Dell OpenManage
Connection 1.0 for
IBM Tivoli Netcool/OMNIbus
User's Guide

Notes

✍ **NOTE:** A NOTE indicates important information that helps you make better use of your computer.

Contents

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Overview

Dell OpenManage Connection for IBM Tivoli Netcool/OMNIbus provides event monitoring capabilities for Dell servers and Dell EqualLogic systems. This guide is intended for system administrators who are familiar with IBM Tivoli Netcool/OMNIbus 7.3.1. The Dell OpenManage Connection monitors Dell devices by receiving alerts on the Netcool/OMNIbus console.

Key Features

Table 1-1 lists the key features of Dell OpenManage Connection.

Table 1-1.   Features and Functionalities

Feature	Functionality
Event monitoring	Monitors the events from Dell servers and Dell EqualLogic systems on the Netcool/OMNIbus console. For more information, see Event Monitoring Using SNMP Traps.
Event auto correlation	Automatically correlates events from Dell servers and Dell EqualLogic systems. For more information, see Event Auto Correlation.
Launching OpenManage Server Administrator (OMSA) console	Launches the OMSA console for the Dell system you are monitoring. For more information, see Launching Dell OpenManage Server Administrator Console.
Launching OMSA web server console	Launches the OMSA web server console for the Dell system you are monitoring. For more information, see Launching Open Manage Server Administrator Web Server Console.
Launching EqualLogic Group Manager console	Launches the EqualLogic Group Manager console for the Dell EqualLogic system you are monitoring. For more information, see Launching EqualLogic Group Manager Console.

Support Matrix for Netcool/OMNIbus

For more information on the supported operating systems for Netcool/OMNIbus components, see the Netcool/OMNIbus 7.3.1 documentation at **publib.boulder.ibm.com/infocenter/tivihelp/v8r1/index.jsp?topic= /com.ibm.netcool_OMNIbus.doc_7.3.1/welcome.htm**.

Dell Devices Support Matrix

The Dell OpenManage Connection monitors Dell servers and EqualLogic systems on the Netcool/OMNIbus console. Table 1-2 lists the supported Dell devices, OMSA versions, firmware versions for EqualLogic systems, and the operating systems on the monitored devices.

Table 1-2.   Dell Devices Support Matrix

Supported Dell Devices	Supported OMSA Versions	Supported Firmware Versions	Supported Operating Systems
Dell PowerEdge and PowerVault *x8xx* to *xx1x* systems (Windows)	6.1–6.5	NA	• Microsoft Windows Small Business Server 2011 • Windows Small Business Server 2008 SP2 • Windows Small Business Server 2008 R2 • Windows Small Business Server 2003 R2 SP2 • Windows Storage Server 2008 SP2 • Windows Storage Server 2003 R2 • Windows Storage Server 2003 R2

Table 1-2. Dell Devices Support Matrix (continued)

Supported Dell Devices	Supported OMSA Versions	Supported Firmware Versions	Supported Operating Systems
Dell PowerEdge and PowerVault *x8xx* to *xx1x* systems (Windows) (*continued*)			• Windows Server 2008 SP1 (32-bit and 64-bit) • Windows Server 2008 SP2 (32-bit and 64-bit) • Windows Server 2008 R1 and R2 (HPC Edition) • Windows Server 2008 R2 (64-bit) • Windows Server 2008 R2 SP1 (64-bit) • Windows Server 2003 R2 (32-bit and 64-bit) • Windows Essential Business Server 2008 SP1 • Windows Server 2003 (Computer Cluster Edition) • Windows Unified DataStorage Server (64-bit)
Dell PowerEdge *x8xx* to *xx1x* systems (Linux)	6.1–6.5	NA	• SUSE Linux Enterprise Server 11 SP1 (64-bit) • SUSE Linux Enterprise Server 10 SP3 (64-bit) • Red Hat Enterprise Linux 6.0 (64-bit) • Red Hat Enterprise Linux 5.5 (64-bit and 32-bit)

Table 1-2.   Dell Devices Support Matrix *(continued)*

Supported Dell Devices	Supported OMSA Versions	Supported Firmware Versions	Supported Operating Systems
Dell PowerEdge *x8xx* to *xx1x* systems (Linux) *(continued)*			• Red Hat Enterprise Linux 5.3 (64-bit and 32-bit) • Red Hat Enterprise Linux 4.8 (64-bit and 32-bit) • Red Hat Enterprise Linux 5.0 (64-bit and 32-bit) • Red Hat Enterprise Linux 4.7 (64-bit and 32-bit)
Dell PowerEdge *x8xx* to *xx1x* systems (ESXi)	6.1–6.5	NA	• ESXi 4.1 U1 (HDD and Flash) • ESXi 4.0 U3 (HDD and Flash) • ESXi 4.0 U2 (HDD and Flash) • ESXi 4.0 U1 (HDD and Flash)
Dell EqualLogic Storage Arrays	NA	5.0 and 5.1	NA

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Using the Dell OpenManage Connection for IBM Tivoli Netcool/OMNIbus

Dell OpenManage Connection for IBM Tivoli Netcool/OMNIbus allows event monitoring, automatic event correlation, and launching device consoles on the Netcool/OMNIbus consoles. These features are supported on the different components of Netcool/OMNIbus such as Probe, ObjectServer Web GUI, and Desktop appropriately. This chapter discusses the various operations that you can perform after you install the Dell OpenManage Connection. For more information on installing the Dell OpenManage Connection, see *Dell OpenManage Connection Version 1.0 for IBM Tivoli Netcool/OMNIbus Installation Guide* at **support.dell.com/manuals**.

Event Monitoring Using SNMP Traps

The Dell OpenManage Connection monitors Dell servers and Dell EqualLogic systems by receiving SNMP traps from the Dell devices on the Netcool/OMNIbus console. You can use both desktop and web Graphical User Interface (GUI) client to monitor the systems.

> **NOTE:** To distinguish among the various devices on the Netcool/OMNIbus console, a class value is assigned to the Dell devices. The class value of Dell servers and Dell EqualLogic systems are 2080 and 2085 respectively.

The event monitoring process is as follows:

1 The SNMP probe receives the SNMP traps from the Dell servers or Dell EqualLogic systems.

2 The SNMP probe converts the trap into event using the respective rules, which filters the traps from the Dell devices and populates the event fields with the appropriate value.

3 The SNMP probe forwards the events to the ObjectServer.

4 The desktop and web GUI consoles display the events by communicating with the ObjectServer.

OMSA Alert Groups

The OpenManage Server Administrator (OMSA) alerts are the events generated by OMSA and displayed on the Netcool/OMNIbus console. Table 2-1 lists the alert groups of OMSA alerts.

Table 2-1. OMSA Alert Groups

Alert Group	Description
ACPowerCord	Provides status information for power cords of an AC power switch on systems that support AC switching.
AmperageProbe	Provides status information for current sensors in a particular chassis.
Battery	Provides status information for batteries in a particular chassis.
ChassisIntrusion	Provides notification when a chassis is intruded.
CoolingDevice	Provides status information for fans in a particular chassis.
Device	Provides status and error information when some devices, such as memory cards are added or removed.
FanEnclosure	Monitors whether foreign objects are present in an enclosure or not and how long a fan enclosure is missing from a chassis.
HardwareLog	Provides status and warning information about the noncircular logs that may fill up, resulting in lost status messages.
MemoryDevice	Provides status and warning information for memory modules present in a particular system.
Miscellaneous-AutomaticSystemRecovery	Provides information when an automatic system recovery action is performed due to a hung operating system.
Miscellaneous-SystemPeakPowerNewPeak	Provides information when the system peak power sensor detects a new peak value.
Miscellaneous-SystemSoftwareEvent	Provides information when OMSA detects a critical system software generated event in the IPMI System Event Log (SEL), which could have been resolved.

Table 2-1.   OMSA Alert Groups _(continued)_

Alert Group	Description
Miscellaneous-SystemUp	Provides information when OMSA completes initialization.
Miscellaneous-ThermalShutdown	Provides information when a system shuts down as the temperature exceeds the maximum threshold.
Miscellaneous-UserHostSystemReset	Provides information when user requests a host system control action to reboot, power off, or power cycle the system.
PowerSupply	Provides status and warning information for power supplies present in a particular chassis.
ProcessorDeviceStatus	Provides status and warning information for processors in a particular chassis.
Redundancy	Provides the redundancy unit information.
SDCardDevice	Provides status and error information for Secure Digital (SD) card devices present in a chassis.
TemperatureProbe	Provides help to protect critical components when temperatures become too high in a chassis.
VoltageProbe	Provides status and warning information for voltage sensors in a particular chassis.

OMSS Alert Groups

The OpenManage Storage Systems (OMSS) alerts are the events generated by OMSS and displayed on the Netcool/OMNIbus console. Table 2-2 lists the alert groups of OMSS alerts.

Table 2-2.   OMSS Alert Groups

Alert Group	Description
Battery	Provides status of batteries in the controller. Battery alerts provide information about battery reconditioning, charging, temperature, replacement, learn cycle, learn mode, operation, and so on.
Channel	Provides addition, removal, configuration errors, and status for pluggable devices, such as memory cards.

Table 2-2. OMSS Alert Groups *(continued)*

Alert Group	Description
Controller	Provides status of the storage controller tasks. Controller alerts provide information about rebuild rate, alarm status, configuration status, background initialization rate, patrol read rate, check consistency rate, redundant path, foreign configuration, disk status, bad blocks, ECC errors, and so on.
EMM	Provides status of the enclosure management modules of the controllers.
Enclosure	Provides status of the components in the enclosures. Enclosure alerts provide the status information of enclosure, alarm, asset tag, service tag, and so on.
Fan	Provides information on how well a fan is functioning. Fan alerts provide status information of fans in a particular enclosure.
PhysicalDisk	Provides information about the operations on the physical disks such as rebuild, hot spare, blink, clear operation, replace member operation, and so on.
PowerSupply	Provides status information of power supplies of the enclosures on the system.
Redundancy	Provides status of the redundancy device.
SystemLevel	Provides status of the controllers of the system.
TemperatureProbe	Provides temperature status of the probes in the enclosure. The temperature probe alerts help protect critical components by alerting when temperatures become too high inside an enclosure.
VirtualDisk	Provides status information of the virtual disk tasks. Virtual disk alerts provide information about initialization, formatting, configuration, rebuild, background initialization, redundancy, and so on.

EqualLogic Alert Groups

The EqualLogic alerts are the events generated by Dell EqualLogic systems and displayed on the Netcool/OMNIbus console. Table 2-3 lists the alert groups of EqualLogic alerts.

Table 2-3.   EqualLogic Alert Groups

Alert Group	Description
BatteryLessThan72Hours	Provides information that the battery has insufficient charge to survive a 72 hour power outage.
BothFanTraysRemoved	Provides information that both fan trays of the member have been removed from the chassis.
ChannelBothFailed	Provides information that both the channel cards have failed.
ChannelBothMissing	Provides information that both the channel cards are missing.
EIPFailureCondition	Provides information that EIP is failed in the channel card.
EmmLinkFailure	Provides information that link to the Enclosure Management Module (EMM) has failed.
EnclosureOpenPerm	Provides information that enclosure is open for a long time.
FanSpeedThreshold	Provides information that fan speed has exceeded the minimum or maximum threshold.
FanTrayRemoved	Provides information that one fan tray of the member has been removed from the chassis.
HighBatteryTemperature	Provides information that battery temperature is high.
HwComponentFailedCrit	Provides information that a critical hardware component of the member has failed.
IncompatControlModule	Provides information that an incorrect control module has been inserted into the chassis.
LowAmbientTemp	Provides information that one or more sensors are below the critical temperature range.

Table 2-3. EqualLogic Alert Groups *(continued)*

Alert Group	Description
MultipleRAIDSets	Provides information that multiple valid RAID sets were found.
NVRAMBatteryFailed	Provides information that NVRAM battery has failed and can no longer be used.
OpsPanelFailure	Provides information that ops panel is missing or damaged.
PowerSupply	Provides information that Power Supply module has detected a failure.
PowerSupplyFan	Provides information that Power Supply module fan has failed.
RAIDLostCache	Provides information that RAID driver is unable to recover the battery-backed cache.
RAIDOrphanCache	Provides information that RAID driver found data in the battery-backed cache and does not have a matching disk array.
RAIDSetDoubleFaulted	Provides information that double fault has been detected in the RAID set.
RAIDSetLostBlkTableFull	Provides information that RAID lost block table is full.
TempSensorThreshold	Provides information that temperature sensor has exceeded the maximum or minimum threshold.
DiskStatus	Provides information that status of the EqualLogic disk has changed.

Understanding Event Severity

The events forwarded to the ObjectServer are displayed on the Netcool/OMNIbus console with one of the following severities:

- **Normal**— Event with successful operation of a component, such as a power supply turning on, or a sensor reading returning to normal.
- **Warning**— Event that is not necessarily significant, but may indicate a possible future problem, such as crossing a warning threshold.

- **Critical**— Event that indicates actual or imminent loss of data or loss of function, such as crossing a failure threshold, or a hardware failure.

- **Indeterminate**— Event with unknown severity. Also, a resolution event that clears the problem event is initially displayed as indeterminate and then changed to normal, when the alert type of the event is **Resolution**.

Event Auto Correlation

The Dell OpenManage Connection supports auto correlation of events on Dell servers and EqualLogic systems. When the ObjectServer receives OMSA, OMSS, or EqualLogic events, appropriate triggers are automatically invoked to correlate the events.

The Dell OpenManage Connection automatically correlates the following events:

- Problem event with its corresponding clear event: OMSA, OMSS, and EqualLogic events support this event correlation. The IBM **generic_clear** trigger correlates the OMSA, OMSS, and EqualLogic problem events with its corresponding clear event when the problem is rectified.

- Problem event with another problem event: OMSA and EqualLogic events support this event correlation. The **dell_omsa_clear** trigger correlates the OMSA problem event by another problem event. The **dell_equallogic_clear** trigger correlates the EqualLogic problem events.

- Duplicated problem event with another problem event: OMSA and EqualLogic events support this event correlation. The **dell_omsa_deduplicate_clear** trigger correlates the OMSA problem events. The **dell_equallogic_deduplicate_clear** trigger correlates the EqualLogic problem events.

NOTE: The normal to normal event correlation is not supported as Netcool/OMNIbus clears the normal events periodically. For more information on OMSA and OMSS event correlation, see *Dell OpenManage Server Administrator Messages Reference Guide* at **support.dell.com**. For more information on EqualLogic event correlation, see Appendix.

Launching Dell OpenManage Server Administrator Console

The Dell OpenManage Connection enables you to launch the OMSA console to get more information about the Dell system you are monitoring. You can launch the OMSA console from the desktop event list or from the Active Event List of the web GUI.

NOTE: Perl is required for the execution of Common Gateway Interface (CGI) scripts. If Perl is installed in a nonstandard location, then the CGI scripts do not function properly. Always ensure that the paths to the resources in the CGI scripts are correct. The standard installation location of Perl on systems running the Windows and Linux operating system are **C:\Perl\bin\perl.exe** and **/usr/bin/perl** respectively. For more information, see *IBM Tivoli Netcool/OMNIbus Administration Guide*.

To launch the OMSA console from desktop event list:

1 Access the desktop event list. For more information, see Accessing the Desktop Event List.

2 Right-click the Dell server event on the **Event List**.

3 From the options, click **Dell Tools→ Launch Dell Server Administrator Console.**

   On systems running the Windows operating system, the OMSA console is launched in the default browser. On systems running the Linux operating system, the OMSA console is launched in the browser application set in the **$OMNIBROWSER** environment variable.

To launch OMSA console from web GUI:

1 Access the Active Event List. For more information, see Accessing the Active Event List.

2 Right-click the Dell server event on the **Active Event List**.

3 From the options, click **Dell Tools→ Launch Dell Server Administrator Console.**

   The OMSA console is launched in the default browser.

Launching Open Manage Server Administrator Web Server Console

The Dell OpenManage connection enables you to launch the OMSA web server console to get more information about the Dell system you are monitoring. You can launch the OMSA web server console from the desktop event list or from the Active Event List of the web GUI of a system running the Windows, Linux, or ESXi operating system.

> **NOTE:** You can launch the OMSA web server console on systems running the Windows or Linux operating system only if you enable **Remote Enablement** during OMSA installation on Dell systems.

To launch the OMSA web server console from desktop event list:

1. Access the desktop event list. For more information, see Accessing the Desktop Event List.

2. Right-click the Dell server event on the **Event List**.

3. From the options, click **Dell Tools→ Launch Dell Server Administrator Web Server Console.**

   On systems running the Windows operating system, the OMSA web server console is launched in the default browser. On systems running the Linux operating system, the OMSA web server console is launched in the browser application set in the **$OMNIBROWSER** environment variable.

To launch OMSA web server console from web GUI:

1. Access the Active Event List. For more information, see Accessing the Active Event List.

2. Right-click the Dell server event on the **Active Event List**.

3. From the options, click **Dell Tools→ Launch Dell Server Administrator Web Server Console.**

   The OMSA web server console is launched in the default browser.

Launching EqualLogic Group Manager Console

The Dell OpenManage connection enables you to launch the EqualLogic Group Manager console to get more information about the EqualLogic systems you are monitoring. You can launch the EqualLogic Group Manager console from the desktop event list or from the Active Event List of the web GUI.

To launch the EqualLogic Group Manager console from desktop event list:

1   Access the desktop event list. For more information, see Accessing the Desktop Event List.

2   Right-click the Dell EqualLogic event on the **Event List**.

3   From the options, click **Dell Tools→ Launch Dell EqualLogic Group Manager Console.**

    On systems running the Windows operating system, the EqualLogic Group Manager console is launched in the default browser. On systems running the Linux operating system, the EqualLogic Group Manager console is launched in the browser application set in the **$OMNIBROWSER** environment variable.

To launch EqualLogic Group Manager console from web GUI:

1   Access the Active Event List. For more information, see Accessing the Active Event List.

2   Right-click the Dell EqualLogic event on the **Active Event List**.

3   From the options, click **Dell Tools→ Launch Dell EqualLogic Group Manager Console.**

    The **EqualLogic Group Manager** console is launched in the default browser.

Accessing the Desktop Event List

To access the desktop event list:

1 Click **Start**→ **Programs**→ **NETCOOL Suite**→ **Event List**.

2 Log in to the **Netcool/OMNIbus Windows Event List**.

3 On the **Event list** window, double-click **Show Sub-Event List** on the **All Events** tab.

   The **Event list** is displayed.

Accessing the Active Event List

To access the Active Event List:

1 Log in to the web GUI.

2 On the left panel, click **Availability**→ **Events**→ **Active Event List (AEL)**.

   The **Active Event list** is displayed.

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Troubleshooting

This section lists the problems that you may encounter while using the Dell OpenManage Connection for IBM Tivoli Netcool/OMNIbus.

Dell Server Events Not Received at the Netcool/OMNIbus Console

- Verify that the following entries are included in the SNMP probe rules file:

    - ```
      include "$NC_RULES_HOME/include-
      snmptrap/dell/dell.master.include.rules"
      ```

    - ```
      include "$NC_RULES_HOME/include-
      snmptrap/dell/dell.master.include.lookup"
      ```

- Verify that the following entries are included in the **dell.master.include.lookup** file:

    - ```
      include "$NC_RULES_HOME/include-
      snmptrap/dell/dell-MIB-Dell-
      10892.include.snmptrap.lookup"
      ```

    - ```
      include "$NC_RULES_HOME/include-
      snmptrap/dell/dell-StorageManagement-
      MIB.include.snmptrap.lookup"
      ```

- Verify that the following entries are included in the **dell.master.include.rules** file:

    - ```
      include "$NC_RULES_HOME/include-
      snmptrap/dell/dell-MIB-Dell-
      10892.include.snmptrap.rules"
      ```

    - ```
      include "$NC_RULES_HOME/include-
      snmptrap/dell/dell-StorageManagement-
      MIB.include.snmptrap.rules"
      ```

Dell EqualLogic Events Not Received at the Netcool/OMNIbus Console

- Verify that the following entries are included in the SNMP probe rules file:

  - ```
    include "$NC_RULES_HOME/include-
    snmptrap/dell/dell.master.include.rules"
    ```

  - ```
    include "$NC_RULES_HOME/include-
    snmptrap/dell/dell.master.include.lookup"
    ```

- Verify that the following entries are included in the **dell.master.include.lookup** file:

  - ```
    include "$NC_RULES_HOME/include-
    snmptrap/dell/equalLogic-EQLMEMBER-
    MIB.include.snmptrap.lookup"
    ```

  - ```
    include "$NC_RULES_HOME/include-
    snmptrap/dell/equalLogic-EQLDISK-
    MIB.include.snmptrap.lookup"
    ```

- Verify that the following entries are included in the **dell.master.include.rules** file:

  - ```
    include "$NC_RULES_HOME/include-
    snmptrap/dell/equalLogic-EQLMEMBER-
    MIB.include.snmptrap.rules"
    ```

  - ```
    include "$NC_RULES_HOME/include-
    snmptrap/dell/equalLogic-EQLDISK-
    MIB.include.snmptrap.rules"
    ```

Dell OpenManage Server Administrator Events Not Correlated

Verify that the following triggers are enabled in Netcool/OMNIbus ObjectServer:

- dell_omsa_clear
- dell_omsa_deduplicate_clear

Dell EqualLogic Events Not Correlated

Verify that the following triggers are enabled on Netcool/OMNIbus ObjectServer:

- dell_equallogic_clear
- dell_equallogic_deduplicate_clear

Error While Importing the Web GUI Integrations

Restart the web GUI Server after importing the Dell OpenManage Connection to the ObjectServer.

Issues in Launching the OMSA Console Using CGI Scripts

- Verify that Perl is properly installed on the web GUI server. For more information, see Launching Dell OpenManage Server Administrator Console.
- For the prerequisites for enabling the CGI scripts functionality, see the OMNIbus CGI script documents.

Problem in Restarting the MTTrapd Probe in Windows

Ensure that the commented text (if exists) is not at the end in the following files:

- dell.master.include.lookup
- dell.master.include.rules

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Related Documents and Resources

This chapter gives you the details of other documents and resources to help you work with the Dell OpenManage Connection for IBM Tivoli Netcool/OMNIbus.

Other Documents You May Need

In addition to this guide, you can access the following guides available at **support.dell.com/manuals**. On the **Manuals** page, click **Software→ Systems Management**. Click the appropriate product link on the right-side to access the documents:

- *Dell OpenManage Installation and Security User's Guide*
- *Dell OpenManage Server Administrator User's Guide*
- *Dell OpenManage Server Administrator Compatibility Guide*
- *Dell OpenManage Server Administrator Messages Reference Guide*
- *Dell OpenManage Server Administrator Command Line Interface User's Guide*
- *Dell OpenManage With VMware ESX/ESXi 4 Systems Management Guide*. To access this guide, click **Software→Virtualization Solutions→ VMware Software** at **support.dell.com/manuals**.

For information on terms used in this document, see the Glossary at **support.dell.com/manuals**.

Getting Technical Assistance

For customers in the United States, call 800-WWW-DELL (800-999-3355).

> **NOTE:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

For information on technical support, visit **www.dell.com/contactus**.

Additionally, Dell Enterprise Training and Certification is available at **www.dell.com/training**.

Appendix

EqualLogic Alert Correlation

The following EqualLogic alerts support alert correlation:

- DiskStatus

- TempSensorThreshold

- FanSpeedThreshold

- PowerSupplyFan

- PowerSupply

The alerts are correlated using the Dell automation triggers on IBM Tivoli Netcool/OMNIbus. The alerts are displayed on the Netcool/OMNIbus console with the latest status. For example, **DiskStatus** alert is displayed with the latest status and all the previous **DiskStatus** alerts are cleared on the Netcool/OMNIbus console.