IBM Cluster Systems Management for Linux®

Technical Reference

Version 1 Release 1

SA22-7851-00

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Note!
Before using this information and the product it supports, read the information in “Notices” on page 157.

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This edition of the *IBM Cluster Systems Management for Linux Technical Reference* applies to IBM Cluster Systems Management for Linux Version 1 Release 1, program number 5799-GNJ, and to all subsequent releases of this product until otherwise indicated in new editions.

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Contents

About This Book

This book describes the commands and files that are used to implement the IBM Cluster Systems Management for Linux suite of tools.

Who Should Use This Book

This book is intended for system administrators who want to use the command-line interface for IBM Cluster Systems Management for Linux . The system administrator should be experienced with UNIX and networked systems.

How to Use This Book

This book contains information that describes the IBM Cluster Systems Management for Linux command-line interface. It is divided into four sections.

1. The first section contains commands that are exclusively for the IBM Cluster Systems Management for Linux command-line interface.
2. The second section contains commands that implement conditions and responses for the Monitoring application.
3. The third section contains commands that interact with the Resource Monitoring and Control (RMC) subsystem.
4. The last section contains scripts and utilities. The scripts can be used as-is or modified to create user-defined scripts that are tailored for your installation.

Typographic Conventions

This book uses the following typographic conventions:

Typographic	Usage
Bold	• **Bold** words or characters represent system elements that you must use literally, such as commands, flags, and path names.
Italic	• *Italic* words or characters represent variable values that you must supply. • *Italics* are also used for book titles and for general emphasis in text.
`Constant width`	Examples and information that the system displays appear in `constant width` typeface.
[ ]	Brackets enclose optional items in format and syntax descriptions.
{ }	Braces enclose a list from which you must choose an item in format and syntax descriptions.
|	A vertical bar separates items in a list of choices. (In other words, it means “or.”)
< >	Angle brackets (less-than and greater-than) enclose the name of a key on the keyboard. For example, **<Enter>** refers to the key on your terminal or workstation that is labeled with the word Enter.
...	An ellipsis indicates that you can repeat the preceding item one or more times.
<Ctrl-*x*>	The notation **<Ctrl-*x*>** indicates a control character sequence. For example, **<Ctrl-c>** means that you hold down the control key while pressing **<c>**.
****	The continuation character is used in coding examples in this book for formatting purposes.

Related Information

IBM Cluster Systems Management for Linux README, which is available on the CD-ROM in the root directory (/)

IBM Cluster Systems Management for Linux Monitoring HOWTO, SA22-7852-00

IBM Cluster Systems Management for Linux Remote Control HOWTO, SA22–7856-00

IBM Cluster Systems Management for Linux Set Up HOWTO, SA22-7853-00

IBM Cluster Systems Management for Linux Overview HOWTO, SA22-7857-00

How to Obtain Publications

The IBM Cluster Systems Management for Linux publications are available as HTML and PDF files on the CD-ROM in the /doc directory or on the installed system in the /opt/csm/doc directory.

The README is available on the CD-ROM in the root directory (/). The file names are as follows:

- *IBM Cluster Systems Management for Linux Monitoring HOWTO*, csmadm.pdf
- *IBM Cluster Systems Management for Linux Remote Control HOWTO*, csmremot.pdf
- *IBM Cluster Systems Management for Linux Set Up HOWTO*, csmsetup.pdf
- *IBM Cluster Systems Management for Linux Overview HOWTO*, csmovrvw.pdf
- *IBM Cluster Systems Management for Linux Technical Reference*, csmtech.pdf

Publications for IBM Cluster Systems Management for Linux were available also at the time of this release at the following website:

`http://www.ibm.com/eserver/clusters/linux`

Chapter 1. CSM Commands

addnode Command

Name

addnode - Defines and installs nodes in a cluster.

Synopsis

addnode [**−h**]

addnode [**−v**] **−f** *nodedef*

addnode [**−v**] [**−n** *starting_node*] [**−c** *count*] [**−H** *HWControlPoints*] [**−C** *ConsoleServers*] [**−t** *HWtype*]

Description

The **addnode** command runs on the management server and defines and installs all the nodes in the cluster. Before running this command, you must run the **installms** command to install the cluster management server. When **addnode** is completed successfully, the cluster is ready for use. This command can be rerun.

The **addnode** command does not add the host names to the nameserver or to the **/etc/hosts** file on the management server. You must add the host name to the nameserver or to **/etc/hosts** manually before **addnode** is run.

If you do not provide some of the arguments, the program prompts you for each piece of information that it needs.

The **addnode** command generates the **/etc/opt/csm/netfinity_power.config** file. A template file is shipped in **csm.server**. See the **/etc/opt/csm/netfinity_power.config.tmpl**. This template file contains a default user ID and password, which is supplied for the service processor when it is shipped from the factory. The **addnode** command uses the default user ID and password from the template file to generate the user ID and password for all of the nodes in the cluster. To change the password or user ID for a node from the default, the file created from the template, **netfinity_power.config**, when **addnode** is run, must be edited manually after **addnode** is run.

Additional steps for changing these user IDs and passwords are supplied in the *IBM Cluster Systems Management for Linux Remote Control HOWTO*.

Note: You cannot redefine a node that is already defined. If you attempt to define a node that is already defined by using the **−n** option, the **addnode** command will fail and return an error message stating that the node is already defined. The command can be rerun and the defined node can be avoided when the command is rerun. But, if a defined node is listed in the node definition file (*nodedef*), processing will complete for the nodes that are undefined, and an error message will be generated for the already defined nodes.

The **addnode** command creates PreManagedNode objects based upon user input and then adds the information to the CSM database (in the PreManagedNode class) for each node. To see the PreManagedNode objects, type:

```
lsnode -P
```

See the **lsnode** man page for details about the attributes that are added to the CSM database.

To list the attributes of a node, type:

```
lsnode -APl
```

To change the attributes of a node, use the **chnode** command.

Options

−c *count*

Specifies how many nodes to define. IP addresses are calculated for nodes beyond the IP address for the starting node. The default is one.

−C *ConsoleServers*

Specifies the list of console server definitions. Multiple console server definitions are separated by commas. To specify that there are no console servers, enter a null value as follows:

```
-C " "
```

Note: A blank space is required between the opening and closing double quotation marks.

Each entry is formatted as follows:

```
-C csname[:method:csnum:starting_portnum][, ...]
```

where:

csname

Represents the host name or IP address of a console server.

method

Represents the console method. The default method is **esp**. Valid values for this field are `esp`, `conserver`, or `none`, or the field can be left blank. If the console server name field is left blank (the **-C** option has a value of ″ ″), then the value assumed for this field is `none`. If the console server name field is not blank and this field is blank, the default value of `esp` is assumed.

csnum Represents the console server number. The default is 1.

starting_portnum

Represents the starting console port number. The default is 0. If some ports have already been defined for the console server, then a starting port number higher than 0 needs to be used. The console port number is represented by a single hexadecimal character (0–f). The number of ports available to each console server depends on the console method.

If the console method is the default **esp**, the program determines how many ports are available. If you would like to know this information, type:

```
esptty -c
```

Otherwise, the default is 16. The port number is incremented up to the number of nodes to be defined. Each node is assigned a specific port number and console server. All the ports for a console server are assigned, and then the ports for the next console server are assigned. The console servers are used in the order that they are specified with the **-C** option.

If any of the port numbers for a console server are already in use by an existing ManagedNode or PreManagedNode, the **addnode** command fails without defining any nodes.

−f *nodedef*

Represents the node definition file. This file contains the node list, the console_server definitions, and the hardware control point definitions. A sample node definition file is supplied in **/opt/csm/install/nodedef.sample**. This option cannot be used with any other option except **−v**.

−h Writes the command's usage statement to standard output.

−H *HWControlPoints*

Specifies the list of hardware control points and their associated service processors. Multiple hardware control point definitions are separated by commas. To specify that there are no hardware control points, enter a null value as follows:

```
-H " "
```

Note: A blank space is required between the opening and closing double quotation marks.

Each hardware control point definition for a node is specified in the following format:

```
-H HWCtrlPt[:method:service_processor_name][,... ]
```

where:

HWCtrlPt

Represents a hardware control point by host name or IP address.

method

Represents the power method. Valid values are `netfinity` or `none`, or the field can be left blank. If the hardware control point is listed and the hardware type is `netfinity`, the default hardware type is `netfinity`. If the hardware control point field is not listed (the **-H** option has a value of ″ ″) or the hardware type is not `netfinity`, then the value assumed for this field is `"none"`.

service_processor_name

Represents the starting internal service processor (ISP) name. A maximum of 10 service processors are connected to each hardware control point. If a starting service processor name is not provided, the default is **node01**. There are two formats provided for the service processor name. The first format is **node***nn*, where *nn* is an integer from 01 through 10. A starting service processor higher than **node01** needs to be used if some of the service processors have already been defined for a hardware control point. The second format is based on the short host name of each node and is specified by entering the word **hostname** as the value for *service_processor_name*.

Note: This changes the setting of the CSM database **SvcProcName** attribute name of the ISP to the short host name of the node. To change the actual ISP name (text id) to the short host name of the node, refer to the *IBM Cluster Systems Management for Linux Remote Control HOWTO*. It is worthwhile to change the ISP to the short host name, for example, if you want to track SNMP (Simple Network Management Protocol) alerts. The ISP provides reporting mechanism support for tracking SNMP alerts.

The service processor name can be incremented up to the number of nodes to be defined. Each node is assigned to a specific service processor and hardware control point. All the service processors attached to a hardware control point are assigned, and then the service processors attached to the next hardware control point are assigned. The hardware control points are used in the order that they are specified with the **-H** option.

If any of the hardware control points for a management service processor are already in use by an existing ManagedNode or PreManagedNode, then the **addnode** command fails without defining any nodes.

−n *starting_node*

Specifies the IP address or host name of the starting node. A list of nodes can be generated by incrementing IP addresses up to the value specified by ***count***. If a host name is specified, it is converted to an IP address.

−t *HWType*
Specifies the hardware type for all of the nodes to be defined. If the hardware type is set to `netfinity`, then PowerMethod defaults to `netfinity`, provided the hardware control point is set.

−v Writes the command's verbose messages to standard output.

Examples

1. To be prompted for all the necessary information, type:

   ```
   addnode
   ```

   The program requests the required information from you.
2. To add 16 nodes to a new cluster, type:

   ```
   addnode -ncls02 -c16 -Hmgt03,mgt04 -Cmgt01 -tnetfinity
   ```
3. To add four nodes to an existing cluster, type:

   ```
   addnode -ncls18 -c4 -Hmgt04::node07 -Cmgtn02 -tnetfinity
   ```
4. To define five nodes and their associated hardware control points and console servers, with a hardware type of `netfinity`, type:

   ```
   addnode -nclsn02 -c5 -Hmgtn03 -Cmgtn02 -tnetfinity
   ```

The output from this command is similar to:

```
definenode: Adding CSM Nodes:
definenode: Adding Node clsn02.ppd.pok.ibm.com(9.114.133.197)
definenode: Adding Node clsn03.ppd.pok.ibm.com(9.114.133.198)
definenode: Adding Node clsn04.ppd.pok.ibm.com(9.114.133.199)
definenode: Adding Node clsn05.ppd.pok.ibm.com(9.114.133.200)
definenode: Adding Node clsn06.ppd.pok.ibm.com(9.114.133.201)
installnode: Output log is being written to /var/log/csm/installnode.log
installnode: Status of nodes before the install:
installnode: 0 nodes already installed
installnode: 5 nodes to be installed
installnode: Installing nodes:
clsn02.ppd.pok.ibm.com
clsn03.ppd.pok.ibm.com
clsn04.ppd.pok.ibm.com
clsn05.ppd.pok.ibm.com
clsn06.ppd.pok.ibm.com
clsn02.ppd.pok.ibm.com SUCCESS!!!!!!!!!!!!
clsn03.ppd.pok.ibm.com SUCCESS!!!!!!!!!!!!
clsn04.ppd.pok.ibm.com SUCCESS!!!!!!!!!!!!
clsn05.ppd.pok.ibm.com SUCCESS!!!!!!!!!!!!
clsn06.ppd.pok.ibm.com SUCCESS!!!!!!!!!!!!
```

Files

/opt/csm/bin/addnode
Location of the **addnode** command.

/etc/opt/csm/netfinity_power.config.tmpl
Location of the template file that contains a default userid and password, which is supplied for the service processor when it is shipped from the factory. The **addnode** command uses the default userid and password from the template file to create userids and passwords for all the nodes in the cluster. The **addnode** command generates the **netfinity_power.config** file to contain these passwords.

/etc/opt/csm/netfinity_power.config
Location of the service processor password file. To change the userid and password for a node, this file must be edited manually after **addnode** is run.

/opt/csm/install/nodedef.sample
Location of the sample node definition file.

See Also

- HOWTO Docs: CSM Set-Up HOWTO (csmsetup.pdf), CSM Remote Control HOWTO (csmrempo.pdf)
- Commands: **definenode** , **installms**, **rpower**
- Files: **netfinity_power.config**, **netfinity_power.config.tmpl**, **nodedef**
- *IBM Cluster Systems Management for Linux Remote Control HOWTO* (csmremot.pdf), *IBM Cluster Systems Management for Linux Set Up HOWTO*(csmsetup.pdf)

Author

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cfm Command

Name

cfm - Starts the configure file manager process, which copies or provides links to all new or modified files in the server's file repository.

Synopsis

cfm [**−h**]

Description

The **cfm** command provides the major function of the configuration file manager application. The configuration file manager (CFM) provides a directory or file system that contains all the files that are shared among CFM managed nodes. The system administrator builds this directory to be the repository of files or links to files of interest, in particular, configuration files. The repository is set up on the management server, and an agent pulls changes to the files in the repository down to the managed nodes in the cluster. For a specified configuration file, versions can be set up for all nodes, for particular types of nodes, or for a specific host name.

Note: If symbolic links are used in the repository, the links and not the files that they point to are copied over. Do not use symbolic links to distribute the actual configuration files themselves.

Typically, **cfm** is usually run on the managed node. A managed node can be instructed to pull new or changed configuration files at boot time, when the files change, and when the administrator runs a command (such as **cforce**) on the managed node.

The top of the repository is **/cfmroot**. This directory should be considered to be equivalent to the root directory (**/**) on the managed nodes (for example, **/cfmroot/etc** on the server equates to **/etc** on the managed node). Files can be copied or linked, but copying allows you to do variable substitutions that are not possible by linking.

To do variable substitution, the **cfm** command checks the files in the file repository of the server and copies all new or modified files. When the variables *%ip%* and *%hostname%* are found in a configuration file, the **cfm** command substitutes the IP address and host name of the managed node on which **cfm** is running for these variables. See example 3 on page 8 for an illustration of how this works.

In addition, **cfm** allows preprocessing and postprocessing; for example, to lock files that are being copied. If a *filename***.pre** or *filename***.post** exists, before the configuration file is copied, the *filename***.pre** script or executable is run, and after the configuration file is copied, *filename***.post** is run.

To copy variations of the same file for different nodes, CFM uses the concept of groups as defined by the CSM **nodegrp** command. To associate a file with a specific group, add a **.**_*GroupName* extension to the file name. For example, **inetd.conf._aixbin** copies files only to nodes in the **aixbin** group. To see a list of all the defined node groups in the cluster, type:

```
nodegrp -l
```

A log is provided from the output of the cfengine application that contains both the standard error and the standard output messages from cfengine. This log is currently located in **/var/log/cfengine.log**. The entries include all files changed on the local node in user-readable format. Because the log is not circular, but rather is appended upon each run of **cfm**, the administrator needs to prune the log entries periodically according to the system policy for that installation.

The **cfm** command uses the file copy capability of the cfengine GNU tool.

Notes:

1. Normally **cfm** is not issued at the command line; rather it is called by the internal **cfd** mechanism on a regular basis (similar to a **cron** job). The **cfm** command can also be called by the **cforce** command. In addition, a predefined condition (CFMRootModeTimeChanged) can be set up and associated with **cforce** as a response action. This forces file synchronization to occur if one or more files change on the management server.
2. **cfm** is sensitive to time differences between the management server and the client nodes. It is the administrator's responsibility to ensure that time is kept in synchronization by means of **ntp** or another suitable method.
3. **cfm** queries node group definitions during processing on each node. This implies that the **mgmtsvr** setting on each node must be set correctly and that the RMC ACL file on the management server node must give access to each node. These are normally set up by CSM automatically. To ensure that the proper permissions are in place, run the following command on each node:

   ```
   nodegrp -l
   ```

   If you can see the defined node groups, then CFM is able to process node group extensions to file names correctly.

Options

−h Writes the command's usage statement to standard output.

Examples

1. To run the configuration file manager on the current managed node, enter:

   ```
   cfm
   ```

2. To copy a file into **/cfmroot** from **/etc**, keeping the same permissions, ownership, modification, and access times, type:

   ```
   cp -p /etc/inetd.conf /cfmroot/etc/inetd.conf
   ```

   The output is similar to:

   ```
   /cfmroot/etc/inetd.conf
   /cfmroot/usr/home/fred/tune.cnf
   /cfmroot/etc/hosts
   ```

   The output on the managed node system after the **cfm** command distributes the files from the server is similar to:

   ```
   /etc/inetd.conf
   /usr/home/fred/tune.cnf
   /etc/hosts
   ```

3. To use variable substitution in order to add the node with an IP address of 192.168.100.2 and a host name of **lister** to the **/etc/hosts** file, add the *%ip%* and *%hostname%* variables to the **/cfmroot/etc/hosts** file as follows:

   ```
   192.168.100.4   clifford
   192.168.100.5 snowy
   192.168.100.6 ns1
   192.168.100.20 streika
   192.168.100.21 bars
   192.168.100.22 lisichka
   %ip% %hostname%
   ```

   On the managed node, this resolves to:

   ```
   192.168.100.4   clifford
   192.168.100.5 snowy
   192.168.100.6 ns1
   ```

```
192.168.100.20 streika
192.168.100.21 bars
192.168.100.22 lisichka
192.168.100.2 lister
```

Diagnostics

All standard error output is displayed and also recorded in the log file.

Files

These files should not be modified:

/usr/local/sbin/cfengine
: Location of the cfengine program

/etc/opt/csm/cf.copy
: Location of the cfengine script for copying files from the server repository to the local cache.

/etc/opt/csm/cf.copylocal
: Location of the cfengine script for copying files from the local cache to the final destination.

/etc/opt/csm/cf.main
: Location of the generic cfengine configuration file that contains items such as the cfengine server. It also serves as the security file for the managed node; for example, it lists the servers that the managed node can access.

/etc/opt/csm/cfd.conf
: Location of the configuration file for the **cfd** daemon portion of cfengine. This file serves as the resident security file for the server and determines the nodes that can access this server.

/etc/opt/csm/cfengine.conf
: Location of the primary configuration file for **cfm**. It handles the copying of files from the server repository to a local cache.

/etc/opt/csm/cfengine.conf.local
: Location of the secondary configuration file for **cfm**. It handles the copying of files from the local cache to the final destination.

See Also

Commands: **cfengine**, **cforce**, **nodegrp**

IBM Cluster Systems Management for Linux Monitoring HOWTO for information on the RMC ACL file and predefined conditions and responses.

Author

Christopher Hawkinson- cluster@us.ibm.com

cforce Command

Name

cforce - Forces the **cfm** managed node to be run on a specific system for file synchronization.

Synopsis

cforce [−h] [*host*]

Description

The **cforce** command is run on the management server and causes all the nodes to pull down any new configuration files from the management server. The **cforce** can optionally cause **cfm** to be run on a single node when the optional parameter *host_name* is specified.

host Specifies the node on which to run **cfm**.

Options

−h Writes the command's usage statement to standard output.

Examples

1. To force **cfm** to run on all nodes, enter:

   ```
   cforce
   ```

2. To run **cfm** on one particular managed node, in this case, a node with the host name of **puppy**, enter:

   ```
   cforce puppy
   ```

Files

/etc/opt/csm/cfd.conf

Location of the configuration file for the **cfd** daemon portion of cfengine.

See Also

Commands: **cfengine**, **cfm**

Author

Christopher Hawkinson - cluster@us.ibm.com

chnode Command

Name

chnode - Changes a node definition in the IBM Cluster Systems Management for Linux (CSM) database.

Synopsis

chnode [**−h**] [**−P**] [**−v**] { *host* | **−w** *selectstr*} *Attr=value* [*Attr=value* ...]

Description

The **chnode** command changes a managed node definition in the CSM database by setting one or more attribute values. Attribute values can be set in the database for this node definition by specifying attribute/value pairs on the command line in the form *Attr=value*. If the value is a string that contains spaces or other special characters, the value must be enclosed in quotation marks. The *host* parameter can be specified by host name or by IP address. If **-w** *selectstr* is specified, **chnode** uses that string in the ″where″ part of an SQL select statement against the database of nodes and changes the nodes that are matched.

The **chnode** command can be run on any node, including the management server, to change a node definition in the IBM Cluster Systems Management for Linux database on the management server.

Options

−h Writes the command's usage statement to standard output.

−P Changes nodes in the PreManagedNode table/class. (Normally, nodes are changed in the ManagedNode table/class.).

−v Writes the command's verbose messages to standard output.

−w *selectstr*
Changes the nodes that match the ″where″ part of the select string. It is easiest to put the whole string in double quotation marks, especially if you need to put attribute values in single quotation marks (when they are strings). As a convenience, ″*″ means all nodes, as if a ″where″ string were not specified. If **whichdb** is set to **rmc**, then the syntax for the select string is described in the section ″Using Expressions″ of Chapter 2 in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*. If **whichdb** is set to **file**, then normal SQL syntax is used.

Exit Status

1 An invalid combination of options and arguments has been entered.

12 Node not found.

51 Badly formed select string. This error is returned from the DBI layer.

When an error is detected in the DBI layer, the return code of the DBI layer is used as the exit status. When RMC is used as the DBI layer, the exit status of the RMC command is returned as the exit status.The DBI (DataBaseInterface) is a perl interface to databases that is similar in purpose to ODBC. DBI drivers (DBDs) are available for many kinds of databases.

Examples

1. To change the operating-system version for **websvr** in the CSM database, type:

```
chnode websvr OSversion='7.1'
```

Files

/opt/csm/bin/chnode
Location of the **chnode** command

See Also

Commands: **createnode**, **lsnode**, **nodegrp**, **rmnode**, **whichdb**

File: See the **rmccli General Information** file for information on attr=value syntax.

IBM Cluster Systems Management for Linux Monitoring HOWTO for information on selection string syntax.

Author

Bruce Potter - cluster@us.ibm.com

chsensor Command

Name

chsensor - Changes attributes of an RMC sensor.

Synopsis

chsensor [**−h**] [**−v | V**] *Name* [*Attr=value* [*Attr=value*...]]

Description

The **chsensor** command changes one or more attributes of the sensor identified by *Name*. Currently, the only attribute that can be changed after the definition of the sensor is its Name; for example, the RefreshInterval attribute cannot be changed. If the value is a string that contains spaces or other special characters, the value must be enclosed in quotation marks. This command returns the error messages and exit status of the underlying **chrsrc** RMC command.

The **chsensor** command runs on any node, including the management server, and normally operates on the local node where it is run unless CT_CONTACT is set.

See the **mksensor** command for a more complete explanation of RMC sensors.

Options

−h Writes the command's usage statement to standard output.

−v Writes the command's verbose messages to standard output. This option can be entered either uppercase or lowercase.

−V Writes the command's verbose messages to standard output. This option can be entered either uppercase or lowercase.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

6 No resources found.

Security

The user needs write permission for the IBM.Sensor resource class in order to run **chsensor**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To change the name of the NumLogins sensor to Numlog, type:

```
chsensor NumLogins Name=NumLog
```

Files

/opt/csm/bin/chsensor
Location of the **chsensor** command.

See Also

Commands: **chrsrc**, **lssensor**, **mksensor**, **rmsensor**

Files: See **rmccli General Information** file for information on attr=value syntax.

See the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for information on the ACL authorization file and the RMC select string syntax.

Author

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createnode Command

Name

createnode - Creates a node definition in the IBM Cluster Systems Management for Linux (CSM) database.

Synopsis

createnode [**−h**] [−M] [**−v**] *host* [*Attr=value [Attr=value* ...]]

Description

This command is normally not run from the command line. Instead **createnode** is called as part of the automated installation process. This command is run on the management server.

The **createnode** command adds a managed-node definition to the CSM database as an additional node to be managed by this management server. The Hostname attribute in the database is set by looking up the primary DNS host name of the specified *host*. The *host* parameter can be specified by host name or by IP address.

Additional attributes can be set in the database for this node definition by specifying attribute/value pairs on the command line in the form *Attr=value*. If the value is a string that contains spaces or other special characters, the value must be enclosed in quotation marks.

Attribute values can be changed later with the **chnode** command.

Options

−h Writes the command's usage statement to standard output.

−M Adds this node to the ManagedNode table/class. Normally, the node is added to the PreManagedNode class and moved to the ManagedNode class later when the CSM installation code has set up the node.

−v Writes the command's verbose messages to standard output.

Exit Status

1 An invalid combination of options and arguments has been entered.

12 Node already exists.

51 Badly formed select string. This error is returned from the DBI layer.

When an error is detected in the DBI layer, the return code of the DBI layer is used as the exit status. When the Resource Monitoring and Control subsystem (RMC) is used as the DBI layer, the exit status of the RMC command is returned as the exit status. The DBI (DataBaseInterface) is a perl interface to databases that is similar in purpose to ODBC. DBI drivers (DBDs) are available for many kinds of databases.

Examples

1. To create a node **websvr** in the CSM database, type:

```
createnode websvr HWtype='netfinity'
```

See Also

Commands: **chnode**, **lsnode**, **nodegrp**, **rmnode**, **whichdb**

File: See the **rmccli General Information** file for information on attr=value syntax.

Files

/opt/csm/bin/createnode
Location of the **createnode** command.

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definenode Command

Name

definenode - Defines the nodes in a cluster.

Synopsis

definenode [**−h**]

definenode [**−v**] **−f** *nodedef*

definenode [**−v**] [**−n** *starting_node*] [**−c** *count*] [**−H** *HWControlPoints*] [**−C** *ConsoleServers*] [**−t** *HWtype*]

Description

The **definenode** command runs on the management server and defines all the nodes in the cluster. Before running this command, you must run the **installms** command to install the cluster management server. This command can be rerun. It does not actually install the nodes. The node installation is done by the **installnode** command.

Note that the **addnode** command runs both the **definenode** and the **installnode** commands automatically.

If you do not provide some of the arguments, the program prompts you for each piece of information that it needs.

The **definenode** command generates the **/etc/opt/csm/netfinity_power.config** file. A template file is shipped in **csm.server**. See the **/etc/opt/csm/netfinity_power.config.tmpl** file This template file contains a default userid and password, which is supplied for the service processor when it is shipped from the factory. The **definenode** command uses the default userid and password from the template file to generate the userid and password for all of the nodes in the cluster. To change the password or userid for a node from the default, the file created from the template when **definenode** is run, **netfinity_power.config**, must be edited manually after **definenode** is run.

Notes:

1. You cannot redefine a node that is already defined. If you attempt to define a node that is already defined by using the **−n** option, the **definenode** command fails and returns an error message stating that the node is already defined. The command can be rerun and the defined node can be avoided when the command is rerun. But, if a defined node is listed in a *nodedef* file, processing is completed for the nodes that are undefined, and an error message is generated for the already defined nodes.
2. The **definenode** command does not add the host names to the nameserver or to the **/etc/hosts** file on the management server. You must add the host name to the nameserver or to **/etc/hosts** manually before **definenode** is run.

The **definenode** command creates PreManagedNode objects based upon user input and then adds the information to the CSM database (in the PreManagedNode class) for each node. To see the PreManagedNode objects, type:

```
lsnode -P
```

See the **lsnode** man page for details about the attributes that are added to the CSM database.

You can list the attributes of a node by typing:

```
lsnode -APl
```

You can change the attributes of a defined node by using the **chnode** command.

Options

−c *count*
Specifies how many nodes to define. IP addresses are calculated for nodes beyond the IP address for the starting node. The default is one.

−C *ConsoleServers*
Specifies the list of console server definitions. Multiple console server definitions are separated by commas. To specify that there are no console servers, enter a null value as follows:

```
-C " "
```

Note: A blank space is required between the opening and closing double quotation marks.

Each entry is formatted as follows:

```
-C csname[:method:csnum:starting_portnum][, ...]
```

where:

csname
Represents the host name or IP address of a console server.

method
Represents the console method. The default method is **esp**. Valid values for this field are `"esp"`, `"conserver"`, or `"none"`, or the field can be left blank. If the console server name field is left blank (the **-C** option has a value of ″ ″), then the value assumed for this field is `"none"`. If the console server name field is not blank and this field is blank, the default value of `"esp"` is assumed.

csnum Represents the console server number. The default is 1.

starting_portnum
Represents the starting console port number. The default is 0. If some ports have already been defined for the console server, then a starting port number higher than 0 needs to be used. The console port number is represented by a single hexadecimal character (0–f). The number of ports available to each console server depends on the console method.

If the console method is the default **esp**, the program determines how many ports are available. If you would like to know this information, type:

```
esptty -c
```

Otherwise, the default is 16. The port number is incremented up to the number of nodes to be defined. Each node is assigned a specific port number and console server. All the ports for a console server are assigned, and then the ports for the next console server are assigned. The console servers are used in the order that they are specified with the **-C** option.

If any of the port numbers for a console server are already in use by an existing ManagedNode or PreManagedNode, the **addnode** command fails without defining any nodes.

For more details on console servers, hardware control points, and service processors, see *IBM Cluster Systems Management for Linux Remote Control HOWTO*.

−f *nodedef*
Represents the node definition file. This file contains the list of node names, the console server definitions, and the hardware control point definitions. A sample node definition file is supplied in **/opt/csm/install/nodedef.sample**. This option cannot be used with any other option except **−v**. See the **nodedef** man page for more information.

−h Writes the command's usage statement to standard output.

−H *HWControlPoints*

Specifies the list of hardware control points and their associated service processors. Multiple hardware control point definitions are separated by commas. To specify that there are no hardware control points, enter a null value as follows:

```
-H " "
```

Note: A blank space is required between the opening and closing double quotation marks.

Each hardware control point definition for a node is specified in the following format:

```
-H HWCtrlPt[:method:service_processor_name][,... ]
```

where:

HWCtrlPt

Represents a hardware control point by host name or IP address.

method

Represents the power method. Valid values are `netfinity` or `none`, or the field can be left blank. If the hardware control point is listed and the hardware type is `netfinity`, then the default is `netfinity`. If the hardware control point field is not listed (the **-H** optionhas a value of ″ ″) or the hardware type is not `netfinity`, then the default for this field is `none`.

service_processor_name

Represents the starting internal service processor (ISP) name. A maximum of 10 service processors are connected to each hardware control point. If a starting service processor name is not provided, the default is **node01**. There are two formats provided for the service processor name. The first format is **node***nn*, where *nn* is an integer from 01 through 10. A starting service processor higher than **node01**needs to be used if some of the service processors have already been defined for a hardware control point. The second format is based on the short host name of each node and is specified by entering the word **hostname** as the value for *service_processor_name*.

Note: This changes the the setting of the CSM database **SvcProcName** attribute name of the ISP to the short host name of the node. To change the actual ISP name to the short host name of the node, refer to the *IBM Cluster Systems Management for Linux Remote Control HOWTO*. It is worthwhile to change the ISP to the short host name, for example, if you want to track SNMP (Simple Network Management Protocol) alerts. The ISP provides reporting mechanism support for tracking SNMP alerts.

The service processor name can be incremented up to the number of nodes to be defined. Each node is assigned to a specific service processor and hardware control point. All the service processors attached to a hardware control point are assigned, and then the service processors attached to the next hardware control point are assigned. The hardware control points are used in the order that they are specified with the **-H** option

If any of the hardware control points for a management service processor are already in use by an existing ManagedNode or PreManagedNode, then the **definenode** command fails without defining any nodes.

−n *starting_node*

Specifies the IP address or host name for the first node to be added. A list of nodes can be generated by incrementing IP addresses up to the value specified by ***count***. If a host name is specified, it is converted to an IP address.

–t *HWType*
Specifies the hardware type for all of the nodes to be defined. If the hardware type is set to `netfinity`, then PowerMethod default to `netfinity`, provided the hardware control point is set.

–v Writes the command's verbose messages to standard output.

Examples

1. To be prompted for all the necessary information, type:

   ```
   definenode
   ```

   The program requests the required information from you.
2. To add 16 nodes to a new cluster, type:

   ```
   definenode -ncls02 -c16 -Hmgt03,mgt04 -Cmgt01 -tnetfinity
   ```
3. To add four nodes to an existing cluster, type:

   ```
   definenode -ncls18 -c4 -Hmgt04::node07 -Cmgt02 -tnetfinity
   ```
4. To define five nodes and their associated hardware control points and console servers, with a hardware type of `netfinity`, type:

   ```
   addnode -nclsn02 -c5 -Hmgtn03 -Cmgtn02 -tnetfinity
   ```

   ```
   definenode: Adding CSM Nodes:
   definenode: Adding Node clsn02.ppd.pok.ibm.com(9.114.133.197)
   definenode: Adding Node clsn03.ppd.pok.ibm.com(9.114.133.198)
   definenode: Adding Node clsn04.ppd.pok.ibm.com(9.114.133.199)
   definenode: Adding Node clsn05.ppd.pok.ibm.com(9.114.133.200)
   definenode: Adding Node clsn06.ppd.pok.ibm.com(9.114.133.201)
   ```

Files

/opt/csm/bin/definenode
Location of the **definenode** command.

/etc/opt/csm/netfinity_power.config.tmpl
Location of the template file that contains a default userid and password, which is supplied for the service processor when it is shipped from the factory. The **definenode** command uses the default userid and password from the template file to create userids and passwords for all the nodes in the cluster. The **definenode** command generates the **netfinity_power.config** file to contain these passwords.

/etc/opt/csm/netfinity_power.config
Location of the service processor password file. To change the userid and password for a node, this file must be edited manually after **definenode** is run.

/opt/csm/install/nodedef.sample
Location of the sample node definition file.

See Also

- Commands: **addnode** , **chnode**, **createnode**, **installms**, **installnode**, **makenode**, **rpower**
- Files: **netfinity_power.config**, **netfinity_power.config.tmpl**, **nodedef**
- *IBM Cluster Systems Management for Linux Remote Control HOWTO* (csmremot.pdf), *IBM Cluster Systems Management for Linux Set Up HOWTO*(csmsetup.pdf)

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dmsctrl Command

Name

dmsctrl - Displays or changes certain parameters that affect the distributed management server of CSM.

Synopsis

dmsctrl [**−h**] [**−v**] [**−t** *HostResponseTimeout*] [**−i** *FpingInterval*] [**−p** *PowerStatusInterval*]

Description

The **dmsctrl** command, which is run on the management server, allows you to manipulate the parameters that CSM uses in the distributed management server. Specifically, parameters can be set or queried that affect the way **fping** is periodically run and how often the power status of each node is queried. The **fping** tool is an open source tool that pings a set of nodes in parallel. The **ping** packets are sent to all the nodes at the same time, and then the tool waits for all the responses. CSM runs **fping** at a specified interval to determine the network status of all the nodes in the CSM cluster. The latest status of each node is cached and made available by means of the **lsnode -p** command. The power status is queried by the **rpower** command. The results are cached and made available by means of the command:

```
lsnode -a PowerStatus
```

One or more of the parameters can be set using the optionsthat follow. If no option is specified, the value of all parameters is displayed.

Options

−h Writes the command's usage statement to standard output.

-v Writes the command's verbose messages to standard output, including messages from the DBI layer.

−i *FpingInterval*
Specifies the length of time (in milliseconds) between **fping** invocations. All nodes are **ping**ed in one **fping** invocation. This value should be at least twice the *HostResponseTimeout*. The default is 5000ms or 5 seconds.

−p *PowerStatusInterval*
Specifies the length of time (in minutes) between queries of the power status. The default is 5 minutes.

−t *HostResponseTimeout*
Specifies the length of time (in milliseconds) that **fping** waits for a return packet before assuming that a node is not responding. The default is 500ms.

Examples

1. To change the ping interval to .25 second and change the timeout interval to 3 seconds, type:
   ```
   dmsctrl -i 250 -t 3000
   ```
2. To change the power query interval to 3 minutes, type:
   ```
   dmsctrl -p 3
   ```
3. To show the values currently set for the ping interval and for the timeout, type:
   ```
   dmsctrl
   ```

Files

/opt/csm/bin/dmsctrl
Location of the **dmsctrl** command.

See Also

Commands: **fping**, **lsnode**, **rpower**

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dsh Command

Name

dsh - Concurrently issues remote shell commands to multiple hosts and formats results.

Synopsis

dsh −q

dsh [**−h**] [**−a**] [**−c**] [**−i**] [**−m**] [**−v**] [**−z**] [**−l** *login_name*] [**−n** *host[,host...]*] [**−N** *node_group[,node_group...]*] [**−w** {*host[,host...*] | – }] [**−o** *″ remote_shell_options″*] [**−r** *remote_shell_path*] [**−f** *fanout_value* | **−s**] [*command*]

Description

The **dsh** command runs on the management server but can be run from any node as long as security is set up to allow the node to run commands on other nodes. The **dsh** command invokes commands on a set of Linux nodes concurrently. It issues a Linux remote shell command concurrently for each node that is specified and returns the output from all the nodes, formatted so that command results from all the nodes can be managed. **/bin/rsh** is the model for syntax and security. It is assumed that the remote login shell of the user of **dsh** is the bash shell.

The set of nodes to which the commands are sent can be determined in two ways:

The first way is called the **node list**. The node list is obtained from the first existence of one of the following:

1. A list of host names specified on the command line when the **-n** option is used.
2. The contents of a file named by the **NODE_LIST** environment variable. The node-list file format is one host name per line. Blank lines and comment lines beginning with # are ignored.

This is the preferred manner.

The second way is called the **working collective**. The working collective is obtained from the first existence of one of the following:

1. A list of host names specified on the command line when the **-w** option is used.
2. The contents of a file named by the **WCOLL** environment variable. The working collective file format is one host name per line. Blank lines and comment lines beginning with # are ignored.

If neither a node list nor a working collective exists when this approach is used, an error has occurred, and no commands are issued.

If nodes are specified in more than one way, only the highest priority specification is used, as follows:

1. **-n** option
2. **-w** option
3. NODE_LIST
4. WCOLL

If the *command* parameter is not specified, **dsh** reads lines from the command line or standard input and issues each input as a command on each host in the node list or working collective. The commands use the syntax of the remote shell command.

To exit the **dsh** command line mode, type `exit` or press Enter at the **dsh** prompt.

When commands are resolved on the remote node, the path used is determined by the **DSHPATH** environment variable specified by the user. If **DSHPATH** is not set, the path used is the remote shell default path, **/usr/ucb:/bin:/usr/bin**. (For example, to set **DSHPATH** to the path set on the source node, use **DSHPATH=$PATH**).

The maximum number of concurrent remote shell commands can be specified with the fanout (**-f**) option or by means of the **FANOUT** environment variable. If desired, sequential invocation can be obtained by specifying a fanout value of 1. All remote shell commands in a fanout must complete before the next set of remote shell commands is started. The fanout is kept at the fanout number that is specified. When one command is completed on a node, another command is started. (Formerly, each command had to be completed on each node before another command in the fanout could be started.) If fanout is not specified by the **FANOUT** environment variable or by the **-f** option, remote shell commands can be issued to up to a maximum of 64 nodes concurrently. Each remote shell command that **dsh** runs requires a reserved TCP/IP port, and only 512 such ports are available per node.

If the streaming mode is specified by the **-s** option instead of the fanout mode, then output is returned from each node as the command is completed on that node rather than waiting for the command to be completed on all nodes before the results are returned. This can improve performance but causes the output to be unsorted.

Exit values for the remote shell commands are displayed in messages from the **dsh** command if the exit values are nonzero. A nonzero return code from a remote shell indicates that the remote shell has failed. This has nothing to do with the exit code of the remotely issued command. If a remote shell fails, that node is removed from the current node list. Use the **-z** option to obtain the return code from the last command issued on the remote node.

The **dsh** exit value is 0 if no errors occurred in the **dsh** command and all remote shell commands finished with exit codes of 0. If internal errors occur or the remote shell commands fail, the **dsh** exit value is greater than 0. The exit value is increased by 1 for each remote shell failure.

No particular error recovery for command failure on remote hosts is provided. The application or user can examine the command results in the standard error and standard output of the **dsh** command and take appropriate action.

The **dsh** command waits until results are in for each command for all hosts and displays those results before reading more input commands. This is true only if the −**s** option is not specified on the **dsh** command line.

The **dsh** command does not work with interactive commands, including those that read from standard input.

The **dsh** command output consists of the output (standard error and standard output) of the remotely issued commands. The **dsh** standard output is the standard output of the remote shell command. The **dsh** standard error is the standard error of the remote shell command. Each line is prefixed with the host name of the node which produced the output. The host name is followed by ″:″ and a line of the command output.

For example: a command was issued to a working collective of host1, host2, and host3. When the command was issued on each of the hosts, the following lines were written by the remote commands:

```
For host1 stdout:
h1out1
h1out2

For host2 stdout:
h2out1
h2out2
```

```
For host3 stdout:
h3out1

For host3 stderr:
h3err1
h3err2

dsh stdout will be
host1: h1out1
host1: h1out2
host2: h2out1
host2: h2out2
host3: h3out1

dsh stderr will be
host3: h3err1
host3: h3err2
```

A filter to display identical outputs grouped by node is provided separately. See the **dshbak** command.

If a node is detected as down (for example, a remote shell command issues a nonzero return code), subsequent commands are not sent to this node on this invocation of **dsh** unless the **-c** option is specified.

An exclamation point (!) at the beginning of a command line causes the command to be passed directly to the local host in the current environment. The command is not sent to the working collective.

Signal 2 (INT), Signal 3 (QUIT), and Signal 15 (TERM) are propagated to the remote commands.

Signal 19 (CONT), Signal 17 (STOP), and Signal 18 (TSTP) are defaulted. This means that the **dsh** command responds normally to these signals, but the signals do not have an effect on the remotely running commands. Other signals are caught by **dsh** and have their default effects on the **dsh** command. In the case of these other signals, all current child processes, and, by means of propagation, their remotely running commands, are terminated (SIGTERM).

Note: The DSH_REMOTE_CMD environment variable can be used to specify a remote shell other than the default, for example, a remote secure shell that conforms to the IETF (Internet Engineering Task Force) Secure Shell protocol. Be aware, however of the following limitations:

1. The **dsh** itself has no security configuration or obligations. All security issues are related to the remote execution environment enabled by the user and the security configuration level that the user has implemented. For example, if the remote shell requires public keys, it is the responsibility of the user to implement this.
2. Use the fully qualified host name when you define a node for the remote shell. If the remote shell requires a list of nodes in its configuration, then the nodes must be defined by their fully qualified host names. This allows the **dsh** command to recognize the node. You can also use an alias to define a node. Aliases are permitted provided the fully qualified host name is also provided.

command Specifies a command to invoke on the working collective. It is passed to remote shell. This command is specified by using the remote shell command syntax.

Options

−a Adds all nodes defined to IBM Cluster Systems Management for Linux (CSM) to the node list.

−c Specifies that commands that failed continue to be sent to the remote nodes for execution.

−f *fanout_value*
Specifies a fanout value. The default value is 64. It indicates the maximum number of concurrent

remote shell commands to issue. Sequential execution can be specified by indicating a fanout value of 1. The fanout value is taken from the **FANOUT** environment variable if the **-f** option is not specified.

−h Writes the command's usage statement to standard out.

−i Verifies the node list before running the command

−l *login_name*
Specifies a remote user name under which to invoke the commands. If **-l** is not used, the remote user name is the same as the local user name. Use this option as you would with the remote shell command.

−m Prints the results of monitoring for each node in the form of the starting and completion messages for each node.

−n *host[,host...]*
Specifies a list of host names, separated by commas, to the node list.

−N *node_group[,node_group...]*
Resolves one or more CSM-specified node groups, separated by commas, and adds the nodes to the node list or working collective.

−o *"remote_shell_options"*
Forwards options for the remote shell. The information within the quotation marks is forwarded and included in the remote shell.

−q Displays the current environment variable settings. For example, the list of nodes in the current node list or working collective file and the value of the **FANOUT** environment variable are displayed.

Note: This option must exist on the **dsh** command line alone. It cannot be used in conjunction with any other **dsh** option or with the *command* argument.

−r *remote_shell_path*
Provides the full path of the remote shell that is used to access the remote systems. The default remote shell is **rsh**.

−s Specifies output in streaming mode. The output is unsorted, but performance is likely to be much better, and memory utilization is reduced.

−v Verifies a node before adding it to the working collective. If this option is set, each node to be added to the working collective is checked before it is added to the collective. If a node is not responding, it is not included in the working collective. The command **/bin/ping** is used to do the check. This check takes ten seconds, as opposed to the minute typically taken for the remote shell command to time out.

−w {*host[,host...] | – }*
Specifies a list of host names, separated by commas, to include in the working collective. If *"-"* is specified, you enter standard input mode. You know that you are in standard input mode because a new line is provided that has no **dsh** prompt. Enter the host names a line at a time. When you are finished, press **Ctrl+d** to exit standard input mode and return to the **dsh** prompt. If **-w -** is used, commands cannot be read from standard input.

Note: Duplicate host names are included only once in the working collective.

−z Prints the return code of the last command that was run remotely. The return code is appended at the end of the output for each node.

Environment

DSHPATH
Sets the path that is used on the remote nodes. If DSHPATH is not set, the default path for the remote shell is used. For example, **DSHPATH=$PATH** sets the path on the remote node to the same path that is used on the source node.

DSH_REMOTE_CMD
Specifies the remote shell to use instead of the default.

DSH_REMOTE_OPTS
Includes the options specified in the remote command when the command is forwarded to the remote nodes

FANOUT
Sets the maximum number of concurrent remote shell commands. This can also be set by the **−f** option.

NODE_LIST
Specifies a file that contains definitions of the set of nodes that comprise the node list.

WCOLL
Specifies a file that contains definitions of the set of nodes that comprise the working collective

Security

Security considerations are the same as for the remote shell command.

Examples

1. To issue the **ps** command on each host listed in the **wchosts** file, enter:
   ```
   WCOLL=./wchosts dsh ps
   ```
2. To list the current working collective file as specified by the **WCOLL** environment variable, enter:
   ```
   dsh -q
   ```
3. To set the working collective to three nodes and start reading commands from standard input, enter:
   ```
   dsh -w otherhost1,otherhost2,otherhost3
   ```
4. To set the current working collective to three nodes and issue a command on those nodes while formatting the output, enter:
   ```
   dsh -w host1,host2,host3 -a cat /etc/passwd | dshbak
   ```
5. To append the file **remotefile** on the node named **otherhost**, to the file named **otherremotefile**, which is located on **otherhost**, enter:
   ```
   dsh -w otherhost cat remotefile '>>' otherremotefile
   ```
6. To run a file of commands sequentially on all the members of the current working collective and save the results in a file, including the collective and the working collective for each command, enter:
   ```
   dsh -if 1 <commands_file >results 2>&1
   ```
7. To run the **ps** command on the working collective and filter results locally, enter:
   ```
   dsh ps -ef | grep root
   ```
8. To run the **ps** command and filter results on the working collective hosts (this can improve performance considerably), enter:
   ```
   dsh 'ps -ef | grep root'
   ```

   or
   ```
   dsh ps -ef "|" grep root
   ```
9. To **cat** a file from **host1** to the local system, stripping off the preceding host name to preserve the file, enter:

```
dsh -w host1 cat /etc/passwd | cut -d: -f2- | cut -c2- >myetcpasswd
```

10. To forward the **needs_auth_program** with the **−D** option to all nodes in the cluster, enter:

    ```
    dsh -a -o "-D" /usr/bin/needs_auth_program
    ```

11. To enter a list of host names in standard input mode by specifying **−w**– and then request the date from the specified nodes, enter:

    ```
    dsh -w -
    ```

    When you complete the list of host names, press **Ctrl+d** to return to the **dsh** prompt. At the **dsh** prompt, specify

    ```
    date
    ```

    The output will be similar to the following:

    ```
    # dsh -w -
    host1
    host2
    host3
    dsh> date
    host1: Fri Mar 23 08:46:59 EST 2001
    host2: Fri Mar 23 08:46:59 EST 2001
    host3: Fri Mar 23 08:46:59 EST 2001
    dsh> exit
    #
    ```

Files

/opt/csm/bin/dsh
: Location of the **dsh** command

/opt/csm/bin/dshbak
: Location of the command that is supplied as the back-end formatting filter

node list file
: File that contains host names, one per line, that defines a set of nodes which comprise the node list. This file is specified by the **NODE_LIST** environment variable.

working collective file
: File that contains host names, one per line, that defines a working collective. This file is specified by the **WCOLL** environment variable.

See Also

Command: **dshbak**, **rsh**

Author

John Simpson - cluster@us.ibm.com

dshbak Command

Name

dshbak - Presents formatted output from the **dsh** command.

Synopsis

dshbak [**−c**]

Description

The **dshbak** command runs on the management server but can be run from any node as long as security is set up to allow the node to run commands on other nodes. The **dshbak** command takes lines in the following format:

```
host_name: line of output from remote command
```

The **dshbak** command formats the lines as follows and writes them to standard output. Assume that the output from host_name3 and host_name4 is identical, and the **-c** option was specified:

```
HOSTS -------------------------------------------------------------
host_name1
-------------------------------------------------------------------
.
.
lines from dsh with host_names stripped off
.
.
HOSTS -------------------------------------------------------------
host_name2
-------------------------------------------------------------------
.
.
lines from dsh with host_names stripped off
.
.
HOSTS -------------------------------------------------------------
host_name3             host_name4
-------------------------------------------------------------------
.
.
lines from dsh with host_names stripped off
.
.
```

When output is displayed from more than one node in collapsed form, the host names are displayed alphabetically.

When output is not collapsed, output is displayed sorted alphabetically by host name.

The **dshbak** command writes ″.″ for each 1000 lines of output filtered.

Options

−c Collapses identical output from more than one node so that it is displayed only once.

Examples

1. To display the results of a command issued on several nodes, in the format used in the **Description** section above, enter:

   ```
   dsh -n node1,node2,node3 cat /etc/passwd | dshbak
   ```

2. To display the results of a command issued on several nodes with identical output displayed only once, enter:

```
dsh -w host1,host2,host3 pwd | dshbak -c
```

Diagnostics

When the **dshbak** filter is used and standard error messages are generated, all error messages on standard error appear before all standard output messages. This is true with and without the **-c** option.

Files

/opt/csm/bin/dshbak
Location of the **dshbak** command

See Also

Commands: **dsh**

Author

John Simpson - cluster@us.ibm.com

installms Command

Name

installms - Installs the CSM management server.

Synopsis

installms [**−h**]

installms [**−v**] [**−p** *pkg_path*]

Description

The **installms** command is copied to a directory on your system and run from there. It should not be run directly from the CSM distribution CD-ROM. The **installms** command is run on the management server and copies the required packages for installation from CD-ROM or from a download directory into the appropriate **/tftpboot** directory and then installs the management server for a cluster of nodes. The packages to be copied are as follows:

- CSM and RSCT RPMs are copied from CD-ROM to **/tftpboot/rpm**.
- Tarball packages are copied from CD-ROM to **/tftpboot/tarball**.
- Other RPMs are copied from CD-ROM to **/tftpboot/rpm**.
- The Red Hat Linux RPMs are copied from the Red Hat CD-ROMs to **/tftpboot/rpm**. The Red Hat RPMs are used to install missing dependencies on the management server and the nodes.

The **installms** command assumes that an installation of the Linux distribution has been performed on your management server. The current default is Red Hat Linux 7.1. All the required RPMs for CSM as well as CSM itself are installed by **installms**. The RPMs are copied to **/tftpboot/rpm** and the tarballs are copied to **/tftpboot/tarball**. The **installms** command links the tarball files from **/tftpboot/tarball** to **/opt/csm/reqs** and then installs the tarball files by using the scripts shipped with **csm.core** and **csm.server**.

Options

−h Writes the command's usage statement to standard output.

−p *pkg_path*
Specifies one or more directories, separated by colons, where RPMs and tarballs can be found. The default is **/mnt/cdrom**.

−v Writes the command's verbose messages to standard output.

Examples

1. To install the management server of a cluster, enter:

   ```
   installms
   ```

2. To install the management server of a cluster by using a CSM distribution that is available in a directory instead of a CD-ROM, enter:

   ```
   installms -p /tmp/distrib
   ```

Files

/mnt/cdrom/installms
Location of the **installms** command when it is available on the distribution CD-ROM so that the CSM server does not need to be installed first.

/opt/csm/bin/installms
Location of the **installms** command.

See Also

- Commands: **addnode**, **createnode**, **definenode**, **installnode**, **makenode**
- *IBM Cluster Systems Management for Linux Set Up HOWTO*(csmsetup.pdf)

Author

Sean Safron - cluster@us.ibm.com

installnode Command

Name

installnode - Installs the nodes in a cluster.

Synopsis

installnode [**−h**] [**−v**]

Description

The **installnode** command runs on the management server and installs all of the PreManaged Nodes in a cluster. The **installnode** command has a log that records what happens to each node as it is installed. See **/var/log/csm/installnode.log** for detailed information on the activity that took place during installation as the first step in debugging any problems.

As each node is installed, it is added to the cluster.

Before **installnode** can be run, the following prerequisites are needed:

1. NFS must be available for mounting **/tftpboot** on the nodes.
2. The **dsh** command must be available to perform remote commands on the nodes; that is, security must be set up on each node in such a way that **dsh** is allowed to run commands on that node.

To install CSM, **installnode** does the following:

1. Uses **dsh** to perform an **NFS** mount of **/tftpboot** to each node.
2. Uses **dsh** to run **makenode** from the mounted **/tftpboot** on each node.

Before running this command, you must run the **installms** and **definenode** commands to install and set up the cluster management server. Note that the **addnode** command automatically runs **definenode** and **installnode**.

Options

−h Writes command's usage statement to standard output.

−v Writes command's verbose messages to standard output.

Examples

To install all the nodes that are in the PreManagedNode class of a cluster, run this command from the cluster management server:

```
installnode
```

Files

/opt/csm/bin/installnode
Location of the **installnode** command.

/var/log/csm/installnode.log
Location of the log file for the **installnode** command. Up to five copies of this log are maintained. Old logs receive a numeric suffix up to 4. The oldest file is **installnode.log.4**.

See Also

- Commands: **addnode**, **createnode**, **definenode**, **installms**, **makenode**.
- *IBM Cluster Systems Management for Linux Remote Control HOWTO* (csmremot.pdf), *IBM Cluster Systems Management for Linux Set Up HOWTO* (csmsetup.pdf)

Author

Sean Safron - cluster@us.ibm.com

lsnode Command

Name

lsnode - Lists the managed node definitions in the IBM Cluster Systems Management for Linux (CSM) database.

Synopsis

lsnode [**−h**] [**−i | −s | −p | −a** *attr* **| −A**] [**−P**] [**−l** | **−d** *delim* | **−D** *delim*] [**−x**][**−v**] [*host ...*]

lsnode [**−h**] [**−i | −s | −p | −a** *attr* **| −A**] [**−P**] [**−l** | **−d** *delim* | **−D** *delim*] [**−x**] [**−v**] [**−w** *selectstr*]

lsnode [**−h**] [**−i | −s | −p | −a** *attr* **| −A**] [**−P**] [**−l** | **−d** *delim* | **−D** *delim*] [**−x**] [**−v**] [**−N** *nodegroup*]

Description

The **lsnode** command can be run on any node, including the management server, and lists the managed nodes that are defined to IBM Cluster Systems Management for Linux (CSM). When one or more *host* parameters are specified, either by host name or IP address, **lsnode** displays the following information about each node:

ConsoleMethod
: Determines the program to invoke for a specific type of console server. The attribute value is one of two options: **esp** | **conserver**

ConsolePortNum
: Console port number. For ESP, this must be a single hexadecimal digit within the range 0 - f.

ConsoleServerName
: Console server host name; for example, **mgtn02.pok.ibm.com**.

ConsoleServerNumber
: Console server number; for example, some number, 1 - *N*. For ESP, this is the ESP number associated with the Equinox ESP system.

Hostname
: Host name of the node

HWControlPoint
: Host name of the ASM PCI adapter to which the internal service processor (ISP) of this node is connected; for example, **mgtn03**.

HWModel
: Hardware model of the node

HWSerialNum
: Hardware serial number of the node

HWType
: Hardware type of the node

InstallDisk
: Installation disk

InstallDiskType
: Installation disk type

InstallMethod
: Installation method

LParID
: Logical partition ID (This is applicable to the Power PC platform only)

OSDistribution
Operating system distribution

OSKernel
Operating system kernel level

OSType
Operating system type

OSVersion
Operating system version

PowerMethod
Determines the program to invoke for a specific type of hardware power control; for example, netfinity (which corresponds to **/opt/csm/bin/netfinity_power**).

PowerStatus
Determines whether the power is on or off

SvcProcname
Internal service processor name; for example, **node01**

UniversalId
Universal ID (This is the node identifier.)

If **-w** *selectstr* is specified, **lsnode** uses that string in the ″where″ part of an SQL select statement against the database of nodes and displays information about the nodes that are matched. If no options are specified, all the nodes known to IBM Cluster Systems Management for Linux are displayed. Most of the options specify the information that is displayed for each node.

The **lsnode** command can retrieve the node information from several different places. Use **whichdb** to control where **lsnode** obtains information.

Options

−a *attr* Displays the specified attribute.

−A Displays all attributes.

−d *delim*
Specifies the delimiter used to separate items within rows and between rows.

−D *delim*
Specifies the delimiter that should be used to separate items within a row. The default is a comma (,).

−i Displays IP addresses.

−l Displays output in long format. The **−x** option has no effect when this option is specified.

−N *nodegroup*
Displays the nodes that are in the specified node group. The node group is evaluated by the **nodegrp** command.

−p Displays the status of the nodes.

−P Lists nodes from the PreManagedNode table/class. This option cannot be used with the **−p** option.

−s Displays the short host name.

−v Writes the command's verbose messages to standard output.

−w *selectstr*
Displays the nodes that match the ″where″ part of the select string. It is easiest to put the whole string in double quotation marks, especially if you need to put attribute values in single quotation

marks (when they are strings). As a convenience, ″*″ means all nodes, as if a ″where″ string were not specified. If **whichdb** is set to **rmc**, then the syntax for the select string is described in the section ″Using Expressions″ of Chapter 2 in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*. If **whichdb** is set to **file**, then normal SQL syntax is used.

−x Specifies not to display the name of the node at the beginning of each row that is returned. The **−x** option has no effect when the **−l** option is specified.

Exit Status

1 An invalid combination of options and arguments has been entered.

12 Node not found.

13 Cannot show ping status.

14 Cannot specify a node group or more than one node because the file database does not support it.

15 Specified node group is empty.

31 An IP address that could not be resolved to a host name was entered.

32 A host name that could not be resolved to an IP address was entered.

51 Badly formed select string. This error is returned from the DBI layer.

When an error is detected in the DBI layer, the return code of the DBI layer is used as the exit status. When RMC is used as the DBI layer, the exit status of the RMC command is returned as the exit status. The DBI (DataBaseInterface) is a perl interface to databases that is similar in purpose to ODBC. DBI drivers (DBDs) are available for many kinds of databases.

Examples

1. To list the names of all nodes, type:
   ```
   lsnode
   ```
2. To list the **ping** status of all nodes, type:
   ```
   lsnode -p
   ```
3. To list all of the attributes for node **websvr**, type:
   ```
   lsnode -Al websvr
   ```
4. To list all nodes whose distribution version is 7.1, type;
   ```
   lsnode -w OSversion='7.1'
   ```

Files

/opt/csm/bin/lsnode
Location of the **lsnode** command

See Also

Commands: **chnode**, **createnode**, **nodegrp**, **rmnode**, **whichdb**

Author

Bruce Potter - cluster@us.ibm.com

lssensor Command

Name

lssensor - Displays the event sensor commands that have been added to RMC.

Synopsis

lssensor [**−a | h**] [**−v | V**] [*Name*]

Description

The **lssensor** command displays the attributes of the sensor identified by *Name*. If *Name* is omitted, the **lssensor** command lists the names of all the sensors defined to RMC. This command returns the error messages and exit status of the underlying **lsrsrc** RMC command.

The **lssensor** command can be run on the management server or on any node. It operates on the local node where it is run unless the CT_CONTACT environment variable is set.

See the **mksensor** command for a more complete explanation of RMC sensors.

Options

−a Displays all attributes of all sensors.

−h Writes the command's usage statement to standard output.

−v Writes the command's verbose messages to standard output. This option can be entered either uppercase or lowercase.

−V Writes the command's verbose messages to standard output. This option can be entered either uppercase or lowercase.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

Security

The user needs read permission for the IBM.Sensor resource class in order to run **lssensor**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. Lists the names of all of the sensors.

   ```
   lssensor
   ```

2. Lists the names and attributes of all sensors.

   ```
   lssensor -a
   ```

3. Lists the attributes of the sensor called NumLogins:

   ```
   lssensor NumLogins
   ```

Files

/opt/csm/bin/lssensor
Location of the **lssensor** command

See Also

Commands: **chsensor**, **lsrsrc**, **mksensor**, **rmsensor**

See the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for information on the ACL authorization file.

Author

Bruce Potter - cluster@us.ibm.com

makenode Command

Name

makenode - Runs on the CSM node and installs the managed node.

Synopsis

makenode [−h]

makenode [**−v**] **−m** *management_server*

Description

The **makenode** command installs the managed node in a cluster of nodes belonging to the specified *management_server*. It is normally run as part of the automated installation and is not used directly by the system administrator. It is called by **installnode** by means of **dsh**. The **makenode** command assumes the RPMS are in **/tftpboot/rpm** and the tarballs are in **/tftpboot/tarball**. It also assumes that the nodes have been defined by **definenode** to the management server. It then performs the following:

1. Installs all the required RPMs for CSM as well as CSM itself.
2. If any dependencies are missing or back-level, **makenode** installs the right level of the dependency.
3. Runs the **mgmtsvr** command to set up the management server for this node.

After installation is complete, remote RMC commands are enabled, and the managed node is ready to be managed actively. CSM commands can be run remotely from the node. For example, if **lsnode** is issued, all of the nodes in the cluster are displayed.

Options

−m Specifies the management server, by host name or IP address, to which this managed node will belong.

−h Writes the command's usage statement to standard output.

−v Writes the command's verbose messages to standard output.

Examples

This command is not normally run by the user. It might be useful in certain diagnostic situations.

Files

/tftpboot/bin/makenode
Temporary location of the **makenode** command during installation.

/opt/csm/bin/makenode
Location of the **makenode** command.

See Also

- HOWTO Docs: CSM Set-Up HOWTO (csmsetup.pdf)
- Commands: **addnode**, **createnode**, **definenode**, **installms**, **installnode**

Author

Sean Safron - cluster@us.ibm.com

mksensor Command

Name

mksensor - Adds an event sensor command to RMC.

Synopsis

mksensor [**−h**] [**− v | V**] [**−i** *seconds*] *Name Command*

Description

The **mksensor** command adds the specified command to the Resource Monitoring and Control (RMC) subsystem to be run periodically to retrieve a user-defined value from the system. Usually this value is used to cause an event to occur by means of the Event Response resource manager (ERRM). For example, if the specified command returns the number of users logged on to the system (a variable none of the standard RMC resource managers return currently), an ERRM condition and response can be written to run a response when the number of users logged on exceeds a certain value. This enables administrators to extend the RMC monitoring capabilities without having to write a resource manager.

The specified command returns the value it retrieves from the system by sending it to standard output in the form Attr=value. The attribute name used depends on the type of the value and is one of: String, Int32, Uint32, Int64, Uint64, Float32, Float64, or Quantum. If only the value is sent to standard output, the attribute name is assumed to be String.

If more than one type of data is to be returned, a series of Attr=value pairs are sent to standard output, separated by blanks. For example: Int32=10 String=″abcdefg″. These attribute names are also the dynamic attributes that can be used in the ERRM condition. The exit value of the script is stored in the dynamic attribute ExitValue and can also be used in an ERRM condition. When the ERRM condition is written, the IBM.Sensor resource class should be specified, and the select string should normally be Name='*Name*', where *Name* is the name of the sensor being defined by this **mksensor** command.

The *Command* parameter represents the command that should be run periodically to retrieve the desired system value. By default, this command is run by RMC under the same user name that originally ran the **mksensor** command to add this sensor.

The **mksensor** command can be run on the management server or on any node. It normally operates on the local node where it is run unless the CT_CONTACT environment variable is set.

This command returns the error messages and exit status of the underlying **mkrsrc** RMC command.

Options

−h Writes the command's usage statement to standard output..

−i *seconds*
Specified how often to periodically run the command. This interval is in seconds. The minimum value is 10 seconds. The default value is 60 seconds.

−v Writes the command's verbose messages to standard output. This option can be entered either uppercase or lowercase.

−V Writes the command's verbose messages to standard output. This option can be entered either uppercase or lowercase.

Environment

CT_CONTACT
When the CT_CONTACT environment variable is set to a host name or IP address, the command

contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

Security

The user needs write permission for the IBM.Sensor resource class in order to run **mksensor**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. Create a new sensor that runs a **numlogins** script to find out how many users are currently logged in:

   ```
   mksensor NumLogins /usr/local/bin/numlogins
   ```

   The **numlogins** script is similar to the following:

   ```
   #!/usr/bin/perl
   my @output='who';
   print 'Int32='scalar(@output), "\n";
   exit;
   ```

Files

/opt/csm/bin/mksensor
Location of the **mksensor** command

See Also

Commands: **chsensor**, **lscondition**, **lssensor**, **mkcondition**, **mkcondresp**, **mkresponse**, **mkrsrc**, **rmsensor**

Files: See **rmccli General Information** file for information on the syntax of attr=value syntax.

See the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for information on the ACL authorization file and on ERRM and ERRM environment variables.

Author

Bruce Potter - cluster@us.ibm.com

mgmtsvr Command

Name

mgmtsvr − Displays or sets the management server entry for this managed node.

Synopsis

mgmtsvr [**−h] [−v] [−d** | *host*]

Description

The **mgmtsvr** command is run on the managed node and controls the management server that will manage this node in the CSM cluster. The *host* parameter can be specified either by host name or IP address. When *host* is specified, the **mgmtsvr** command sets the node represented by *host* as the management server for this node and then notifies the newly specified management server that this node is now part of its cluster. The management server is also given the necessary authorization to this node.

After the management server is successfully set, you can run **lsnode** to display all the nodes in the cluster of this management server, and you can run **nodegrp** to display all of the node groups in the cluster of this management server, provided the management server is using RMC as the CSM database.

Note: In order for this command to be able to contact the management server, this node must already be in the RMC ACL list of the management server or have the appropriate key.

If *host* is not specified, the current management server is displayed.

Options

−h Writes the command's usage statement to standard output.

−d Deletes the management server entry.

−v Writes the command's verbose messages to standard output.

Exit Status

0 Command has run successfully.

1 Error occurred when command was run.

Examples

1. To query the current CSM management server for this node, type:

   ```
   mgmtsvr
   ```

2. To set the management server for this node to **csmsvr.com**

   ```
   mgmtsvr csmsvr.com
   ```

Files

/opt/csm/bin/mgmtsvr
Location of **mgmtsvr** command

See Also

The **lsnode**, **nodegrp** commands.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* for information on editing the RMC ACL file.

The *IBM Cluster Systems Management for Linux Set Up HOWTO* for FAQs on troubleshooting the RMC ACL file.

Author

Bruce Potter - cluster@us.ibm.com

netfinity_power.config File

Name

netfinity_power.config File – The configuration file containing the passwords for the Netfinity internal service processors (ISPs).

Description

The **netfinity_power.config** file is an input file for the **rpower** command. The file is used during two login phases; the login to the Advanced System Management (ASM) PCI adapter, and the subsequent login to the target internal service processors. For security purposes, this file should be defined as read and write by root only (`6 0 0`). Review this file to verify that all nodes are defined properly. This file must be updated when a password has changed.

The **definenode** command creates the **netfinity_power.config** file automatically with default user IDs and passwords. If you are not using the defaults, you should change these user IDs and passwords in the **netfinity_power.config** file after running **definenode** for the first time. When **definenode** is run again, it checks to see if entries exist for the *HWControlPoint* and *SvcProcName* attributes. If none exist, the command creates entries for these attributes.

The **–H** option on **definenode** changes the setting of the CSM database *SvcProcName* attribute name of the ISP to the short host name of the node. To change the actual ISP name to the short host name of the node, refer to the *IBM Cluster Systems Management for Linux Remote Control HOWTO*. It is worthwhile to change the ISP to the short host name, for example, if you want to track SNMP (Simple Network Management Protocol) alerts. The ISP provides reporting mechanism support for tracking SNMP alerts.

See the **definenode** man page for more information on defining service processor names. See the **rpower** man page for more information on defining passwords.

The **netfinity_power.config** file is a flat text file, with each line containing four colon-separated attributes that map to attributes defined in CSM:

1. Hardware Control Point (`HWControlPoint`)
2. Internal Service Processor name (`SvcProcName`)
3. User ID (`id`)
4. Password (`passwd`)

These four attributes appear in the **netfinity_power.config** file in the following format:

```
HWControlPoint:SvcProcName:id:passwd
```

The first line of the file describes the ASM adapter for that group of 10 nodes. So, in the first line the `HWControlPoint` and `SvcProcName` attribute values will always be the same. You must have an entry for every node and ASM PCI adapter. See the next section for an example.

Examples

The following **/etc/opt/csm/netfinity_power.config** file example shows the attributes for two groups containing an ASM PCI adapter and 10 nodes in each group. The first line describes the ASM PCI adapter for that group and subsequent lines describe each node. The second column can be either an ASM PCI adapter or an ISP adapter.

```
mgtn03.ppd.pok.ibm.com:mgtn03.ppd.pok.ibm.com:USERID:PASSW0RD
mgtn03.ppd.pok.ibm.com:node01:USERID:PASSW0RD
mgtn03.ppd.pok.ibm.com:node02:USERID:PASSW0RD
mgtn03.ppd.pok.ibm.com:node03:USERID:PASSW0RD
mgtn03.ppd.pok.ibm.com:node04:USERID:PASSW0RD
mgtn03.ppd.pok.ibm.com:node05:USERID:PASSW0RD
mgtn03.ppd.pok.ibm.com:node06:USERID:PASSW0RD
```

```
mgtn03.ppd.pok.ibm.com:node07:USERID:PASSW0RD
mgtn03.ppd.pok.ibm.com:node08:USERID:PASSW0RD
mgtn03.ppd.pok.ibm.com:node09:USERID:PASSW0RD
mgtn03.ppd.pok.ibm.com:node10:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:mgtn04.ppd.pok.ibm.com:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node01:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node02:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node03:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node04:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node05:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node06:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node07:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node08:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node09:USERID:PASSW0RD
mgtn04.ppd.pok.ibm.com:node10:USERID:PASSW0RD
```

Files

/etc/opt/csm/netfinity_power.config
Location of the **netfinity_power.config** file.

See Also

The **definenode**, **rpower** commands.

The *IBM Cluster Systems Management for Linux Remote Control HOWTO* (csmremot.pdf)

Author

John Simpson – cluster@us.ibm.com

nodedef File

Name

nodedef - CSM node definition file.

Description

The **nodedef** file is a text file that contains a list of attributes about a CSM node. This file is used as input to the **addnode** and **definenode** commands. See *IBM Cluster Systems Management for Linux Remote Control HOWTO* for more details about the fields that comprise the entries in this file. There is one entry per line, and each line has the format:

```
name:HWControlPoint:PowerMethod:SvcProcName:ConsoleServerName:ConsoleMethod:ConsoleServerNumber:ConsolePortNum:HWType
```

These fields represent the following:

name Name of the node. This can be either a host name or an IP address and is assigned to the **Hostname** attribute in the CSM database. If necessary, it is converted to a host name.

HWControlPoint
Hardware control point. This can be either a host name or an IP address. If this field is left blank, there is no hardware control point.

PowerMethod
Determines the program to invoke for a specific type of hardware power control. The valid entries are `netfinity`, `none`, or the field may be left blank. If the field is left blank, then the default depends on the value of the hardware control point field. When the hardware control point field is blank, the default method is `none`. When the hardware control point field has a value and the HWtype is `netfinity`, the default method is `netfinity`. If the hardware control point field is blank or the HWtype is not `netfinity`, then the default method is `none`.

SvcProcName
Service processor name. The format can be one of the following:

- node*nn*, where *nn* can have a value of 01 through 10
- **hostname**, which uses the node's short host name
- a value that matches the real internal service processor (ISP) name (text id)

ConsoleServerName
Console server name, which can be a host name or an IP address. If left blank, there is no console server.

Console Method
Determines the program to invoke for a specific type of console server. Valid entries are **esp**, **conserver**, or **none**. The format is any string. The default is **esp** if the console server has a value, or the default is **none** if the console server does not have a value.

ConsoleServerNumber
Console server number. You need to enter the appropriate value. See *IBM Cluster Systems Management for Linux Remote Control HOWTO* for details.

ConsolePortNum
Console port number, which can be a hexadecimal value from 0 through f.

HWType
Hardware type. The format is any string. There is no default. If set to `netfinity`, PowerMethod also becomes `netfinity`, provided the hardware control point is set.

Examples

1. A sample node definition file is available in: **/usr/local/csm/install/nodedef.sample**.

2. A sample filled-in node-attribute table is availabe in *IBM Cluster Systems Management for Linux Remote Control HOWTO*.

Files

/usr/local/csm/install/nodedef.sample
Location of a sample node definition file.

See Also

- Commands: **addnode**, **definenode**, **rconsole**, **rpower**
- *IBM Cluster Systems Management for Linux Remote Control HOWTO* (csmremot.pdf), *IBM Cluster Systems Management for Linux Set Up HOWTO*(csmsetup.pdf)

Author

Sean Safron - cluster@us.ibm.com

nodegrp Command

Name

nodegrp - Manages node group definitions in the IBM Cluster Systems Management for Linux (CSM) database.

Synopsis

nodegrp [**−h**] [**−v**] {**−p | −a** *nodelist* **| −x** *nodelist* **| −D | −w** *selectstr* | **−W**} [**−d** *delim*] *group*

nodegrp {**−l** | **−s** *node* | **−h** } [**−v**] [**−d** *delim*]

Description

The **nodegrp** command can be run on any node, including the management server. It lists and updates the node groups that are defined to IBM Cluster Systems Management for Linux (CSM). Node groups can either be explicit lists of node host names created with the **-a** option, or a dynamic group, using a select string specified with the **-w** option. When **−w** *selectstr* is specified, the **nodegrp** command uses that string to apply against the node database each time the **nodegrp** command is invoked to display the members of the group.

Options can also be used to list all node groups, delete a node group, or remove nodes from a node group. The group specified as the input to the command is the group that is to be acted on for all options specified.

The *host* parameter can be specified by either a host name or an IP address.

The *group* parameter is the name of a specified node group.

Options

−a *nodelist*
: Adds host names to a group, creating a group if necessary. A node list consists of one or more comma-separated host names.

−d *delim*
: Specifies the delimiter used to separate the items returned.

−D
: Deletes a group.

−h
: Writes the command's usage statement to standard output.

−l
: Lists all defined node groups.

−p
: Prints a group. If no option is specified, this is the default.

−s *host*
: Displays all the group names (static and dynamic) that contain the node represented by this host name or IP address.

−v
: Writes the command's verbose messages to standard output.

−w *selectstr*
: Specifies the ″where″ clause of a select string to be used to search the nodes table in the database to dynamically determine the list of nodes in the group. The group is created if it does not already exist. If **whichdb** is set to **rmc**, then the syntax for the select string is described in the section ″Using Expressions″ of Chapter 2 in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*. If **whichdb** is set to **file**, then normal SQL syntax is used.

−W
: Displays the ″where″ clause of the select string set for this node group.

–x *nodelist*
Removes nodes from a group.

Exit Status

1 An invalid combination of options and arguments has been entered.

12 Group not found.

14 ″where″ string set in attempt to add nodes to group.

15 ″where″ string set in attempt to remove nodes from group.

16 Member list set in attempt to set the ″where″ string.

17 ″where″ string not set in attempt to display the ″where″ string.

51 Badly formed select string. This error is returned from the DBI layer.

When an error is detected in the DBI layer, the return code of the DBI layer is used as the exit status. When RMC is used as the DBI layer, the exit status of the RMC command is returned as the exit status. The DBI (DataBaseInterface) is a perl interface to databases that is similar in purpose to ODBC. DBI drivers (DBDs) are available for many kinds of databases

Examples

1. To list all of the node groups, type:
   ```
   nodegrp
   ```
2. To create a node group called `g1` that contains `websvr1` and `websvr2`, type:
   ```
   nodegrp -a websvr1,websvr2 g1
   ```
3. To list the members of `g1`, type:
   ```
   nodegrp g1
   ```
4. To add a node (`websvr3`) to `g1`, type:
   ```
   nodegrp -a websvr3 g1
   ```
5. To remove `websvr2` from `g1`, type:
   ```
   nodegrp -x websvr2 g1
   ```
6. To create a node group called `ws` that contains all the nodes that start with `websvr`, type:
   ```
   nodegrp -w "Hostname like 'websvr%'" ws
   ```

Files

/opt/csm/bin/nodegrp
Location of the **nodegrp** command

See Also

Commands: **chnode**, **createnode**, **lsnode**, **rmnode**, **whichdb**

Author

Bruce Potter - cluster@us.ibm.com

predefined-condresp Command

Name

predefined-condresp − Defines default monitoring conditions and responses.

Synopsis

predefined-condresp [**−h**] [**−r**] [**−c | d**] [**−q**] [**−n**] [**−v**]

Description

The **predefined-condresp** command defines some monitoring conditions and responses that are useful to many administrators. These conditions and responses are used by the Event Response resource manager (ERRM) to monitor the cluster for conditions of interest. When the conditions occur, ERRM runs the corresponding responses. The **predefined-condresp** command is run automatically when **csm.server** is installed. This command can also be run again to restore the conditions and responses to their initial definitions. If run with no arguments, **predefined-condresp** removes the conditions and responses first and then defines them again. The options can be used only to define or only to remove the conditions and responses.

Options

−c Defines conditions and responses by means of the actual ERRM commands that an administrator would use. This option is used in place of the −**d** option. Although performance is slower with this option, it shows by example how an administrator can define similar resources.

−d Defines conditions and responses.

−h Writes command's usage statement to standard output.

−n Do not run the commands.

−q Do not print the command before running it.

−r Removes the conditions and responses.

−v Writes the command's verbose messages to standard output.

Exit Status

0 Command has run successfully.

1 Error occurred when command was run.

n The highest exit code that was returned by any of the ERRM commands.

Examples

1. To remove the current predefined conditions and responses and create them again, type:
   ```
   predefined-condresp
   ```
2. To define the predefined conditions and responses, type:
   ```
   predefined-condresp -d
   ```

Files

/opt/csm/bin/predefined-condresp
Location of **predefined-condresp** command

See Also

The **mkcondition**, **mkcondresp**, and **mkresponse** commands.

See the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for information on ERRM and on the predefined conditions and responses that are available for monitoring.

Author

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rconsole Command

Name

rconsole – provides remote console support for Cluster Systems Management (CSM) nodes.

Synopsis

rconsole [**–a**] [**–h**] [**–n** *host[,host...]*] [**–N** *Node_group[,Node_group...]*]

Description

The **rconsole** command provides remote console support for the nodes in a cluster. The command uses the CSM database to determine the nodes and their service processor information. The **–a** option causes the **rconsole** command to display a console for each node defined in the cluster. The **–n** and **–N** optionscause the command to display a console for each node defined by these options. You can also define an environment variable RCONSOLE_LIST, which is the name of a file that contains a list of nodes to manage. The host names used must be the names specified when the nodes are defined in the CSM database.

The **rconsole** command provide an **xterm** window for each node specified. The font used depends on the number of nodes specified:

1	fixed
2 to 5	5x8
greater than 5	nil12

Note: The nil12 font that is the default font when more that five systems are specified is not intended to be readable. Rather, it is intended to give a general idea of whether the node is up. Use RCONSOLE_FONT to override this default if you intend to read the information provided on these consoles.

Options

−a Runs the command on all of the nodes in the cluster.

−h Displays the usage information.

–n *Host[,Host...]*
Specifies a list of nodes on which to run the command.

–N *Node_group[,Node_group...]*
Specifies one or more node groups on which to run the command.

Environment

RCONSOLE_FONT
Specifies the font to use for the remote console. This overrides the default.

RPOWER_LIST
Specifies a file that contains a list of nodes, one host name per line.

Exit Status

0 Command has run successfully.

1 Error occurred with one or more of the remote console commands.

Security

All systems are shipped with a default service processor ID of USERID and password of PASSW0RD (that is P-A-S-S-W-zero-R-D). You should change the ID and passwords and update the **netfinity_power.config** file to reflect your changes.

Examples

1. To open a remote console to one system, type:

   ```
   rconsole -n clsn02
   ```

2. To open a remote console to a group of nodes defined in the CSM database as the node group **clients**, type:

   ```
   rconsole -N clients
   ```

3. To open consoles for a group of nodes with a specific font, type:

   ```
   export RCONSOLE_FONT=fixed10; rconsole -n clsn02,clsn03
   ```

Files

/opt/bin/rconsole Location of the **rconsole** command.

See Also

The **espcfg**, **espdiag**, **esptty**, and **lsnodes** commands.

IBM Cluster Systems Management for Linux Remote Control HOWTO

Author

John Simpson – cluster@us.ibm.com

rmnode Command

Name

rmnode - Removes a node definition from the IBM Cluster Systems Management for Linux (CSM) database.

Synopsis

rmnode [**−h**] [**−v**] [**−P**] *host*

Description

The **rmnode** command is run on the management server and deletes a managed node definition from the IBM Cluster Systems Management for Linux database. The managed node is represented by the *host* parameter, which can be specified by either host name or IP address.

Options

−h Writes the command's usage statement to standard output.

−P Removes a node from the PreManagedNode table/class. (Normally, nodes are removed from the ManagedNode table/class.)

−v Writes the command's verbose messages to standard output.

Exit Status

1 An invalid combination of options and arguments has been entered.

12 Node not found.

51 Badly formed select string. This error is returned from the DBI layer.

When an error is detected in the DBI layer, the return code of the DBI layer is used as the exit status. When RMC is used as the DBI layer, the exit status of the RMC command is returned as the exit status.The DBI (DataBaseInterface) is a perl interface to databases that is similar in purpose to ODBC. DBI drivers (DBDs) are available for many kinds of databases.

Examples

1. To remove the node named **websvr** from the CSM database, type:

   ```
   rmnode websvr
   ```

2. To remove the node with the IP address 9.117.10.51 from the database, type:

   ```
   rmnode 9.117.10.51
   ```

Files

/opt/cms/bin/rmnode
Location of **rmnode** command

See Also

Commands: **chnode, createnode, lsnode, nodegrp, whichdb**

File: **rmccli General Information** file

Author

Bruce Potter - cluster@us.ibm.com

rmsensor Command

Name

rmsensor - Removes an event sensor command from RMC.

Synopsis

rmsensor [**−h**] [**−v | V**] *Name*

Description

The **rmsensor** command removes the sensor identified by *Name* from RMC. This command returns the exit status and error messages of the underlying **rmrsrc** RMC command.

The **rmsensor** command can be run on the management server or on any node and normally operates on the local node where the command is run unless the CT_CONTACT environment variable is set to prevent this.

See the **mksensor** command for a more complete explanation of RMC sensors.

Options

−h Writes the command's usage statement to standard output.

−v Writes the command's verbose messages to standard output. This option can be entered either uppercase or lowercase.

−V Writes the command's verbose messages to standard output. This option can be entered either uppercase or lowercase.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Security

The user needs write permission for the IBM.Sensor resource class in order to run **rmsensor**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

6 No resources found.

Examples

You can use the **lssensor** command without any parameters to obtain a complete list of sensor names.

1. To remove the sensor named NumLog, type:

```
rmsensor NumLog
```

Files

/opt/csm/bin/rmsensor
Location of the **rmsensor** command

See Also

Commands: **chsensor**, **lssensor, mksensor**, **rmrsrc**

See the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for information on the ACL authorization file.

Author

Bruce Potter - cluster@us.ibm.com

rpower Command

Name

rpower – Controls remote power for Cluster Systems Management (CSM) nodes.

Synopsis

rpower [**–a**] [**–h**] [**–n** *host[,host...]*] [**–N** *Node_group[,Node_group...]*] [**–v**] **on | off | reboot | query | resetsp**

Description

The **rpower** command allows remote power control for the nodes in a cluster. The command uses the CSM database to determine the nodes and their service processor information. The **–a** option causes the **rpower** command to run on all of the nodes defined in the cluster. The **–n** and **–N** options cause the command to run on the set of nodes defined by these options. In addition to these options, you can define an environment variable, RPOWER_LIST, which is the name of a file that contains a list of nodes to manage. The host names used must be the names specified when defining the nodes in the CSM database.

The **query** option prints a response for each node that specifies the node name and the **on** or **off** status. The **on**, **off**, **reboot**, and **resetsp** options print the node name with the command specified and the return code of the command.

Options

−a Runs the command on all of the nodes in the cluster.

−h Displays the usage information.

–n *host[,host...]*
Specifies a list of nodes on which to run the command.

–N *Node_group[,Node_group...]*
Specifies one or more node groups on which to run the command.

−v Writes the verbose messages of the command to standard error.

on Powers the node or nodes on.

off Requests a shutdown and schedules a power off based on the ISP timer.

reboot Reboots the power on the node or nodes.

query Reports the power status of the node or nodes.

resetsp Resets the service processor for the node or nodes.

Environment

RPOWER_LIST
Specifies a file that contains definitions of the set of hosts, one per line, that comprise the node list.

Exit Status

0 Command has run successfully.

1 Error occurred with one or more of the remote power commands.

Security

While the **rpower** command currently only supports the Netfinity hardware, the architecture is designed to allow future enhancements for other hardware support. For Netfinity hardware, the **rpower** command requires a **netfinity_power.config** file containing the ID and password for each service processor. See the **netfinity_power.config** file man page for more information.

Note: All systems are shipped with a default service processor ID of USERID and password of PASSW0RD (that's P-A-S-S-W-zero-R-D). You should change the ID and passwords and update the **netfinity_power.config** file to reflect your changes.

Examples

1. To query one node, type:

   ```
   rpower -n clsn04 query
   ```

   The output is:

   ```
   clsn04 on
   ```

2. To query all nodes, type:

   ```
   rpower -a query
   ```

   The output is similar to:

   ```
   clsn05.ppd.pok.ibm.com on
   clsn04.ppd.pok.ibm.com on
   clsn03.ppd.pok.ibm.com on
   clsn02.ppd.pok.ibm.com on
   clsn01.ppd.pok.ibm.com on
   ```

3. To power off a node, type:

   ```
   rpower -n clsn04 off
   ```

   The output is:

   ```
   clsn04 off complete rc=0
   ```

4. To power on a node, enter:

   ```
   rpower -n clsn04 on
   ```

5. To display a list of the nodes in a node group, type:

   ```
   nodegrp -p test
   ```

   The output is similar to:

   ```
   clsn01.ppd.pok.ibm.com
   clsn02.ppd.pok.ibm.com
   clsn05.ppd.pok.ibm.com
   ```

6. To query the power status of the nodes in a node group, type:

   ```
   rpower -N test query
   ```

   The output is similar to::

   ```
   clsn01.ppd.pok.ibm.com on
   clsn02.ppd.pok.ibm.com on
   clsn05.ppd.pok.ibm.com on
   ```

Files

/etc/opt/csm/netfinity_power.config
Location of the **netfinity_power.config** file.

/opt/bin/rpower
Location of the **rpower** command.

See Also

The **lsnode** command

IBM Cluster Systems Management for Linux Remote Control HOWTO

Author

John Simpson – cluster@us.ibm.com

whichdb Command

Name

whichdb - Displays or changes the underlying database that CSM uses.

Synopsis

whichdb [**−h**] [**−v**] [**−d | −i**] [**file | rmc**]

whichdb −D *dbd_connect_string*

Description

The **whichdb** command is normally not intended to be run by users or administrators. Rather it is used by installation routines to set the database that CSM uses to store its persistent information. When all of CSM is installed, **whichdb** is set to **rmc**. This gives CSM the event capabilities it needs to respond appropriately to changes in persistent information. When **whichdb** is run from the command line, it is run on the management server.

When only the **csm.core** RPM is installed and being used by a standalone package like **dsh** or some other tool, **whichdb** can be set to **file** to allow the persistent information to be stored in a set of files, for example, **/var/lib/csm/file_db**. Thus, **csm.core** does not have to specify RMC or any database as a prerequisite.

Note: If **whichdb** is set to **rmc**, then the syntax for the select string is described in the section ″Using Expressions″ of Chapter 2 in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*. If **whichdb** is set to **file**, then normal SQL syntax is used. The commands that use a select string are: **chnode**, **lsnode**, and **nodegrp**.

If no arguments are specified, **whichdb** displays the currently set DBD.

Options

−d Displays the full DBD connect string for the specified **dbd**: **file** or **rmc**. If no DBD is specified, the DBD connect string of the currently set DBD is displayed.

−D *dbd_connect_string*
Sets the DBD connect string that **csm.core** uses explicitly. This string is used as the first input parameter to the **DBI->connect()** function.

−h Writes the command’s usage statement to standard output.

−i Initializes the data base specified by **dbd** or the currently set DBD. This creates the tables with the necessary attributes (columns) for CSM.

−v Writes the command’s verbose messages to standard output.

Examples

.

1. To display the database that is currently being used by CSM, type:
   ```
   whichdb
   ```
2. To set CSM to use a flat file for its database, type:
   ```
   whichdb file
   ```

Files

/opt/csm/bin/whichdb
Location of the **whichdb** command

See Also

Commands: **chnode**, **createnode**, **lsnode**, **nodegrp**, **rmnode**

Author

Bruce Potter - cluster@us.ibm.com

Chapter 2. ERRM Commands

chcondition Command

Name

chcondition – Changes any of the attributes of a defined condition.

Synopsis

chcondition [**−h**] [**−c** *New_condition*] [**−r** *Resource_class*] [**−e** *Event_expression*] [**−E** *Rearm_expression*] [**−d** *Event_description*] [**−D** *Rearm_description*] [**−n** *Node_name*[,*Node_name*...]] [**−s** *"Selection_string"*] [**−S c | w | i**] [**−T**] [**−V**] *Condition*

Description

The **chcondition** command changes the attributes of a defined condition to the values supplied. If the name of the condition is changed using the **-c** option, any links with responses remain intact.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Condition The name of an existing condition.

Options

−c *New_condition*
The *New_condition* name is a character string that identifies the condition. If the name contains spaces, it must be enclosed in quotes. A name cannot consist of all spaces, be null, or contain imbedded single quotes.

−d *Event_description*
Specifies a user-supplied text that describes the event expression.

−D *Rearm_description*
Specifies a user-supplied text that describes the rearm expression.

−e *Event_expression*
Specifies an event expression. The event expression determines when an event occurs. It includes a dynamic attribute of the *Resource_class* with a mathematical comparison symbol (for example, >, <) and a constant. When this expression evaluates to TRUE, an event is generated.

−E *Rearm_expression*
Specifies a rearm expression. After the *Event_expression* has evaluated to TRUE and an event is generated, the rearm expression determines when monitoring for the *Event_expression* begins again. Typically, the rearm expression prevents multiple events from being generated for the same event evaluation. The rearm expression includes a dynamic attribute of the *Resource_class* with a mathematical comparison symbol (for example, >) and a constant.

−h Writes the command's usage statement to standard output.

−n *Node_name*
Specifies the host name for a node or list of host names for a list of nodes, separated by commas, where this condition is registered. The default is the local node. Use asterisk (*"*"*) to register the condition on all nodes defined in the ManagedNode resource class.

−r *Resource_class*
Specifies the resource class to be monitored by this condition. The **lsrsrcdef** command can be used to list the resource class names.

−s *″Selection_string″*

Specifies a selection string that is applied to all of the *Resource_class* attributes to determine which resources should be monitored by the *Event_expression*. The default is to monitor all resources within the *Resource_class*. The selection string must be enclosed within double or single quotation marks. For information on how to specify selection strings, see ″Using Expressions″ in the chapter ″Using the Monitoring Application″ of the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

−S c |w | i

The severity of the event:

c Critical

w Warning

i Informational

The default is **i**.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.Condition resource class to run **chcondition**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To change the condition name from ″FileSystem space used up″ to ″Watch FileSystem space″, type:

```
chcondition -c "Watch FileSystem space"  "FileSystem space used up"
```

2. To change a rearm expression and rearm description for a condition with the name ″tmp space used up″, type:

```
chcondition -E "PercentTotUsed < 80"\
 -D "Start monitoring tmp again after it is less than 80 percent full" \
"tmp space used up"
```

Files

/usr/sbin/rsct/bin/chcondition
Location of the **chcondition** command.

See Also

The **lscondition**, **lscondresp**, **mkcondition**, **rmcondition** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding Event Response operations and information on how to use expressions and selection strings.

Author

Joseph Chaky - cluster@us.ibm.com

chresponse Command

Name

chresponse – Adds or deletes the actions of a response or renames a response.

Synopsis

chresponse [**−h**] **−a −n** *Action* [**−d** *Days_of_week*[,*Days_of_week...*]] [**−t** *Time_of_day*[,*Time_of_day...*]] **−s** *Action_script* [**−r** *Return_code*] [**−e a | r | b**] [**−o**] [**−T**] [**−V**] *Response*

chresponse [**−h**] **−p −n** *Action* [**−T**] [**−V**] *Response*

chresponse [**−h**] **−c** *New_response* [**−T**] [**−V**] *Response*

Description

The **chresponse** command adds an action to a response or deletes an action from a response. A response must have at least one action defined to it. Actions define commands to be run when the response is used with a condition and the condition occurs. The **chresponse** command can also be used to rename a response.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Response The name of the response to be changed.

Options

−a Adds the action specification to *Response*.

−c *New_response*

The *New_response* name is a character string that identifies the response. If the name contains spaces, it must be enclosed in quotes. A name cannot consist of all spaces, be null, or contain imbedded single quotes.

−d *Days_of_week*

Specifies the days of the week when the action being defined can be run. *Days_of_week* and *Time_of_day* together define the interval when the action can be run.

Enter the numbers of the days separated by a plus sign (+) or as a range of days separated by a hyphen (-). More than one *Days_of_week* parameter can be specified, but the parameters must be separated by a comma(,). The number of *Days_of_week* parameters specified must match the number of *Time_of_day* parameters specified. The default is all days. If no value is specified but a comma is entered, the default value is used. The numbers of the days follow:

1 Sunday

2 Monday

3 Tuesday

4 Wednesday

5 Thursday

6 Friday

7 Saturday

−e a | r | b
Specifies the type of event that causes the action being defined to run:

a Event

r Rearm event

b Both event and rearm event

The default is event (**a** option).

−h Writes the command's usage statement to standard output.

−n *Action*
Specifies the name of the action. When the **−a** option is used, this is the name of the action being defined. When the **−p** option is used, this is the name of the action to be deleted. Action names must be unique within a response. Only one action can be defined at a time.

−o Directs all standard output from *Action_script* to the audit log. The default is not to keep standard output. Standard error is always directed to the audit log.

−p Deletes *Action* from Response.

−r *Return_code*
Specifies the expected return code for *Action_script*. The actual return code of *Action_script* is compared to the expected return code. A message is written to the audit log indicating whether they match. If the **−r** option is not specified, the actual return code is written to the audit log, and no comparison is performed.

−s *Action_script*
Specifies the fully qualified path for the script or command to run for the action being defined. See the man pages for **logevent**, **notifyevent**, and **wallevent** for descriptions of predefined response scripts that are provided with the application.

−t *Time_of_day*
Specifies the time range when *Action* can be run, consisting of the start time followed by the end time, separated by a hyphen. *Days_of_week* and *Time_of_day* together define the interval when the action can be run.

The time is in 24–hour format (HHMM) where the first two digits represent the hour and the last two digits represent the minutes. The start time must be less than the end time because the time is specified by day of the week. More than one *Time_of_day* parameter can be specified, but the parameters must be separated by a comma (,). The number of *Days_of_week* parameters specified matches the number of *Time_of_day* parameters specified. The default is 0000-2400. If no value is specified but a comma is entered, the default value is used.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT
When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.EventResponse resource class to run **chresponse**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To delete the action named ″E-mail root″ from the response named ″E-mail root anytime″ (″E-mail root″ cannot be the only action), type:

   ```
   chresponse -p -n "E-mail root"  "E-mail root anytime"
   ```

2. To add the action named ″E-mail root″ to be used Monday through Friday from 8 am to 6 pm that uses the command **/usr/sbin/rsct/bin/notifyevent root**, that saves standard output in the audit log, and that expects return code 5 from the action to the response ″E-mail root any time″, type:

   ```
   chresponse  -a  -n "E-mail root" -d 2-6 -t 0800-1800 \
   -s "/usr/sbin/rsct/bin/notifyevent root" -o  -r 5  \
   "E-mail root anytime"
   ```

3. To rename the response ″E-mail root anytime″ to ″E-mail root and admin any time″, type:

   ```
   chresponse  -c "E-mail root and admin anytime"   "E-mail root anytime"
   ```

Files

/usr/sbin/rsct/bin/chresponse

Location of the **chresponse** command.

See Also

The **lscondresp**, **lsresponse**, **mkcondresp**, **mkresponse**, **rmresponse** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding ERRM operations.

Author

Joseph Chaky - cluster@us.ibm.com

lscondition Command

Name

lscondition – Lists information about one or more conditions.

Synopsis

lscondition [**−h**] [**−A**] [**−m | −n | −e**] [**−C | −l | −t | −d | −D** *Delimiter*] [**−q**] [**−x**] [**−T**] [**−V**] [*Condition* [*Condition...*]]

Description

The **lscondition** command lists information about defined conditions.

The following information about the condition is listed:

EventDescription
The text description of *EventExpression*.

EventExpression
The expression used in monitoring this condition.

MonitorStatus
The status of the condition: monitored without error, not monitored, or in error.

Name The name of the condition.

NodeNames
The host names of the nodes where the condition is registered, if any. An asterisk (*) indicates all nodes defined in the ManagedNode resource class.

RearmDescription
The text description of *RearmExpression*.

RearmExpression
The expression used in determining when monitoring should restart for this condition after an event has occurred.

ResourceClass
The resource class monitored by this condition.

Severity
The severity of the condition: critical, warning, or informational.

SelectionString
The selection string that is applied to the attributes of the *ResourceClass* to determine which resources are included in the monitoring of this condition.

For a list of all conditions, enter the **lscondition** command without any condition names specified. A list of all the condition names is returned with the monitoring status for each condition. The default format in this case is tabular.

For all the information about all condition names, specify the **-A** option with the **lscondition** command. The **-A** option causes all information about a condition to be listed when no condition names are specified. When all the information about all conditions is listed, the default format is long. If a monitoring-status option (**-e**, **-m**, or **-n**) is specified, the conditions with that status are listed.

When more than one *Condition* is specified, the condition information is listed in the order that the condition names are entered.

By default, when a condition name is entered with the **lscondition** command, all of the attributes of the condition are displayed.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Condition The *Condition* may be a condition name or a substring of a condition name. When it is a substring, any defined condition name that contains the substring will be listed.

Options

−A Displays all of the attributes of the condition.

−C Outputs the **mkcondition** command that could be used to create the *Condition*. If more than one condition is specified, every **mkcondition** command appears on a separate line. This option is ignored when no conditions are specified. This option overrides the **–l** option.

−d Produces delimiter-formatted output. The default delimiter is a colon (:). Use the **–D** option if you wish to change the default delimiter.

−D *Delimiter*
Produces delimiter-formatted output that uses the specified delimiter. Use this option to specify something other than the default, colon (:). An example is when the data to be displayed contains colons. Use this option to specify a delimiter of one or more characters.

−e Lists only those conditions that are monitored in error.

−h Writes the command's usage statement to standard output.

−l Produces long formatted output. Displays the condition information on separate lines.

−m Lists only those conditions that are being monitored without error.

−n Lists only those conditions that are not being monitored.

−q Does not return an error when *Condition* does not exist.

−t Produces tabular formatted output. The condition information is displayed in separate columns.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

−x Suppresses header printing.

Environment

CT_CONTACT
When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs read permission for the IBM.Condition resource class to run **lscondition**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To list all conditions and their monitoring status, type:

   ```
   lscondition
   ```

   Output is similar to:

   ```
   Name                 MonitorStatus
   "FileSystem space used up"  "Monitored"
   "tmp space used up"  "Not monitored"
   "var space used up"  "Error"
   ```

2. To list general information about the condition ″FileSystem space used up″ in long form, type:

   ```
   lscondition "FileSystem space used up"
   ```

   Output is similar to:

   ```
      Name              = "FileSystem space used up"
      MonitorStatus     = "Monitored"
      ResourceClass     = "IBM.FileSystem"
      EventExpression   = "PercentTotUsed > 99"
      EventDescription  = "Generate event when space used is
   greater than 99 percent full"
      RearmExpression   = "PercentTotUsed < 85"
      RearmDescription  = "Start monitoring again after it is
   less than 85 percent"
      SelectionString   = ""
      Severity          = "w"
      NodeNames         = "localnode"
   ```

3. To list the command that would create the condition ″FileSystem space used up″, type:

   ```
   lscondition -C "FileSystem space used up"
   ```

   Output is similar to:

   ```
   mkcondition -r IBM.FileSystem -e "PercentTotUsed > 99"\
    -E "PercentTotUsed < 85"\
    -d "Generate event when space used is greater than 99 percent full"\
    -D "Start monitoring after it is less than 85 percent"\
    -S w "FileSystem space used up"
   ```

4. To list all conditions that have ″space″ in their name, type:

   ```
   lscondition space
   ```

   Output is similar to:

   ```
   Name = "FileSystem space used up"
   MonitorStatus = "Monitored"
   :
   Name = "tmp space used up"
   ```

```
MonitorStatus = "Not Monitored"
:
Name = "var space used up"
MonitorStatus = "Monitored"
```

Files

/usr/sbin/rsct/bin/lscondition Location of the **lscondition** command.

See Also

The **chcondition**, **lscondresp**, **mkcondition**, **rmcondition** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding Event Response operations.

Author

Grant McLaughlin - cluster@us.ibm.com

lscondresp Command

Name

lscondresp – Lists information about a condition and its linked responses, if any.

Synopsis

lscondresp [**−h**] [**−a | −n**] [**−C | −l | −t | −d | −D** *Delimiter*] [**−q**] [**−x**] [**−T**] [**−V**] [*Condition* [*Response* [*Response ...*]]]

lscondresp [**−h**] [**−a | −n**] [**−C | −l | −t | −d | −D** *Delimiter*] [**−q**] [**−x**] **−r** [**−T**] [**−V**] *Response* [*Response ...*]

Description

The **lscondresp** command lists information about a condition and its linked responses. The information shows what responses are linked with a condition and whether monitoring is active for a condition and its linked response.

The following information is listed:

Condition The name of the condition linked with a response.

State State of the response for the condition. The state indicates whether a specified response is active or not.

Response The name of the response linked with the condition.

To list a particular condition and response, specify both condition and response. To list all responses to a condition, specify only the condition. To list all conditions that a response is linked to, specify only the response along with the **-r** option. To list all conditions and their linked responses, omit specifying the condition and response. When neither the **−a** option nor the **−n** option is specified, all selected conditions for the responses are listed. Tabular format is the default.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Condition The *Condition* may be a condition name or a substring of a condition name. When it is a substring, any defined condition name that contains the substring and is linked to the response will be listed.

Response The *Response* may be a response name or a substring of a response. When it is a substring, any defined response name that contains the substring and is linked to the condition will be listed.

Options

−a Lists only those responses that are active for the condition.

−C Outputs the **mkcondition** command that could be used to create the *Condition*. If more than one condition is specified, every **mkcondition** command appears on a separate line. This option is ignored when no conditions are specified. This option overrides the **–l** option.

−d Specifies delimiter-formatted output. The default delimiter is a colon (:). Use the **-D** option if you wish to change the default delimiter.

−D *Delimiter*
Specifies delimiter-formatted output that uses the specified delimiter. Use this option to specify

something other than the default, colon (:). For example, when the data to be displayed contains colons, use this option to specify another delimiter of one or more characters.

−h Writes the command's usage statement to standard output.

−l Specifies long formatted output. Displays the condition and response information on separate lines.

−n Lists only those responses that are not active for the condition.

−q Does not return an error if either *Condition* or *Response* does not exist.

−r Indicates that all command parameters are responses. There are no conditions specified. This lists all linked condition-response information for the specified responses.

−t Specifies tabular formatted output. The condition information and response information are displayed in separate columns.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

−x Suppresses header printing.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs read permission for the IBM.Association resource class to run **lscondresp**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To list information about the condition ″FileSystem space used up″ with the linked response ″Broadcast event on-shift″, type:

   ```
   lscondresp  "FileSystem space used up" "Broadcast event on-shift"
   ```

   Output is similar to:

   ```
    Condition              Response                        State
   "FileSystem space used up"     "Broadcast event on-shift"      "Active"
   ```

2. To list information about the condition ″FileSystem space used up″, type:

```
lscondresp "FileSystem space used up"
```

   Output is similar to:

```
Condition               Response                    State
"FileSystem space used up"     "Broadcast event on-shift"  "Active"
"FileSystem space used up"     "E-mail root anytime"       "Not Active"
```

3. To list information about the condition ″FileSystem space used up″ for responses that are active, type:

```
lscondresp -a  "FileSystem space used up"
```

   Output is similar to:

```
Condition               Response                    State
"FileSystem space used up"     "Broadcast event on-shift"  "Active"
```

4. To list all conditions with their linked responses, type:

```
lscondresp
```

   Output is similar to:

```
Condition               Response                    State
"FileSystem space used up"     "Broadcast event on-shift"  "Active"
"FileSystem space used up"     "E-mail root anytime"       "Not Active"
"Page in Rate"          "Log event anytime"         "Active"
```

5. To list all conditions that have ″space″ in their name that are linked to a response, type:

```
lscondresp space
```

   Output is similar to:

```
Condition               Response                    State
"FileSystem space used up"     "Broadcast event on-shift"  "Active"
"FileSystem space used up"     "E-mail root anytime"       "Not Active"
```

Files

/usr/sbin/rsct/bin/lscondresp Location of the **lscondresp** command.

See Also

The **mkcondition**, **mkcondresp**, **mkresponse**, **rmcondresp**, **startcondresp**, **stopcondresp** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding Event Response operations.

Author

Grant McLaughlin - cluster@us.ibm.com

lsresponse Command

Name

lsresponse – Lists information about one or more responses.

Synopsis

lsresponse [**−h**] [**−A**] [**−C | −l | −t | −d | −D** *Delimiter*] [**−q**] [**−x**] [**−T**] [**−V**] [*Response* [*Response...*]]

Description

The **lsresponse** command lists information about defined responses. The following information about the response is included:

Action
Name of an action.

ActionScript
The script or command to run for the action.

CheckReturnCode
Indicates if the actual return code for **ActionScript** is compared to its expected return code. The character 'y' is for yes and 'n' is for no.

DaysOfWeek

The days of the week when the action is allowed to be run. *Days_of_week* and *Time_of_day* together define the interval when the action can be run.

The numbers of the days can be separated by a plus sign (+) or displayed as a range of days separated by a hyphen (-). If there is more than one *Days_of_week*, they are separated by a comma (,). The number of *Days_of_week* matches the number of *Time_of_day*. The numbers of the days follow:

1 Sunday

2 Monday

3 Tuesday

4 Wednesday

5 Thursday

6 Friday

7 Saturday

EventType
The type of event that causes the action to be run; event, rearm event, or both.

Name Name of the response.

ReturnCode
The expected return code for **ActionScript**.

StandardOut
Indicates if standard output is directed to the audit log. The character 'y' is for yes and 'n' is for no.

TimeOfDay

The time range when *Action* can be run, consisting of the start time followed by the end time separated by a hyphen. *Days_of_week* and *Time_of_day* together define the interval when the action can be run.

The time is in 24–hour format (HHMM) where the first two digits represent the hour and the last two digits represent the minutes. The start time must be less than the end time because the time is specified by day of the week. If there is more than one *Time_of_day*, they are separated by a comma (,). The number of *Days_of_week* matches the number of *Time_of_day*.

To get a list of all response names, enter the **lsresponse** command alone without any response names specified. A list of all response names is returned. The default format in this case is tabular. To see all the information about all response names, specify the **-A** option with the **lsresponse** command. The **-A** option causes all information about a response to be listed when no response names are specified. When all the information about all responses is listed, the long format is the default.

When more than one *Response* is specified, the response information is listed in the order that the responses are entered.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Response The *Response* may be a response name or a substring of a response name. When it is a substring, any defined response name that contains the substring will be listed.

Options

−A Displays all of the attributes of the response.

−C Outputs the **mkresponse** command that can be used to create the response and one of its actions. If more than one response is specified, every **mkresponse** command appears on a separate line. This option is ignored when no responses are specified. This option overrides the **–l** option.

−d Specifies delimiter-formatted output. The default delimiter is a colon (:). Use the **–D** option if you wish to change the default delimiter.

−D *Delimiter*
Specifies delimiter-formatted output that uses the specified delimiter. Use this option to specify something other than the default, colon (:). For example, when the data to be displayed contains colons, use this option to specify another delimiter of one or more characters.

−h Writes the command's usage statement to standard output.

−l Specifies long formatted output. Displays the response information on separate lines.

−q Does not return an error when *Response* does not exist.

−t Specifies tabular formatted output. The response information is displayed in separate columns.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

−x Suppresses headers when printing.

Environment

CT_CONTACT
When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs read permission for the IBM.EventResponse resource class to run **lsresponse**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To list general information about the response ″Critical notifications″, type:

   ```
   lsresponse "Critical notifications"
   ```

   Output is similar to:

   ```
   Name             = "Critical notifications"
   Action           = "Log Critical Event"
   DaysOfWeek       = 1+2+7
   TimeOfDay        = 0000-2400
   ActionScript     = "/usr/sbin/rsct/bin/logevent /tmp/criticalEvents"
   ReturnCode       = 0
   CheckReturnCode  = "y"
   EventType        = "b"
   StandardOut      = "y"

   Name             = "Critical notifications"
   Action           = "E-mail root"
   DaysOfWeek       = 6+2,6+2,6+5
   TimeOfDay        = 1700-2400,0000-0800,0000-2400
   ActionScript     = "/usr/sbin/rsct/bin/notifyevent root"
   ReturnCode       = 0
   CheckReturnCode  = "y"
   EventType        = "b"
   StandardOut      = "y"
   ```

2. To list all of the responses, type:

   ```
   lsresponse
   ```

   Output is similar to:

   ```
   Name
   "E-mail root anytime"
   "E-mail root first shift"
   "Critical notifications"
   ```

3. To list the command that would create the response ″Critical notifications″ along with one of its actions, type:

   ```
   lsresponse -C "Critical notifications"
   ```

   Output is similar to:

   ```
   mkresponse -n "Log Critical Event" -d 1+2+7 -t 0000-2400 \
   -s "usr/sbin/rsct/bin/logevent /tmp/criticalEvents"  \
   -e b -r 0 "Critical notifications"
   ```

4. To list all responses that have ″E-mail″ in their name, type:

```
lsresponse "E-mail"
```

   Output is similar to:

```
Name = "E-mail root anytime"
Action = "some name"
:
Name = "E-mail root first shift"
Action = "some name"
```

Files

/usr/sbin/rsct/bin/lsresponse Location of the **lsresponse** command.

See Also

The **chresponse**, **lscondresp**, **mkcondresp**, **mkresponse**, **rmresponse** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding Event Response operations.

Author

Grant McLaughlin - cluster@us.ibm.com

mkcondition Command

Name

mkcondition – Creates a new condition definition which can be monitored.

Synopsis

mkcondition [**−h**] **−r** *Resource_class* **−e** *Event_expression* [**−E** *Rearm_expression*] [**−d** *Event_description*] [**−D** *Rearm_description*] [**−n** *Node_name*[,*Node_name*...]] [**−s** *″Selection_string″*] [**−S c | w | i**] [**−T**] [**−V**] *Condition*

mkcondition [**−h**] **−c** *Existing_condition* [**−r** *Resource_class*] [**−e** *Event_expression*] [**−E** *Rearm_expression*] [**−d** *Event_description*] [**−D** *Rearm_description*] [**−n** *Node_name*[,*Node_name*...]] [**−s** *″Selection_string″*] [**−S c | w | i**] [**−T**] [**−V**] *Condition*

Description

The **mkcondition** command creates a new condition with the name specified by the *Condition* parameter. The condition is used to monitor a resource for the occurrence of the condition (or event). One or more responses to an event can be defined by using the **mkresponse** command. The conditions can then be linked to the responses by using the **mkcondresp** command, or by using the **startcondresp** command to link responses and start monitoring.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Condition The *Condition* name is a character string that identifies the condition. If the name contains spaces, it must be enclosed in quotes. A name cannot consist of all spaces, be null, or contain imbedded single quotes.

Options

−c *Existing_condition*
Copy an existing condition. If any other options are specified, update the new condition as indicated by the options. Links with responses are not copied.

−d *Event_description*
Specifies user-supplied text that describes the event expression.

−D *Rearm_description*
Specifies user-supplied text that describes the rearm expression.

−e *Event_expression*
Specifies the event expression, which determines when an event occurs. It includes a dynamic attribute of the *Resource_class* with a mathematical comparison symbol (for example, >, <) and a constant. When this expression evaluates to TRUE, an event is generated.

−E *Rearm_expression*
Specifies the rearm expression. After the *Event_expression* has evaluated to TRUE and an event is generated, the rearm expression determines when monitoring for the *Event_expression* begins again. Typically, the rearm expression prevents multiple events from being generated for the same event evaluation. The rearm expression includes a dynamic attribute of the *Resource_class* with a mathematical comparison symbol (for example, >) and a constant.

−h Writes the command's usage statement to standard output.

−n *Node_name*
Specifies the host name for a node or list of host names for a list of nodes, separated by commas, where this condition is registered. The default is the local node. Use an asterisk (″*″) to register the condition on all nodes defined in the ManagedNode resource class.

−r *Resource_class*
Specifies the resource class to be monitored by this condition. The **lsrsrcdef** command can be used to list the resource-class names.

−s ″*Selection_string*″
Specifies a selection string that is applied to all of the *Resource_class* attributes to determine which resources should be monitored by the *Event_expression*. The default is to monitor all resources within the *Resource_class*. The selection string must be enclosed within double or single quotation marks. For information on how to specify selection strings, see ″Using Expressions″ in the chapter ″Using the Monitoring Application″ of the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

−S c | w | i
Specifies the severity of the event:

c Critical

w Warning

i Informational

The default is **i**. This is for user reference.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT
When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.Condition resource class to run **mkcondition**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To define a condition with the name ″FileSystem space used up″ to check for percentage of space used greater than 90% and to rearm when the percentage is back down below 85%, type:

```
mkcondition -r IBM.FileSystem  \
-e "PercentTotUsed > 90" -E "PercentTotUsed < 85" \
"FileSystem space used up"
```

2. To define a condition with the name ″tmp space used up″ to check for percentage of space used greater than 90% for **/tmp** and to rearm when the percentage is back down below 85%, including comments, type:

```
mkcondition -r IBM.FileSystem  \
-e "PercentTotUsed > 90" -E "PercentTotUsed < 85" \
-d "Generate event when tmp > 90% full"  \
-D "Restart monitoring tmp again after back down < 85% full"\
-s 'Name=="/tmp"'  "tmp space used up"
```

3. To define a condition with the name ″Space used up″ as a copy of ″FileSystem space used up″, type:

```
mkcondition -c "FileSystem space used up"  "Space used up"
```

4. To define a condition with the name ″var space used up″ as a copy of ″tmp space used up″, but change the selection to **/var**, type:

```
mkcondition -c "tmp space used up" -s 'Name=="/var"' \
"var space used up"
```

Files

/usr/sbin/rsct/bin/mkcondition
Location of the **mkcondition** command.

See Also

The **chcondition**, **lscondition**, **mkcondresp**, **mkresponse**, **rmcondition**, **startcondresp** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding Event Response operations and information on how to use expressions and selection strings.

Author

Joseph Chaky - cluster@us.ibm.com

mkcondresp Command

Name

mkcondresp – Creates a link between a condition and one or more responses.

Synopsis

mkcondresp [**−h**] [**−T**] [**−V**] *Condition Response* [*Response...*]

Description

The **mkcondresp** command creates a link between a condition and a response, but does not start monitoring. More than one response may be linked with a condition. You can start monitoring for this condition and its linked responses later by using the **startcondresp** command.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Condition Specifies the name of the condition to be linked to the response. The condition is always specified first.

Response Specifies the name of the response, or more than one response. If more than one response is given, all responses are linked to the condition.

Options

−h Writes the command's usage statement to standard output.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.Association resource class to run **mkcondresp**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To link the condition ″FileSystem space used″ to the response ″Broadcast event on-shift″, type:

   ```
   mkcondresp "FileSystem space used" "Broadcast event on-shift"
   ```

2. To link the condition ″FileSystem space used″ to the responses ″Broadcast event on-shift″ and ″E-mail root anytime″, type:

   ```
   mkcondresp "FileSystem space used" "Broadcast event on-shift" "E-mail root anytime"
   ```

Files

/usr/sbin/rsct/bin/mkcondresp
Location of the **mkcondresp** command.

See Also

The **lscondresp**, **mkcondition mkresponse**, **rmcondresp**, **startcondresp**, **stopcondresp** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding ERRM operations.

Author

Joseph Chaky - cluster@us.ibm.com

mkresponse Command

Name

mkresponse – Creates a new response definition with one action.

Synopsis

mkresponse [**−h**] **−n** *Action* [**−d** *Days_of_week*[*,Days_of_week...*]] [**−t** *Time_of_day*[*,Time_of_day...*]] **−s** *Action_script* [**−r** *Return_code*] [**−e a | r | b**] [**−o**] [**−T**] [**−V**] *Response*

mkresponse [**−h**] **−c** *Existing_response* [**−T**] [**−V**] *Response*

Description

The **mkresponse** command creates a new response definition with the name specified by the *Response* parameter. One action must also be defined when the response is defined. Actions define commands to be run when the response is used with a condition and the condition occurs. The action defines days of the week when the action can be used, the time of day for those days of the week, the script or command to be run, what type of event causes the command to be run, the expected return code of the script or command, and whether to keep standard output. The days and times are paired so that different times can be specified for different days.

The **chresponse** command can be used to add actions to a response or to remove actions from a response. A response must always have at least one action defined. Monitoring can be started by using the **startcondresp** command. The **startcondresp** command links a response to a condition if they are not already linked.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Response The *Response* name is a character string that identifies the response. If the name contains spaces, it must be enclosed in quotes. A name cannot consist of all spaces, be null, or contain imbedded single quotes.

Options

−c *Existing_response*
Copies an existing response. Links with conditions are not copied.

−d *Days_of_week*

Specifies the days of the week when the action being defined can be run. *Days_of_week* and *Time_of_day* together define the interval when the action can be run.

Enter the numbers of the days separated by a plus sign (+) or as a range of days separated by a hyphen (-). More than one *Days_of_week* parameter can be specified, but the parameters must be separated by a comma (,). The number of *Days_of_week* parameters specified must match the number of *Time_of_day* parameters specified. The default is all days. If no value is specified but a comma is entered, the default value is used. The numbers of the days follow:

1 Sunday

2 Monday

3 Tuesday

4 Wednesday

5 Thursday

6 Friday

7 Saturday

−e a | r | b
Specifies the type of event that causes the action being defined to run:

a Event

r Rearm event

b Both event and rearm event

The default is event (**a** flag).

−h Writes the command's usage statement to standard output.

−n *Action*
Specifies the name of the action being defined. Only one action can be defined when the response is created. Use the **chresponse** command to add more actions to the response.

−o Directs all standard output from *Action_script* to the audit log. The default is not to keep standard output. Standard error is always directed to the audit log.

−r *Return_code*
Specifies the expected return code for *Action_script*. If the expected return code is specified, the actual return code of *Action_script* is compared to the expected return code. A message is written to the audit log indicating whether they match. If the **−r** option is not specified, the actual return code is written to the audit log, and no comparison is performed.

−s *Action_script*
Specifies the fully qualified path for the script or command to run for the action being defined. See the man pages for **logevent**, **notifyevent**, and **wallevent** for descriptions of the predefined response scripts provided with the application.

−t *Time_of_day*
Specifies the time range when *Action* can be run, consisting of the start time followed by the end time, separated by a hyphen. *Days_of_week* and *Time_of_day* together define the interval when the action can be run.

The time is in 24−hour format (HHMM) where the first two digits represent the hour and the last two digits represent the minutes. The start time must be less than the end time because the time is specified by day of the week. More than one *Time_of_day* parameter can be specified, but the parameters must be separated by a comma (,). The number of *Days_of_week* parameters specified must match the number of *Time_of_day* parameters specified. The default value is 0000-2400. If no value is specified but a comma is entered, the default value is used.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT
When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.EventResponse resource class to run **mkresponse**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To define a response with the name ″E-mail root anytime″ that has an action named ″E-mail root″, to be used anytime Saturday and Sunday and uses the command **/usr/sbin/rsct/bin/notifyevent root** for both events and rearm events, type:

   ```
    mkresponse -n "E-mail root" -d 1+7  \
   -s "/usr/sbin/rsct/bin/notifyevent root" -e b   \
   "E-mail root anytime"
   ```

2. To define a response with the name ″E-mail root anytime″ that has an action named ″E-mail root″, to be used anytime Saturday and Sunday but only 8 am to 5 pm Monday through Friday and that uses the command **/usr/sbin/rsct/bin/notifyevent root** for events, type:

   ```
   mkresponse -n "E-mail root"     \
   -d 1+7,2-6  -t 0000-2400,0800-1700  \
   -s "/usr/sbin/rsct/bin/notifyevent root" -e a  \
   "E-mail root anytime"
   ```

3. To define a response with the name ″E-mail root first shift″ that has an action named ″E-mail root″ to be used Monday through Friday from 8 am to 6 pm, that uses the command **/usr/sbin/rsct/bin/notifyevent root** for rearm events, and that saves standard output in the audit log, expecting return code 5, type:

   ```
   mkresponse -n "E-mail root" -d 2-6  -t 0800-1800  \
   -s "/usr/sbin/rsct/bin/notifyevent root" -e r  -o   \
   -r 5  "E-mail root first shift"
   ```

4. To define a response with the name ″Critical notifications″ as a copy of ″Warning notifications″, type:

   ```
   mkresponse -c "Warning notifications" "Critical notifications"
   ```

Files

/usr/sbin/rsct/bin/mkresponse
Location of the **mkresponse** command.

See Also

The **chresponse**, **lsresponse**, **mkcondition**, **mkcondresp**, **rmresponse**, **startcondresp** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding ERRM operations.

Author

Joseph Chaky - cluster@us.ibm.com

rmcondition Command

Name

rmcondition – Removes a condition.

Synopsis

rmcondition [**−h**] [**−f**] [**−q**] [**−T**] [**−V**] *Condition*

Description

The **rmcondition** command removes the condition specified by the *Condition* parameter. The condition must already exist to be removed. When the condition must be removed even if it has linked responses, use the **-f** option to force the condition and the links with the responses to be removed. If the **-f** option is not specified and links with responses exist, the condition is not removed. Responses are not removed by this command.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Condition The name of a condition to be removed.

Options

−f Forces the condition to be removed even if it is linked to responses. The links with the responses are removed as well as the condition, but the responses are not removed.

−h Writes the command's usage statement to standard output.

−q Does not return an error when *Condition* does not exist.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.Condition resource class to run **rmcondition**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To remove the condition definition named ″FileSystem space used up″, type:

   ```
   rmcondition "FileSystem space used up"
   ```

2. To remove the condition definition named ″FileSystem space used up″ even if the condition is linked with responses, type:

   ```
   rmcondition -f "FileSystem space used up"
   ```

Files

/usr/sbin/rsct/bin/rmcondition
Location of the **rmcondition** command.

See Also

The **chcondition**, **lscondition**, **lscondresp**, **mkcondition** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding ERRM operations.

Author

Joseph Chaky - cluster@us.ibm.com

rmcondresp Command

Name

rmcondresp – Deletes a link between a condition and one or more responses.

Synopsis

rmcondresp [**−h**] [**−q**] [**−T**] [**−V**] *Condition* [*Response* [*Response ...*]]

rmcondresp [**−h**] [**−q**] **−r** [**−T**] [**−V**] *Response* [*Response ...*]

Description

The **rmcondresp** command deletes the link between a condition and a response. More than one response can be specified. The response is no longer run when the condition occurs. Use the **-r** option to specify that the command parameters consist only of responses. This deletes all links to conditions for these responses. If only a condition is specified, links to all responses for that condition are deleted.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Condition Specifies the name of the condition linked to the response. The condition is always specified first unless the **-r** option is used.

Response Specifies the name of a response, or more than one response. The links from the specified responses to the specified condition are removed.

Options

−h Writes the command's usage statement to standard output.

−q Does not return an error when either *Condition* or *Response* does not exist.

−r Indicates that all command parameters are responses. There are no conditions specified. This command removes links from all conditions that are linked to the specified responses.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.Association resource class to run **rmcondresp**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To delete the link between the condition ″FileSystem space used″ and the response ″Broadcast event on-shift″, type:

   ```
   rmcondresp  "FileSystem space used" "Broadcast event on-shift"
   ```

2. To delete the links between the condition ″FileSystem space used″ and all of its responses, type:

   ```
   rmcondresp  "FileSystem space used"
   ```

3. To delete the links between the condition ″FileSystem space used″ and the responses ″Broadcast event on-shift″ and ″E-mail root anytime″, type:

   ```
   rmcondresp  "FileSystem space used"  "Broadcast event on-shift" "E-mail root anytime"
   ```

4. To delete the links between the response ″Broadcast event on-shift″ and all of the conditions that use it, type:

   ```
   rmcondresp -r "Broadcast event on-shift"
   ```

Files

/usr/sbin/rsct/bin/rmcondresp
Location of the **rmcondresp** command.

See Also

The **lscondresp**, **mkcondition**, **mkcondresp**, **mkresponse**, **startcondresp**, **stopcondresp** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding ERRM operations.

Author

Joseph Chaky - cluster@us.ibm.com

rmresponse Command

Name

rmresponse – Removes a response.

Synopsis

rmresponse [**−h**] [**−f**] [**−q**] [**−T**] [**−V**] *Response*

Description

The **rmresponse** command removes the response specified by the *Response* parameter. The response must already exist in order to be removed. When the response must be removed even if it is linked with conditions, specify the **-f** flag. This forces the response and the links with the conditions to be removed. If the **-f** option is not specified and links with conditions exist, the response is not removed. Conditions are not removed by this command.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Response The name of a defined response to be removed.

Options

−f Forces the response to be removed even if it is linked with conditions. The links with the conditions are removed as well as the response, but the conditions are not removed.

−h Writes the command's usage statement to standard output.

−q Does not return an error when *Response* does not exist.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.EventResponse resource class to run **rmresponse**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To remove the response definition named ″Broadcast event on-shift″, type:

   ```
   rmresponse  "Broadcast event on-shift"
   ```

2. To remove the response definition named ″Broadcast event on-shift″ even if the response is linked with conditions, type:

   ```
   rmresponse -f "Broadcast event on-shift"
   ```

Files

/usr/sbin/rsct/bin/rmresponse
Location of the **rmresponse** command.

See Also

The **chresponse**, **lscondresp**, **lsresponse**, **mkcondresp**, **mkresponse** commands.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding ERRM operations.

Author

Joseph Chaky - cluster@us.ibm.com

startcondresp Command

Name

startcondresp – Starts monitoring a condition that has one or more linked responses.

Synopsis

startcondresp [**−h**] [**−T**] [**−V**] *Condition* [*Response* [*Response ...*]]

Description

The **startcondresp** command starts the monitoring of a condition that has a linked response. After monitoring is started, when the condition occurs, the response is run. If no responses are specified, monitoring is started for all responses linked to the condition. This causes all of the linked responses to run when the condition occurs. If more than one response is specified, monitoring is started only for those linked responses.

If one or more responses are specified and the responses are not linked with the condition, the **startcondresp** command links the specified responses to the condition, and monitoring is started. Use the **mkcondresp** command to link a response to a condition without starting monitoring.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Condition Specifies the name of the condition linked to the response. The condition is always specified first.

Response Specifies the name of a response, or more than one response. Specifying more than one response starts monitoring the specified responses linked to the specified condition.

Options

−h Writes the command's usage statement to standard output.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.Association resource class to run **startcondresp**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To start monitoring for the condition ″FileSystem space used ″ by using the response ″Broadcast event on-shift″, whether or not the response is linked with the condition, type:

   ```
   startcondresp  "FileSystem space used" "Broadcast event on-shift"
   ```

2. To start monitoring for the condition ″FileSystem space used ″ by using all of its linked responses, type:

   ```
   startcondresp "FileSystem space used"
   ```

3. To start monitoring for the condition ″FileSystem space used ″ by using the response ″Broadcast event on-shift″ and ″E-mail root anytime″, whether or not they are linked with the condition, type:

   ```
   startcondresp "FileSystem space used" "Broadcast event on-shift" "E-mail root anytime"
   ```

Files

/usr/sbin/rsct/bin/startcondresp
Location of the **startcondresp** command.

See Also

The **lscondresp**, **mkcondition**, **mkcondresp**, **mkresponse**, **stopcondresp** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding Event Response operations.

Author

Joseph Chaky - cluster@us.ibm.com

stopcondresp Command

Name

stopcondresp – Stops monitoring a condition that has one or more linked responses.

Synopsis

stopcondresp [**−h**] [**−q**] [**−T**] [**−V**] *Condition* [*Response* [*Response ...*]]

Description

The **stopcondresp** command stops the monitoring of a condition that has a linked response. If no response is specified, all of the linked responses for the condition are stopped. If more than one response is specified, only those linked responses are stopped. When the condition occurs, the response is not run. If no responses are active for a condition, the condition is no longer monitored.

Note: The ERRM commands are normally run on the management server for central monitoring. However, they can also be run on individual nodes for monitoring conditions and running responses locally on the nodes. The CT_CONTACT environment variable also affects whether a command can be run on a node.

Condition Specifies the name of the condition linked to the response. The condition is always specified first.

Response Specifies the name of a response, or more than one response. Specifying more than one response stops monitoring the specified responses linked to the specified condition.

Options

−h Writes the command's usage statement to standard output.

−q Does not return an error when either *Condition* or *Response* does not exist or when the *Condition* linked with *Response* is not being monitored.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred that was based on faulty command line input.

Security

The user needs write permission for the IBM.Association resource class to run **stopcondresp**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To stop monitoring for the condition ″FileSystem space used ″ which has the response ″Broadcast event on-shift″ linked with it, type:

   ```
   stopcondresp "FileSystem space used" "Broadcast event on-shift"
   ```

2. To stop monitoring for the condition ″FileSystem space used ″ using all of its linked responses, type:

   ```
   stopcondresp  "FileSystem space used"
   ```

Files

/usr/sbin/rsct/bin/stopcondresp
Location of the **stopcondresp** command.

See Also

The **lscondresp**, **mkcondition**, **mkcondresp**, **mkresponse**, **startcondresp** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains information regarding ERRM operations.

Author

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Chapter 3. RMC Commands

rmccli General Information File

Name

rmccli – Contains information global to the Resource Monitoring and Control (RMC) command-line interface (CLI).

Description

This man page provides global information for the Resource Monitoring and Control command-line interface, including data types, terminology and references to other related material.

Terminology

Common terminology used in the RMC CLI man pages:

Attribute

Attributes are either persistent or dynamic. A resource class is defined by a set of persistent and dynamic attributes. A resource is also defined by a set of persistent and dynamic attributes. Persistent attributes define the configuration of the resource class and resource. Dynamic attributes define a state or performance-related aspect of the resource class and resource. In the same resource class or resource, a given attribute name can be specified as either persistent or dynamic, but not both.

Resource

A resource is an instance of a resource class. Therefore, a resource contains instances of the persistent and dynamic attributes for the resource class. A resource of the class IBM.FileSystem contains the persistent and dynamic attributes that describe a particular file system.

Resource_class

A resource class is a collection of attributes that describe similar hardware or software entities. The IBM.FileSystem resource class, for example, consists of persistent and dynamic attributes that define existing file systems in a host. To see all of the resource classes defined in the system, issue the command **lsrsrc** without any options or parameters. To see all of the IBM.FileSystem resources defined in the system, issue the command: **lsrsrc IBM.FileSystem**.

Selection_string

Specifies a selection string. All selection strings must be enclosed within either double or single quotation marks. If the selection string contains double quotation marks, enclose the entire selection string in single quotation marks. For example:

```
-s 'Name == "testing"'
-s 'Name ?= "test"'
```

Only persistent attributes may be listed in a selection string. For information on how to specify selection strings, see ″Using Expressions″ in the chapter ″Using the Monitoring Application″ of the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

Data display information

The options that control the display function for the RMC CLI routines, in order of precedence, are:

1. **–l** for long display. This is the default display format.

   For example, the command:

   ```
   lsrsrc -s 'Name == "c175n05"' IBM.Foo Name NodeList SD Binary RH Int32Array
   ```

   produces output similar to:

   ```
   Persistent Attributes for Resource: IBM.Foo
   resource 1:
           Name       = "c175n05"
           NodeList   = {1}
   ```

```
SD         = ["testing 1 2 3",1,{0,1,2}]
Binary     = "0xaabbcc00 0xeeff"
RH         = "0x0000 0x0000 0x00000000 0x00000000 0x00000000 0x00000000"
Int32Array = {1,5,-10,1000000}
```

2. **–t** for tabular display.

   For example, the command:

   ```
   lsrsrc -s 'Name ?= "Page"' -t IBM.Condition Name EventExpression
   ```

   produces output similar to:

   ```
   Persistent Attributes for Resource: IBM.Condition

   Name                  EventExpression
   "Page space out rate" "VMPgSpOutRate > 500"
   "Page fault rate"     "VMPgFaultRate > 500"
   "Page out rate"       "VMPgOutRate > 500"
   "Page in rate"        "VMPgInRate > 500"
   "Page space in rate"  "VMPgSpInRate > 500"
   ```

3. **–x** for suppressing headers when printing.
4. **–d** for colon (:) delimited display.

   For example, the command:

   ```
   lsrsrc -xd -s 'Name == "c175n05"' IBM.Foo Name Int32 Uint32Array SD Binary
   ```

   produces output similar to:

   ```
   c175n05:-100:{}:["hel  lo1",1,{0,1,2}]:"0xaabbcc00 0xeeff":
   ```

   Note the use of the **–x** option along with the **–d** option.

5. **–D** *Delimiter* for string-delimited display.

   For example, the command:

   ```
   lsrsrc -xD:: -s 'Name == "c175n05"' IBM.Foo Name Int32 Uint32Array SD Binary
   ```

   produces output similar to:

   ```
   c175n05::-100::{}::["hel  lo1",1,{0,1,2}]::"0xaabbcc00 0xeeff"::
   ```

   Note the use of the **–x** option along with the **–D** *Delimiter* option.

When output of any list command **(lsrsrc**, **lsrsrcdef**) is displayed in the tabular output format, the printing column width may be truncated. If more characters need to be displayed (as in the case of strings) use the **–l** option to display the entire field.

Data input formatting

Binary data may be input in the following formats:

- ″0x######## 0x######## 0x####...″
- ″0x####################...″
- 0x##################...

Be careful when you specify strings as input data:

- Strings that contain no white space or non-alphanumeric characters may be supplied as input without enclosing quotation marks.
- Strings that contain white space or other alphanumeric characters must be enclosed in double quotation marks.
- Strings that contain single quotation marks (') must be enclosed by double quotation marks (″), as shown in this example: `"this is a string with 'single quotations marks'"`

Selection strings must be input in double quotation marks, unless the selection string itself contains double quotation marks, in which case the selection string must be enclosed in single quotation marks. For information on how to specify selection strings, see ″Using Expressions″ in the chapter ″Using the Monitoring Application″ of the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

- Typical selection string input: `"NodeNumber == 1"`.
- Selection string input where double quotation marks are part of the selection string: `'Name == "c175n05"'`.

Structured data (SD) types must be enclosed in square brackets: `[hello,1,{2,4,6,8}]`

When supplying structured data (SD) as command-line input to the RMC commands, enclose the SD in single quotation marks: `SD='[hello,1,{2,4,6,8}]'`

Arrays of any type must be enclosed in braces {}:

- Array of integers: `{-4, -3, -2, -1, 0, 1, 2, 3, 4}`
- Array of strings: `{abc, "do re mi", 123}`
- Array of structured data: `{[hello,1,{0,1,2,3}],[hello2,2,{2,4,6,8}]}`

Arrays of any type, with more than one element, must be enclosed in quotes. For example:

- mkrsrc IBM.Foo Name=testing NodeList={1} Uint32Array='{1,2,3}'
- mkrsrc IBM.Foo Name=testing NodeList='{1}' Uint32_array='{1,2,3}'

Arrays of strings and arrays of structured data must always be enclosed in quotes.

When supplying arrays of structured data or arrays containing strings enclosed in quotation marks as command-line input to the RMC commands, enclose the entire array in single quotation marks:

- Array of strings: `mkrsrc IBM.Foo Name="c175n05" NodeList={1} StringArray='{"a string","a different string"}'`
- Array of structured data: `mkrsrc IBM.Foo Name="c175n05" NodeList={1} SDArray='{["string 1",1,{1,1}],["string 2",2,{1,2,3}]}'`

For more examples, refer to the **Resource_Data_Input** file.

Data output formatting

String data is always displayed in either double or single quotation marks, as shown below:

- A description attribute that equals the string ″This is a string that contains white space″ is displayed using long format as:

  ```
  Description = "This is a string that contains white space"
  ```

- A description attribute value that equals an empty string ″″ is displayed in long format as:

  ```
  Description = ""
  ```

- A description attribute value that equals a string that contains a new-line character at the end of the string is displayed in long format as:

  ```
  Description = "This string ends with a new - line character...
   "
  ```

- A selection string containing double quotation marks is displayed in long format as:

  ```
  SelectionString = 'Name == "c175n05"'
  ```

- A name attribute value that equals the string ″c175n05″ is displayed in long format as:

  ```
  Name = "c175n05"
  ```

Binary data is displayed as follows:

```
"0x######## 0x######## 0x######## 0x###..."
```

Naming and numbering conventions

The following keywords are used throughout the RMC command man pages:

Attr The name of a resource class or resource attribute.

Resource_class
The name of a resource class.

Command structure and use

The RMC commands may be grouped into categories representing the different operations that can be performed on resource classes and resources:

- Creating and removing: **mkrsrc**, **rmrsrc**
- Modifying: **chrsrc**, **refrsrc**
- Viewing definitions and data: **lsrsrc**, **lsrsrcdef**
- Viewing actions: **lsactdef**

The RMC commands can be run directly from the command line or called by user-written scripts. In addition, the RMC commands are used as the basis for higher-level commands, such as the Event Response Resource Manager (ERRM) command line interface.

RMC subsystem scope

By default, the RMC subsystem runs in ″Global Scope″, monitoring and controlling the resources and resource classes on all nodes in the cluster. For a cluster of more than one node, if you want RMC to only return or change resources or resource classes on the node where it is running, then set the CT_LOCAL_SCOPE environment variable to 1. For example:

```
export CT_LOCAL_SCOPE=1
```

Options

−h Writes the command's usage statement to standard output.

−T Writes this command's trace messages to standard error. For your software-service organization's use only.

−V Writes this command's verbose messages to standard output.

All RMC commands support a **-V** and **-T** option. The **-V** option is used to see additional information (verbose mode) regarding the command. Verbose messages are contained in message catalogs and are translated based on the locale in which you are running and other criteria.

Run a command with the **-T** option only when the your software-service organization instructs you to turn on trace. Trace messages are not translated. The **-T** option shows the calls and returns to and from the underlying Perl to C Extensions.

See Also

The **Resource_Data_Input** file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding RMC operations.

Author

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Resource_Data_Input File

Name

Resource_Data_Input File – Input file for passing both resource class and resource attribute names and values to the Resource Monitoring and Control command-line interface (CLI). The data in this file is used for defining resources or for changing persistent attribute values of a resource or resource class.

Description

The **Resource_Data_Input File** is used in conjunction with the **-f** command line option to pass resource persistent attribute values to the RMC CLI in cases where using the command line directly would be too cumbersome or too prone to typographical errors. This file has no set location. It can be a temporary or permanent file, depending on requirements.

The **mkrsrc** and **chrsrc** commands read this file when they are issued with the **-f** option. The **lsrsrcdef** and **lsactdef** commands generate a file with this format when issued with the **-i** option.

PersistentResourceAttributes
: Persistent attribute names and values for one or more resources for a specific resource class used to define a new resource or change attribute values for an existing resource. The persistent resource attributes are read in by the commands **mkrsrc** and **chrsrc**. These attributes are ignored if the input file is read by the **chrsrc** command that has been specified with the **-c** option.

PersistentResourceClassAttributes
: Persistent attribute names and values for a resource class used to change the attribute values of an existing resource class. The persistent resource class attributes are read in by the command **chrsrc** only when the **-c** option is specified.

In general, the **Resource_Data_Input File** is a flat text file with a format as follows (bold words are literal). Note that text preceding any single colon is an arbitrary label and may be any alphanumeric text.

```
PersistentResourceAttributes::
# This is a comment
    label:
      AttrName1  = value
      AttrName2  = value
      AttrName3  = value
    another label:
        Name        = name
        NodeNumber  = 1
...
::

PersistentResourceClassAttributes::
    label:
      SomeSettableAttrName  = value
      SomeOtherSettableAttrName  = value
    ::
...
```

See the **Examples** section for more details.

Format points:

- The keywords: **PersistentResourceAttributes** and **PersistentResourceClassAttributes** are all followed by a double colon (::).
- The order of the keyword stanzas is not significant in the file. For example, **PersistentResourceClassAttributes** could precede **PersistentResourceClass**. It does not affect the portion of the data that is read in by the calling CLI.

- Individual stanza headings (beneath the keywords) are followed by a single colon (:). Example: `c175n05 resource info:`
- White space at the beginning of lines is not significant. Tabs or spaces are suggested for readability.
- Any line whose first printable character is a pound sign (#) is a comment.
- Each entry on an individual line is separated by white space (spaces or tabs).
- Blank lines in the file are not significant and are suggested for readability.
- There is no limit to the number of resource attribute stanzas included in a particular **PersistentResourceAttributes** section.
- There is no limit to the number of resource class attribute stanzas included in a particular **PersistentResourceClassAttributes** section. Typically, there is only one instance of a resource class. In this case, only one stanza is expected.
- If only one resource attribute stanza is included in a particular **PersistentResourceAttributes** section, the `label:` keyword can be omitted.
- If only one resource class attribute stanza is included in a particular **PersistentResourceClassAttributes** section, the `label:` keyword can be omitted.
- Values that contain spaces must be enclosed in double quotation marks or single quotation marks.
- A double colon (::) indicates the end of a section. If a terminating double colon is not found, the next Reserved Keyword or end of file signals the end of a section.
- Double quotation marks included within a string that is surrounded by double quotation marks must be escaped. (\″).

  Note: Double quotation marks can be nested within single quotation marks. These are examples:

  – `"Name == \"testing\""`

  – `'Name == "testing"'`

    This syntax is preferred if your string is a selection string and you are going to cut and paste to the command line.
- Single quotation marks included within a string that is surrounded by single quotation marks must be escaped. (\″).

  Note: Single quotation marks can be nested within double quotation marks. These are examples:

  – `'Isn\'t that true'`

  – `"Isn't that true"`

    This syntax is preferred if you are going to cut and paste to the command line.
- The format you use to enter data in the **Resource Data Input**file may not be the same format used on the command line. The shell you choose to run the commands in has its own rules with regard to quotation marks. Refer to the documentation for your shell for these rules, which determine how to enter data on the command line.

Examples

1. Example of input file for IBM.Foo resource used by the following sample **mkrsrc** command. Comments are arbitrary:

   ```
   mkrsrc -f /tmp/my_resource_data_input_file IBM.Foo
   ```

   The file consists of:

   ```
   PersistentResourceAttributes::
   # Resource 1 - only set required attributes
   resource 1:
       Name="c175n04"
   ```

```
    NodeList = {1}
# Resource 2 - setting both required and optional attributes
# mkrsrc -e2 IBM.Foo displays required and optional
# persistent attributes
resource 2:
    Name="c175n05"
    NodeList = {1}
    Int32 = -99
    Uint32 = 99
    Int64 = -123456789123456789
    Uint64 = 123456789123456789
    Float32 = -9.89
    Float64 = 123456789.123456789
    String = "testing 123"
    Binary = 0xaabbccddeeff
    RH = "0x0000 0x0000 0x00000000 0x00000000 0x00000000 0x00000000"
    SD = [hello,1,{2,4,6,8}]
    Int32Array = {-4, -3, -2, -1, 0, 1, 2, 3, 4}
    Int64Array = {-4,-3,-2,-1,0,1,2,3,4}
    Uint32Array = {0,1,2,3,4,5,6}
    Uint64Array = {0,1,2,3,4,5,6}
    Float32Array = {-3.3, -2.2, -1.2, 0, 1, 2.2, 3.3}
    Float64Array = {-3.3, -2.2, -1.2, 0, 1, 2.2, 3.3}
    StringArray = {abc,"do re mi", 123}
    BinaryArray = {"0x01", "0x02", "0x0304"}
    RHArray     = {"0x0000 0x0000 0x00000000 0x00000000 0x00000000 0x00000000",
 "0xaaaa 0xaaaa 0xbbbbbbbb 0xcccccccc 0xdddddddd 0xeeeeeeee"}
    SDArray     = {[hello,1,{0,1,2,3}],[hello2,2,{2,4,6,8}]}
```

2. Example of an input file for changing the attribute values of existing IBM.Foo resources.

```
chrsrc -f  /tmp/Foo/ch_resources -s 'Name == "c175n05"' IBM.Foo
```

The file consists of:

```
PersistentResourceAttributes::
# Changing resources that match the selection string entered
# when running chrsrc command.
resource 1:
        String            = "this is a string test"
        Int32Array        = {10,-20,30,-40,50,-60}
```

See Also

The **chrsrc**, **lsactdef**, **lsrsrcdef**, **mkrsrc** commands.

The **rmccli** General Information file.

Author

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chrsrc Command

Name

chrsrc – Changes the persistent attribute values of a resource or resource class.

Synopsis

To change the persistent attribute values of a resource or resource class (**-c** option), using data entered on the command line:

chrsrc [**−h**] **−s** *″Selection_string″* [**−v**] [**−T**] [**−V**] *Resource_class Attr=value*...

chrsrc [**−h**] **−r** [**−v**] [**−T**] [**−V**] *Resource_handle Attr=value*...

chrsrc [**−h**] **−c** [**−v**] [**−T**] [**−V**] *Resource_class Attr=value*...

To change the persistent attribute values of a resource or resource class (**-c** option), using data predefined in an input file:

chrsrc [**−h**] **−f** *Resource_Data_Input_file* **−s** *″Selection_string″* [**−v**] [**−T**] [**−V**] *Resource_class*

chrsrc [**−h**] **−f** *Resource_Data_Input_file* **−r** [**−v**] [**−T**] [**−V**] *Resource_handle*

chrsrc [**−h**] **−f** *Resource_Data_Input_file* **−c** [**−v**] [**−T**] [**−V**] *Resource_class*

Description

The **chrsrc** command changes the persistent attribute values for a resource or resource class.

By default, this command changes the resource persistent attributes. If you wish to change the resource class persistent attributes, specify the **-c** option.

Only persistent attributes that do not have a ″Read Only″ property can be changed. The underlying resource manager that controls the specified resource determines which attributes can be changed by using this command.

Use the **-v** option to verify that the attribute names specified by the command line or **Resource_Data_Input**file are valid persistent attributes for the specified resource and that these attributes do not have a property of ″Read Only″. When **chrsrc** is run with the **-v** option, the specified attributes are not changed.

After the **chrsrc** command is run without the **-v** option, if any specified attribute could not be changed, it is noted in an error message. If a particular attribute passes when the **chrsrc -v** command is run, this does not ensure that the attribute can be changed. The underlying resource manager controls which attributes can be changed.

To change the persistent attributes for a resource, use the **-r** option to change just the resource linked with the specified *Resource_handle*, or use the **-s** option to change all the resources that match the specified *″Selection_string″*.

Attr=value

Enter one or more attribute value pairs. If the **-f** option is specified, *Attr=value* pair parameters should not be entered on the command line. *Attr* is any defined persistent attribute name. Use the **lsrsrcdef** command to get a list of the defined persistent attributes and their data types for the specified resource. The value entered must be the appropriate data type for the specified attribute. For example, if NodeNumber is defined as a uint32 data type, enter a positive numeric value.

Resource_class
A resource class name. Enter the **lsrsrcdef** command for a list of defined resource class names.

Resource_handle
The specific resource handle that is linked with the resource that you wish to change. Use the **lsrsrc** command to obtain valid resource handles. The resource handle must be enclosed within double quotation marks. An example is: `"0x4017 0x0001 0x00000000 0x0069684c 0x0d4715b0 0xe9635f69"`.

Options

−c Changes the resource class persistent attribute values. By default, the resource persistent attributes are changed. Use this option if you want to change the resource class persistent attributes.

−f *Resource_Data_Input_file*
Specifies the name of the file which contains resource attribute information.

−h Writes the command's usage statement to standard output.

−r Changes the specific resource that matches the specified *Resource_handle*.

−s *″Selection_string″*
Specifies a selection string. All selection strings must be enclosed within either double or single quotation marks. If the selection string contains double quotation marks, enclose the entire selection string in single quotation marks. For example:

```
-s 'Name == "testing"'
-s 'Name ?= "test"'
```

Only persistent attributes may be listed in a selection string. For information on how to specify selection strings, see ″Using Expressions″ in the chapter ″Using the Monitoring Application″ of the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−v Verifies that all of the specified attributes are valid persistent attribute names that do not have a Read Only property. The **chrsrc** command cannot verify that all of the attributes specified on the command line or in the input file can be changed. The underlying resource manager that controls the specified resource determines which attributes can be changed. After this command is run (without the **-v** option), any attribute name that could not be changed is included in an error message.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT
When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

6 No resources were found that match the selection string.

Security

The user needs write permission for the *Resource_class* specified in **chrsrc** to run **chrsrc**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To change the Int32, Uint32 and SD persistent resource attributes in resource class IBM.Foo for the resources that have a Name equal to c175n05, type:

   ```
   chrsrc -s 'Name == "c175n05"' IBM.Foo \
   Int32=-9999 Uint32=9999\
   SD='["testing 1 2 3",1,{2,4,6}]'
   ```

2. To change the Int32, Uint32, SD persistent resource attributes in resource class IBM.Foo for the resource that has a Name starting with `c175n`, using the **Resource_Data_Input** file with the following contents:

   ```
   PersistentResourceAttributes::
   resource 1:
        Int32  = -9999
        Uint32 = 9999
        SD     = ["testing 1 2 3",1,{2,4,6}]
   ```

   type:

   ```
   chrsrc -f /tmp/IBM.Foo.chrsrc\
    -s 'Name ?= "c175n"'  IBM.Foo
   ```

3. To change the Name persistent resource attribute for the resource that has a resource handle equal to ″0x0001 0x4005 0x35ae868c 0x00000000 0xfeef2948 0x0d80b827″, type:

   ```
   chrsrc -r "0x0001 0x4005 0x35ae868c 0x00000000 0xfeef2948 0x0d80b827" Name="c175n05"
   ```

Files

/usr/sbin/rsct/bin/chrsrc Location of the **chrsrc** command.

See Also

The **lsrsrc**, **lsrsrcdef**, **mkrsrc**, **rmrsrc** commands.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding RMC operations and information on how to use expressions and selection strings.

Author

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lsactdef Command

Name

lsactdef – Lists (displays) action definitions of a resource or resource class.

Synopsis

lsactdef [**−h**] [**−c**] [**−p** *Property*] [**−s i | o**] [**−e**] [**−l | −i | −t | −d | −D** *Delimiter*] [**−x**] [**−T**] [**−V**] [*Resource_class* [*Action*...]]

Description

The **lsactdef** command lists the action definitions of a resource or resource class. Use **lsactdef** with no parameters specified to get a list of all resource class names.

By default, the resource action definitions are displayed. To see the resource class action definitions, specify the **-c** option.

By default, when no actions are specified on the command line, only actions that are defined as public are displayed. To override this default, use the **-p** option or specify on the command line the names of the actions whose definition you wish to display.

To see the structured data definition that is required as input when this action is invoked, specify the **-s i** option. To see the structured data definition linked with the output that results from invoking this action, specify the **-s o** option.

By default, for the actions that contain descriptions, the descriptions are not displayed. Specify the **-e** option to display the descriptions. Because the translation of these descriptions may take some time and because some of the descriptions are very long, the default is not to display these descriptions.

Action If a *Resource_class* parameter is specified, zero or more action names may be specified. If no *Action* parameter is specified, the definitions for all of the actions for the *Resource_class* are listed. Specific action names may be entered to control which actions are displayed and in what order. Actions must be separated by spaces.

Resource_class
Resource class name. The name of the resource class whose action definitions you wish displayed. If no *Resource_class* parameter is specified, a list of all of the resource class names is displayed.

Options

−c Displays the resource class action definitions. By default the resource action definitions are displayed.

−d Specifies delimiter-formatted output. The default delimiter is a colon (:). Use the **-D** option if you wish to change the default delimiter.

−D *Delimiter*
Specifies delimiter-formatted output that uses the specified delimiter. Use this option to specify a delimiter other than the default colon (:). An example is when the data to be displayed contains colons. Use this option to specify a delimiter of one or more characters.

−e Expands the descriptions. By default the definitions are displayed without the textual descriptions because they can be lengthy. Specify this option to see both the definitions and descriptions.

−h Writes the command's usage statement to standard output.

−i Specifies input format. Generates a template of the **Resource_Data_Input**file. The output is

displayed in long (stanza) format. The attribute's SD element data types are displayed as the value in the *Attr=value* pairs. It is suggested that when you use this option, the output of the **lsactdef** command be directed to a file. This option overrides the **−s o** option.

−l Specifies long formatted output, one entry per line. This is the default display format. If the **lsactdef** command is issued with the **-l** option, but without a resource class name, the **-l** option is ignored when the command returns the list of defined resource class names.

p *Property*
Displays actions with the specified *Property*. By default, only the definitions for public actions are displayed. To display all action definitions regardless of the action property, use the **-p 0** option.

Action Properties

0x0001
Long running

0x0002
Public

A decimal or hexadecimal value can be specified for the property. To request the action definitions for all actions that have one or more properties, ″OR″ the properties of interest together and then specify the ″ORed″ value with the **-p** option. For example, to request the action definitions for all actions that are long running or public, type:

```
-p 0x03
```

−s i | o
Displays the structured data definition for the action input or action response.

i Displays the action input structured data definitions. This is the default.

o Displays the action response (output) structured data definitions.

−t Specifies tabular formatted output. Each attribute is displayed in a separate column, one resource per line.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

−x Suppresses header printing.

Environment

CT_CONTACT
When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

Security

The user needs read permission for the *Resource_class* specified in **lsactdef** to run **lsactdef**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To list the names of all of the resource classes, type:

   ```
   lsactdef
   ```

   Output is similar to:

   ```
   class_name
   "IBM.Association"
   "IBM.AuditLog"
   "IBM.AuditLogTemplate"
   "IBM.Condition"
   "IBM.EventResponse"
   "IBM.Host"
   "IBM.Program"
   "IBM.Sensor"
   "IBM.ManagedNode"
   ...
   ```

2. To list the public resource action definitions for resource class IBM.AuditLog, type:

   ```
   lsactdef IBM.AuditLog
   ```

   Output is similar to:

   ```
   Resource Action Definitions for
   class_name: IBM.AuditLog
   action 1:
           action_name    = "GetRecords"
           display_name   = ""
           description    = ""
           properties     = {"public"}
           confirm_prompt = ""
           action_id      = 0
           variety_list   = {{1..1}}
           variety_count  = 1
           timeout        = 0
   action 2:
           action_name    = "DeleteRecords"
           display_name   = ""
           description    = ""
           properties     = {"public"}
           confirm_prompt = ""
           action_id      = 1
           variety_list   = {{1..1}}
           variety_count  = 1
           timeout        = 0
   ....
   ```

3. To list the structured data definition required for invoking the action on resources in resource class IBM.AuditLog, action GetRecords, type:

   ```
   lsactdef -s i IBM.AuditLog GetRecords
   ```

   Output is similar to:

   ```
   Resource Action Input for: IBM.AuditLog
   action_name GetRecords:
   SD element 1:
           element_index     = 0
           element_name      = "MatchCriteria"
           description       = ""
   ```

```
        element_data_type = "char_ptr"
        display_name      = ""
SD element 2:
        element_index     = 1
        element_name      = "IncludeDetail"
        description       = ""
        element_data_type = "uint32"
        display_name      = ""
```

Files

/usr/sbin/rsct/bin/lsactdef Location of the **lsactdef** command.

See Also

The **lsrsrcdef** command.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding RMC operations.

Author

Stephanie Beals - cluster@us.ibm.com

lsrsrc Command

Name

lsrsrc – Lists (displays) resources or a resource class.

Synopsis

lsrsrc [**−h**] [**−s** *"Selection_string"*] [**−a p | d | b**] [**−p** *Property*] [**−l | −t | −d | −D** *Delimiter*] [**−x**] [**−T**] [**−V**] [*Resource_class* [*Attr*...]]

lsrsrc [**−h**] [**−s** *"Selection_string"*] **−r** [**−l | −t | −d | −D** *Delimiter*] [**−x**] [**−T**] [**−V**] [*Resource_class*]

lsrsrc [**−h**] **−c** [**−a p | d | b**] [**−p** *Property*] [**−l | −t | −d | −D** *Delimiter*] [**−x**] [**−T**] [**−V**] *Resource_class* [*Attr*...]

Description

The **lsrsrc** command is used to list the persistent and dynamic attributes and their values of either a resource class or a resource.

When no *Attr* parameter is specified, only attributes that are defined as public are displayed. Use the **-p** option to override this default. When no *Attr* parameter is specified, the **-a p | d | b** option controls whether only persistent, or only dynamic, or both persistent and dynamic attributes and their values are displayed.

When one or more attribute names are specified, exactly the attribute names specified and their values are displayed in the order specified, provided that each of the specified attribute names are valid.

To get a list of all of the resource classes, enter the **lsrsrc** command with no parameters.

Specify the **-c** option to display a list of the resource class attributes and values.

Specify the **-r** option to display only the resource handles linked with the resources in the displayed class.

By default, the resource attributes and values are displayed in long format. Use the **-t**, **-d**, or **-D** option for the resources to be displayed in tabular or delimiter formatted output.

For best performance, specify either the **-a p** option or only persistent attributes as parameters.

Note: Any attribute that has a data type defined as ct_none (for example, a Quantum) is not listed by the **lsrsrc** command. RMC does not return attribute values for attributes that are defined as Quantum. To list attribute definitions, use the **lsrsrcdef** command.

Attr
: Attribute name. Both persistent and dynamic attribute names may be specified to control which attributes are displayed and their order. Zero or more attributes may be specified. Attributes must be separated by spaces. If no attribute names are specified, the **-a p | d | b** option controls whether only persistent attributes, only dynamic attributes, or both persistent and dynamic attributes are displayed. When no attribute names are specified, only attributes that are defined as public are displayed. Use the **-p** option to override this default.

Resource_class
: Resource class name. The name of the resource class whose resources you wish displayed. Zero or one *Resource_class* parameter can be specified. If no *Resource_class* parameter is specified, a list of all resource class names is displayed.

Options

−a p | d | b
Specifies an attribute type. By default only persistent attributes are displayed. This option can be used only when no attribute names are specified on the command line.

p Displays only persistent attributes.

d Displays only dynamic attributes.

b Displays both persistent and dynamic attributes.

For best performance, specify the **-a p** option.

−c Displays the attributes for the resource class. By default, the resource attributes, not the resource class, are displayed. This option overrides the **-r** option.

−d Specifies delimiter-formatted output. The default delimiter is a colon (:). Use the **-D** option if you wish to change the default delimiter.

−D *Delimiter*
Specifies delimiter-formatted output that uses the specified delimiter. Use this option to specify something other than the default colon (:). An example is when the data to be displayed contains colons. Use this option to specify a delimiter of one or more characters.

−h Writes the command's usage statement to standard output.

−l Specifies long formatted output. Each attribute is displayed on a separate line. This is the default display format. If the **lsrsrc** command is issued with the **-l** option, but without a resource class name, the **-l** option is ignored when the command returns the list of defined resource class names.

−p *Property*
Displays attributes with the specified *Property*. By default, only public attributes are displayed. To display all the attributes regardless of the property, use the **-p 0** option. Use this option in conjunction with the **-a** option when no attributes are specified on the command line.

Persistent Attribute Properties

0x0001
Read only

0x0002
Required for define

0x0004
Not valid for define

0x0008
Optional for define

0x0010
Selectable

0x0020
Public

Dynamic Attribute Properties

0x0020
Public

A decimal or hexadecimal value can be specified for the property. To display attributes and their values for all attributes that have one or more properties, ″OR″ the properties of interest together and then specify the ″ORed″ value with the **-p** option. For example, to display attributes and their values for all persistent attributes that are either required for define or optional for define, type:

```
-p 0x0a
```

−r Displays the resource handles for the resources that match the specified selection string or all resources when no selection string is specified.

−s *″Selection_string″*
Specifies a selection string. All selection strings must be enclosed within either double or single quotation marks. If the selection string contains double quotation marks, enclose the entire selection string in single quotation marks. For example:

```
-s 'Name == "testing"'
-s 'Name ?= "test"'
```

Only persistent attributes may be listed in a selection string. For information on how to specify selection strings, see ″Using Expressions″ in the chapter ″Using the Monitoring Application″ of the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

−t Specifies tabular formatted output. Each attribute is displayed in a separate column, one resource per line.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

−x Suppresses header printing.

Environment

CT_CONTACT
When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

Security

The user needs read permission for the *Resource_class* specified in **lsrsrc** to run **lsrsrc**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To list the names of all of the resource classes, type:

   ```
   lsrsrc
   ```

   Output is similar to:

```
class_name
"IBM.Association"
"IBM.Condition"
'IBM.EventResponse"
"IBM.Host"
"IBM.Ethernet"
"IBM.TokenRing"
...
```

2. To list the persistent attributes for resource IBM.Host that have 4 processors, type:

```
lsrsrc -s "NumProcessors == 4" -a p -p 0 IBM.Host
```

Output is similar to:

```
Resource Persistent Attributes for: IBM.Host
resource 1:
        Name           = "c175n05.ppd.pok.ibm.com"
        ResourceHandle = "0x4008 0x0001 0x00000000 0x0069684c 0x0d7f55d5 0x0c32fde3"
        Variety        = 1
        NodeList       = {1}
        NumProcessors  = 4
        RealMemSize    = 1073696768
```

3. To list the public dynamic attributes for resource IBM.Host on node 1, type:

```
lsrsrc -s 'Name == "c175n05.ppd.pok.ibm.com"' -a d IBM.Host
```

Output is similar to:

```
Resource Dynamic Attributes for: IBM.Host
resource 1:
        ProcRunQueue        = 1.03347987093142
        ProcSwapQueue       = 1.00548852941929
        TotalPgSpSize       = 65536
        TotalPgSpFree       = 65131
        PctTotalPgSpUsed    = 0.61798095703125
        PctTotalPgSpFree    = 99.3820190429688
        PctTotalTimeIdle    = 0
        PctTotalTimeWait    = 51.5244382399734
        PctTotalTimeUser    = 12.8246006482343
        PctTotalTimeKernel  = 35.6509611117922
        PctRealMemFree      = 66
        PctRealMemPinned    = 4
        RealMemFramesFree   = 173361
        VMPgInRate          = 0
        VMPgOutRate         = 0
        VMPgFaultRate       = 0
         ...
```

4. To list the Name, Variety, and ProcessorType attributes for the IBM.Processor resource on all the online nodes, type:

```
lsrsrc IBM.Processor Name Variety ProcessorType
```

Output is similar to:

```
Resource Persistent Attributes for: IBM.Processor
resource 1:
        Name          = "proc3"
        Variety       = 1
        ProcessorType = "PowerPC_604"
resource 2:
        Name          = "proc2"
        Variety       = 1
        ProcessorType = "PowerPC_604"
resource 3:
        Name          = "proc1"
        Variety       = 1
        ProcessorType = "PowerPC_604"
```

```
resource 4:
        Name          = "proc0"
        Variety       = 1
        ProcessorType = "PowerPC_604"
```

5. To list both the persistent and dynamic attributes for the resource class IBM.Condition, type:

   ```
   lsrsrc -c -a b -p 0 IBM.Condition
   ```

   Output is similar to:

   ```
   Resource Class Persistent and Dynamic Attributes for: IBM.Condition
   resource 1:
           ResourceType = 0
           Variety      = 0
   ```

Files

/usr/sbin/rsct/bin/lsrsrc Location of the **lsrsrc** command.

See Also

The **lsrsrcdef** command.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding RMC operations.

Author

Stephanie Beals - cluster@us.ibm.com

lsrsrcdef Command

Name

lsrsrcdef – Lists a resource or resource class definition.

Synopsis

lsrsrcdef [**−h**] [**−c**] [**−a p | d**] [**−p** *Property*] [**−e**] [**−s**] [**−l | −i | −t | −d | −D** *Delimiter*] [**−x**] [**−T**] [**−V**] [*Resource_class* [*Attr*...]]

Description

The **lsrsrcdef** command lists the definition of a resource class, or the persistent or dynamic attributes of a resource instance or a resource class.

Use **lsrsrcdef** with no parameters specified to get a list of all resource class names.

To see just the resource class definition, specify the **-c** option and a *Resource_class* parameter without specifying the **-a** option.

To see the persistent or dynamic attribute definitions of the resource class, specify a *Resource_class* parameter and the **-c** option with the appropriate **-a** option (**-a d** for dynamic attribute or **-a p** for persistent attribute definitions). To see the persistent or dynamic attribute definitions for a resource, specify the appropriate **-a p | d** option without the **-c** option.

By default, when no *Attr* parameters are specified on the command line, only the definitions for public attributes are displayed. To override this default, use the **-p** option or specify the name of the attribute you wish to display.

By default, for the attributes that contain descriptions, the descriptions are not displayed. Specify the **-e** option to display the descriptions. Because some of the descriptions are very long, the default is not to display them.

Attr If a *Resource_class* parameter is specified, zero or more attribute names can be specified. If no *Attr* parameter is specified, the definition for all the attributes for the resource are listed. Specific attribute names may be specified to control which attributes are displayed and their order. Specify only persistent attribute names when the **-a p** option is used. Specify only dynamic attribute names when the **-a d** option is used. Attributes must be separated by spaces.

Resource_class
Resource class name. The name of the resource class whose attribute definitions are to be displayed. If no *Resource_class* parameter is specified, a list of all of the resource class names is displayed.

Options

−a p | d
Specifies the attribute type. Either persistent or dynamic attribute definitions may be displayed. Use this option with the **-c** option for the persistent or dynamic attribute definitions of the resource class.

p Displays only persistent attributes

d Displays only dynamic attributes

−c Displays the resource class definition. By default, the resource definition is displayed. Combine with the **-a p | d** option to display the resource class definition for persistent or dynamic attributes. Use the **–c** option alone, without the **-a p | d** option, to see the resource class definition.

−d Specifies delimiter-formatted output. The default delimiter is a colon (:). Use the **-D** option to change the default delimiter.

−D *Delimiter*
Specifies delimiter-formatted output that uses the specified delimiter. Use this option to specify something other than the default colon (:). An example is when the data to be displayed contains colons. Use this option to specify a delimiter of one or more characters.

−e Expands the descriptions. By default the definitions are displayed, but the textual descriptions are not displayed because they may be lengthy. Specify this option to see both the definitions and descriptions.

−h Writes the command's usage statement to standard output.

−i Generates a template of the **Resource_Data_Input**file which can then, after appropriate editing, be used as input to the **mkrsrc** command. The output is displayed in long (stanza) format. All required and optional attributes that can be used to define a resource are displayed. The attribute data type is displayed as the value in the *Attr=value* pairs. It is suggested that when you use this option, the output of the **lsrsrcdef** command be directed to a file. This option overrides the **−s** and **−a d** options.

−l Specifies long formatted output, one entry per line. This is the default display format. If the **lsrsrcdef** command is issued with the **-l** option, but without a resource class name, the **-l** option is ignored when the command returns the list of defined resource class names.

−p *Property*
Displays attribute definitions for attributes with the specified *Property*. By default, only the definitions for public attributes are displayed. To display all attribute definitions regardless of the property, use the **-p 0** option.

Persistent Attribute Properties

0x0001
Read only

0x0002
Required for define

0x0004
Not valid for define

0x0008
Optional for define

0x0010
Selectable

0x0020
Public

Dynamic Attribute Properties

0x0020
Public

A decimal or hexadecimal value can be specified for the property. To request the attribute definitions for all attributes that have one or more properties, ″OR″ the properties of interest together and then specify the ″ORed″ value with the **-p** option. For example, to request the attribute definitions for all persistent attributes that are either required for define or optional for define, type:

```
-p 0x0a
```

−s Displays the structured data definition. Specify this option for the structured data definition to be expanded so that each element definition of the structured data attributes is displayed.

−t Specifies tabular formatted output. Each attribute is displayed in a separate column, one resource per line.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

−x Suppresses header printing.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

Security

The user needs write permission for the *Resource_class* specified in **lsrsrcdef** to run **lsrsrcdef**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To list the names of all of the resource classes defined on the system, type:

   ```
   lsrsrcdef
   ```

   Output is similar to:

   ```
   class_name
   "IBM.ATMDevice"
   "IBM.Association"
   "IBM.AuditLog"
   "IBM.AuditLogTemplate"
   "IBM.Condition"
   "IBM.EthernetDevice"
   "IBM.EventResponse"
   ...
   ```

2. To list the resource class definitions for resource IBM.Host, type:

   ```
   lsrsrcdef -c IBM.Host
   ```

   Output is similar to:

```
Resource Class Definition for: IBM.Host
resource class 1:
        class_name         = "IBM.Host"
        class_id           = 8
        properties         = {"has_rsrc_insts","mtype_subdivided"}
        display_name       = ""
        description        = ""
        locator            = "NodeList"
        class_pattr_count  = 1
        class_dattr_count  = 3
        class_action_count = 0
        pattr_count        = 6
        dattr_count        = 47
        action_count       = 0
        error_count        = 0
        rsrc_mgr_count     = 1
rsrc_mgrs 1:
        mgr_name  = "IBM.HostRM"
        first_key = 1
        last_key  = 1
```

3. To list the resource class persistent attribute definitions for resource IBM.Host, type:

```
lsrsrcdef -c -a p -p 0 IBM.Host
```

Output is similar to:

```
Resource Class Persistent Attribute Definitions for: IBM.Host
attribute 1:
        program_name              = "Variety"
        display_name              = ""
        group_name                = ""
        properties                = {"read_only","invalid_for_define"}
        description               = ""
        attribute_id              = 0
        group_id                  = 255
        data_type                 = "uint32"
        variety_list              = {{1..1}}
        variety_count             = 1
        default_value             = 0
```

4. To list the resource persistent attribute definitions and descriptions for resource IBM.Host, type:

```
lsrsrcdef -a p -p 0 -e IBM.Host
```

Output is similar to:

```
Resource Persistent Attribute Definitions for: IBM.Host
attribute 1:
        program_name       = "Name"
        display_name       = "Name"
        group_name         = "General"
        properties         = {"required_for_define","public,selectable"}
        description        = "Identifies the current name of the host
      as returned by command."
        attribute_id       = 0
        group_id           = 0
        data_type          = "char_ptr"
        variety_list       = {{1..1}}
        variety_count      = 1
        default_value      = ""
attribute 2:
        program_name       = "ResourceHandle"
        display_name       = "Resource Handle"
        group_name         = "Internal"
        properties         = {"read_only","invalid_for_define","selectable"}
        description        = "A globally unique handle that
      identifies the host. Every resource is assigned a resource
      handle, which is used internally for identifying and
      locating each resource.  The resource handle is fixed in size
```

```
      and avoids the problems of name space collisions across
      different types of resources."
        attribute_id       = 1
        group_id           = 255
        data_type          = "rsrc_handle_ptr"
        variety_list       = {{1..1}}
        variety_count      = 1
        default_value      = "0x0000 0x0000 0x00000000 0x00000000 0x00000000 0x00000000"
attribute 3:
        program_name       = "Variety"
        display_name       = "Variety"
        group_name         = "Internal"
...
```

5. To list the public dynamic attributes for resource IBM.Host, type:

```
lsrsrcdef -a d IBM.Host
```

Output is similar to:

```
Resource Dynamic Attribute Definitions for: IBM.Host
attribute 1:
        program_name           = "ProcRunQueue"
        display_name           = ""
        group_name             = ""
        properties             = {"public"}
        description            = ""
        attribute_id           = 1
        group_id               = 1
        data_type              = "float64"
        variable_type          = 0
        variety_list           = {{1..1}}
        variety_count          = 1
        init_value             = 0
        min_value              = 0
        max_value              = 100
        expression      = "(ProcRunQueue - ProcRunQueue@P) >= (ProcRunQueue@P * 0.5)"
        expression_description = ""
        rearm_expression       = "ProcRunQueue < 50"
        rearm_description      = ""
        PTX_name               = ""
attribute 2:
...
```

Files

/usr/sbin/rsct/bin/lsrsrcdef Location of the **lsrsrcdef** command.

See Also

The **lsrsrc**, **mkrsrc** commands.

The **Resource_Data_Input** file.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding RMC operations.

Author

Stephanie Beals - cluster@us.ibm.com

mkrsrc Command

Name

mkrsrc – Defines a new resource.

Synopsis

To define a new resource using data entered on the command line:

mkrsrc [**−h**] [**−v**] [**−T**] [**−V**] *Resource_class Attr=value*...

To define a new resource using data predefined in an input file:

mkrsrc [**−h**] **−f** *Resource_Data_Input_file* [**−v**] [**−T**] [**−V**] *Resource_class*

To see examples of the **mksrc** command for a Resource class:

mkrsrc [**−h**] **−e** *Resource_class*

Description

The **mkrsrc** command requests the RMC subsystem to define a new resource instance for the class specified by the *Resource_class* parameter. At least one persistent attribute name and its value must be specified either as an parameter or by a resource definition file using the **-f** option.

Prior to running **mkrsrc**, you should run the **lsrsrcdef** command to determine which attributes are required_for_define. Only attributes that have a property of required_for_define or optional_for_define can be defined using the **mkrsrc** command. The **lsrsrcdef** command also identifies the data type for each attribute. The value specified for each attribute must match this data type.

Attr=value...
: Attributes of the resource being defined. When defining a new resource instance, there are specific required attributes for each resource that must be defined. These attributes can be specified as parameters on the command line or defined in an input file by using the **-f** option.

  Attr The name of a persistent attribute for this resource. This attribute must have a property of required_for_define or optional_for_define. Use the **lsrsrcdef** command to check the property.

  value The value for this persistent attribute. The data type for this value must match the defined data type for the value of this attribute. Use the **lsrsrcdef** command to verify the data type for each attribute.

Resource_class
: The resource class name of the resource to be defined

Options

−e Displays two examples of suitable command line input for this command.
- Example of **mkrsrc** command line input for required attributes only.
- Example of **mkrsrc** command line input for both required and optional attributes.

−f *Resource_Data_Input_file*
: Specifies the name of the file which contains resource attribute information.

−h Writes the command's usage statement to standard output.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−v Verifies that the input file or command line is valid. For example, check that all of the attribute names specified are defined and are either required_for_define or optional_for_define.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

Security

The user needs write permission for the *Resource_class* specified in **mkrsrc** to run **mkrsrc**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To create a new resource in the IBM.Host class, assuming you already know which persistent attributes are required when defining a resource of this class, type:

   ```
   mkrsrc IBM.Host Name=c175n05
   ```

2. To create a new resource in the IBM.Processor class by first generating a template to aid in the defining of these resources, type:

   ```
   lsrsrcdef -i IBM.Processor > /tmp/IBM.Processor.rdef
   ```

   Then, edit the file **/tmp/IBM.Processor.rdef** and enter values for all of the attributes, substituting the type for an appropriate value, or leaving it blank for the default value.

   Finally, type:

   ```
   mkrsrc -f /tmp/IBM.Processor.rdef IBM.Processor
   ```

3. To create two new IBM.Host resources using the information defined in file **/tmp/IBM.Host.rdef**, type:

   ```
   mkrsrc -f /tmp/IBM.Host.rdef IBM.Host
   ```

   Where the file **/tmp/IBM.Host.rdef** looks like:

   ```
   PersistentResourceAttributes::
   resource 1:
       Name        = c175n04

   resource 2:
       Name        = c175n05
   ```

4. This example creates a new resource in the IBM.Foo class. In this class, the Name and NodeList are required attributes. The Binary, SD, StringArray, and SDArray attributes are optional_for_define. This example shows how to enter the more difficult data types from the command line. The data types for the optional Binary, SD, StringArray, and SDArray attributes are self-explanatory. Type:

```
mkrsrc IBM.Foo Name=c175n05 \
NodeList={1} \
Binary="0xaabbccddeeff00" \
SD='[testing123,1,{2,4,6}]' \
StringArray='{"testing 1 2 3",testing123,"testing 1 2 3"}' \
SDArray='{["testing 1 2 3",1,{1,3,5}],[testing,2,{2,4,6}]}'
```

   Note: As discussed in the rmcli General Information file, attribute values for data types: structured data, array of structured data, and arrays containing strings enclosed in double quotation marks, should be enclosed in single quotation marks.

Files

/usr/sbin/rsct/bin/mkrsrc Location of the **mkrsrc** command.

See Also

The **lsrsrc**, **lsrsrcdef**, **rmrsrc** commands.

The **Resource_Data_Input**file.

The **rmccli** General Information file.

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding RMC operations.

Author

Stephanie Beals - cluster@us.ibm.com

refrsrc Command

Name

refrsrc – Refreshes the resources within the specified resource class.

Synopsis

refrsrc [**−h**] [**−T**] [**−V**] *Resource_class*

Description

The **refrsrc** command refreshes the resources within the specified resource class. Use this command to force the Resource Monitoring and Control (RMC) subsystem to detect new instances of resources in cases where the configuration could be altered by operating system commands (**mkfs**, for example).

This command makes a request to the RMC subsystem to refresh the configuration of the resources within a resource class. The request is actually performed by the linked resource manager.

Any application that is monitoring resources in the specified resource class may receive events as the configuration is refreshed.

Resource_class The resource class name.

Options

−h Writes the command's usage statement to standard output.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

Security

The user needs read permission for the *Resource_class* specified in **refrsrc** to run **refrsrc**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To refresh the configuration of the resources in class IBM.FileSystem, type:

```
refrsrc IBM.FileSystem
```

Files

/usr/sbin/rsct/bin/refrsrc Location of the **refrsrc** command.

See Also

The **lsrsrc**, **lsrsrcdef** commands.

The **rmccli** General Information file

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding RMC operations.

Author

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rmrsrc Command

Name

rmrsrc – Removes a defined resource.

Synopsis

rmrsrc [**−h**] **−s** *″Selection_string″* [**−T**] [**−V**] *Resource_class*

rmrsrc [**−h**] **−r** [**−T**] [**−V**] *Resource_handle*

Description

The **rmrsrc** command removes (undefines) the specified resource instance or resource instances. The **rmrsrc** command makes a request to Resource Monitoring and Control (RMC) to undefine a specific resource instance. The resource manager of the resource removes the resource.

The first format of this command requires a resource class name parameter and a selection string specified using the **-s** option. All resources in the specified resource class that match the specified selection string are removed. If the selection string identifies more than one resource to be removed, it is the same as running this command once for each resource that matches the selection string.

The second format of this command allows the actual resource handle linked with a specific resource to be specified as the parameter. It is expected that this form of the command would be more likely used from within a script.

Resource_class
: The resource class name. The resource instances for this resource class that match the selection string criteria are removed.

Resource_handle
: A resource handle. The resource handle must be specified using the format: ″0x#### 0x#### 0x######### 0x######### 0x######### 0x#########″, where # is any valid hexadecimal digit. The resource handle uniquely identifies a particular resource instance that should be removed.

Options

−h Writes the command's usage statement to standard output.

−r Specifies that a resource handle is supplied as the parameter

−s *″Selection_string″*
: Specifies a selection string. All selection strings must be enclosed within either double or single quotation marks. If the selection string contains double quotation marks, enclose the entire selection string in single quotation marks. For example:

```
-s 'Name == "testing"'
-s 'Name ?= "test"'
```

Only persistent attributes may be listed in a selection string. For information on how to specify selection strings, see ″Using Expressions″ in the chapter ″Using the Monitoring Application″ of the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

−T Writes the command's trace messages to standard error. For your software-service organization's use only.

−V Writes the command's verbose messages to standard output.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with RMC.

2 Error occurred with CLI script.

3 Incorrect flag on command line.

4 Incorrect parameter on command line.

5 Error occurred with RMC that was based on faulty command line input.

6 No resources were found that match the selection string.

Security

The user needs write permission for the *Resource_class* specified in **rmrsrc** to run **rmrsrc**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To remove the resource with the Name c175n05 from resource class IBM.Host, type:

   ```
   rmrsrc -s 'Name == "c175n05"' IBM.Host
   ```

2. To remove the resource linked with resource handle: ″0x4017 0x0001 0x00000000 0x0069684c 0x0d52332b3 0xf3f54b45″, type:

   ```
   rmrsrc -r "0x4017 0x0001 0x00000000 0x0069684c 0x0d52332b3 0xf3f54b45"
   ```

Files

/usr/sbin/rsct/bin/rmrsrc Location of the **rmrsrc** command.

See Also

The **lsrsrc**, **mkrsrc** commands.

The **rmccli** General Information file

The *IBM Cluster Systems Management for Linux Monitoring HOWTO* contains more information regarding RMC operations.

Author

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Chapter 4. CSM Scripts, Commands, and Utilities

ctsnap Command

Name

ctsnap – Gathers configuration, log, and trace information about the Reliable Scalable Cluster Technology (RSCT) components.

Synopsis

ctsnap [**-h**] [**-d** *output_directory*]

Description

The **ctsnap** command gathers configuration, log, and trace information about the RSCT components that are installed with CSM or GPFS. This command collects data only on the local node on which this command is running. Depending on the products that are installed, the following components may be included:

- Audit Log resource manager (IBM.AuditRM)
- Distributed Management Server resource manager (IBM.DMSRM)
- Event Response resource manager (IBM.ERRM)
- File System resource manager (IBM.FSRM)
- Group Services (cthags)
- Host resource manager (IBM.HostRM)
- Resource Monitoring and Control (ctrmc)
- Topology Services (cthats)
- Sensor resource manager (IBM.SensorRM)

This command is typically executed when a problem is encountered with any of these components in order to provide information to your software-service organization.

The output of **ctsnap** is a compressed tar file and a log file (**ctsnap.*host_name.nnnnnnnn*.tar.Z** and **ctsnap.*host_name.nnnnnnnn*.log**, respectively, where *nnnnnnnn* is the timestamp when the **ctsnap** command was run and *host_name* is the name of the host on which the command is running). Both files should be provided to the software-service organization. By default, these files are placed in the **/tmp/ctsupt** directory.

Error messages are written to standard error and to the **ctsnap.*host_name.nnnnnnnn*.log** file.

Options

−d *output_directory*
: Identifies the output directory (The default directory is **/tmp/ctsupt**).

−h
: Displays the command usage information.

Exit Status

0
: Command has run successfully.

1
: Command was not successful.

Security

Privilege Control: Only the root user can run this command.

Examples

1. To gather RSCT support information, enter:

   ```
   ctsnap
   ```

2. To gather RSCT support information and place it in the **/tmp/mydir** directory, enter:

   ```
   ctsnap -d /tmp/mydir
   ```

Files

/usr/sbin/rsct/bin/ctsnap Location of the **ctsnap** command.

/tmp/ctsupt Location of the default directory that contains the output files.

tmp/ctsupt/ctsnap.*host_name.nnnnnnnn***.tar.Z**
Location of the compressed tar file that contains the collected data, where *nnnnnnnn* is a timestamp and *host_name* is the name of the host on which the command is running.

/tmp/ctsupt/ctsnap.*host_name.nnnnnnnn***.log**
Location of the log file of the command execution, where *nnnnnnnn* is a timestamp and *host_name* is the name of the host on which the command is running.

Author

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displayevent Command

Name

displayevent − Displays an event or a rearm event to a specified X-window display.

Synopsis

displayevent [**-h**] *Xdisplay*

Description

The **displayevent** command displays a message of an event or a rearm event to a particular X-windows display. Event or rearm event information is captured and posted by the Event Response resource manager in environment variables that are generated by the Event Response resource manager when an event or a rearm event occurs. The **displayevent** command can be used as an action that is executed by an Event Response resource. It can also be used as a template to create other user-defined actions. See ″Event Response Resource Manager″ in the *IBM Cluster Systems Management for Linux Monitoring HOWTO* to understand how an Event Response resource runs an action command.

The following message template is displayed on the specified X-display display when an event or a rearm event for which **displayevent** is a response action occurs:

```
[ ERRM_COND_SEVERITY] [ERRM_TYPE] occurred:
  Condition: [ ERRM_COND_NAME]
  Node:  [ERRM_NODE_NAME]
  Resource: [ERRM RSRC_NAME]
  Resource Class:  [ERRM_RSRC_CLASS_NAME]
  Resource Attribute: [ERRM_ATTR_NAME]
  Attribute Type: [ERRM_DATA_TYPE]
  Attribute Value: [ERRM_VALUE]
  Time: <local time>
```

The environment variables have the following meanings:

ERRM_COND_SEVERITY
: Significance of the Condition resource that caused the event or rearm event. The value can be one of the following: Critical, Warning, or Informational

ERRM_TYPE
: Type of event that occurred. The values can be event or rearm event.

ERRM_COND_NAME
: Name of the Condition resource whose attribute value changed to cause this event or rearm event.

ERRM_NODE_NAME
: Host name on which this event or rearm event occurred.

ERRM_RSRC_NAME
: Name of the resource whose attribute changed to cause this event or rearm event.

ERRM_RSRC_CLASS_NAME
: Name of the resource class to which the resource that caused this event or rearm event belongs.

ERRM_ATTR_NAME
: Name of the resource attribute that changed to cause this event or rearm event.

ERRM_DATA_TYPE
: The data type of the resource attribute.

ERRM_VALUE
: Resource attribute value that changed to cause this event or rearm event.

Local Time
Time when the event or rearm event is observed. The actual environment variable supplied by ERRM is ERRM_TIME. This value is localized and converted to readable form before being displayed.

The **displayevent** command captures the preceding environment variable values and uses the **gless** command to display a message to the specified X-window display.

Note: The following restriction applies. This script must be run on the host where the Event Response resource manager is running.

Options

−h Writes help information about this script to standard out. No further processing is performed.

Exit Status

0 Script has run successfully.

1 Error occurred when script was run.

Examples

1. Assume the command **/usr/sbin/rsct/bin/displayevent adminhost:0** is an action in the critical-notification response, which is associated with the ″/var space used″ condition on the resource **/var**. The threshold of the event expression defined for this condition is met, and an event occurs. The critical-notification response takes place, and **displayevent** is run. The following message is displayed on the X display of the machine **adminhost**:

```
Critical event occurred:
  Condition:  /var space used
  Node:  localnode
  Resource:  /var
  Resource Class:  IBM.FileSystem
  Resource Attribute: PercentTotUsed
  Attribute Type: Int32
  Attribute Value: 91
  Time: 18:43:03 03/28/01
```

Files

/usr/bin/rsct/bin/displayevent
Location of the **displayevent** command.

See Also

The ″Event Response Resource Manager″ for information about the Event Response resource manager and ″Using Event Response Environment Variables″ for information on how to use ERRM environment variables in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

Author

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logevent Command

Name

logevent − Logs event information generated by the Event Response resource manager to a specified log file.

Synopsis

logevent [**-h**] *LogFile*

Description

The **logevent** command captures event information that is posted by the Event Response resource manager in environment variables that are generated by the Event Response resource manager when an event occurs. The **logevent** command can be used as an action that is executed by an Event Response resource. It can also be used as a template to create other user-defined actions. See ″Event Response Resource Manager″ in the *IBM Cluster Systems Management for Linux Monitoring HOWTO* to understand how an Event Response resource runs an action command.

The event information includes:

ERRM_COND_NAME
: Name of the Condition resource associated with this event or rearm event.

ERRM_COND_SEVERITY
: Significance of the Condition resource that caused the event or rearm event. The value can be one of the following: Critical, Warning, or Informational

ERRM_RSRC_NAME
: Name of the resource whose attribute changed to cause this event or rearm event.

ERRM_RSRC_CLASS_NAME
: Name of the resource class to which the resource that caused this event or rearm event belongs.

ERRM_TIME Time when the event or rearm event was observed.

ERRM_TYPE Type of event that occurred. The values can be event or rearm event.

ERRM_EXPR Statement that evaluated to true and thereby caused this event or rearm event.

ERRM_DATA_TYPE
: Resource attribute type that changed to cause this event or rearm event.

ERRM_VALUE
: Resource attribute value that changed to cause this event or rearm event.

LogFile specifies the name of the file where event information is logged. An absolute path for the *LogFile* parameter should be specified.

When *LogFile* already exists, event information is appended to it. If *LogFile* does not exist, it is created so that event information can be written to it.

Notes:

1. This command must be executed on the node where the Event Response resource manager is running.
2. The user who runs this command must have write permission for the *LogFile* where the event information is logged.
3. The size of the *LogFile* is not limited, and it will not overwrite itself. The file size will increase indefinitely unless the administrator periodically removes entries.

Options

−h Writes help information about this script to standard out. No further processing is performed.

Exit Status

0 Script has run successfully.

1 A required *logfile* is not specified.

2 The *logfile* path is invalid.

Examples

1. To log information, specify **/tmp/event.log**. The following command runs by the Event Response resource manager:

   ```
   /usr/sbin/rsct/bin/logevent/tmp/event.log
   ```

   Note: The **/tmp/event.log** file need not exist when the command is run.

2. To see the contents of the **/tmp/event.log** file, type:

   ```
   cat /tmp/event.log
   ```

   The following example shows a warning event for the **/var** file system (a file system resource):

   ```
   ============================================================================
   Event reported at Mon Mar 27 16:38:03 2000

   Condition Name:                         /var space used
   Severity:                               Warning
   Event Type:                             Event
   Expression:                             PercentTotUsed>90

   Resource Name:                          /var
   Resource Class Name:                    IBM.FileSystem
   Data Type:                              CT_UINT32
   Data Value:                             91
   ```

Files

/usr/bin/rsct/bin/logevent Location of the **logevent** command.

See Also

The ″Event Response Resource Manager″ for information about the Event Response resource manager and ″Using Event Response Environment Variables″ for information on how to use ERRM environment variables in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

Author

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lsaudrec Command

Name

lsaudrec – Lists records from the audit log.

Synopsis

lsaudrec [**-h**] [**-l**] [**-n** *″Subsystem_name″*] [**-s** *″Selection_string″*] [**-x**] [*FieldName*...]

Description

The **lsaudrec** command lists records in the audit log. The audit log is a system-wide facility for recording information about the system's operation. It can include information about the normal operation of the system as well as failures and other errors. It is meant to augment error log functionality by conveying the relationship of the error relative to other system activities. All detailed information about failures is still written to the error log.

Records are created in the audit log by subsystems that have been instrumented to do that. For example, the Event Response subsystem runs in the background to monitor conditions defined by the administrator and then invokes one or more actions when a condition becomes true. Because this subsystem runs in the background, it is difficult for the operator or administrator to understand the total set of events that occurred and the results of any actions that were taken in response to an event. Because the Event Response subsystem records its activity in the audit log, the administrator can view Event Response subsystem activity as well as that of other subsystems through this command.

Each record in the audit log contains named fields. Each field contains a value that provides information about the situation corresponding to the record. For example, the **Time** field indicates when the situation occurred. Each record has a set of common fields and a set of subsystem-specific fields. The common fields are present in every record in the audit log. The subsystem-specific fields vary from record to record. Their names are only significant when used with a subsystem name because they may not be unique across all subsystems. Each record is derived from a template that defines what subsystem-specific fields are present in the record and defines a format string that is used to generate a message describing the situation. The format string may use record fields as inserts. A subsystem typically has many templates.

The field names may be used as variables in a selection string to choose which records are displayed. The selection string is matched against each record by using the referenced fields of each record to perform the match. Any records that match will be displayed. The selection string is specified with the **-s** option.

A selection string is an expression composed of field names, constants and operators. The syntax of a selection string is very similar to an expression in the C programming language. For a complete description of the selection string syntax, see ″Using Expressions″ in the chapter ″Using the Monitoring Application″ of the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

Field names may also be specified as parameters to this command to choose which fields display and the order in which they display.

The common field names are:

Time Time when the situation to which the record corresponds occurred. The value is a 64-bit integer and represents the number of microseconds since Unix Epoch (00:00:00 GMT January 1, 1970). See the constants in the following list to specify time in more user-friendly formats.

Subsystem
Identifies the subsystem that generated the record. It is a string.

Category
Identifies the category of the situation as determined by the subsystem that generated the audit log record. The category is represented as a 32-bit unsigned integer that may have the value of 0 (informational) or 1 (error).

SequenceNumber
Specifies the unique 64-bit integer that is assigned to the record. No other record in the audit log has the same sequence number.

TemplateId
Specifies the subsystem-dependent identifier that is assigned to records that have the same content and format string. This value is a 32-bit unsigned integer.

In addition to the constants in expressions that are described in the selection string reference, the following syntax for dates and times may be used with this command.

#mmddhhmmyyyy
This format consists of a sequence of decimal characters that are interpreted according to the pattern shown. The fields in the pattern are from left to right, mm=month, dd=day, hh=hour, mm=minutes, yyyy=year. For example ″#010523042000″ corresponding to January 5, 11:04 PM, 2000. The fields may be omitted from right to left. If not present, the following are used: year defaults to the current year, minutes default to 0, hour defaults to 0, day defaults to 1, and month defaults to the current month.

#-mmddhhmmyyyy
This format is similar to the previous one but is relative to the current time and date. For example, the value #-0001 corresponds to one day ago and the value #-010001 corresponds to one month and one hour ago. Fields may be omitted starting from the right and are replaced by 0.

The audit records considered for display and matched against the selection string can be restricted to a specific subsystem by using the **-n** option. If this option is present, then the subsystem-specific field names may be used in the selection string as well as the common field names.

The audit records are displayed in tabular format. If any of the field names are specified as parameters, they control the fields that are displayed and the order in which they appear on each line. By default, the columns displayed are: date and time, name of the subsystem that generated the record, severity of the situation, and the subsystem-specific message that describes the situation.

FieldName identifies a field in the audit log records that is to be displayed. Multiple field names may be specified, and their order on the command line corresponds to the order in which they are displayed. If no field names are displayed, then **Time**, **Subsystem**, **Category**, and **Message** are displayed by default

Options

−h Writes help information about this script to standard out. No further processing is performed.

−l Specifies long formatted output with one entry per line. The option also displays extended fields (if applicable), which provide additional information about the recorded event. Extended fields are not displayed if **−l** is not specified.

−n ″*Subsystem_name*″
Specifies a subsystem name. If this option is present, then only records from the subsystem identified by ″*Subsystem_name*″ are considered for display. The records displayed can be further restricted by the **-s** option. If the subsystem name contains any spaces, it must be enclosed within single or double quotation marks.

−s ″*Selection_string*″
Specifies a *Selection_string* that is evaluated against each record in the audit log. All records that match the *Selection_string* are displayed.

If the *Selection_string* contains any spaces, it must be enclosed within single or double quotes. See ″Using Expressions″ in the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for a complete description of the *Selection_string* syntax. The names of fields within the record may be used in the expression. If the **-n** option is not specified, then only the names of common fields may be used. See ″Description″ for a list of the field names and their data types. If the **-n** option is present, the name of any field for the specified subsystem as well as the common field names may be used.

If this option is omitted, the records that are displayed depend on the **-n** option. If the **-n** option is omitted, all records from the audit log are displayed. Otherwise, all records for the subsystem identified by the **-n** option are displayed.

–x Suppresses header printing.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with the RMC subsystem

2 Error occurred in CLI (command-line interface) program

3 Bad option on command line

4 Bad operand on command line

5 User error

Security

The user must have write permission to the **IBM.AuditLog** resource class to run **lsaudrec**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To list all records in the audit log, type:
   ```
   lsaudrec
   ```
2. To list all records that were logged in the last hour, type:
   ```
   lsaudrec -s"Time>#000001"
   ```
3. To list the time and sequence number of every record in the audit log for the subsystem **abc**, type:
   ```
   lsaudrec -s'Subsystem=="abc"' Time SequenceNumber
   ```

Files

/usr/bin/rsct/bin/lsaudrec Location of the **lsaudrec** command.

See Also

The **rmaudrec** command.

The ″Using Expressions″ section in the *IBM Cluster Systems Management for Linux Monitoring HOWTO* provides information about selection string syntax.

Author

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lssrc Command

Name

lssrc − Gets the status of a subsystem, a group of subsystems, or a subserver.

Synopsis

To get all status:

lssrc [**-h** *Host*] **−a**

To get group status:

lssrc [**-h** *Host*] **−g** *GroupName*

To get subsystem status:

lssrc [**-h** *Host*] [**−l**] **−s** *Subsystem*

To get status by PID:

lssrc [**-h** *Host*] [**−l**] **−p** *SubsystemPID*

Description

The **lssrc** command sends a request to the System Resource Controller (SRC) to get status on a subsystem, a group of subsystems, or all subsystems. The **lssrc** command sends a subsystem request packet to the daemon to be forwarded to the subsystem for a subserver status or a long subsystem status.

You can choose whether to request a short or long status for a subserver. When the **−l** flag is absent, the status request is assumed to be a short status. A short status of a subsystem, group of subsystems, or all subsystems is handled by the SRC.

When the **−l** flag is present for a subsystem, a status request is taken to the subsystem and the subsystem sends the status back. The **−l** flag is supported only for those subsystems not using signals as their communication method. For either a long or short status of a subserver, the subsystem is sent a status request packet, and the subsystem sends the status back

Error messages are written to standard error.

Options

−a Lists the current status of all defined subsystems.

−g *GroupName*
Specifies a group of subsystems to get status for. The command is unsuccessful if the GroupName variable is not contained in the subsystem object class.

−h *Host*
Specifies the foreign host on which this status action is requested. The local user must be running as root. The remote system must be configured to accept remote SRC requests. That is, the **srcmstr** daemon (see **/etc/inittab**) must be started with the **−r** flag and the **/etc/hosts.equiv** or **.rhosts** file must be configured to allow remote requests.

−l Requests that a subsystem send its current status in long form. Long status requires that a status request be sent to the subsystem; it is the responsibility of the subsystem to return the status.

-p *SubsystemPID*
Specifies a particular instance of the SubsystemPID variable to get status for, or a particular instance of the subsystem to which the status subserver request is to be taken.

-s *Subsystem*
Specifies a subsystem to get status for. The Subsystem variable can be the actual subsystem name or the synonym for the subsystem. The command is unsuccessful if the Subsystem variable is not contained in the subsystem object class.

Exit Status

0 Command has run successfully.

1 Command was not successful.

Examples

1. To get the status of all subsystems that are known on the local machine, type:
   ```
   lssrc -a
   ```
2. To get the status of a particular subsystem **cthags** subsystem, type:
   ```
   lssrc -s cthags
   ```
   The status of all instances of the **cthags** subsystem on the local machine is returned.
3. To get the status of the subsystem by PID, for example, PID 1234, type:
   ```
   lssrc -p 1234
   ```
   This gets the status of the subsystem with the subsystem PID of 1234 on the local machine.
4. To get the status of the **cthags** subsystem group, enter:
   ```
   lssrc -g cthags
   ```
   This gets the status of all instances of subsystems in the **cthags** group on the local machine.
5. To get the status of the **tester** subserver that belongs to the **srctest** subsystem, enter:
   ```
   lssrc -t tester -p 1234
   ```
   This gets the status of **tester** subserver that belongs to the **srctest** subsystem with the subsystem PID of 1234 on the local machine.

Files

/etc/objrepos/SRCsubsys	Specifies the SRC Subsystem Configuration Object Class.
/etc/objrepos/SRCsubsvr	Specifies the SRC Subserver Configuration Object Class.
/etc/objrepos/SRCnotify	Specifies the SRC Notify Configuration Object Class.
/etc/services	Defines the sockets and protocols used for Internet services.
/dev/SRC	Specifies the AF_UNIX (UNIX domain) socket file.
/dev/.SRC-unix	Specifies the location for temporary socket files.

Author

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msgevent Command

Name

msgevent − Sends an event or a rearm event to a specified user's console.

Synopsis

msgevent [**-h**] **user** [*tty*]

Description

The **msgevent** command displays a message of an event or a rearm event on the console of a specified user. If *tty* is specified, the message will be sent to that tty; otherwise, the **write** command chooses a tty that belongs to that user. Event or rearm event information is captured and posted by the Event Response resource manager in environment variables that are generated by the Event Response resource manager when an event or a rearm event occurs. The **msgevent** command can be used as an action that is executed by an Event Response resource. It can also be used as a template to create other user-defined actions. See the section ″Event Response Resource Manager″ in the *IBM Cluster Systems Management for Linux Monitoring HOWTO* to understand how an Event Response resource runs an action command.

The following message template is displayed on the specified X-display display when an event or a rearm event for which **msgevent** is a response action occurs:

```
[ ERRM_COND_SEVERITY] [ERRM_TYPE] occurred:
  Condition: [ ERRM_COND_NAME]
  Node:  [ERRM_NODE_NAME]
  Resource: [ERRM RSRC_NAME]
  Resource Class:  [ERRM_RSRC_CLASS_NAME]
  Resource Attribute: [ERRM_ATTR_NAME]
  Attribute Type: [ERRM_DATA_TYPE]
  Attribute Value: [ERRM_VALUE]
  Time: <local time>
```

The environment variables have the following definitions:

ERRM_COND_SEVERITY
: Significance of the Condition resource that caused the event or rearm event. The value can be one of the following: Critical, Warning, or Informational.

ERRM_TYPE
: Type of event that occurred. The values can be event or rearm event.

ERRM_COND_NAME
: Name of the Condition resource whose attribute value changed to cause this event or rearm event.

ERRM_NODE_NAME
: Host name on which this event or rearm event occurred.

ERRM_RSRC_NAME
: Name of the resource whose attribute changed to cause this event or rearm event.

ERRM_RSRC_CLASS_NAME
: Name of the resource class to which the resource that caused this event or rearm event belongs.

ERRM_ATTR_NAME
: Name of the resource attribute that changed to cause this event or rearm event.

ERRM_DATA_TYPE
: The data type of the resource attribute.

ERRM_VALUE
: The value of the resource attribute that changed to cause this event or rearm event.

Local Time
Time when the event or rearm event is observed. The actual environment variable supplied by ERRM is ERRM_TIME. This value is localized and converted to readable form before being displayed.

The **msgevent** command captures the preceding environment variable values and uses the **write** command to display a message on the specified user's console.

Note: The following restriction applies. This script must be run on the host where the Event Response resource manager is running.

Options

−h Writes help information about this script to standard out. No further processing is performed.

Exit Status

0 Script has run successfully.

1 Error occurred when script was run.

Examples

1. Assume the command **/usr/sbin/rsct/bin/msgevent root** is an action in the critical-notification response, which is associated with the ″/var space used″ condition on the resource **/var**. The threshold of the event expression defined for this condition is met, and an event occurs. The critical-notification response takes place, and **msgevent** is run. The following message is displayed on a tty belonging to root:

```
Critical event occurred:
  Condition:  /var space used
  Node:  localnode
  Resource:  /var
  Resource Class:  IBM.FileSystem
  Resource Attribute: PercentTotUsed
  Attribute Type: Int32
  Attribute Value: 91
  Time: 18:43:03 03/28/01
```

Files

/usr/bin/rsct/bin/msgevent Location of the **msgevent** command.

See Also

The ″Event Response Resource Manager″ for information about the Event Response resource manager and ″Using Event Response Environment Variables″ for information on how to use ERRM environment variables in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

Author

Bruce Potter - cluster@us.ibm.com

notifyevent Command

Name

notifyevent – Mails event information generated by the Event Response resource manager to a specified userid.

Synopsis

notifyevent [**-h**] [*UserID*]

Description

The **notifyevent** command captures event information that is posted by the Event Response resource manager in environment variables that are generated by the Event Response resource manager when an event occurs. The **notifyevent** command can be used as an action that is executed by an Event Response resource. It can also be used as a template to create other user-defined actions.

See ″Event Response Resource Manager″ in *IBM Cluster Systems Management for Linux Monitoring HOWTO* to understand how an Event Response resource runs an action command.

The event information includes:

ERRM_COND_NAME
Name of the Condition resource that caused this event or rearm event.

ERRM_COND_SEVERITY
Significance of the Condition resource that caused the event or rearm event. The value can be one of the following: Critical, Warning, or Informational.

ERRM_RSRC_NAME
Name of the resource whose attribute changed to cause this event or rearm event.

ERRM_RSRC_CLASS_NAME
Name of the resource class to which the resource that caused this event or rearm event belongs.

ERRM_TIME
Time when the event or rearm event was observed.

ERRM_TYPE
Type of event that occurred. The values can be event or rearm event.

ERRM_EXPR
Statement that evaluated to true and thereby caused this event or rearm event.

ERRM_DATA_TYPE
Resource attribute type that changed to cause this event or rearm event.

ERRM_VALUE
Resource attribute value that changed to cause this event or rearm event.

The **notifyevent** command uses the **mail** command to send event information to the specified userid. When a userid is specified, it is assumed to be valid, and it is used without verifying it. If a userid is not specified, the user who is running the command is used as the default.

Note: The following restrictions apply:

1. This command must be executed on the node where the Event Response resource manager is running.
2. The **mail** command is used to read the file.

UserID is the optional ID of the user to whom the event information will be mailed. If *UserID* is not specified, the user who is running the command is used as the default.

Options

−h Writes help information about this command to standard out. No further processing is performed.

Exit Status

0 Command has run successfully.

Examples

1. Specify **user1** to send mail to a user. The Event Response resource manager then runs the following command:

   ```
   /usr/bin/rsct/sbin/notifyevent user1
   ```

2. You can use the **mail** command to read the contents of the event information. The following example shows how a warning event for the **/var** file system (a file system resource) is formatted and logged:

   ```
   ============================================================================
   Event reported at Sun Mar 26 16:38:03 2000

   Condition Name:   /var space used
   Severity: Warning
   Event Type:   Event
   Expression:  PercentTotUsed>90

   Resource Name: /var
   Resource Class Name: IBM.FileSystem
   Data Type: CT_UINT32
   Data Value: 91
   ```

Files

/usr/sbin/rsct/bin/notifyevent Location of the **notifyevent** command.

See Also

The **mail** command

The ″Event Response Resource Manager″ for information about the Event Response resource manager and ″Using Event Response Environment Variables″ for information on how to use ERRM environment variables in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

Author

Ya-Huey Juan - cluster@us.ibm.com

rmaudrec Command

Name

rmaudrec – Removes records from the audit log.

Synopsis

rmaudrec [**-h**] [**-n** *"Subsystem_name"*] [**-s** *"Selection_string"*] [**-V**]

Description

The **rmaudrec** command deletes records in the audit log. The audit log is a system-wide facility for recording information about the system's operation. It can include information about the normal operation of the system as well as failures and other errors. It is meant to augment error log functionality by conveying the relationship of the error relative to other system activities. All detailed information about failures is still written to the error log.

Records are created in the audit log by subsystems that have been instrumented to do that. For example, the Event Response subsystem runs in the background to monitor conditions defined by the administrator and then invokes one or more actions when a condition becomes true. Because this subsystem runs in the background, it is difficult for the operator or administrator to understand the total set of events that occurred and the results of any actions that were taken in response to an event. Because the Event Response subsystem records its activity in the audit log, the administrator can easily view Event Response subsystem activity as well as that of other subsystems. In addition, records may sometimes need to be removed explicitly, which can be done through this command.

Each record in the audit log contains named fields. Each field contains a value that provides information about the situation corresponding to the record. For example, the **Time** field indicates when the situation occurred. Each record has a set of common fields and a set of subsystem-specific fields. The common fields are present in every record in the audit log. The subsystem-specific fields vary from record to record. Their names are only significant when used with a subsystem name because they may not be unique across all subsystems. Each record is derived from a template that defines what subsystem-specific fields are present in the record and defines a format string that is used to generate a message describing the situation. The format string may use record fields as inserts. A subsystem typically has many templates.

The field names may be used as variables in a selection string to choose which records are deleted. The selection string is matched against each record by using the referenced fields of each record to perform the match. Any records that match are removed. The selection string is specified with the **-s** option.

A selection string is an expression composed of field names, constants and operators. The syntax of a selection string is very similar to an expression in the C programming language. For a complete description of the selection string syntax, see ″Using Expressions″ in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

The common field names are:

Time Time when the situation to which the record corresponds occurred. The value is a 64-bit integer and represents the number of microseconds since Unix Epoch (00:00:00 GMT January 1, 1970). See the constants in the following list to specify time in more user-friendly formats.

Subsystem
Identifies the subsystem that generated the record. It is a string.

Category
Identifies the category of the situation as determined by the subsystem that generated the audit log record. The category is represented as a 32-bit unsigned integer that may have the value of 0 (informational) or 1 (error).

SequenceNumber
Specifies the unique 64-bit integer that is assigned to the record. No other record in the audit log has the same sequence number.

TemplateId
Specifies the subsystem-dependent identifier that is assigned to records that have the same content and format string. This value is a 32-bit unsigned integer.

In addition to the constants in expressions that are described in the selection string reference, the following syntax for dates and times may be used with this command.

#mmddhhmmyyyy
This format consists of a sequence of decimal characters that are interpreted according to the pattern shown. The fields in the pattern are from left to right, mm=month, dd=day, hh=hour, mm=minutes, yyyy=year. For example ″#010523042000″ corresponding to January 5, 11:04 PM, 2000. The fields may be omitted from right to left. If not present, the following are used: year defaults to the current year, minutes default to 0, hour defaults to 0, day defaults to 1, and month defaults to the current month.

#-mmddhhmmyyyy
This format is similar to the previous one but is relative to the current time and date. For example, the value #-0001 corresponds to one day ago and the value #-010001 corresponds to one month and one hour ago. Fields may be omitted starting from the right and are replaced by 0.

The audit records considered for deletion and matched against the selection string can be restricted to a specific subsystem by using the **-n** option. If this option is present, then the subsystem-specific field names can be used in the selection string as well as the common field names.

It is advisable to first use the **lsaudrec** command with the same **-s** option value to list the records that are deleted. This minimizes the possibility of the selection string matching more records than intended.

If the **-V** option is specified and the command is completed successfully, a message that indicates the number of records that were deleted is written to standard error.

Note: The following restrictions apply:

- The command must be executed on the machine whose audit log is to have records removed.

Options

−h Writes help information about this script to standard out. No further processing is performed.

−n ″*Subsystem_name*″
Specifies a subsystem name. If this option is present, then only records from the subsystem identified by ″*Subsystem_name*″ are considered for deletion. The records deleted may be further restricted by the **-s** option. If the subsystem name contains any spaces, it must be enclosed within single or double quotation marks.

-s ″*Selection_string*″
Specifies a *Selection_string* that is evaluated against each record in the audit log. This string is evaluated against each record in the audit log. If the evaluation results in a non-zero result (TRUE), then the record is removed from the audit log. If the *Selection_string* contains any spaces, it must be enclosed within single or double quotes. See ″Using Expressions″ in the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for a complete description of the selection string syntax.

The names of fields within the record may be used in the expression. If the **-n** option is not specified, then only the names of common fields may be used. See ″Description″ for a list of the common field names and their data types. If the **-n** option is present, the name of any field for the specified subsystem as well as the common field names may be used.

No records will be removed from the audit log if this option is not present.

–V Writes the verbose messages of the command to standard error.

Environment

CT_CONTACT

When the CT_CONTACT environment variable is set to a host name or IP address, the command contacts the Resource Monitoring and Control (RMC) daemon on the specified host. If the environment variable is not set, the command contacts the RMC daemon on the local system where the command is being run. The resource class or resources that are displayed or modified by the command are located on the system to which the connection is established.

Exit Status

0 Command has run successfully.

1 Error occurred with the RMC subsystem

2 Error occurred in CLI (command-line interface) program

3 Bad option on command line

4 Bad operand on command line

5 User error

Security

The user needs write permission for the **IBM.AuditLog** resource class to run **rmaudrec**. Permissions are specified in the access control list (ACL) file on the contacted system. See ″Security Considerations″ in the ″Overview″ chapter of the *IBM Cluster Systems Management for Linux Monitoring HOWTO* for details on the ACL file and how to modify it.

Examples

1. To remove all records in the audit log, type:

   ```
   rmaudrec -s"Time>0"
   ```

   or

   ```
   rmaudrec -s"SequenceNumber>=0"
   ```

2. To remove all records more than a week old, type:

   ```
   rmaudrec -s"Time <#-0007"
   ```

3. To remove all records more than a week old and created by the Abc subsystem, type:

   ```
   rmaudrec -s"Subsystem==Abc" && "Time <#-0007"
   ```

Files

/usr/bin/rsct/bin/rmaudrec Location of the **rmaudrec** command.

See Also

The **lsaudrec** command.

The ″Using Expressions″ section in the *IBM Cluster Systems Management for Linux Monitoring HOWTO* provides information about selection string syntax.

Author

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rmcctrl Command

Name

rmcctrl – Manages the Resource Monitoring and Control (RMC) subsystem.

Synopsis

rmcctrl {**-a** | **-A** | **-d** | **-h** | **-k** | **-p** | **-P** | **-s**}

Description

The **rmcctrl** command controls the operation of the Resource Monitoring and Control (RMC) subsystem. The subsystem is under the control of the System Resource Controller (SRC) with a subsystem name of **ctrmc** and a subsystem group name of **rsct**. The RMC subsystem definition is added to the subsystem object class and then started when Reliable Scalable Cluster Technology (RSCT) is installed. In addition, an entry is made in the **/etc/inittab** file so that the RMC subsystem is automatically started at system boot.

> **Note:** While the RMC subsystem can be stopped and started by using the **stopsrc** and **startsrc** commands, it is recommended that the **rmcctrl** command be used to perform these functions.

Options

−a Adds the RMC subsystem to the subsystem object class and places an entry at the end of the **/etc/inittab** file.

−A Adds and starts the RMC subsystem.

−d Deletes the RMC subsystem from the subsystem object class and removes the RMC entry from the **/etc/inittab** file.

−h Displays the command usage message.

−k Stops the RMC subsystem.

−p Enables remote client connections

−P Disables remote client connections

−s Starts the RMC subsystem.

Exit Status

0 Command has run successfully.

1 Command was not successful.

Security

Privilege Control: Only the root user should have execute (x) access to this command.

Examples

1. To add the RMC subsystem, type:
   ```
   rmcctrl -a
   ```
2. To start the RMC subsystem, type:
   ```
   rmcctrl -s
   ```
3. To stop the RMC subsystem, type:
   ```
   rmcctrl -k
   ```
4. To delete the RMC subsystem, type:
   ```
   rmcctrl -d
   ```

Files

/usr/sbin/rsct/bin/rmcctrl Location of the **rmcctrl** command.

Author

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wallevent Command

Name

wallevent – Broadcasts an event or a rearm event to all users who are logged in.

Synopsis

wallevent [**-h**]

Description

The **wallevent** command broadcasts a message on an event or a rearm event to all users who are currently logged in to the host when the event or the rearm event occurs. Event or rearm event information is captured and posted by the Event Response resource manager in environment variables that are generated by the Event Response resource manager when an event or a rearm event occurs. The **wallevent** command can be used as an action that is executed by an Event Response resource. It can also be used as a template to create other user-defined actions.

See ″Event Response Resource Manager″ in the *IBM Cluster Systems Management for Linux Monitoring HOWTO* to understand how an Event Response resource runs an action command.

The following message template is displayed at the consoles of all users who are logged in when an event or a rearm event for which **wallevent** is a response action occurs:

```
Broadcast message from <user@host> <tty> at <hh:mm:ss>...
<Severity> <Event Type> occurred for the condition <Condition Name>
 on the resource <Resource Name> of <Resource Class Name> at <Event Time>
```

The environment variables have the following meanings:

ERRM_COND_SEVERITY
: Significance of the Condition resource that caused the event. The value can be one of the following: Critical, Warning, or Informational.

ERRM_TYPE
: Type of event that occurred. The value can be: event or rearm event.

ERRM_COND_NAME
: Name of the Condition resource whose attribute value changed to cause this event or rearm event.

ERRM_RSRC_NAME
: Name of the resource whose attribute value changed to cause this event or rearm event.

ERRM_RSRC_CLASS_NAME
: Name of the resource class to which the resource that caused this event or rearm event belongs.

ERRM_TIME
: Time when the event or rearm event is observed.

The **wallevent** command captures the preceding environment variable values and uses the **wall** command to write a message to the currently logged-in user consoles.

Note: The following restrictions apply:

1. This script must be run on the host where the Event Response resource manager is running.
2. The **wall** command is used to write a message to currently logged-in user consoles. Refer to the **wall** man page for more information on the **wall** command.

Options

−h Writes help information about this command to standard output. No further processing is performed.

Exit Status

0 Script has run successfully.

1 Error occurred when the script was run.

Examples

1. Assume the **wallevent** command is a predefined action in the critical-notification response, which is associated with the **/var** space used condition on the resource **/var**. The threshold of the event expression defined for this condition is met, and an event occurs. The critical-notification response takes place, and **wallevent** is run. The following message is displayed on the consoles of all logged-in users:

   ```
   Broadcast message from joe@neverland.com (pts/6) at 18:42:03...

   Critical event occurred for the Condition /var space used
   on the resource /var of JFS at 18:43:03 03/28/00
   ```

2. When a rearm event occurs for the /var space used condition on the resource **/var**, the following message is displayed on the consoles of all users who are logged in:

   ```
   Broadcast message from joe@neverland.com (pts/6) at 18:42:03...

   Critical rearm event occurred for the Condition /var space used
   on the resource /var of JFS at 18:43:03 03/28/00
   ```

Files

/usr/sbin/rsct/bin/wallevent

See Also

The **wall** command.

The ″Event Response Resource Manager″ for information about the Event Response resource manager (ERRM) and ″Using Event Response Environment Variables″ for information on how to use ERRM environment variables in the *IBM Cluster Systems Management for Linux Monitoring HOWTO*.

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Version 1 Release 1

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