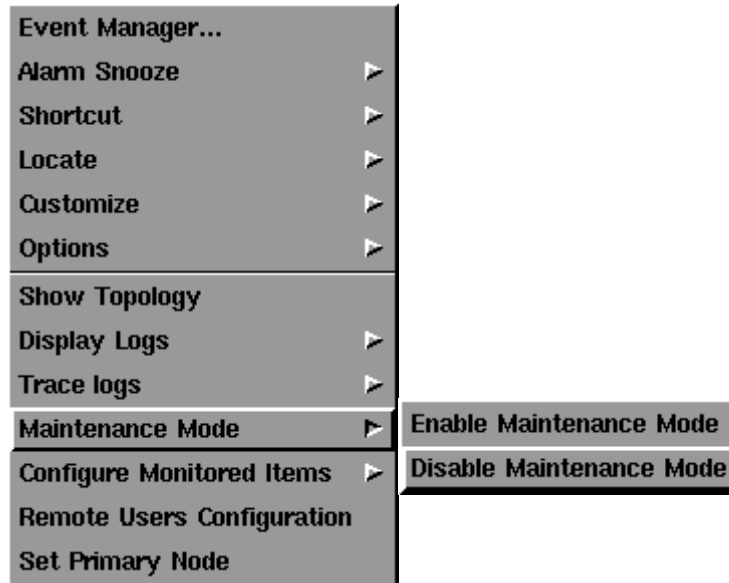
All alarms for cluster will be refreshed to match maintenance mode specifications, see page 5-6 according to the poll time of each application.



## Deactivating Maintenance Mode

### Step 1

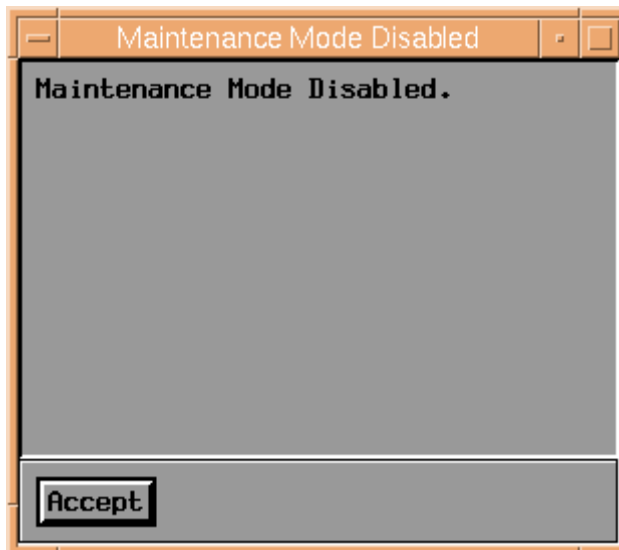
Choose Maintenance Mode => Disable Maintenance Mode from BCL\_HACMP application menu.



### Step 2

Maintenance Mode is now deactivated.

All alarms for cluster will be refreshed to display warnings and alarms disabled by maintenance mode specifications, see page 5-6 according to the poll time of each application.



# Monitoring Functions

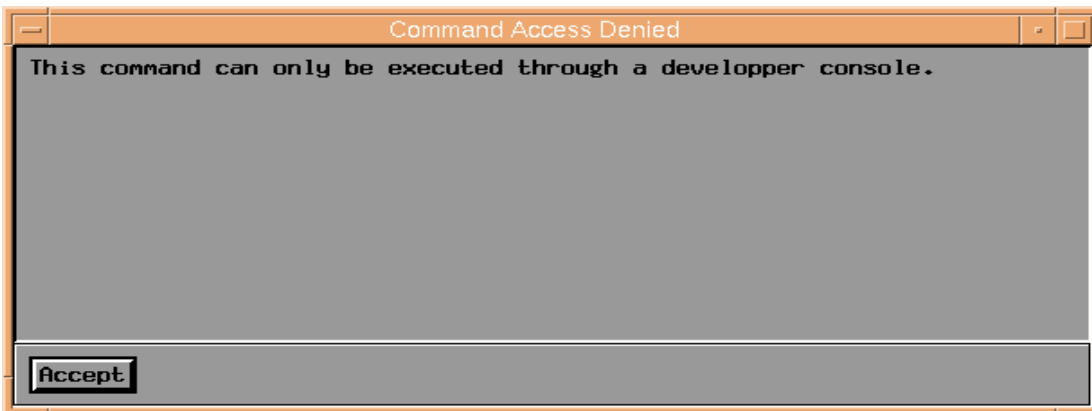
The following functionalities allow you to customize HACMP Cluster Management KM display, by specifying instances not to display.

There are three ways to set these limitations:

- Stop monitoring a specific item
- Limiting the number of application instances
- Using a pattern indicating application instances names not to monitor

**Note:** All monitoring functionalities are only available through a PATROL development console.

If you try to change configuration using a PATROL operator console, you will get the window:



## Stop Monitoring

Stop monitoring menu is a general menu, applicable to all applications, except:

- BCL\_CLUSTER
- BCL\_COLLECT
- BCL\_HACMP

All other KM applications use this menu. For the convenience of users, we will only indicate, as an example, how to stop monitoring a BCL\_ADAPTER instance.

Steps are identical for other applications.

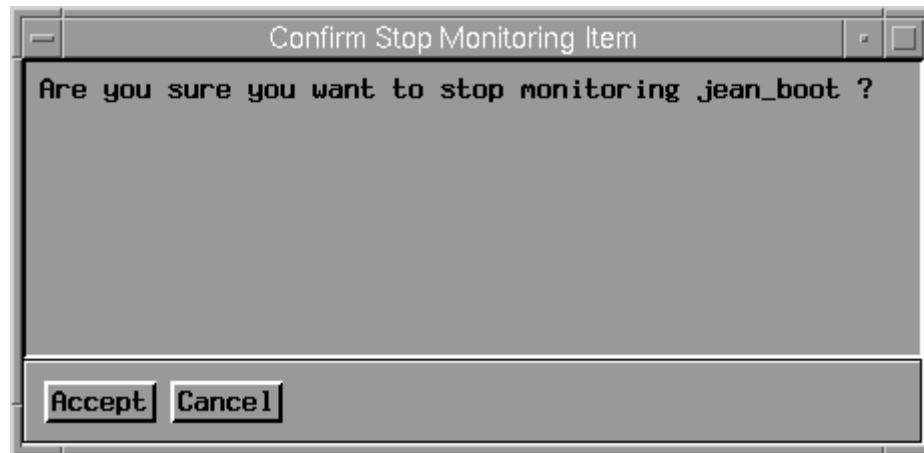
### Step 1

Choose Stop Monitoring from appropriate application menu (in the example: BCL\_ADAPTER application menu).



### Step 2

A confirmation window appears. Press the Accept button to process new configuration.



### Step 3

The result of your configuration is displayed in an acknowledgement window.

If configuration propagation is unsuccessful for BCL\_CLUSTER application dependances, an error window is displayed, with the reason of the failure. It is necessary, in this case, to correct the problem, and to change HACMP Cluster Management KM configuration manually on all nodes where configuration is not set.

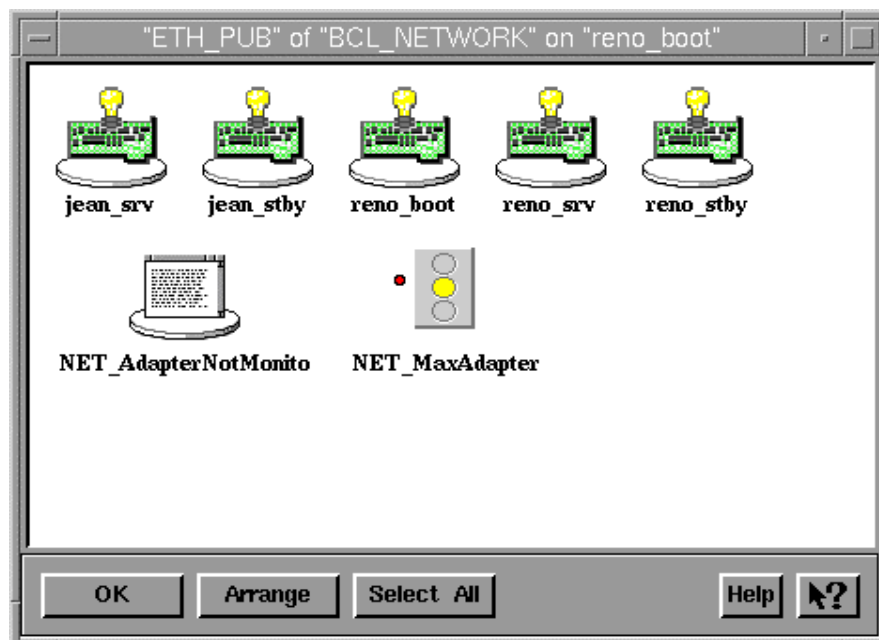
In this example, for example, configuration for node "jean" has not been modified.

It will be necessary to change the value of BCL\_ADAPTER\_Pattern variable into the BCL\_conf file (KM configuration file) on the cluster node: see Customize HACMP Cluster Management KM to have a description of each usable variable.

By editing it, and adding the string "jean\_boot" (new value choosen) to the old value, the KM will take this new value into account in next application discovery phase.

If the specified variable is not set, add the line to the configuration file :

```
BCL_ADAPTER_Pattern="jean_boot"
```



Otherwise, the selected instance icon disappears from the parent application window: see application hierarchy, on page 2-5 (in the example: BCL\_NETWORK window).

If not already activated, new parameters appear:

- <parent application prefix>\_<application type>NotMonitored: text parameter indicating appropriate application instances disabled for monitoring by the user (in the example: NET\_AdapterNotMonitored parameter).
- <parent application prefix>\_Max<application type>: stoplight parameter indicating a warning if any appropriate application instance is not monitored (in the example: NET\_MaxAdapter parameter). Its value corresponds to the number of instances not monitored for this application.

These parameters are inactivated if all instances of an application are monitored by the KM.

**In order to enable an instance to be displayed again:**

When an instance has stopped monitoring, its name is added to the pattern for instances not to be monitored.

You can restart monitoring of instances that have been stopped by changing this pattern: refer to Set a Pattern of unmonitored Instances section for more details.

In our example, adapter “jean\_boot” has been stopped monitoring. The pattern for the instances not to monitored is similar to: “...|jean\_boot”. Removing “|jean\_boot” string in pattern and make sure that the regular expression does not match this string, will have the effect that the KM will reintegrate “jean\_boot” adapter in the instances to monitored.

## Set Maximum Number of Instances to Monitor

This function allows you to limit a given application instances number to a user fixed value.

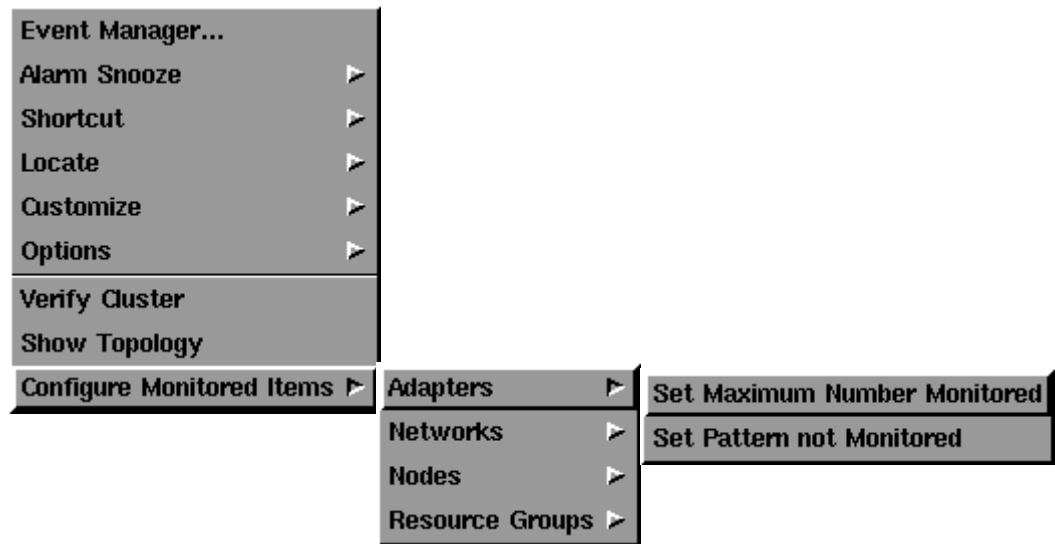
It can be used for any application except BCL\_CLUSTER, BCL\_COLLECT and BCL\_HACMP.

To illustrate this functionality, we will limit the number of monitored adapters to 3 instances by configuring BCL\_ADAPTER application.

### Step 1

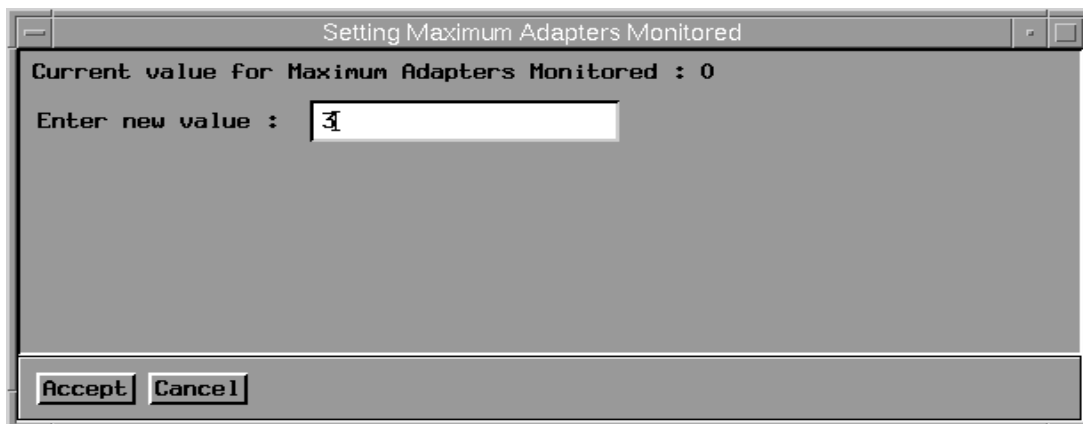
Choose Configure Monitored Items => appropriate application type => Set Maximum Number Monitored from BCL\_CLUSTER or BCL\_HACMP application menu, whichever application is the parent of the selected application instance.

**Note:** Configuration of maximum number from BCL\_CLUSTER application menu is automatically propagated to all cluster nodes, in order to be taken in account by any potential new primary node.



### Step 2

From the next window, enter the new maximum number of instances to monitor. Press the Accept button to register this configuration.



### Step 3

The result of your configuration is displayed in an acknowledgement window.

If configuration propagation is unsuccessful for BCL\_CLUSTER application dependences, an error window is displayed, with the reason for the failure. It is necessary, in this case, to correct the problem, and to change HACMP Cluster Management KM configuration manually on all nodes where configuration is not set.

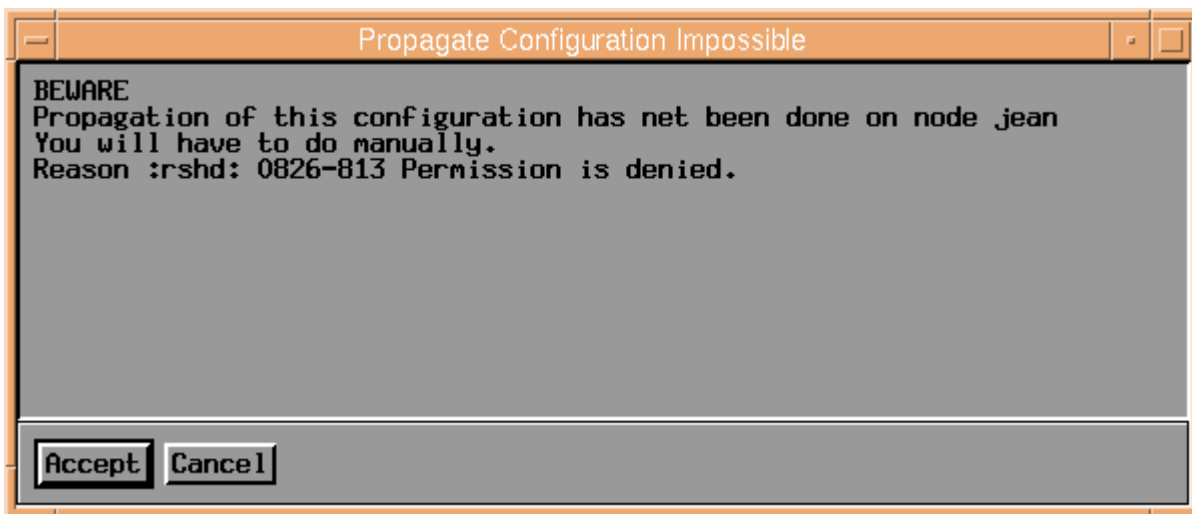
In this example, for example, configuration for node "jean" has not been modified.

It will be necessary to change the value of BCL\_ADAPTER\_Max\_Instances variable into the BCL\_conf file (KM configuration file) on the cluster node: see Customize HACMP Cluster Management KM to have a description of each usable variable.

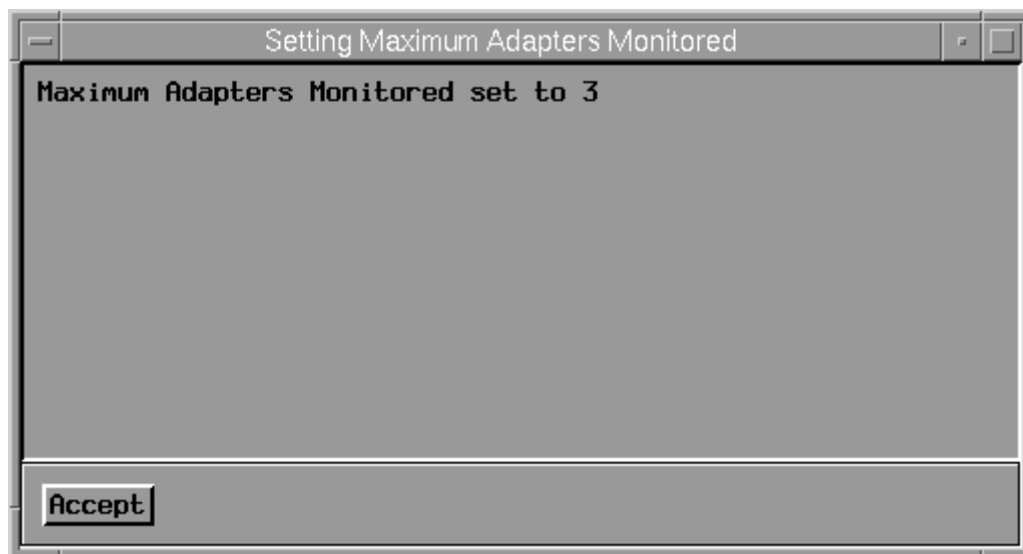
By editing it, and replacing the old value by 3 (new value chosen), the KM will take this new value into account in next application discovery phase.

If the specified variable is not set, add a new line in the configuration file:

```
BCL_ADAPTER_Max_Instances=3
```



Otherwise, an acknowledgement for the configuration modification is displayed.



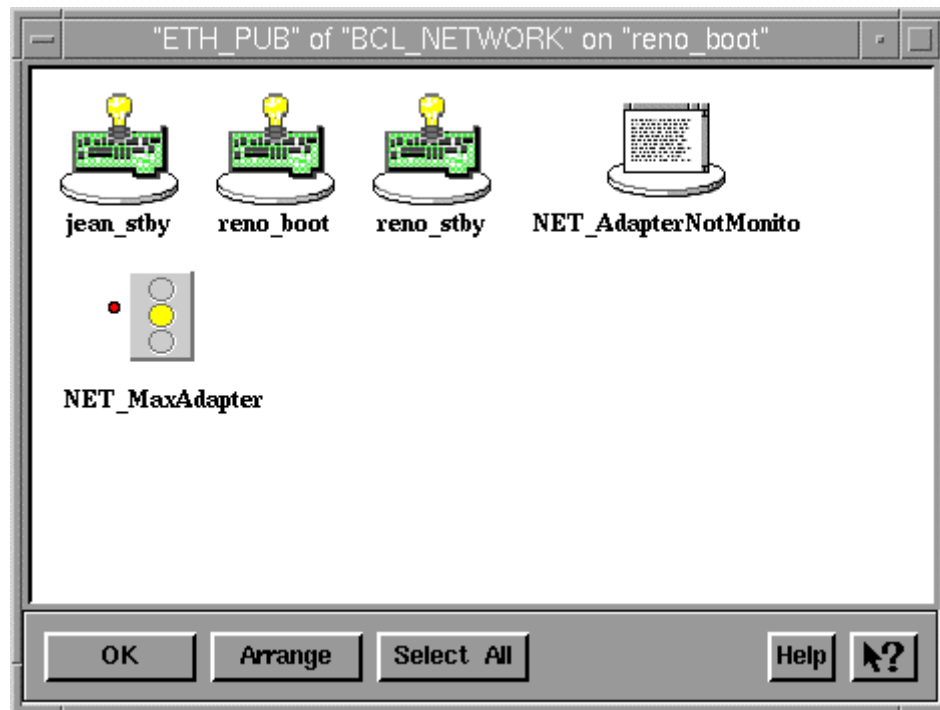
#### Step 4

Wait for the new application discovery phase, to allow the KM to take the new configuration into account .

Instance icons disappears from the parent application window: see application hierarchy, on page 2-5 (in the example: BCL\_NETWORK window), until there are only the specified maximum number.

If not already activated, new parameters appear:

- <parent application prefix>\_<application type>NotMonitored: text parameter indicating appropriate application instances disabled for monitoring by the user (in the example: NET\_AdapterNotMonitored parameter).
- <parent application prefix>\_Max<application type>: stoplight parameter indicating a warning if any appropriate application instance is not monitored (in the example: NET\_MaxAdapter parameter). Its value corresponds to the number of instances not monitored for this application.



#### In order to enable any number of instances to display:

Use the same steps as above to change maximum number of a given application instances to 0 (default value).

## Set a Pattern of unmonitored Instances

This function allows you to disable monitoring of a given application instances by providing a pattern of instance names not to display.

This pattern is a regular expression using the same syntax than for the *grep* PSL command. See *PATROL Script Language Reference Manual* for more details.

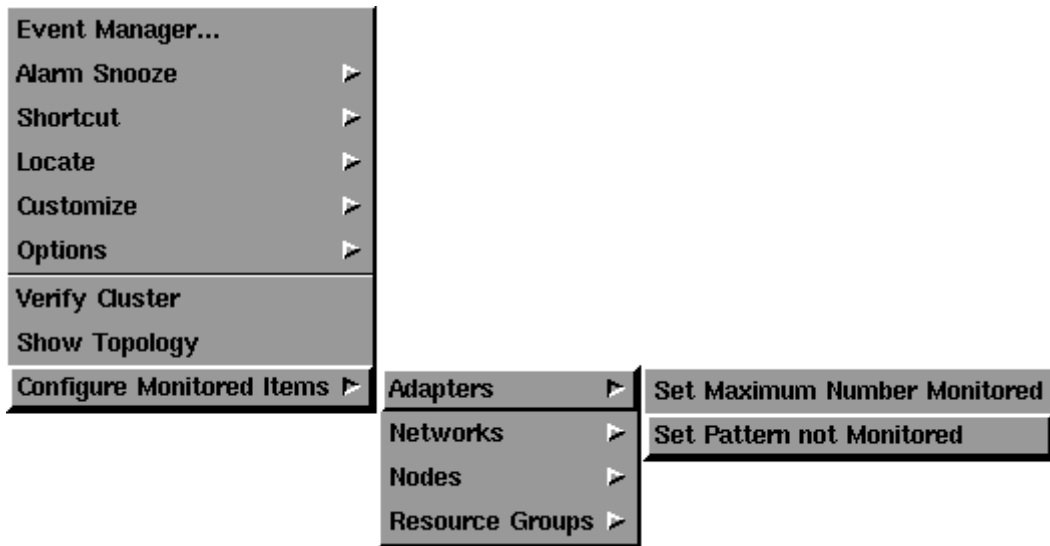
It can be used for any application except BCL\_CLUSTER, BCL\_COLLECT and BCL\_HACMP.

To illustrate this functionality, we will prevent all boot and standby adapters to be monitored by configuring BCL\_ADAPTER application. In our example, these adapters are

### Step 1

Choose Configure Monitored Items => appropriate application type => Set Pattern not Monitored from BCL\_CLUSTER or BCL\_HACMP application menu, whichever application is the parent of the selected application instance.

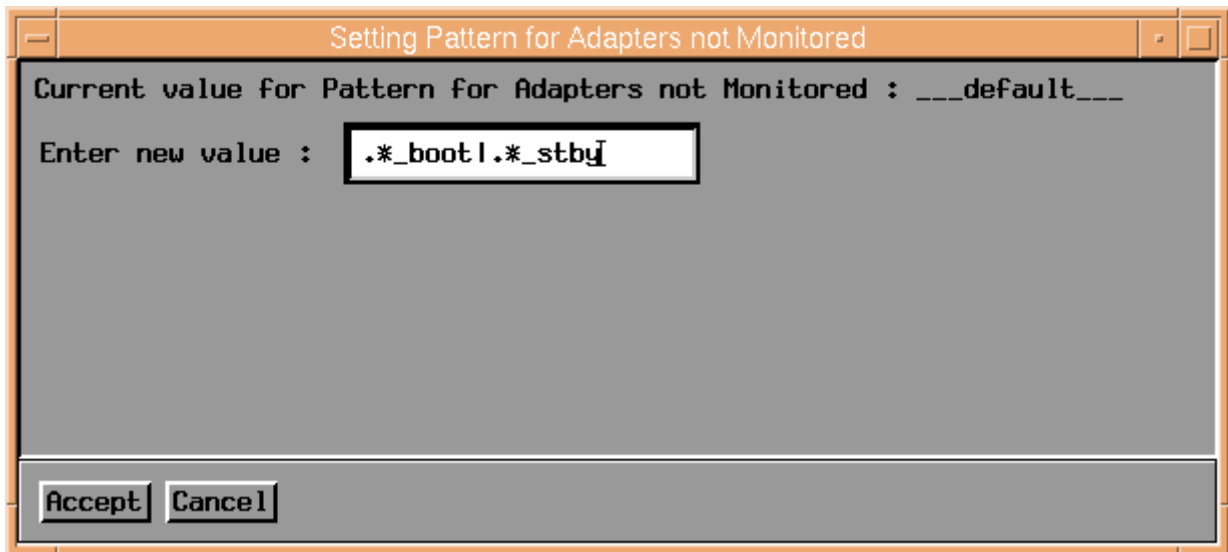
**Note:** Configuration of patterns from BCL\_CLUSTER application menu is automatically propagated to all cluster nodes, in order to be taken into account by any potential new primary node.





## Step 2

From the next window, enter the new pattern of instances not to monitor. Press the Accept button to register this configuration.



## Step 3

The result of your configuration is displayed in an acknowledgement window.

If configuration propagation is unsuccessful for BCL\_CLUSTER application dependances, an error window is displayed, with the reason of the failure. It is necessary, in this case, to correct the problem, and to change HACMP Cluster Management KM configuration manually on all nodes where configuration is not set.

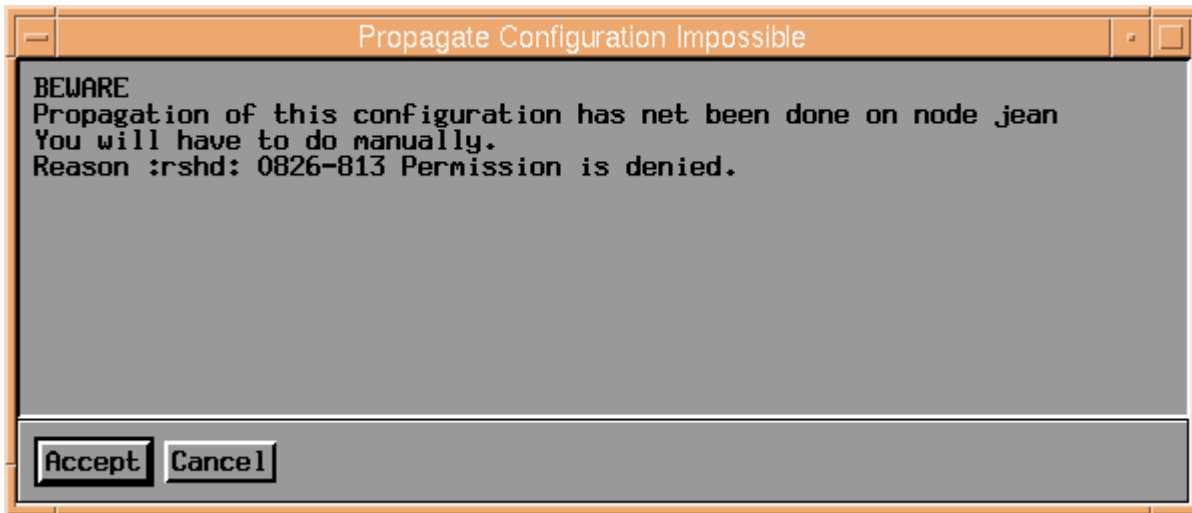
In this example, for example, configuration for node "jean" has not been modified.

It will be necessary to change the value of BCL\_ADAPTER\_Pattern variable in the BCL\_conf file (KM configuration file) on the cluster node: see Customize HACMP Cluster Management KM to have a description of each usable variable.

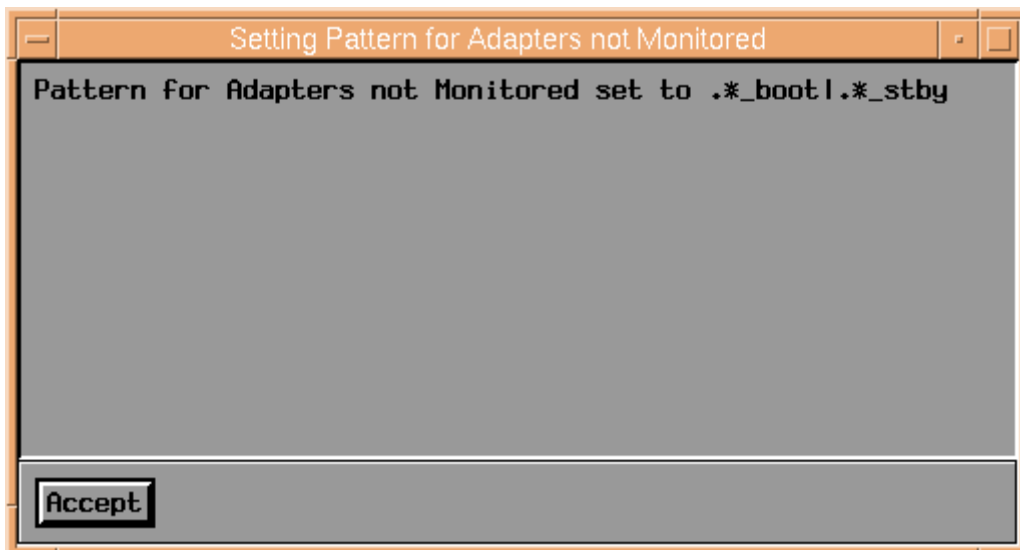
By editing it, and replacing the old value by ".\*\_boot|.\*\_stby" (new value chosen), the KM will take this new value into account in next application discovery phase.

If the specified variable is not set, add to configuration file the line:

```
BCL_ADAPTER_Pattern=".*_boot|.*_stby"
```



Otherwise, an acknowledgement for the configuration modification is displayed.



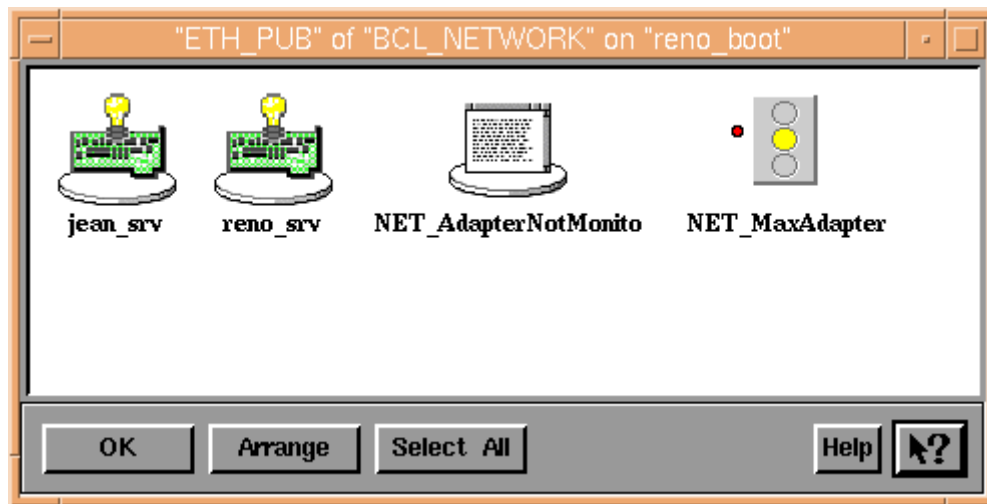
#### Step 4

Wait for the new application discovery phase, to allow the KM to take the new configuration into account.

Instance icons disappears from parent application window: see application hierarchy, on page 2-5 (in the example: BCL\_NETWORK window), until there are only the specified maximum number.

If not already activated, new parameters appear:

- <parent application prefix>\_<application type>NotMonitored: text parameter indicating appropriate application instances disabled for monitoring by the user (in the example: NET\_AdapterNotMonitored parameter).
- <parent application prefix>\_Max<application type>: stoplight parameter indicating a warning if any appropriate application instance is not monitored (in the example: NET\_MaxAdapter parameter). Its value corresponds to the number of instances not monitored for this application.



**In order to clear pattern of instances not to display:**

Use the same steps as above to change pattern of given application instances to an empty string: "" (default value).

# Primary Node

Following steps indicate how to set the primary node manually.

For more details about primary node, refer to Primary Node paragraph, on page 5-5.

**Note:** Primary node functionality is only available through a PATROL development console.

If you try to change configuration using a PATROL operator console, you will get the window:



## Step 1

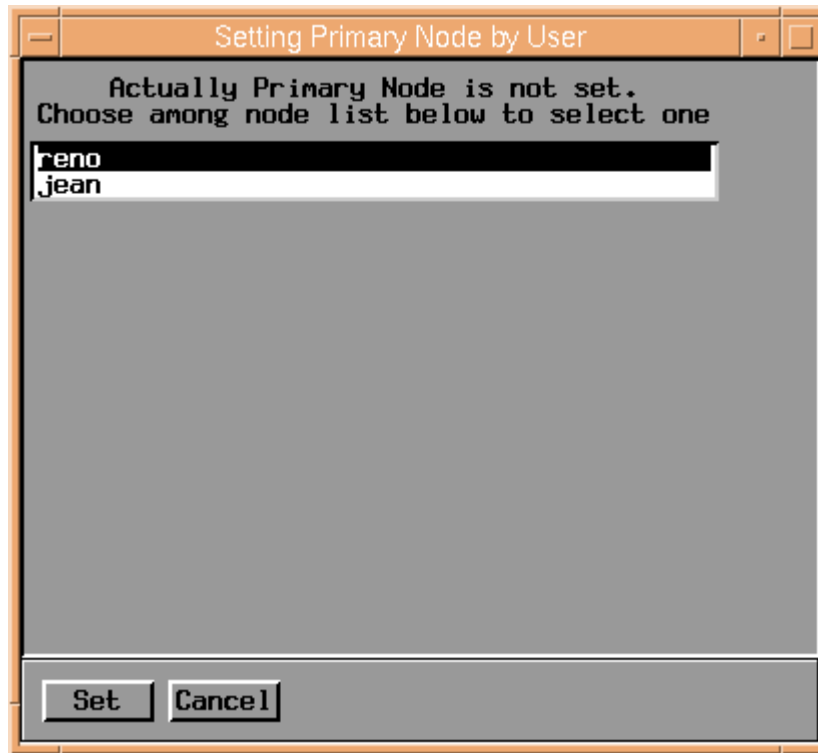
Choose Set Primary Node from BCL\_HACMP application menu.



### Step 2

In next window choose the node to be set for primary node.

**Note:** If no node is selected, the default value is set and election among all nodes restarts as normal.

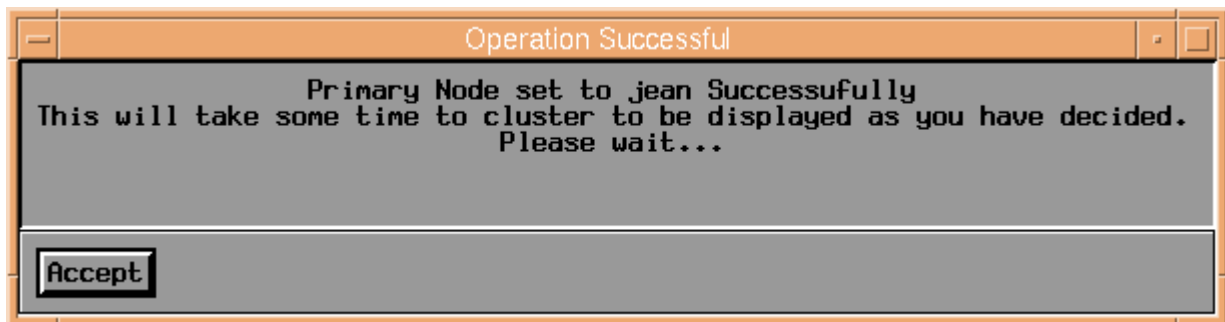


### Step 3

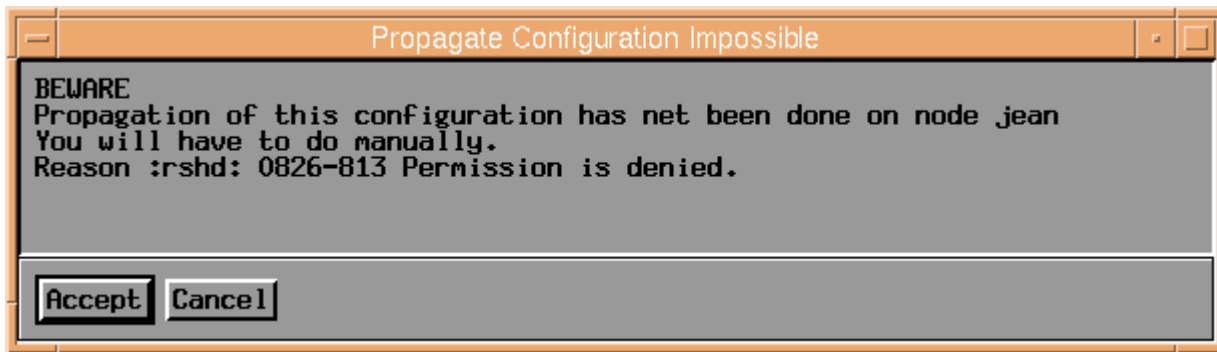
The next window indicates the result of operation.

If a new primary node has been set correctly the following window appears.

Wait for the new application discovery phase for applying modifications.



Otherwise, a window indicating error appears.



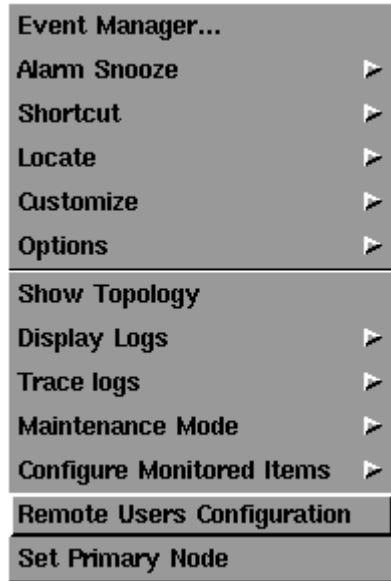
# Configure Remote Accesses

The following steps indicate how to automatically configure remote accesses for nodes, in order to allow exchanges between cluster nodes for retrieving cluster state.

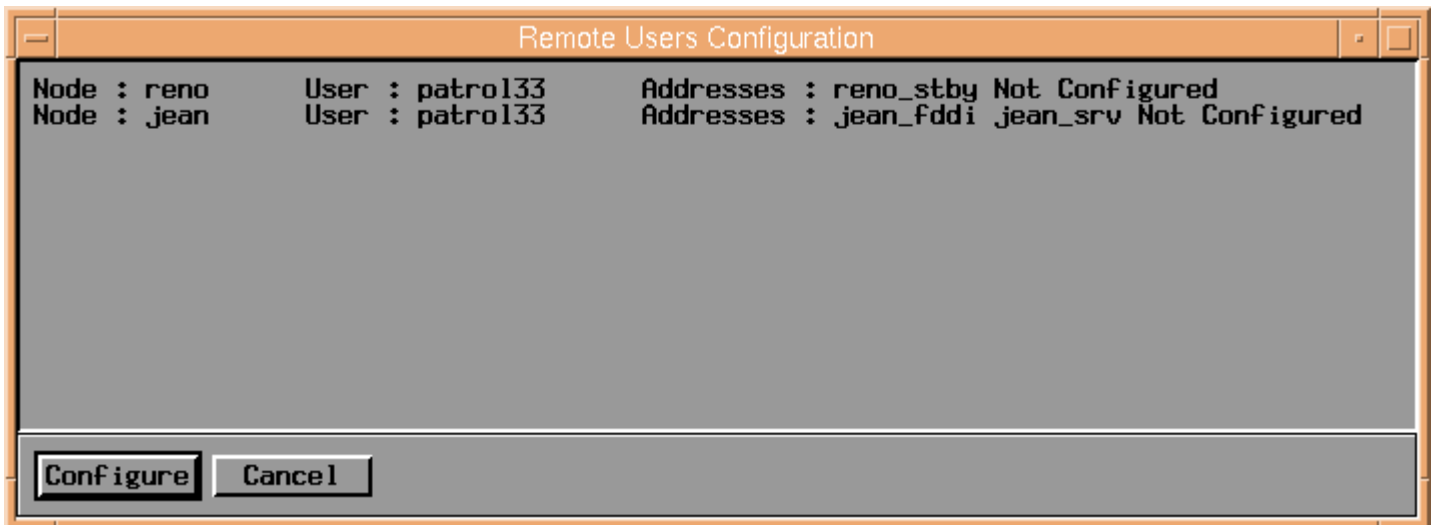
## Step 1

Choose Remote Users Configuration from BCL\_HACMP application menu.

## Step 2



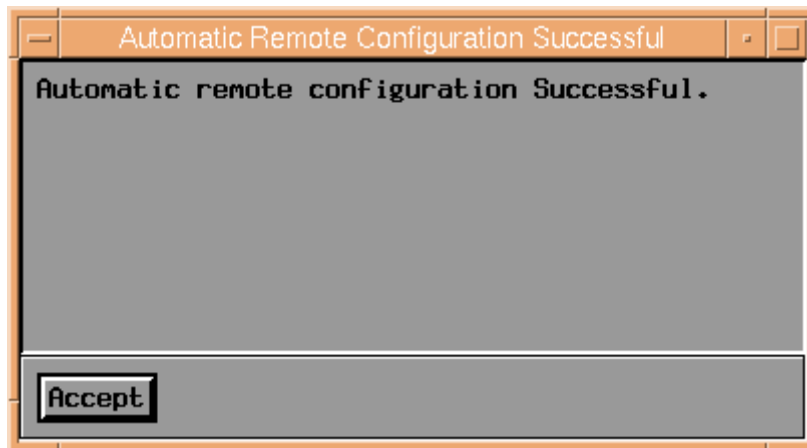
Press the Configure button from the next window to automatically update .rhosts file belonging to PATROL user used in this window.



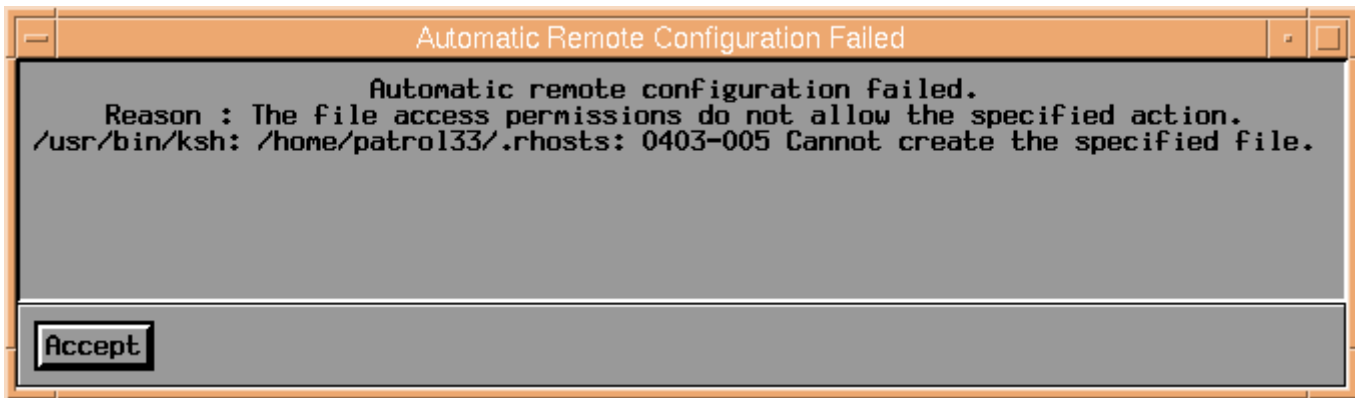
### Step 3

The next window indicates the result of the operation.

If the configuration has been successfully updated, you get this window.



Otherwise, the reason of failure is indicated.





## Refreshing information

All HACMP Cluster Management KM information is collected by its collector parameters, which are owned by the BCL\_COLLECT application and updated according to their proper poll time.

The following functionalities allow you to update information collected by the KM at any moment, by forcing application discoveries and collector parameters refresh. There are four levels of refresh commands:

- **ALL:** forces discovery of all applications and refreshes all collector parameters. This is the most complete refresh.
- **HACMP configuration:** forces refresh of all information about HACMP configuration.
- **Local Resources:** forces refresh of any information attached to a node. This concerns HACMP application, the events, the resources, the volume groups, the application servers, the filesystems and the physical volumes.
- **Network Information:** forces refresh of any information attached to the cluster. This concerns the cluster, the resource groups, the nodes, the networks and the adapters.

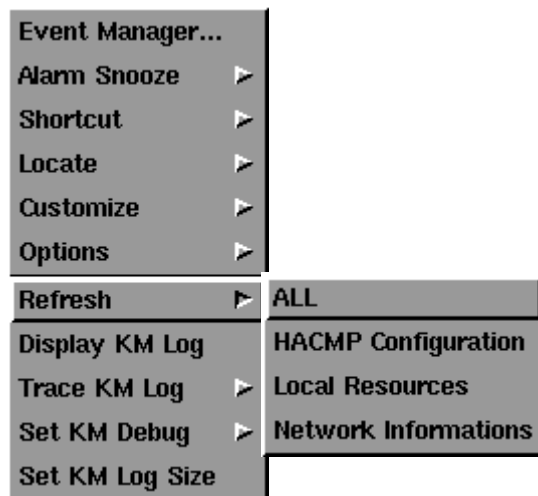
**Note:** This command is useful to retrieve information that has been modified and not refreshed by the KM or if you want to retrieve the exact state of the cluster without waiting for an asynchronous refresh of collector parameters.

### Refreshing All Information

The following steps indicate how to update all the information contained by the HACMP Cluster Management KM. This causes a forced discovery phase for each KM application, and a forced update of all collector parameters.

#### Step 1

Choose Refresh => ALL from BCL\_COLLECT application menu.

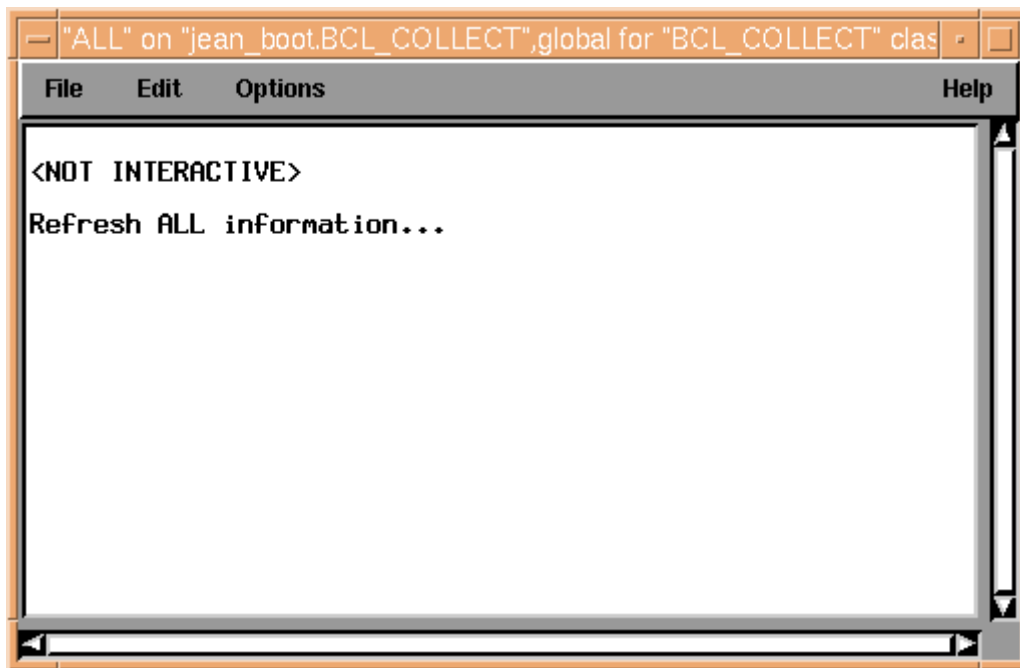


#### Step 2

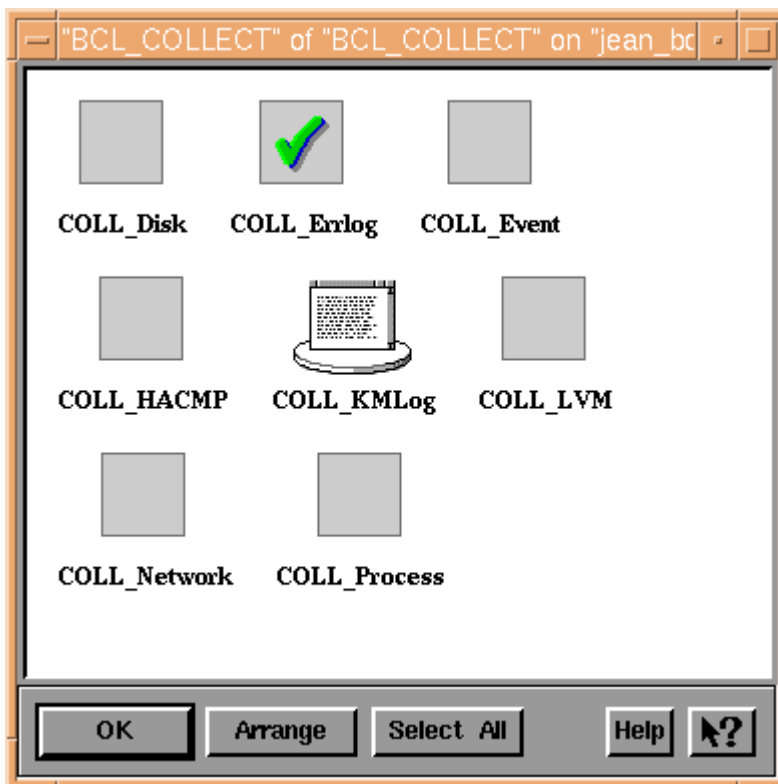
A task window in BCL\_HACMP application window, with a timer, indicates state and time elapsed for the operation.



If you open the associated window by double clicking on icon, you get:



During uptime, collector parameters are refreshed. You can see the collector update status for each parameter in BCL\_COLLECT application window.



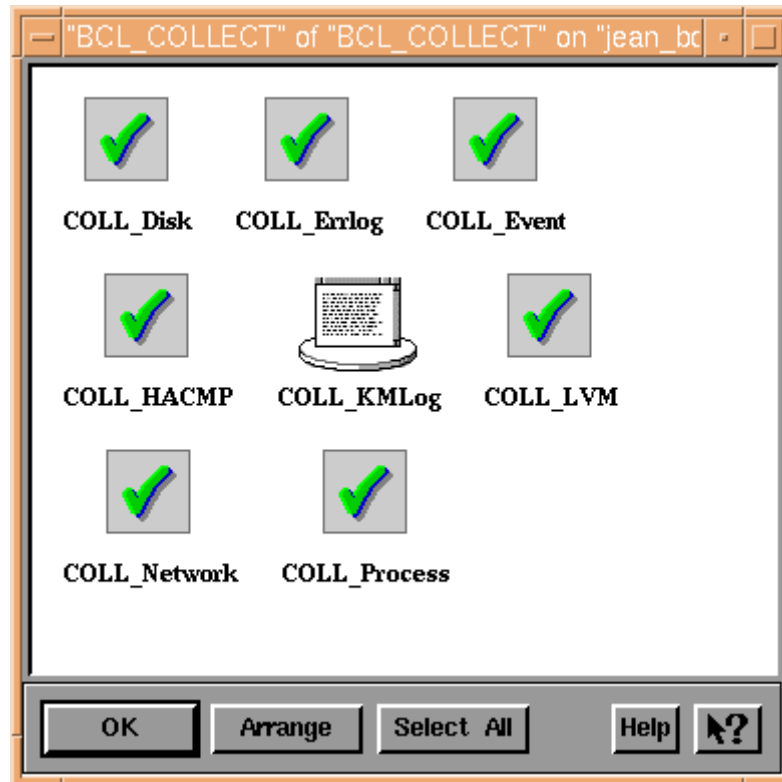
### Step 3

When the task has been completed, you can destroy it or repeat it by clicking right on the icon and choosing the appropriate command in popup menu.

The completed task is symbolized by the icon:



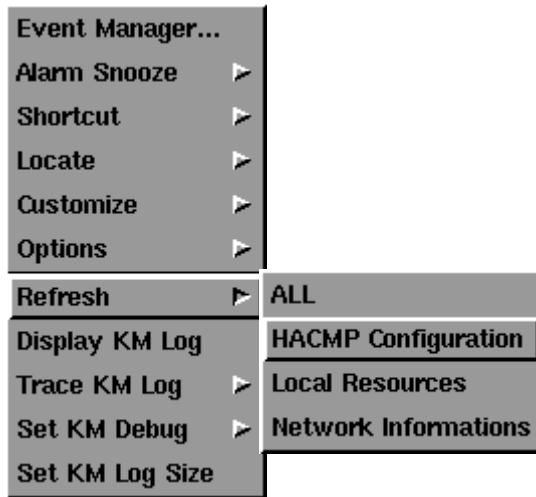
The window containing collector parameters looks like:



## Refreshing HACMP configuration information

### Step 1

Choose Refresh => HACMP Configuration from BCL\_COLLECT application menu.



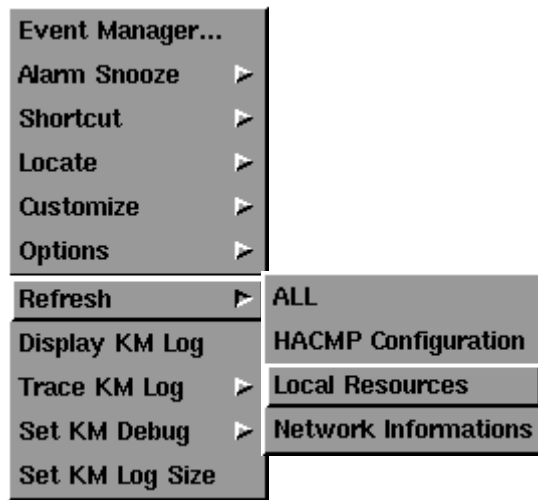
### Following Steps

Follow the steps for "Refreshing all information" paragraph above, from step 2.

## Refreshing local resources information

### Step 1

Choose Refresh => Local Resources from BCL\_COLLECT application menu.



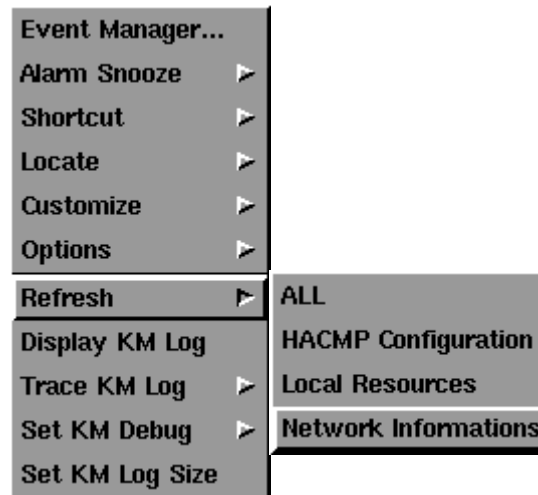
### Following Steps

Follow the steps for “Refreshing all information” paragraph above, from step 2.

## Refreshing network information

### Step 1

Choose Refresh => Network Informations from BCL\_COLLECT application menu.



### Following Steps

Follow the steps for “Refreshing all information” paragraph above, from step 2.

# Display KM Log

The following steps explain how to display the HACMP Cluster Management KM log.

## Step 1

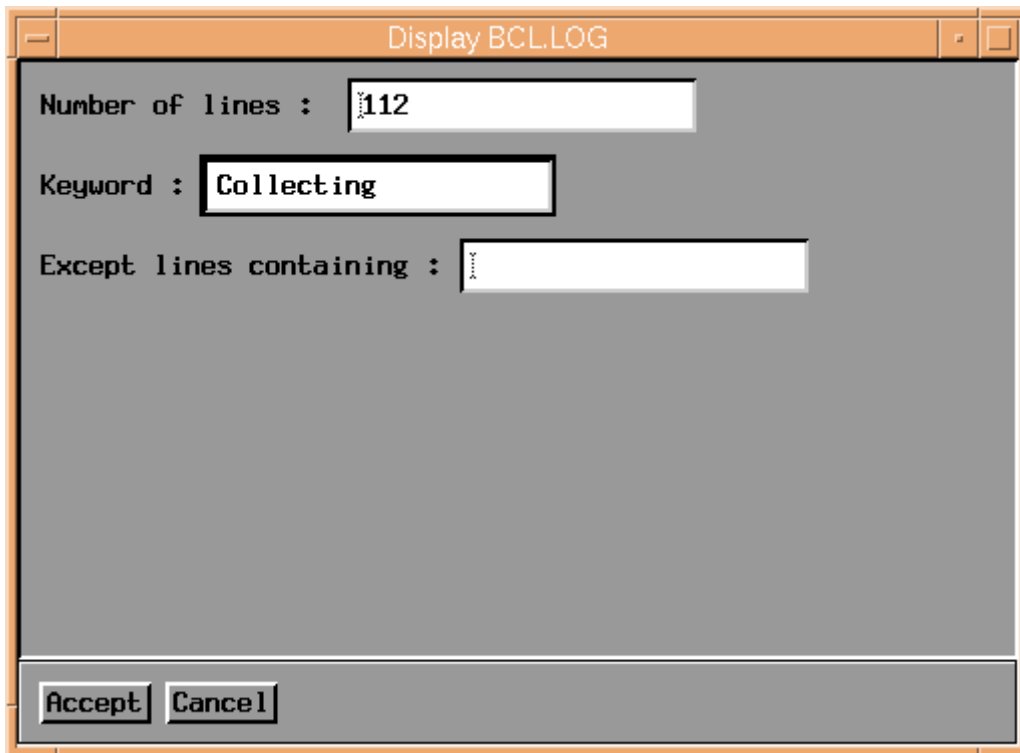
Choose Display KM Log from BCL\_COLLECT application menu.



## Step 2

From the next window, indicate the number of latest lines in this file you want to display (default is the whole file).

Optionally, you can indicate a keyword to search in lines and/or a keyword to avoid.

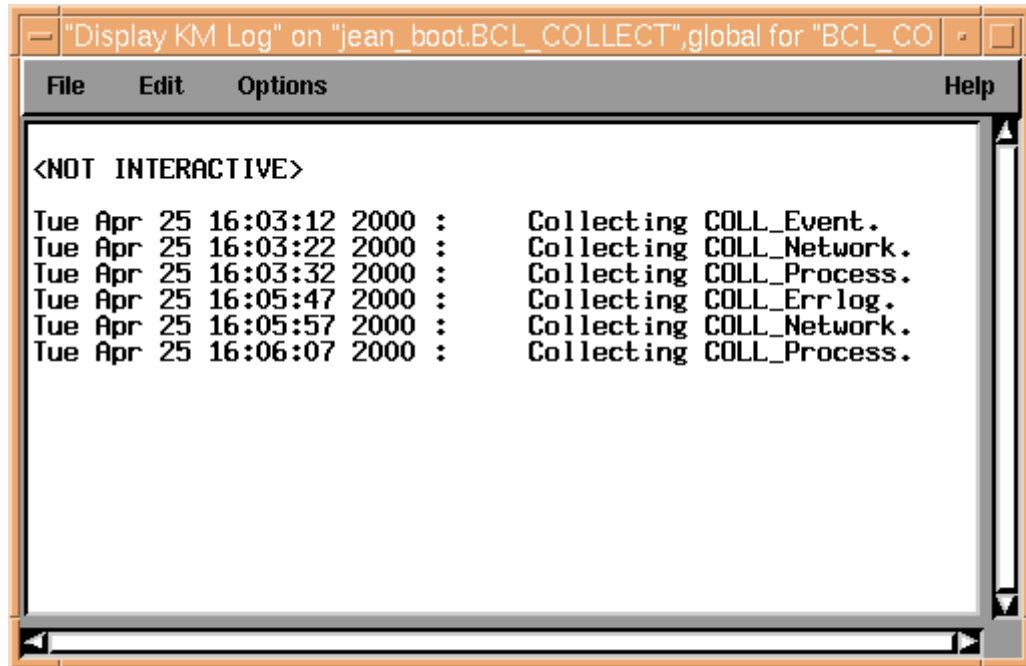


When user choices are defined, press the Accept button.

**Note:** Pay attention to the number of lines to display. Result windows are limited by a buffer, whose size is 500Kb by default. Limit the number of lines to display or change the buffer size in main PATROL console options.

### Step 3

The command output window appears.



```
"Display KM Log" on "jean_boot.BCL_COLLECT",global for "BCL_CO"
File Edit Options Help
<NOT INTERACTIVE>
Tue Apr 25 16:03:12 2000 : Collecting COLL_Event.
Tue Apr 25 16:03:22 2000 : Collecting COLL_Network.
Tue Apr 25 16:03:32 2000 : Collecting COLL_Process.
Tue Apr 25 16:05:47 2000 : Collecting COLL_Err log.
Tue Apr 25 16:05:57 2000 : Collecting COLL_Network.
Tue Apr 25 16:06:07 2000 : Collecting COLL_Process.
```

### Step 4

Use File => Exit menu from the command output window to close it.

A report is generated and available in BCL\_HACMP window.



**DisplayKMLog**  
**BCL\_COLLECT**  
**jean\_boot**

You can destroy it by clicking on this icon with the right mouse button and selecting the Destroy menu.

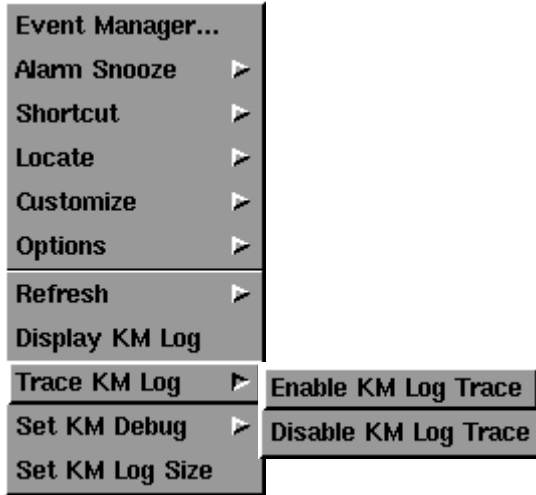
# Tracing KM Log

The following steps explain how to get the dynamic update of HACMP Cluster Management KM log.

This allows you to follow KM activity and to track potential problems.

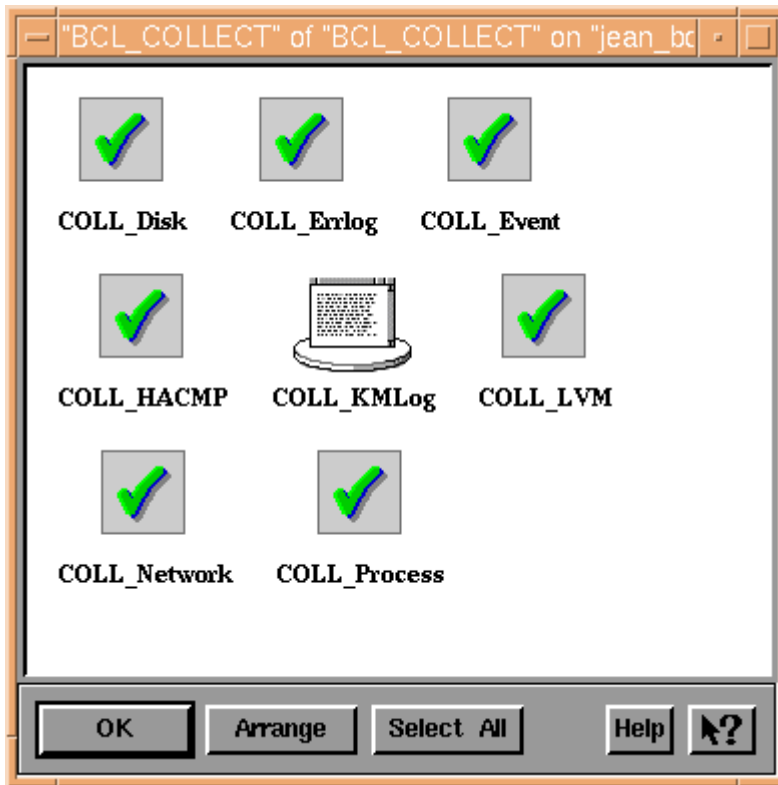
## Step 1

Choose Trace KM Log => Enable Log Trace from BCL\_COLLECT application menu.



## Step 2

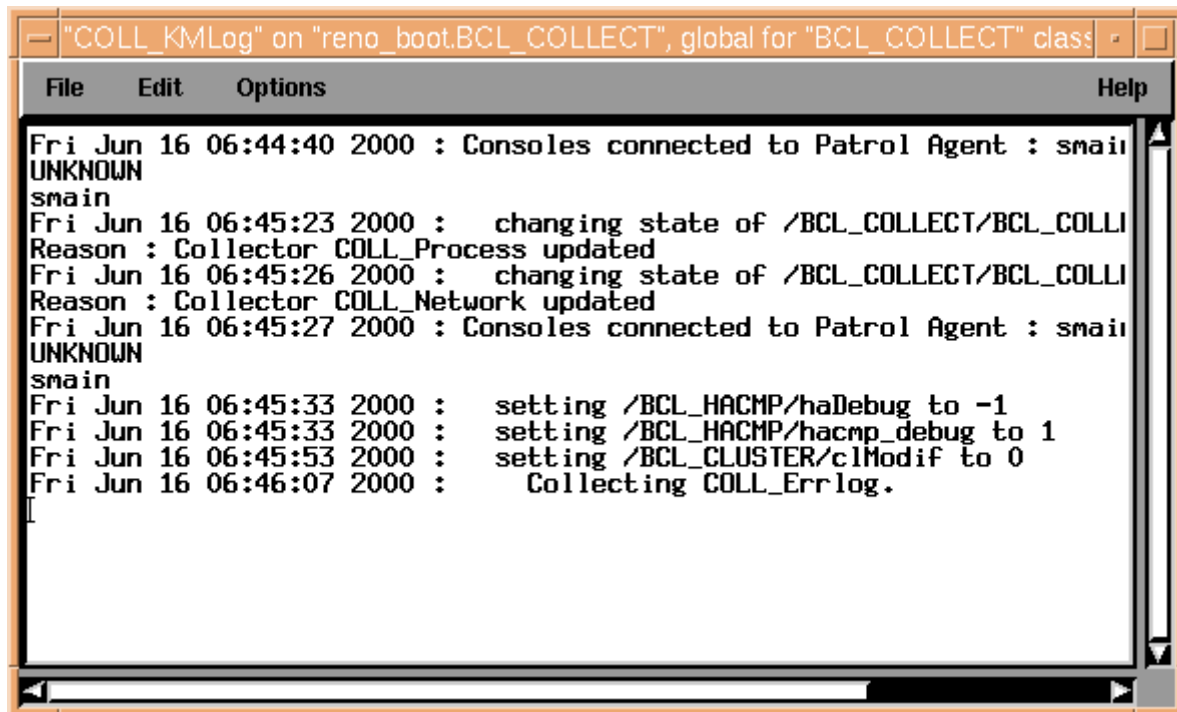
The COLL\_KMLog text parameter appears in BCL\_COLLECT window.





### Step 3

Double click on COLL\_KMLog to open a text window containing the lines of BCL\_log KM log, updated dynamically as the file is filled.

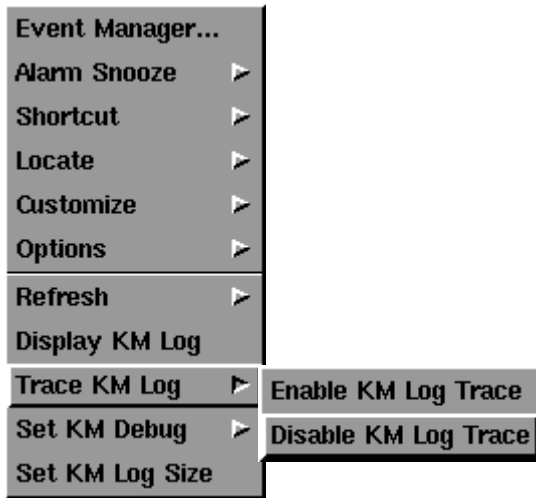


```
File Edit Options Help
"COLL_KMLog" on "reno_boot.BCL_COLLECT", global for "BCL_COLLECT" class
Fri Jun 16 06:44:40 2000 : Consoles connected to Patrol Agent : smain
UNKNOWN
smain
Fri Jun 16 06:45:23 2000 : changing state of /BCL_COLLECT/BCL_COLLI
Reason : Collector COLL_Process updated
Fri Jun 16 06:45:26 2000 : changing state of /BCL_COLLECT/BCL_COLLI
Reason : Collector COLL_Network updated
Fri Jun 16 06:45:27 2000 : Consoles connected to Patrol Agent : smain
UNKNOWN
smain
Fri Jun 16 06:45:33 2000 : setting /BCL_HACMP/haDebug to -1
Fri Jun 16 06:45:33 2000 : setting /BCL_HACMP/hacmp_debug to 1
Fri Jun 16 06:45:53 2000 : setting /BCL_CLUSTER/clModif to 0
Fri Jun 16 06:46:07 2000 : Collecting COLL_Errlog.
```

# Stop tracing KM Log

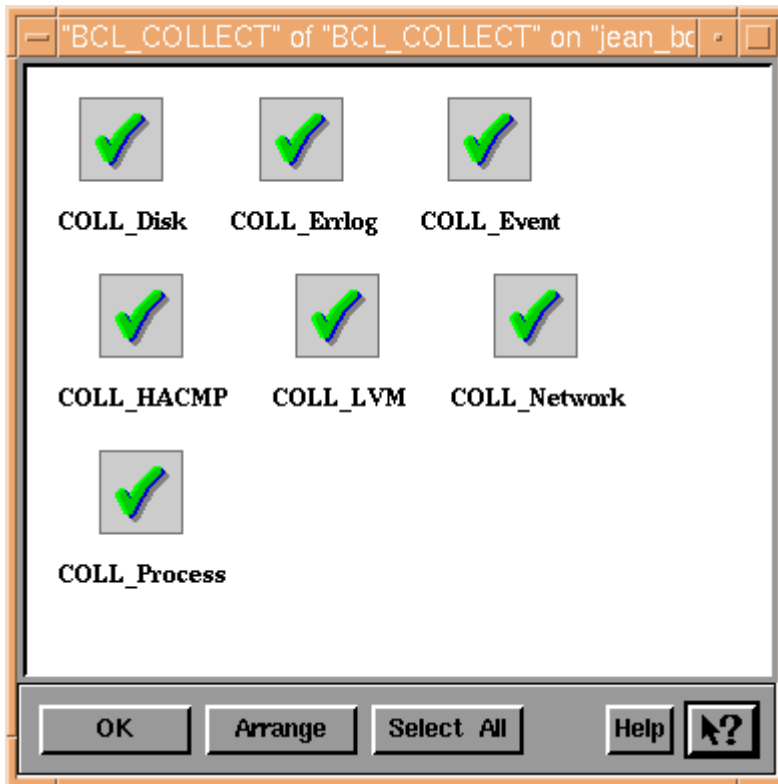
## Step 1

Choose Trace KM Log => Disable Log Trace from BCL\_COLLECT application menu.



## Step 2

The COLL\_KMLog text parameter is inactivated. Its icon disappears from the BCL\_COLLECT window.



# Debugging Mode

To follow the HACMP Cluster Management KM activity, a log file stores all modifications about KM objects. In this KM, there are two levels of debug, that provides you two levels of detail about KM and PATROL activities:

- Normal debug mode provides information about the main change into KM objects status.
- Verbose debug mode informs about any change, variable settings and application discoveries in the KM.

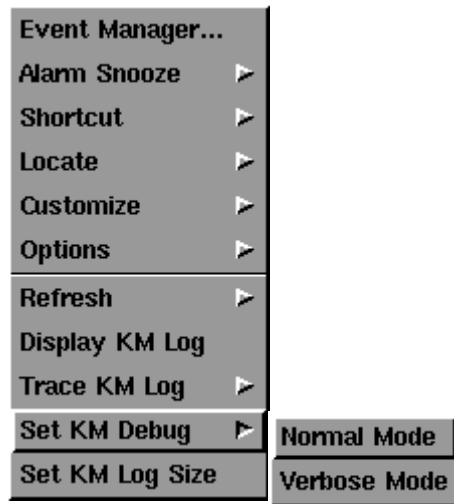
By default, debugging mode is set to “Normal” mode.

For more information about debugging mode, see “Debugging Mode”, on page 5-8.

## Changing debugging mode to Normal mode

### Step 1

Choose Set KM Debug => Normal from BCL\_COLLECT application menu.

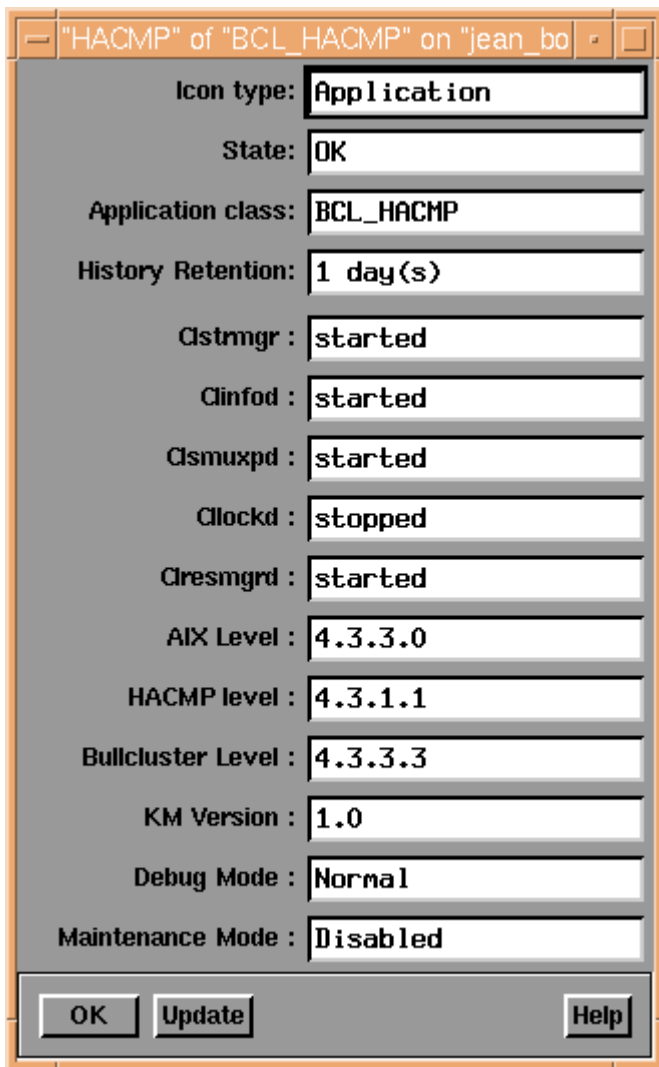


### Step 2

If debugging mode was previously set to “Verbose” mode, you will stop seeing debug lines displayed in System Output of your cluster node.

The KM log file will now only be updated by main KM changes messages.

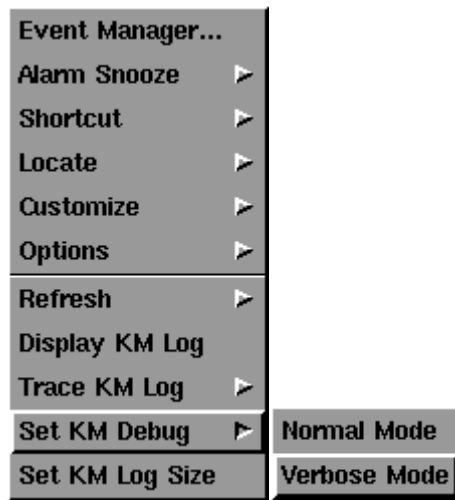
**Note:** Debugging mode level is displayed into BCL\_HACMP infobox.



## Changing debugging mode to Verbose mode

### Step 1

Choose Set KM Debug => Normal from BCL\_COLLECT application menu.



### Step 2

If debugging mode was previously set to “Normal” mode, you will see debug lines displayed in the System Output window of your cluster node.

The KM log file will now be updated with all KM messages.

**Note:** Debugging mode level is displayed in the BCL\_HACMP infobox.

**Note:** According to its specifications, this mode rapidly increases the KM log file size. Set by default to 100 Kbytes, it is recommended to increase the size of this file, not to have COLL\_LogWarning parameter changed to warning state. See “Changing HACMP Cluster Management KM log size” to get more information.

**Note:** It is possible to keep “Verbose” debugging mode, without displaying debug messages in the System Output window of your cluster node:

Type in System Output window after prompt:

```
%PSL set("/BCL_HACMP/hacmp_debug",0);
```

To restart display, rerun the steps for “Changing debugging mode to Verbose mode”

# Changing HACMP Cluster Management KM log size

The HACMP Cluster Management KM log file records permanently changes about KM objects.

Set by default to 100 Kbytes, the log file maximum size prevents saturation of filesystems. When the maximum size is reached, KM is saved into a “.bak” file and a warning appears, triggered by COLL\_LogWarning parameter.

It is possible to change the KM log size directly by an application command: the following steps indicate how to do this.

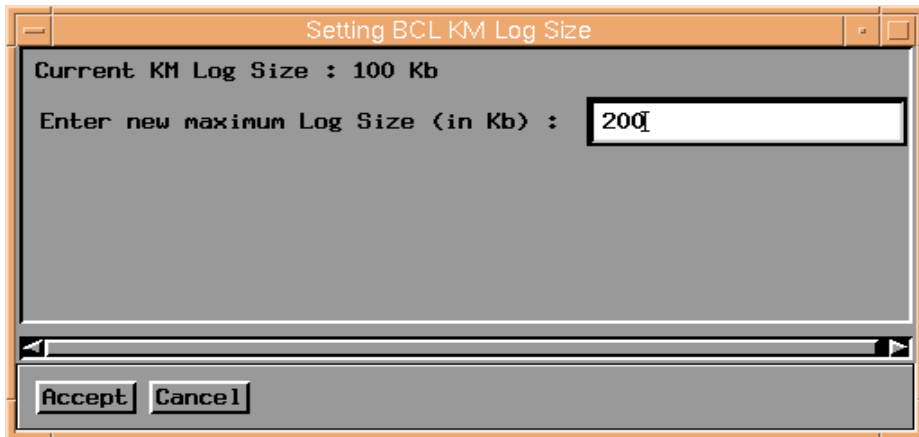
## Step 1

Choose Set KM Log Size from the BCL\_COLLECT application menu.



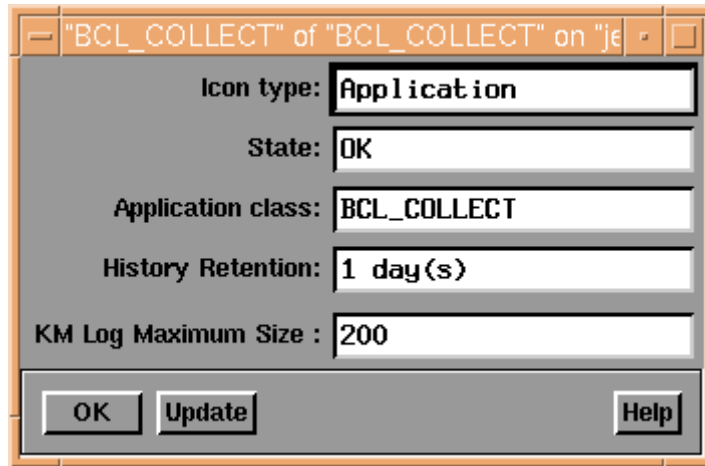
## Step 2

From the next window, choose the new maximum log size and press the Accept button.



### Step 3

You can retrieve maximum KM log size in BCL\_COLLECT infobox.



# Verifying Cluster Topology

The following steps show how to verify cluster topology, resources and custom defined verification methods.

## Step 1

Choose Verify Cluster from BCL\_CLUSTER application menu.



## Step 2

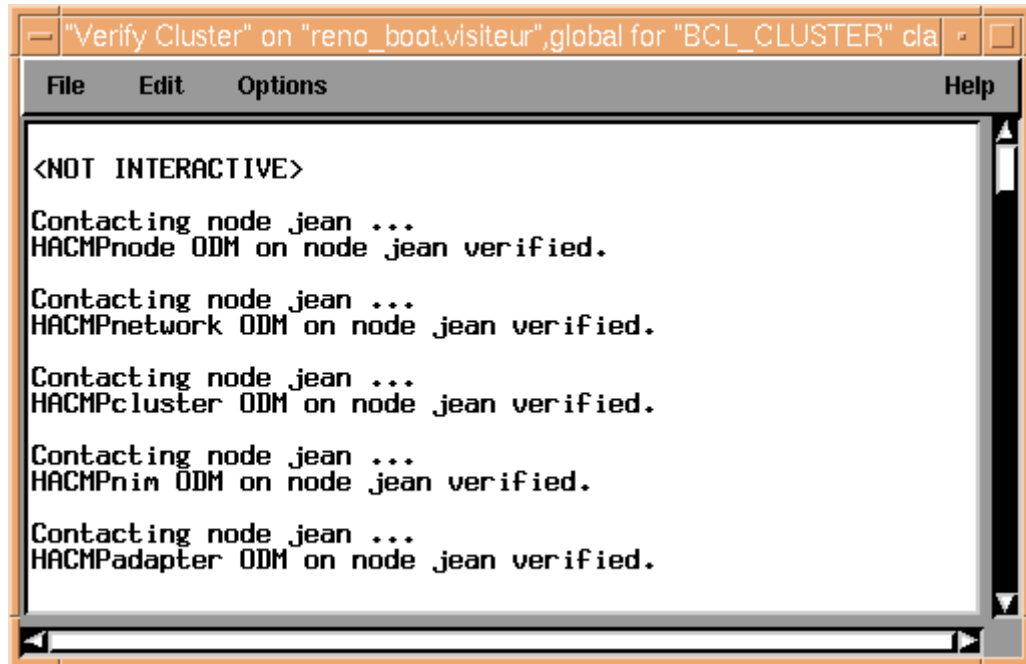
The login and password dialog box appears.





### Step 3

The command output window appears and is dynamically updated as the verify command is running.



```
"Verify Cluster" on "reno_boot.visiteur",global for "BCL_CLUSTER" cla
File Edit Options Help
<NOT INTERACTIVE>
Contacting node jean ...
HACMPnode ODM on node jean verified.
Contacting node jean ...
HACMPnetwork ODM on node jean verified.
Contacting node jean ...
HACMPcluster ODM on node jean verified.
Contacting node jean ...
HACMPnim ODM on node jean verified.
Contacting node jean ...
HACMPadapter ODM on node jean verified.
```

### Step 4

Use File => Exit menu from the command output window to close it.

A report is generated and available in the BCL\_HACMP window.



You can destroy it by clicking on this icon with the right mouse button and selecting the Destroy menu.

# Event Monitoring

HACMP Cluster Management KM monitors the HACMP defined events. Thus, when the application detects an error, it change the state of the event. The KM retrieves these states continuously and is an effective means to inform you that there is a problem.

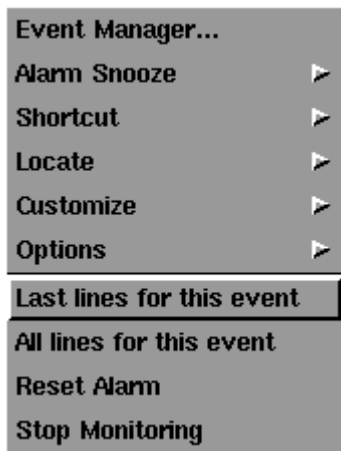
The following functionalities allow you to get details of events and to manage them.

## Retrieving last occurrence of an event in hacmp.out HACMP log

The following steps show how to get the last lines of an event logged in the hacmp.out HACMP file. If there are no line for this event in the last hacmp.out file, it skips to the next most recent file until retrieving information.

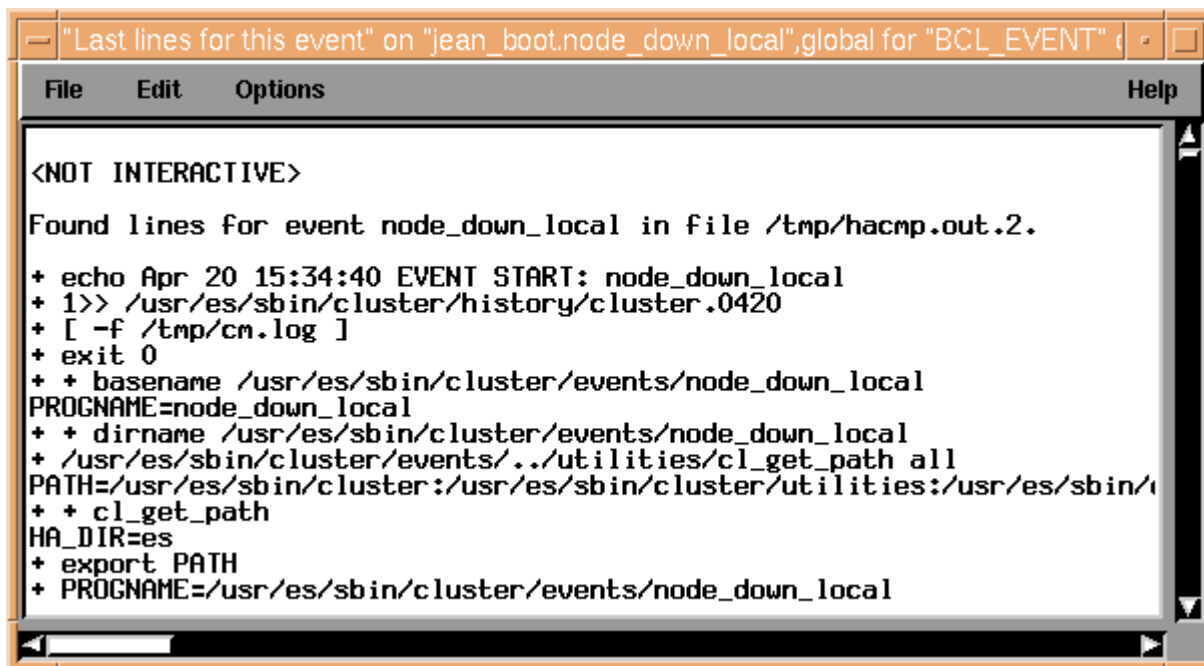
### Step 1

Choose Last line for this event from the BCL\_EVENT application menu.



### Step 2

The command output window appears.



### Step 3

Use File => Exit menu from the command output window to close it.

A report is generated and available in the BCL\_EVENT window.



**Lastlinesforthis  
node\_down\_local  
jean\_boot**

You can destroy it by clicking on this icon with the right mouse button and selecting the Destroy menu.

## Retrieving all occurrences of an event in hacmp.out HACMP log

The following steps show how to get all lines for a given event logged in the hacmp.out HACMP file. If there are no line for this event in the last hacmp.out file, it skips to next most recent file until retrieving information.

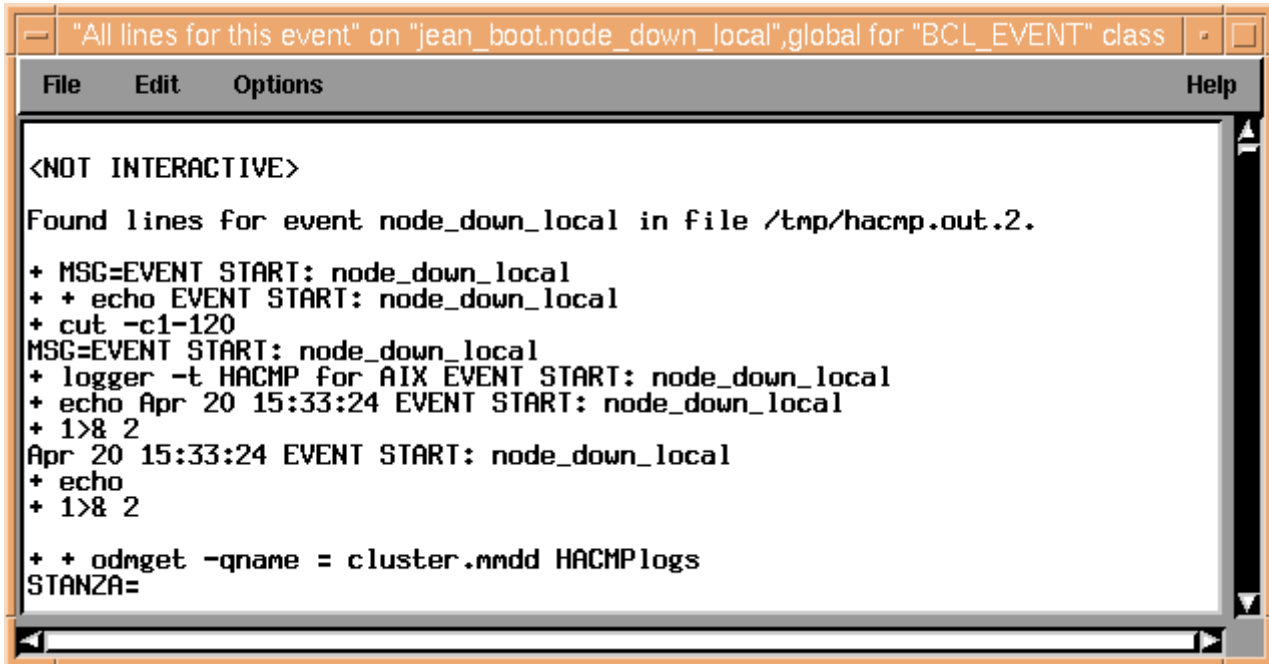
### Step 1

Choose All lines for this event from BCL\_EVENT application menu.



## Step 2

The command output window appears.



```
"All lines for this event" on "jean_boot.node_down_local",global for "BCL_EVENT" class
File Edit Options Help
<NOT INTERACTIVE>
Found lines for event node_down_local in file /tmp/hacmp.out.2.
+ MSG=EVENT START: node_down_local
+ + echo EVENT START: node_down_local
+ cut -c1-120
MSG=EVENT START: node_down_local
+ logger -t HACMP for AIX EVENT START: node_down_local
+ echo Apr 20 15:33:24 EVENT START: node_down_local
+ 1>8 2
Apr 20 15:33:24 EVENT START: node_down_local
+ echo
+ 1>8 2

+ + odmget -qname = cluster.mdd HACMPlogs
STANZA=
```

## Step 3

Use File => Exit menu from the command output window to close it.

A report is generated and available in the BCL\_EVENT window.



```
Allinesforthise
node_down_local
jean_boot
```

You can destroy it by clicking on this icon with the right mouse button and selecting Destroy menu.

## Stop alarm on an event

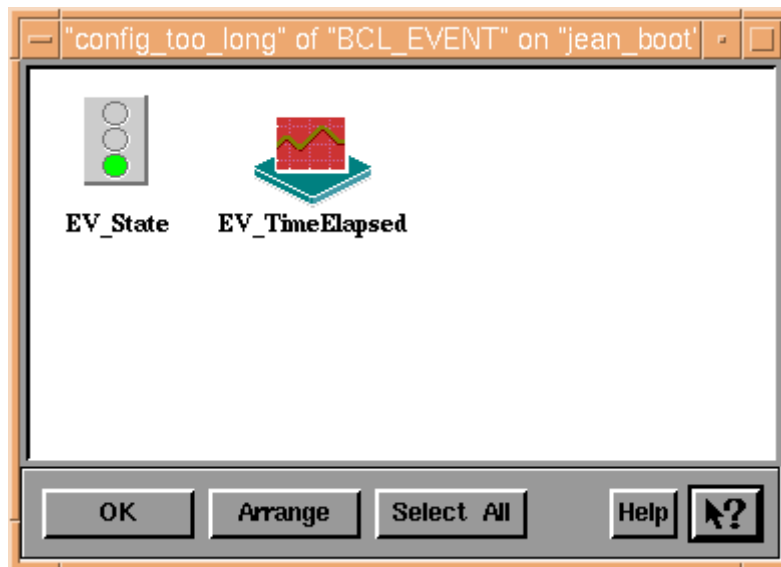
In some cases, even after correcting the problem and restarting HACMP, events still indicate an alarm corresponding to the last problem.

Especially for “config\_too\_long” event, correction of the problem is not sufficient to change the state of event, since it starts when an HACMP phase is too long and does not stop after event has been completed, if an error has occurred, because it is not restarted anyway.

For this situation, the Reset Alarm menu command provides a method to manage event alarms manually.

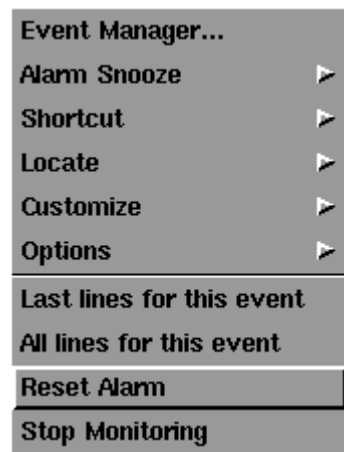
However, communication between HACMP administrator who will correct manually the problem, if any, and PATROL administrator must be clear. This function must not be used if there still is an unsolved problem, and in most cases, restarting HACMP from script failures updates events status is sufficient, so event management is not necessary.

For an example, just after having installed the HACMP Cluster Management on my cluster, an alarm indicates that the “config\_too\_long” event is running. Using the last lines for this event menu command, it is easy to understand that this alarm has occurred several days previously and is no longer applicable. Verifying this fact with the HACMP administrator, I can use the Reset Alarm menu command to cancel it.



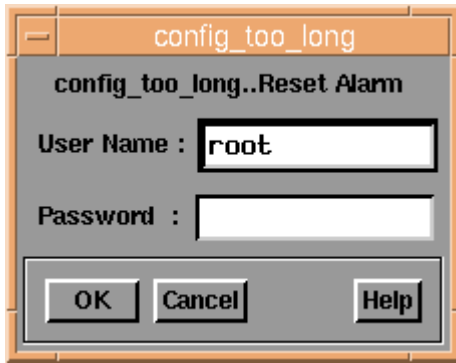
### Step 1

Choose Reset Alarm from BCL\_EVENT application menu.



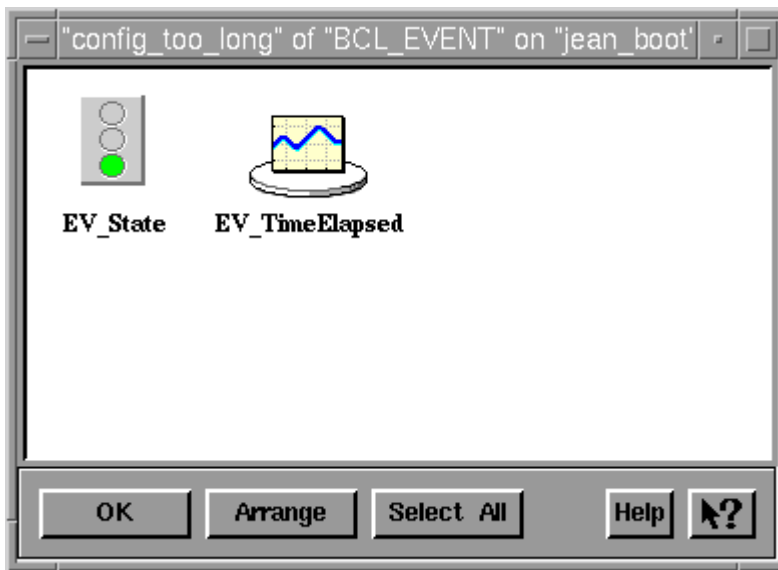
### Step 2

A login and password dialog box appears.



### Step 3

The parameters assigned to the event are set to the non-alarm value.



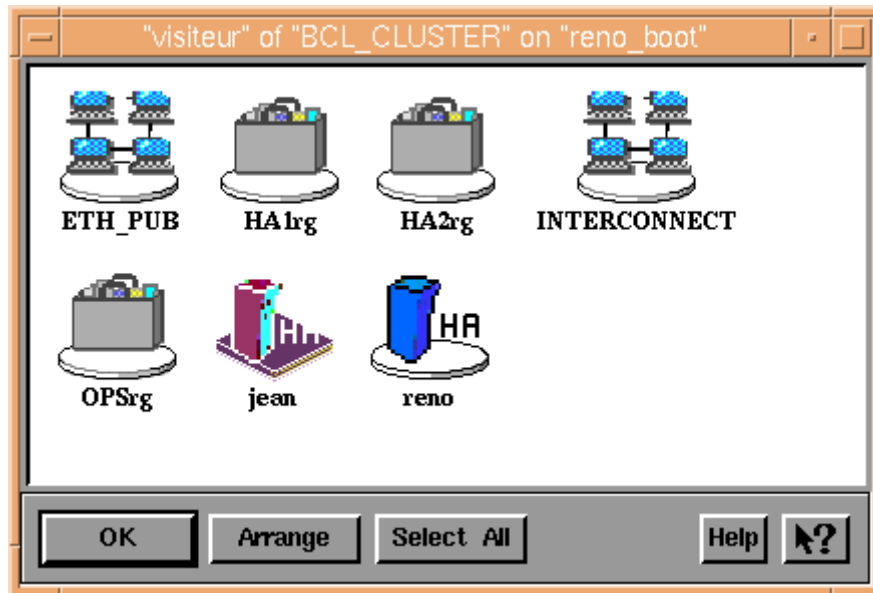
Note: This configuration for events is stored in the \$PATROL\_HOME/remote/BCL\_shared\_info/events.lst file to be taken into account for next sessions.

## Localizing Local Resources problems in cluster

The NODE\_LocalResources parameter indicate status, in a general view, of all resources depending on the local node. This is the worst state of all KM objects depending on the BCL\_HACMP application (BCL\_APPLICATIONSERVER, BCL\_EVENT, BCL\_FILESYSTEM, BCL\_PHYSICALVOLUME, BCL\_RESOURCEGROUP, BCL\_VOLUMEGROUP).

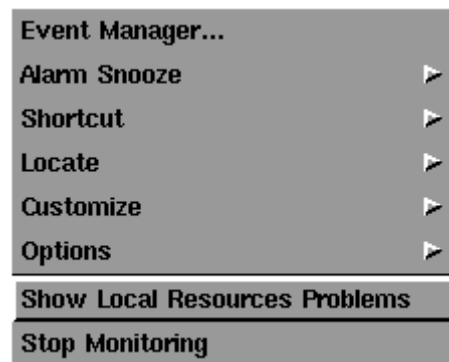
For retrieving what instance(s) is(are) in a warning or in a alarm state without opening the cluster node window, the following steps indicate an easy manner to get them.

In our example, "config\_too\_long" event is in alarm state. Some time later the event is in this state, the cluster instance in main PATROL window indicates an alarm. Opening cluster window, we get:



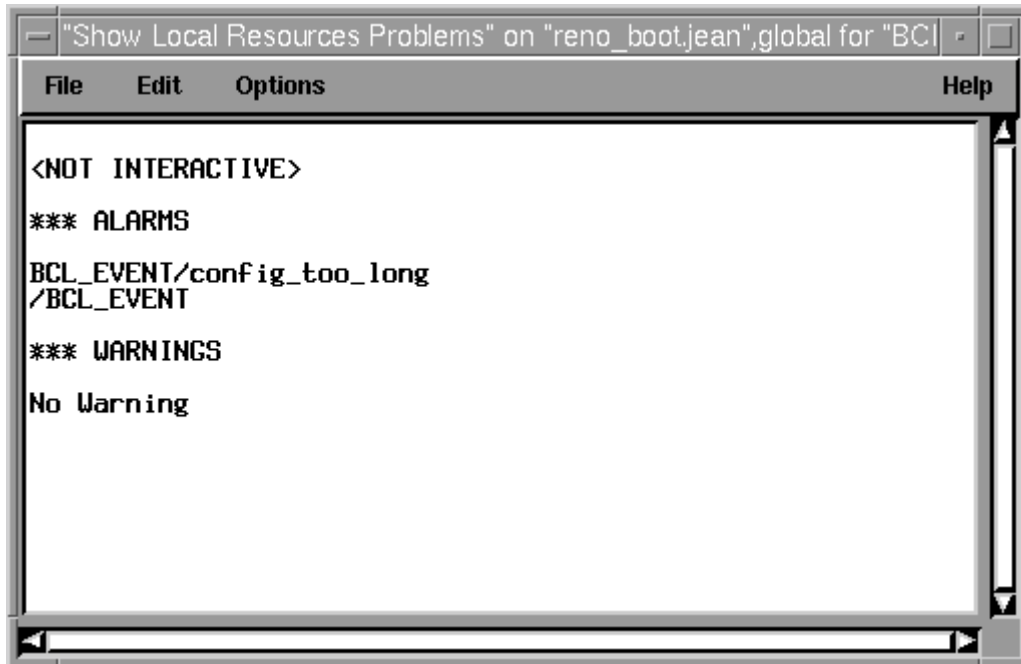
### Step 1

Choose Show Local Resources Problems from BCL\_NODE application menu.



## Step 2

A command output window shows the warning and alarms instances that are responsible for the node state.



```
"Show Local Resources Problems" on "reno_boot,jean",global for "BCL"
File Edit Options Help
<NOT INTERACTIVE>
*** ALARMS
BCL_EVENT/config_too_long
/BCL_EVENT
*** WARNINGS
No Warning
```

## Step 3

We learn that "config\_too\_long" event (from BCL\_EVENT application), is in alarm state.

We can now take measures to correct this problem...

Use File => Exit menu from the command output window to close it.

A report is generated and available in the BCL\_CLUSTER window.



**ShowLocalResources**  
jean  
reno\_boot

You can destroy it by clicking on this icon with the right mouse button and selecting the Destroy menu.



---

## Chapter 7. Event Messages

### How to retrieve messages in the HACMP Cluster Management KM log ?

The HACMP Cluster Management KM log is a file that summarizes all KM activity by collecting messages from all KM applications.

If you are connected on a node where the HACMP Cluster Management KM for PATROL is installed and configured, you can look at this file to retrieve information, directly.

There are also different menu commands from the BCL\_COLLECT application that allows you to activate trace on this file, deactivate it and search information through it.

#### **CAUTION:**

The messages stored in the HACMP Cluster Management KM log depend on the debugging mode used. Using the "normal" debugging mode.

### To activate trace on the HACMP Cluster Management KM log:

Use the Trace KM Log => Enable KM Log Trace menu command from the BCL\_COLLECT application: this activates the COLL\_KMLog parameter which shows you dynamically the latest lines logged in the file.

Double click on the BCL\_COLLECT application instance to reach the COLL\_KMLog parameter.

Double click on the COLL\_KMLog parameter to obtain the trace.

### To deactivate trace on the HACMP Cluster Management KM log:

Use the Trace KM Log => Disable KM Log Trace menu command from the BCL\_COLLECT application: this deactivates the COLL\_KMLog parameter which shows you dynamically the latest lines logged into the file.

### To search information into the HACMP Cluster Management KM log:

Use the Display KM Log menu command from the BCL\_COLLECT application: this activates the COLL\_KMLog parameter which shows you dynamically the latest lines logged into the file.

Enter information to retrieve as described in the menu command summary.

### To set debugging mode to "normal":

Use the Set KM Debug => Normal Mode menu command from the BCL\_COLLECT application.

### To set debugging mode to "verbose":

Use the Set KM Debug => Verbose Mode menu command from the BCL\_COLLECT application.

### How to retrieve messages in the PATROL Event Manager ?

All messages in the HACMP Cluster Management KM for PATROL are stored in the PATROL Event Manager event repository.

To use PATROL Event Manager, refer to the User Guide for your console (Unix or Windows NT).

The HACMP Cluster Management KM events come from the BCL\_HACMP event catalog. They shared different features:

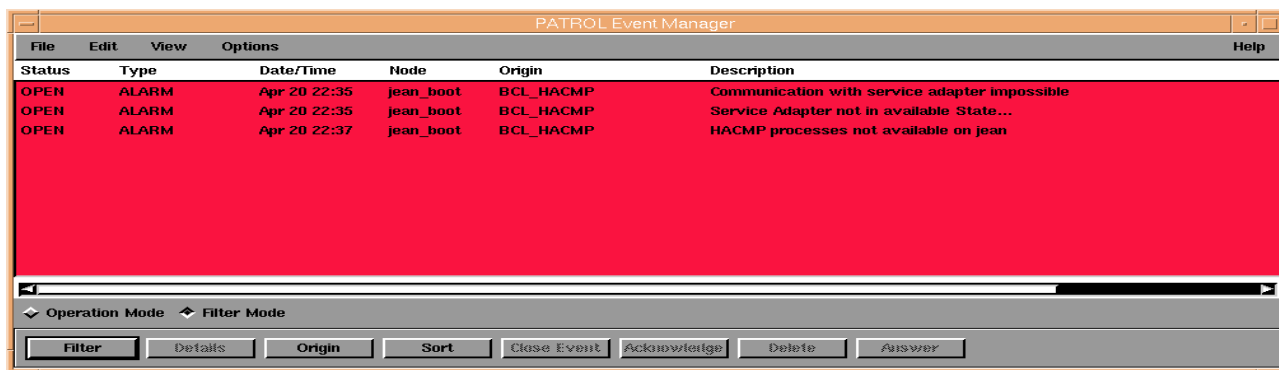
- They have the same origin: BCL\_HACMP. So you can use a filter with this origin to retrieve all events stored from HACMP Cluster Management KM for PATROL.
- They have the same owner: Bull.
- None of them have an escalation command or notification command or an acknowledge command: it is the responsibility of the PATROL administrator to set the appropriate commands to his needs.
- All of them have expert advice, that can be used for alarm events.

You can retrieve below the description of all the HACMP Cluster Management KM events:

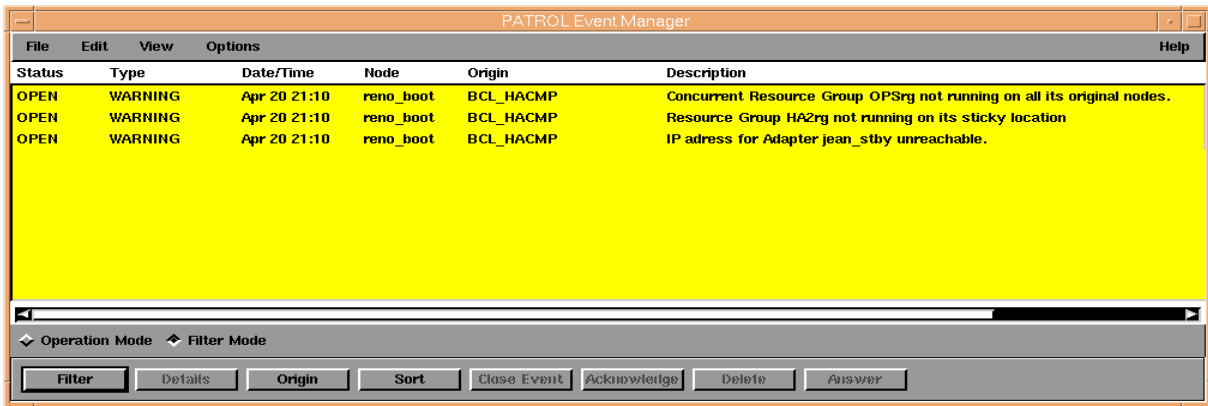
Event Name	Description
AdapDown	Indicates changes in BCL_ADAPTER instances status
CollectorStatus	Indicates refreshes in BCL_COLLECT parameters
DeletedItem	Indicates application instances that have been destroyed
DiskError	Indicates changes in BCL_PHYSICALVOLUME instances status
EventError	Indicates changes in BCL_EVENT instances status
HACMPStatus	Indicates changes in BCL_HACMP instance status
NewItem	Indicates application instances newly created
NodeError	Indicates changes in BCL_NODE instances status
ResGroupError	Indicates changes in BCL_RESOURCEGROUP instances status
ResourcesError	Indicates changes in BCL_RESOURCES instances status
UpdStatus	Indicates changes in application instances status
WaitStatus	Indicates wait time for creation of new application instances

Using the appropriate filters, you can retrieve easily information you need and stored history of your cluster.

Examples of alarms retrieved using PATROL Event Manager:



Examples of warnings retrieved using PATROL Event Manager:



The screenshot shows the PATROL Event Manager window with a table of warnings. The table has columns for Status, Type, Date/Time, Node, Origin, and Description. There are three rows of warnings, all with a yellow background. Below the table is a toolbar with buttons for Filter, Details, Origin, Sort, Close Event, Acknowledge, Delete, and Answer.

Status	Type	Date/Time	Node	Origin	Description
OPEN	WARNING	Apr 20 21:10	reno_boot	BCL_HACMP	Concurrent Resource Group OPSrg not running on all its original nodes.
OPEN	WARNING	Apr 20 21:10	reno_boot	BCL_HACMP	Resource Group HA2rg not running on its sticky location
OPEN	WARNING	Apr 20 21:10	reno_boot	BCL_HACMP	IP address for Adapter jean_stby unreachable.

## List of Messages

### Creating instance *instance* in state *state* parent: *parent\_instance*

This message indicates that the creation of the application instance *instance* is successful. This new instance has been generated in state *state* and has *parent\_instance* as direct parent.

### Cannot create instance *instance* in state *state* parent: *parent\_instance*

This message indicates that the creation of the application instance *instance* has failed. This instance would have state *state* and would have *parent\_instance* as direct parent.

Cause:

This is usually caused by:

A memory problem has prevented the creation of the application instance.

Remedy:

If the problem persists, call your system administrator to verify memory usage.

### Destroying instance *instance*

This message indicates that the deletion of the application instance *instance* is successful.

### Cannot destroy instance *instance*

This message indicates that the deletion of the application instance *instance* has failed.

Cause:

This is usually caused by:

A memory problem has prevented the creation of the application instance.

Remedy:

If the problem persists, call your system administrator to verify memory usage.

### instance waiting for: *variable*

To create application instances, the collector parameters collect all information about your HACMP configuration and status. This creation cannot be complete unless all information is collected.

This is why, during discovery phase of applications, this message appears.

This message indicates that the creation of the application instance *instance* is delayed.

After 100 unsuccessful attempts, an event is generated to trace the problem.

Cause:

This is usually caused by:

- An incomplete gathering of information by the collector parameters.
- During start of PATROL Agent, it is usual to get this message. Wait several minutes to allow the KM to retrieve all information mandatory for the creation of instances.

Remedy:

- Wait for an update of all collector parameters.
- Wait for the creation of application instances.
- If the problem persists, use the Refresh => ALL menu command from the BCL\_COLLECT application.
- If you get this message again, call customer support.

## **instance1 waiting for creation of instance: instance2**

According to the hierarchical architecture of the HACMP Cluster Management KM for PATROL, some application instances depend on the creation of other application instances.

This message indicates that the creation of the application instance *instance1* is delayed.

After 100 unsuccessful attempts, an event is generated to trace the problem.

Cause:

This is usually caused by:

- A asynchronous discovery of all application instances included in HACMP Cluster Management KM for PATROL.
- An incomplete gathering of information by the collector parameters.
- During start of PATROL Agent, it is usual to get this message. Wait several minutes to allow the KM to retrieve all information mandatory for the creation of instances.

Remedy:

- Wait for an update of all collector parameters.
- Wait for the creation of application instances.
- If the problem persists, use the Refresh => ALL menu command from the BCL\_COLLECT application.
- If you get this message again, call customer support.

## **Changing State of *instance* from state *state1* to *state2***

### **Reason: *message***

This message indicates that the status change of the application instance *instance* from *state1* to *state2* is successful.

A *message* provides the reason why the status has changed (not mandatory).

## **Alarms not allowed in maintenance mode**

or

## **Alarms for service adapter disabled in maintenance mode**

or

## Warnings for standby adapter disabled in maintenance mode

or

## Node *node* disabled for alarms in maintenance mode

or

## Node *node* disabled for alarms in maintenance mode

This message indicates that the status change of the application instance generating this message is treated not to generate a warning or alarm status for the instance because the maintenance mode has been activated.

## IP adress for Adapter *adapter* unreachable

or

## Communication with standby adapter impossible

or

## Communication with service adapter impossible

or

## Communication with boot adapter impossible

or

## Service Adapter not in available State...

or

## Node *node* unreachable

This message indicates that the adapter instance generating this message is not repoding or the node *node* is not responding.

## Cannot retrieve console information on node *node*

or

## Cannot retrieve Local Resources on node *node*

This message indicates that the remote node *node* cannot transfer information about its state.

Cause:

This is usually caused by:

- The node *node* is not responding.
- Access rights for shared information (\$PATROL\_HOME/remote/BCL\_shared\_info directory) are not set for the PATROL user on node generating this message to node.

Remedy:

- Verify communication with remote node
- Verify access rights for PATROL user on node generating this message to node.
- Use Remote Users Configuration menu command to update access rights between the both nodes.

## Primary Node elected: *node*

This message indicates that election of primary node has resulted in the node *node* election.

## Cannot retrieve information from physical volume: command *bclwapi\_pv...*

This message indicates that the command retrieving information about physical volume has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_pv` command (or HACMP commands used by this script) have changed: user change or AIX PTFs updating HACMP release.
- No physical volume and no volume group are defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving volume group or physical volume information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.

## Cannot retrieve information from system errlog

This message indicates that the system command "errpt" has failed.

Cause:

This is usually caused by:

- Access rights to `$PATROL_HOME/remote/BCL_shared_info` directory are not set for PATROL user
- The system error log file (`/var/adm/ras/errlog`) has corrupted
- The access rights for the "errpt" command have been refused to the PATROL user

Remedy:

- Verify access rights for `$PATROL_HOME/remote/BCL_shared_info` directory
- Contact your administrator to correct this problem

## Infos from events not available...

This message indicates that the command retrieving information about events (`$PATROL_HOME/BCL_KM/bin/bclwapi_lastevent`) has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_lastevent` command (or HACMP commands used by this script) have changed: user change or AIX PTFs updating HACMP release.

Remedy:

- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.

## Infos from cluster not available...

This message indicates that the command retrieving general information about cluster configuration has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_info` command (or HACMP commands used by this script) have changed: user change or AIX PTFs updating HACMP release.
- No cluster is defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving cluster information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.

## Infos from nodes configuration not available...

This message indicates that the command retrieving general information about nodes has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_node` command (or HACMP commands used by this script) have changed: user change or AIX PTFs updating HACMP release.
- No node is defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving node information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.

## Infos from resource groups not available...

This message indicates that the command retrieving general information about resource groups has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_listsrc` command (or HACMP commands used by this script) have changed: user change or AIX PTFs updating HACMP release.
- No resource group is defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving resource group information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.

## Infos from application servers not available...

This message indicates that the command retrieving general information about application servers has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_listsrc` command (or HACMP commands used by this script) have changed: user change or AIX PTFs updating HACMP release.
- No application server is defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving application server information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.

## Infos for resource groups not available...

This message indicates that the command retrieving information about a given resource group has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/cllsres` command have changed. user change or AIX PTFs updating HACMP release.
- No resource group is defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving resource group information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.

## Cannot retrieve information from physical volume: command bclwapi\_fs...

This message indicates that the command retrieving information about file systems has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_fs` command (or HACMP commands used by this script) have changed: user change or AIX PTFs updating HACMP release.
- No file system are defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving file systems information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.



## Cannot retrieve information from physical volume: command bclwapi\_svg...

This message indicates that the command retrieving information about volume groups has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_svg` command (or HACMP commands used by this script) have changed: user change or AIX PTFs updating HACMP release.
- No volume group and no file system are defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving volume group of file system information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.

## Infos for adapters not available...

This message indicates that the command retrieving information about adapters has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_addr` command (or HACMP commands used by this script) command have changed: user change or AIX PTFs updating HACMP release.
- No adapter is defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving adapter information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script `$PATROL_HOME/BCL_KM/config/BCL_config` if access rights are not correctly set.

## Infos for networks not available...

This message indicates that the command retrieving information about networks has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the `$PATROL_HOME/BCL_KM/bin/bclwapi_netstate` command (or HACMP commands used by this script) command have changed: user change or AIX PTFs updating HACMP release.
- No network is defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving network information on the node
- Synchronize HACMP configuration if not done

- Rerun configuration script \$PATROL\_HOME/BCL\_KM/config/BCL\_config if access rights are not correctly set.

## Infos from resource groups not available: command clfindres fails or no resource group defined...

This message indicates that the command retrieving information about resource groups has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the \$PATROL\_HOME/BCL\_KM/bin/clfindres command have changed: user change or AIX PTFs updating HACMP release.
- No resource group is defined in your HACMP configuration of the node.

Remedy:

- Verify your HACMP configuration for retrieving resource group information on the node
- Synchronize HACMP configuration if not done
- Rerun configuration script \$PATROL\_HOME/BCL\_KM/config/BCL\_config if access rights are not correctly set.

## Cannot retrieve information from processes

This message indicates that the command retrieving information about processes has failed or does not return anything.

Cause:

This is usually caused by:

- The access rights of the \$PATROL\_HOME/BCL\_KM/bin/bclwapi\_ps command (or HACMP commands used by this script) have changed: user change or AIX PTFs updating HACMP release.

Remedy:

- Rerun configuration script \$PATROL\_HOME/BCL\_KM/config/BCL\_config if access rights are not correctly set.

## Collecting *collector* parameter

This message indicates that collector parameter *collector* is starting to collect information for HACMP Cluster Management KM

## Event *event* has problem.

This message indicates that the command retrieving information about events has detected a problem on HACMP event *event*.

Remedy:

- Use Last lines for this event menu command from BCL\_EVENT application instance event
- Search in the text window for the reason
- If the problem is solved manually and the event is still in the alarm state, use the Reset Alarm menu command from BCL\_EVENT application instance event

## Clstrmgr process or topsvcs not active

or

## HACMP processes not available on node

This message indicates that HACMP services are not active on node.

Cause:

This is usually caused by:

- A stop of the HACMP application has been planned (maintenance of system,...)
- The node has been stopped

Remedy:

- Verify with your administrator if this stop has been planned
- If this stop has been planned, you may use the maintenance mode to avoid alarms: use the Maintenance Mode => Enable Maintenance Mode menu command from the BCL\_HACMP application
- Otherwise, verify if the node is not restarting HACMP on the node
- If not, alert your administrator or this unexpected stop in order to restart it as soon as possible

## Patrol Agent unreachable on *node*

This message indicates that HACMP services are not active on *node*.

Cause:

This is usually caused by:

- PatrolAgent process has been stopped or killed on node *node*
- Communication with node *node* is impossible

Remedy:

- Verify communication with node *node*
- If communication is OK, verify the presence of PatrolAgent process using the command:  
"ps -ef|grep PatrolAgent"
- Restart this process on this node: refer to the User Guide of your console (Unix or Windows NT)

## Local Resources on node *node* in WARNING state

This message indicates that at least one resource of node *node* is in warning state.

Remedy:

- Use Show Local Resources Problems menu command from the BCL\_NODE application instance *node*
- Open the *node* system window to retrieve warning on PATROL object indicated by the result of the command above.
- See parameters value to identify warning or use PATROL Event Manager to retrieve warning message about this PATROL object

## Local Resources on node *node* in ALARM state

This message indicates that at least one resource of node *node* is in alarm state.

Remedy:

- Use Show Local Resources Problems menu command from the BCL\_NODE application instance *node*
- Open the *node* system window to retrieve alarm on PATROL object indicated by the result of the command above.

- See parameters value to identify alarm or use PATROL Event Manager to retrieve alarm message about this PATROL object

### **Permanent error on disk *disk***

This message indicates that the COLL\_Disk collector parameter has detected a permanent error in system errlog on disk *disk*.

Cause:

This is usually caused by:

- AIX has detected a permanent problem on disk *disk*

Remedy:

- You can get more detail on system errlog error message by using the Display Logs => System Errlog menu command from the BCL\_HACMP application.
- Contact your administrator to solve this problem.

### **Temporary error on disk *disk***

This message indicates that the COLL\_Disk collector parameter has detected a temporary error in system errlog on disk *disk*. This means that the error has been corrected, but similar multiple errors on the same disk could hide a real problem.

Cause:

This is usually caused by:

- AIX has detected a temporary problem on disk *disk*

Remedy:

- You can get more detail on system errlog error message by using the Display Logs => System Errlog menu command from the BCL\_HACMP application.
- Contact your administrator to solve this problem, if the same error is repeated regularly on the same disk.

### **Disk *disk* no more in active state...**

This message indicates that the disk *disk*, previously in available state is now defined.

### **Resource Group *resource group* not running on its sticky location**

or

### **Concurrent Resource Group *resource group* not running on all its original nodes**

or

### **Cascading Resource Group *resource group* not running on its original node**

This message indicates that the resource group *resource group* is not actually running on its normal location:

- Concurrent resource groups should run on all the nodes belonging to the participating node list of the resource group
- Cascading resource group without sticky location should run on the first node of its participating node list
- Cascading resource group with sticky location should run on the node corresponding to the sticky location

**An Error has been detected in Resource Group *resource group***

**Please check HACMP logs for correcting the problem**

or

**Resource Group *resource group* is currently running in instable state**

**If problem persists, check HACMP logs for looking about some errors**

or

**Error(s) detected in local resources *resources***

**Please check HACMP logs for more informations**

or

**Local resources *resources* running in uncertain state**

**Please check HACMP logs for more informations**

This message indicates that the COLL\_Network collector parameter has detected a potential error on resource group resource group.

Cause:

This is usually caused by:

- Resource group indicated is running in a state ACQUIRING, RELEASING or ERROR. For these three states, infobox of the resource group indicates : ????

Remedy:

- Wait several minutes to see if state of the resource group changes (it is possible that it is stopping or starting).
- If the state does not change, search in hacmp.out HACMP log file for errors about this resource group. You can use the Display Logs => Display hacmp.out menu command from the BCL\_HACMP application to see this file.



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# Glossary

This glossary contains the abbreviations, keywords and phrases that can be found in this document.

## **Adapter (Network Adapter)**

Connects a node to a network. Synonym: interface. A node is typically configured with at least two network interfaces for each network to which it connects: a service interface that handles cluster traffic, and one or more standby interfaces.

## **alarm**

An indication that either a resource has returned a value that falls within the alarm range or that the application check cycle has discovered a missing file or application since the last application check. The alarm status of the object is indicated by the object icon status, which will be red and flashing.

## **alarm state**

An alarm state occurs when one or more computer parameters are in an alarm state and/or an application whose state is propagated is in an alarm state.

## **ALL\_COMPUTERS class**

The highest object class level in PATROL. Attributes assigned to this class will be inherited by all computer classes known to PATROL.

## **application**

A computer program or executable with its associated files that can exist on a computer is called an application. Examples of applications include a database, a file system, and a spreadsheet program. Any group of computer programs and files is called an application class.

## **application check cycle**

The period during which the process cache is checked to ensure that all applications and files previously discovered still exist there. See [application discovery](#).

## **application class**

The name of the object class.

## **application discovery**

A procedure carried out by the PATROL Agent running on each managed computer at preset intervals. The application description information is checked against the information in a cache, which is periodically updated. The cache contains information about the system process table. Each time the cache is refreshed, application discovery is triggered. Any new applications

discovered and state changes since the last refresh are then sent to the Console.

## **application discovery rules (application description)**

A set of rules stored in PATROL Agent and periodically evaluated to find out whether a specific application class exists in the monitored environment. They describe how PATROL Agent can detect instances of this application on a machine, what icon to draw, and so on. Two types of application discovery exist: simple and PATROL Script Language (PSL).

## **application instance**

Each running copy of an application discovered by PATROL. See [instance](#).

## **Application Server**

An application that runs on a cluster node. When queried by client applications, the application server may access a database on the shared external disk and then respond to client requests. Application servers are configured as cluster resources that are made highly available with start and stop scripts supplied by the user or application.

## **Boot Address**

Address for a node to use before HACMP assigns a service address. If you want to use IP address takeover (with or without hardware address swapping) in an HACMP cluster, you must define a boot address (associated with a service adapter) so when a failed node comes back up, it can use the boot address until the process of node reintegration reassigns IP addresses. This boot address can be used during HACMP activity if you use the IP aliasing mode.

## **built-in command**

Internal commands offered by PATROL Agent to reset the state of an object, refresh parameters, echo text, and so forth. See "How to Use Built-In Commands" in the PATROL Console Help.

## **built-in variables**

Internal variables maintained by PATROL for use in commands and parameters.

## **Cascading Resources**

Resources that may be taken over by more than one node. A takeover priority is assigned to each

configured cluster resource group on a per-node basis. In the event of a takeover, the node with the highest priority acquires the resource group. If that node is unavailable, the node with the next-highest priority acquires the resource group, and so on.

### **class**

The object classification in PATROL. It is used to define a hierarchy for attribute inheritance. Objects in PATROL can have one of the following classes:

- ALL\_COMPUTERS
- Computer Class
- Computer Instance
- Application Class
- Application Instance

Attributes can be defined for each PATROL object class and are inherited by any object at a lower class level. The class classification is higher than the instance classification.

### **Cluster**

Loosely-coupled collection of independent systems ([nodes](#)) organized into a network for the purpose of sharing resources and communicating with each other. HACMP defines relationships among cooperating systems where peer cluster nodes provide the services offered by a cluster node should that node be unable to do so.

### **Cluster Information Program (Clnfo)**

SNMP monitor program. Clnfo, running on a client machine or on a cluster node, queries the clsmuxpd daemon for updated cluster information. It then makes information about the state of an HACMP cluster, nodes, and networks available to clients and applications running in a clustered environment. Clnfo and its associated APIs enable developers to write applications that recognize and respond to changes within a cluster.

### **Cluster lock daemon (cllockd)**

HACMP daemon responsible for coordinating requests for shared data across the cluster. It institutes a locking protocol that server processes use to coordinate data access and to ensure data consistency during normal operation as well as in the event of failure.

### **Cluster Manager (clstrmgr)**

HACMP daemon responsible for monitoring local hardware and software subsystems, tracking the state of cluster peers, and triggering cluster events when there is a change in the status of the cluster.

### **Cluster Resource Manager (clresmgrd)**

HACMP daemon responsible for centralizing the storage of and publishing updated information about HACMP-defined resource groups. The Resource Manager on each node coordinates

information gathered from the HACMP global ODM, the Cluster Manager and other Resource Managers in the cluster to maintain updated information about the content, location and status of all HACMP resource groups.

### **Cluster SMUX Peer (clsmuxpd)**

HACMP daemon that provides Simple Network Management Protocol (SNMP) support to client applications. It maintains cluster status information in a special HACMP MIB. Developers can use one of the Clnfo APIs or standard SNMP routines to access the cluster information in this MIB.

### **collector parameter**

A PATROL variable that contains instructions for gathering values for consumer parameters to display. A collector parameter does not display any value, nor does a collector parameter issue alarms or invoke recovery actions. See also [parameter](#), [standard parameter](#), and [consumer parameter](#).

### **command type**

The language used for the command and describes how the command is executed. PATROL has two default command types: OS and PSL.

### **computer class**

A computer class is the basic type of computer and how it is represented on the Console. Examples include the following:

- SUN
- HP-UX
- RS6000

### **computer instance**

A computer instance is a computer with PATROL Agent installed. It is represented on the Console using the information about the computer class stored in the system knowledge module.

### **computer screen**

All output written to the computer can be viewed by clicking on the computer icon screen (the icon hot-spot). When new data is written to the computer, the icon screen turns blue.

### **computer type**

See [computer class](#).

### **Concurrent Access**

Simultaneous access to a shared volume group or a raw disk by two or more nodes. In this configuration, all the nodes defined for concurrent access to a shared volume group are owners of the shared resources associated with the volume group or raw disk.

If one of the nodes in a concurrent access environment fails, it releases the shared volume group or disk, along with all its resources. Access to the shared volume group or disk is, however,



continuously available, as long as another node is up. Applications can switch to another server immediately.

### configuration file

A file that gives the characteristics of system or subsystem.

### Console

The workspace from which you command and manage the distributed environment monitored by PATROL. The Console displays all the monitored computers and applications as icons.

The Console interacts with the PATROL Agent on each remote computer. The dialog is event-driven so that messages reach the Console only when a specific event causes a state change on the monitored computer.

You can run commands and tasks against monitored computers from the Console. From the Console, you can log in to a computer that is displayed by using the computer pop-up menu.

### consumer parameter

A PATROL variable that only displays a value that was gathered by a collector parameter. A consumer parameter does not include any data-gathering instructions, including scheduling information. See also [parameter](#), [standard parameter](#), and [collector parameter](#).

### container

A representation of a logical or functional subset of computers, applications, and parameters in a distributed environment.

A container can contain one or more container icons. Once a container is defined, object hierarchy applies at each level of container. That is, a container icon found within a container icon assumes the variable settings of the container in which it displays.

### Debugging Mode

The HACMP Cluster Management KM for PATROL allows you to generate information about the KM activity into the HACMP Cluster Management KM log, and into the System Output window. Two different debugging mode are possible:

- "Normal Mode": logs information about application instances creation, deletion and their status changes. Some other messages are generated to trace the consoles connected to the nodes.
- "Verbose Mode": logs all information describes above, plus KM variables affectations, collector parameters updates, application discoveries entrances, etc...

### To set debugging mode to "normal":

- use the Set KM Debug = Normal Mode menu command from the BCL\_COLLECT application

### To set debugging mode to "verbose":

- use the Set KM Debug = Verbose Mode menu command from the BCL\_COLLECT application

### desensitized

*Grayed out.* When an icon appears this way, it usually means that no connection is established to the object or that the object is not active.

### event

The occurrence of a state change in a monitored object. Such objects include computers, [applications](#), or [parameter](#). Events are captured by the PATROL Agent and stored in a repository file. Events are forwarded by a PATROL Agent to all PATROL Event Managers (PEMs) that are connected to it. The types of events forwarded by the Agent are governed by a Persistent Filter for each PEM/PATROL Agent relationship.

### Event (or Cluster Event)

Represents a change in a cluster's composition that the Cluster Manager recognizes and can respond to. Major cluster events include:

- **node\_down**— a node detaches from the cluster
- **node\_up**— a node joins or rejoins the cluster
- **network\_down**— a network failure
- **network\_up**— a network is added or restored
- **swap\_adapter**— a service adapter fails

### Event Diary

Part of the PATROL Event Manager (PEM), it is a place to store your comments on any event in the repository. It can be amended at any time and is accessed through the Event Manager Details window.

### event escalation

The increase in the severity of an event as the result of its persistence. An escalation action can be triggered only by the PATROL Agent.

### Event Repository

The [PATROL Event Manager's](#) database of events. Events are stored to provide a history of events that you can use for problem resolution. The database is a circular file residing on an Agent machine. It stores a limited number of events. When the maximum number of events is reached and a new event is stored, the oldest event is removed in a cyclical fashion.

**file system**

A set of files stored on a disk or on one partition of a disk. A file system has one root directory that contains files and subdirectories. These subdirectories can in turn contain files and other directories. In the KM for Unix, the FILESYSTEM application monitors and provides information about file system resources.

**full discovery**

During a full discovery, a PATROL Agent searches the refreshed process cache for any new instances of an application class. In contrast, in the application check cycle, the PATROL Agent searches only to see whether previously existing applications are still running. A full discovery cycle has little effect on applications using PATROL Script Language (PSL) discovery rules. If needed, however, PSL can use the full discovery PSL built-in function. See [simple discovery](#).

**global level**

A term used in PATROL to describe the ALL\_COMPUTERS class, computer class, and application class object classification level.

**global-level attribute**

Attributes assigned to objects at class level rather than at instance level. Global-level attributes are defined once, then inherited by every object of that class discovered in the PATROL environment. An attribute assigned to a specific computer class, SUN for example, will be inherited by every instance of a SUN computer found running in the distributed environment.

**global parameter**

A global parameter applies to an entire class of object. Typically, a global parameter is active on ALL instances of a particular application class or on ALL computers of a certain computer class. See [parameter](#).

**HACMP (High Availability Cluster Multi-Processing) for AIX**

Licensed Program Product (LPP) that provides custom software that recognizes changes within a [cluster](#) and coordinates the use of AIX features to create a highly available environment for critical data and applications.

**history level**

The amount of time that parameter values are stored in the history database before they are automatically purged. The level setting can be either inherited or local. See [inherited history](#) and [local history](#).

**icon**

Indicates whether the parameter is represented as a graph, gauge, or text.

**icon type**

The icon type for the object. PATROL has three types of icons:

- application
- parameter
- computer

**icon window**

The icon window appears when you double-click on an instance of an object icon or a container icon with MB1 in Unix or the left mouse button in Windows NT. The window displays icons for all the objects associated with the object from which the window was displayed.

**InfoBox**

A window that displays current summary information for an object. It has both static fields that display current values, such as current state and icon type, and information fields that you can create for the object yourself.

**information event**

Any event that is not a state change (warning or alarm) or an error. Typical information events are as follows:

- A parameter is either activated or deactivated.
- A global parameter is suspended or resumed.
- Application discovery is run.

The default setting for PATROL is to prevent this type of event from being stored in the event repository. To store and display this type of event, you need to turn silent mode off for the computer instance.

**inherited history**

The default history retention period for any application parameters that is will be inherited from a higher level object (for example, a computer class or a Console preference setting).

**instance**

A representation of a computer, [application](#), [parameter](#), or command that is running in the PATROL-managed environment.

**instance level**

Each computer being monitored, or representation of an application that is running, is an [instance](#) of the class of computer or application. PATROL Agent monitors computer or application instances. To set attributes, variables, and commands at a certain level, you use the pop-up menu for the PATROL object shown. This is called the local level. Settings at this level override settings at higher class levels.

### Knowledge Module (KM)

A set of files from which a PATROL Agent receives information about all the applications running on a monitored system. Knowledge Modules can be downloaded from a Developer Console or installed using a utility on an Agent machine.

The information used to discover and represent the applications, the parameters it runs against those applications, and the menu options available on pop-up menus are all provided by Knowledge Modules.

### local history

Requires the user to set the default history retention period for the application parameters.

### local level

The individual instance of a computer, application, [parameter](#), or command.

### local-level attribute

An attribute defined for objects at the object instance level. Local-level attributes must be defined for each instance of an object class individually. These attributes override the attributes assigned to the object class.

### Log Files

Files that contain messages put out by the HACMP for AIX subsystems (e.g., event notification messages, verbose script output messages, and cluster state messages). Log files can provide valuable information for troubleshooting cluster problems.

- The /usr adm/cluster.log file contains time-stamped, formatted messages generated by HACMP scripts and daemons.
- The /tmp/cm.log file contains time-stamped formatted messages generated by HACMP clstrmgr activity.
- The /tmp/hacmp.out file contains messages generated by HACMP scripts; it does not contain state messages.
- The system error log contains time stamped formatted messages from all AIX subsystems including HACMP scripts and daemons.

### Logical Volume Manager (LVM)

AIX facility that manages disks at the logical level. HACMP uses AIX LVM facilities to provide high availability— in particular, volume groups and disk mirroring.

### Maintenance Mode

HACMP Cluster Management KM specificity: allows you not to display alarms from a cluster if service operations have been planned for a given node, for example.

In that case, alarms will no longer be treated for the node in maintenance mode: node alarms and

adapter alarms.

If the node is still reachable, HACMP Cluster Management KM gives state of PatrolAgent, but not the state of the local resources for the node (parameters are deactivated, but events are still generated and visible by Patrol Event Manager.) Adapters alarms are not treated: adapters turn in OFFLINE state if not available.

### Network

In HACMP environment, connects multiple nodes and allows clients to access these nodes. HACMP defines various types of networks.

### new data state

New data commands are activated when data is being written to the computer Console window.

**Note:** This menu is only accessible via the computer application menu and is used by PATROLINK. Refer to the *PATROLINK Reference* manual for more information.

### Node (or Cluster Node)

RS/6000 system unit that participates in an HACMP [cluster](#) as a server.

### object

A computer, [application](#), [parameter](#), or container in the PATROL-managed environment.

### object icons

Icons that represent a computer, [application](#), [parameter](#), or container in the PATROL-managed environment.

### OK and Not OK icons

These icons show the user the state of a PATROL object. See [state](#).

### OK state

An OK state occurs when there is a network connection between the Console and the computer, the PATROL Agent is running, all parameters are OK, and all applications propagating their state are OK.

### offline state

An offline state occurs when one or more computer parameters are offline and/or an application whose state is propagated is offline.

### OS command

An operating system command that is spawned by PATROL and executes in the current PATROL environment. It can be a short sequence of commands or a large script. Unlike [tasks](#), the user cannot restart or stop the command before it has been completed.

### output range

Indicates when a warning and an alarm occur based on the value set in the parameter.

## parameter

In PATROL, an item of knowledge about *what to check* and *how often*.

It can include

- a description of the monitored attribute
- how often to check the attribute
- the instructions for measuring and monitoring the attribute
- detection thresholds for abnormal attribute values

Parameter commands are stored by the PATROL Agent and are periodically executed to retrieve data about the managed computer or application. Parameter information can be displayed as a graph, a gauge, or in a text window. Parameters add information to the built-in rules about computers and applications and contain [recovery actions](#) that are triggered when the parameter detects an unhealthy state (that is, when a returned value falls outside specified alarm ranges).

## parameter type

A classification of PATROL parameters that identify whether a parameter is a

- [standard parameter](#)
- [consumer parameter](#)
- [collector parameter](#)

## PATROL Agent

A fundamental part of the PATROL architecture, which is used for remote monitoring and management of hosts. It can communicate with the PATROL [Console](#), the stand-alone PEM Console, and PATROLVIEW. It is configured by the PATROL Agent Configuration utility and is used to analyze the managed computer and to communicate with a console and Event Manager.

## PATROL Console

The graphical Console. It is the display environment responsible for receiving rules and commands from the user and sending them to the PATROL Agent and receiving information from the agent. It displays a real-time picture of the status of all the computers being managed and applications discovered from information it receives from the PATROL Agent.

From the PATROL Console, you can monitor and manage either an entire enterprise-wide information system or just a collection of workstations and server computers. PATROL offers two types of [SNMP consoles](#) with different levels of functionality, a [PATROL Developer Console](#) and a PATROL Operator Console.

## PATROL Developer Console

An interface to PATROL that administrators can

use to monitor and manage applications and to customize and create Knowledge Modules.

## PATROL Event Manager

A facility that provides a selective view of events occurring on your system resources. It can be accessed from the [Console](#) or used as a stand-alone facility in large-scale installations. It works with the PATROL Agent and user-specified filters to provide a view of only the most important events.

## PATROL Event Manager Console

A stand-alone application used to manage PEM window connections to one or more hosts running PATROL Agents.

## PATROLINK

An integration package used to link PATROL with network management and other external applications.

## PATROL Applications Manager Console

An interface to PATROL that operators can use to manage applications but without being able to customize or create Knowledge Modules, commands, and so forth.

## PATROL Script Language (PSL)

A programming language for writing sophisticated [application discovery](#) procedures and parameters. PSL is an interpreted language for use within the PATROL environment. It can also be used to write arbitrary commands and tasks.

## PATROLVIEW

A product that provides the ability to view events and monitor and display all the parameters provided by the PATROL Agents and Knowledge Modules.

## persistent filter

A filter used to determine which events will be forwarded from a PATROL Agent to a specific PATROL Event Manager (PEM). This capability helps minimize network traffic. PATROL Agents maintain a persistent filter for each PEM that connects to it. Persistent filters are stored local to the PATROL Agent. The default persistent filter allows the PATROL Agent to forward all event types except information events to any connecting PEM.

## platform

Indicates which platforms the KM for Unix supports.

## polling

The process the computer goes through to check any remote devices for operational status and readiness to send or receive data.

## poll time

The amount of time it takes for a parameter to be discovered. Graphs and gauges appear only when



a parameter receives its first data value from the agent. If the poll time for a particular parameter is 10 minutes, then it will take up to 10 minutes for that parameter's icon to appear in the parameter icon window.

### **Primary Node**

HACMP Cluster Management KM specificity: this information contains the name of the node that has been elected by all available nodes running Patrol Agent to represent information about cluster state and display it directly in the Patrol Console main window.

This information is available in the cluster infobox.

### **PSL discovery**

A type of application discovery in which the discovery rules are defined using PATROL Script Language (PSL). PSL discovery can consist of prediscovery and discovery PSL scripts. The PSL *create* function is used to create instances.

### **recovery action**

An action defined as part of a parameter and triggered when a parameter value returned falls within a defined alarm range. A recovery action is a command that executes to fix a possible problem that would cause the alarm range value.

### **resource**

Any computer or [application](#) that is running on a machine that PATROL monitors.

### **Resource**

Cluster entity, such as a disk, file system, network adapter, or application server, that is made highly available in the cluster.

### **Resource Group**

Set of [resources](#) handled as one unit. Configured by user. See also cascading resources.

### **Rotating Resources**

Resource groups that may be associated with one or several nodes. Each resource group rotates among all the nodes defined in the resource chain, one resource per network per node. There must be at least one standby node. The node with the highest priority in the resource chain for the resource group takes over for a failed node. When a failed node joins a cluster, it does not re-acquire its resources; it comes up as a standby.

### **scheduler**

A PATROL Agent facility that is responsible for executing all the parameters at their poll time or as close to their poll time as possible.

### **self-polling parameter**

A parameter command that has the ability to run itself indefinitely. In PATROL, self-polling parameters can be activated and given a

scheduling frequency by using the Schedule dialog box. See [parameter](#).

### **Service Adapter**

The primary connection between the node and the network. A node has one service adapter for each physical adapter is used for AIX network connections and is the address published by the CLuster Information Program (Cinfo) to application programs that wants to use cluster services.

### **session module**

A [knowledge module](#) that contains the combined information from every other Console previously loaded during the Console session.

### **silent mode**

A PATROL operating mode that prevents information-type events from being stored in the event repository. The silent mode is on by default but can be changed for each computer instance.

### **simple discovery**

A type of application discovery that uses simple pattern matching for identifying the files and processes associated with the application when creating the rules for discovery.

### **SNMP**

Simple Network Management Protocol. This communications protocol is designed for network management systems. The messages are typically very short, perhaps just code numbers, that the recipient is expected to translate into the desired action.

### **SNMP Console**

An interface to PATROL that collects parameters and converts complex administration information into numeric code, thus reducing routine network traffic.

### **standard parameter**

A PATROL parameter that contains instructions for both gathering and displaying a value. Standard parameter data-gathering can be scheduled. See also [parameter](#), [collector parameter](#), and [consumer parameter](#).

### **Standby Adapter**

Backs up the service adapter. If the service adapter fails, the Cluster Manager directs the traffic for that node to the standby adapter. Using a standby adapter eliminates a network adapter as a single point-of-failure.

### **startup action**

Commands that are executed by the PATROL Agent against the computer while the PATROL Agent is running and the Console is either connected or reconnected. A startup action can

initialize an application log file to prepare it for monitoring, for example.

### **state**

The condition of a monitored PATROL object. States include normal, warning, and alarm. See [state change action](#).

### **state change**

Any change-of-state that takes place on a resource that PATROL is monitoring. Examples of state changes that can take place are as follows:

- A [parameter](#) goes above or below its normal range.
- The connection status of a computer changes (goes void for example).
- A parameter description is changed for a class of objects.

### **state change action**

An action stored, maintained, and initiated by the Console in response to a monitored object's change of state. The Console initiates state change actions when notified by the PATROL Agent that a monitored object has changed state. State change actions can only be performed by OS commands since PSL does not run on the Console. A common state change action is to change the appearance of an object icon to represent the real-time status of the object it represents.

### **static application**

An application whose Knowledge Module (KM) is loaded automatically by the PATROL Agent when it starts. If a KM is loaded later, such as commanded from the PATROL Console, it is dynamic, not static. When the Console's interest in an application ceases, static application KMs remain loaded; dynamic application KMs are unloaded. You can also configure the Agent to consider specified applications to be static, even if loaded dynamically.

### **status**

Indicates whether the parameter is active or inactive on discovery.

### **Sticky Location**

A special resource marker that resides in the HACMP ODM and which indicates that:

- its associated resource group is sticky
- the node specified by its value field is the associated home node. Sticky locations are discarded when a cluster is rebooted (all nodes go down at least once).

### **su command**

**su** *option user shell\_args*

Allows you to become another user without logging on and off the system, suspending your current shell while logging you in as the substitute user.

### **super module**

The combination of each subsequent knowledge module that you load with previously loaded knowledge modules to form one module. When loading additional Knowledge Modules, you can choose whether you want to overwrite identical object definitions or keep the old definition.

### **suspend**

An interruption of parameter data collection. All parameters for a specific instance of an application or a computer can be suspended. Suspending the parameter does not affect how the parameter activity level is defined (active or not active) for the object class.

### **Synchronize Cluster Topology**

Command that propagates the local node's definition of the cluster topology to the rest of the cluster.

### **system knowledge module**

The basic Knowledge Module for your operating system (for example, Unix or Windows NT). It needs to be loaded so that the PATROL can identify the computer classes and display icons for your managed computers.

### **task**

A command or group of commands that can execute on one object or several objects simultaneously. A task runs in the background. A task icon is displayed for each running task. You can perform operations dynamically, such as stop, start, and destroy, using the Task icon pop-up menu.

### **UDP**

User-datagram protocol  
A packet-level protocol used for application-to-application programs between TCP/IP host systems. The valid port numbers used by PATROL are four-digit integers greater than 1024.

### **unit**

States in what form the output is expressed; for example, percentage, number, or seconds.

### **user datagram protocol**

A packet-level protocol used for application-to-application programs between TCP/IP host systems. The valid port numbers used by PATROL are four-digit integers greater than 1024.

### **user-defined command**

A command defined by the user in the course of this session. That is, it is not loaded from any Knowledge Module.

**UUCP**

Unix-to-Unix Copy Program

**value set by**

Identifies the collector or collectors that gather the data for this parameter.

**variable name**

Refers to a language object.

**view filter**

A filter to screen events forwarded from PATROL Agents to the PATROL Console so only those events that match the selection criteria can be viewed. After you create a view filter, it is temporarily stored and can be re-applied to selectively view only those events that match the view filter criteria.

**void state**

A void state occurs when the network connection between the Console and computer is down and/or the PATROL Agent is not running.

**warning**

An indication that a parameter has returned a value that falls within the warning range.

**warning state**

A warning state occurs when one or more computer parameters are in a warning state and/or an application whose state is propagated is in a warning state.

**worst parameter**

The name of the parameter causing the most problem.





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