

White paper

Integration of HP Servers into ServerView® Operations Manager

This White Paper describes the integration of servers from third-party manufacturers into the PRIMERGY management tool ServerView® Operations Manager using the example of an HP server.



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Introduction

This White Paper describes the integration of servers from third-party manufacturers into the PRIMERGY management tool ServerView® Operations Manager using the example of an HP server. The aim of Fujitsu Technology Solutions is to enable monitoring of servers from heterogeneous server farms in a network with one standard tool, thus ensuring the availability of all servers, even those from different manufacturers.

System messages are forwarded and displayed to the central administrator via SNMP with the alarm management facility integrated in ServerView®. The "Management Information Bases" (MIBs) of the relevant manufacturers can be integrated in ServerView®.

The ServerView® Suite is the comprehensive management suite for Fujitsu Technology Solutions PRIMERGY servers. It combines all PRIMERGY servers from the tower mono-server to rack-optimized or blade servers. It also integrates important alarm functions for monitored servers in general. ServerView® comes with every PRIMERGY server.

1 Overview

Server management ensures

- Easy configuration and installation
- Reliable monitoring and administration in continuous operation
- Proactive diagnostics and automated maintenance
- Rapid error recovery
- Simple integration in global IT management systems

The ServerView® Suite from Fujitsu Technology Solutions is an easy-to-use, comprehensive set of management programs for the monitoring and administration of PRIMERGY systems. The ServerView® Suite includes tools for the provision and analysis of system data and the automated updating of BIOS, firmware and driver statuses. An efficient, individually configurable alarm management facility ensures rapid and secure forwarding of system messages to administrators or service staff. ServerView® uses standardized protocols and interfaces.

Administrators get a quick and reliable overview of the operating status of the systems, utilization trends, and possible sources of error. The individually configurable alarm management ensures that predetermined administrators or service providers can respond rapidly.

1.1 ServerView® structure: management station and agents

The PRIMERGY server management console provides the graphical user interface via which servers are monitored and server management is set up (agents, RSB, ASR&R, threshold values, etc.). The central management server can be a Windows or Linux server, on which the ServerView® application collects and evaluates the data. On the central management server you also need a web server. The communication can be encrypted via the SSL protocol, so that configuration tasks can also be performed securely over the Internet. Managed servers collect status information with SNMP agents and pass it on to the central management server.



1.2 Alarm management

Alarm management is one of the most important tools of any management system. The ServerView alarm management facility can be flexibly configured and ensures fast information on system statuses and events of the servers and subsystems in a managed network environment. The ServerView alarm management facility receives, evaluates, filters and documents alarm messages and forwards them to all kinds of receiver terminals according to defined specifications. The number and type of warnings displayed can be controlled by the administrator. This allows a quick and appropriate response, so that disruption can often be prevented before system errors occur. It is often the case that the administrator does not need to intervene, as automatic responses to specific errors are produced.

The individually configurable alarm management facility provides the administrator with information about the server system. In the event of a fault, the automatic notification of the administrator or service staff (e.g. via e-mail or cell phone) allows a quick response.

In many cases, on-site activities are not necessary for diagnostics and maintenance: The correct setup for the relevant servers can be achieved via LAN, WAN or through the Internet – even if the server concerned can no longer boot. The ServerView Alarm Service guarantees fast notification of system statuses and incidents of the servers and subsystems in a managed network. The trap filtering prevents blockages which would otherwise affect the network. The guidelines are defined by the administrator, with ServerView® providing additional input.

1.3 ServerView® consolidates server management

HP servers can be integrated into the Fujitsu Technology Solutions server management tool ServerView® with minor manufacturer-related restrictions. ServerView® standardizes management in a heterogeneous environment.

2 Integration of HP servers in ServerView®

2.1 Required components

The server manufacturer's SNMP agents must be installed on all systems to be managed, because the agents collect information on the components, configuration and system status of the managed servers and report this via SNMP to the management station.

On HP servers make sure the HP Agents are installed, otherwise ServerView® Operations Manager will not be able to collect information specified in the HPtoSV Toolkit. Make sure the ServerView® SNMP agents are not installed to enable automatic server detection in the Server Browser.

The required components are ServerView® Operations Manager on the central management station and the appropriate SNMP agents on the server to be managed. Also required are manufacturer-specific Management Information Base files (MIBs), which can normally be downloaded from the websites of the respective hardware manufacturers. The ServerView® Installation Manager can be installed interactively from the ServerView® Suite DVD. The ServerView® Suite DVD can also be accessed online at:

http://download.ts.fujitsu.com/prim_supportcd/start.html

2.1.1 The tool for HP server integration

For recognition of HP servers, Fujitsu Technology Solutions provides the HPtoSV Toolkit with the following components:

- This White Paper on the integration of ServerView®
- The ServerView® HP Server Integration Kit (HPtoSV.zip):
 - The tool for integrating the HP-specific server rules HPtoSV.cmd
 - Rules for the integration of HP servers into ServerView® Operations Manager (HPserver_browsertypes.xml, HPserver_serverlisttypes.xml, HPserver_wwwroot.xml)

The toolkit for the integration of HP servers can be obtained from the ServerView® Suite DVD. The ServerView® Suite DVD can also be accessed online at:

http://download.ts.fujitsu.com/prim_supportcd/start.html

ServerView Suite -> Software Products -> ServerView -> Integration Solutions -> ServerView HP Server Integration.

2.2 Installing the SNMP agents

The SNMP agents of the server manufacturer must be installed on the server to be integrated. For information on where to get these agents and how to install them, please refer to the manufacturer's manuals.

2.3 Configuring the SNMP service

For the alarm messages to be forwarded, SNMP forwarding to the central management system must be configured on the server to be managed. This involves two steps:

- The SNMP service must be configured such that the SNMP traps are sent to the central management station on which ServerView® Operations Manager is installed.
- The SNMP service must be configured such that ServerView® Operations Manager can access the server with the help of SNMP (read rights are sufficient).

The exact procedure depends on your operating system. Details can be found in the Installation Guide for ServerView® Operations Manager on the ServerBooks CD.

2.4 Integrating the manufacturer-specific MIBs

The Management Information Bases (MIBs) of the relevant manufacturers must be integrated on the central management system where ServerView® Operations Manager is running. Be aware that not all MIBs with the associated traps can be integrated since referenced MIBs sometimes cause problems. For HP servers a list of tested MIBs can be found in Appendix 1.

Notes:

- Some MIBs need to be adjusted because their structure is not compatible with ServerView®. This mainly applies to referenced MIBs, whose references must be removed to avoid causing problems in the ServerView® MIB Compiler. An example of this adjustment is described in the section 'Integrating HP MIBs'.
- SV Operations Manager only supports one type of enterprise within the trap definitions of a MIB. If a MIB contains more than one type of enterprise, the MIB needs to be split (e.g. HP's cpqhlth.mib). An example is described in the section 'Integrating HP MIBs'.
- Occasionally there are manufacturer-specific MIBs which are also present in ServerView®. Here you must make sure that the ServerView® MIB is not overwritten. Using the example of HP MIBs, Appendix 2 lists some of the MIBs that must not be overwritten by the HP MIBs.

The MIBs should be imported into ServerView® with the 'MIB Integrator' (Event Manager – MIB Integrator) to avoid potential problems with the ServerView® MIB Compiler in advance. You can use the 'Browse' button to navigate to the MIBs to be imported. Various MIBs produce warnings in the MIB Parser (e.g. 'Warning on trap ' cpqHo2NicStatusOk, number of trap is 5. trapSummarySyntaxCheck failed.), but these can be ignored.

Once the MIB to be integrated has been tested, it can be stored in the ServerView® MIBs directory. If there is an error during the test run, the MIB cannot be stored in the ServerView® MIBs directory.

Note:

Alternatively, you can copy the required MIBs directly into the ServerView® MIBs directory (<SvRoot>\ServerView Services\scripts\ServerView\common\mibs).

However, this runs the risk of erroneous MIBs causing problems for the MIB Compiler. This leads to a situation where ServerView® Operations Manager disregards all MIBs and is unable to manage the monitored servers. This situation can be recognized in the Server List by the fact that all servers to be managed are indicated by a blue icon. In this case remove all foreign MIBs and add one by one using the MIB Integrator, restarting the ServerView® Service in between.

To complete the MIB integration you must close all ServerView Operations Manager windows and restart the 'ServerView Services' (former 'FSC ServerView Services') service so that the HP-specific rules are observed by ServerView®.

The service administration can be opened via 'Start' – 'Control Panel' – 'Administrative Tools' – 'Services' in order to restart the service.

2.5 Integrating HP MIBs

The MIB files can be found on the Compaq Management CD. MIB files are also available for downloading at www.hp.com.


Extract or unzip the MIB files into a folder. This folder now contains all the relevant MIBs for HP products, although only a few selected MIBs are necessary for integrating HP servers in ServerView®.

Appendix 1 lists the MIBs that are required for system recognition and trap initiation. For these MIBs the following adaptations need to be made.


2.5.1 Remove referenced MIBs

Some MIBs need to be adjusted because their structure is not compatible with ServerView®. This mainly applies to referenced MIBs, whose references must be removed to avoid causing problems in the ServerView® MIB Compiler.

In any MIB to be imported (see Appendix 1), please comment out this line if it exists:

 `compaq FROM CPQHOST-MIB` Enter a comment here
`compaq FROM CPQHOST-MIB`

and remove the comment from this line if there is one:

 `compaq OBJECT IDENTIFIER ::= { enterprises 232 }` Remove this comment
`compaq OBJECT IDENTIFIER ::= { enterprises 232 }`

Note:

All references to other MIBs within the MIB used in the XML-files from the HPtoSV toolkit need to be removed as described above for the SV Operations Manager to be able to parse the foreign MIBs.

2.5.2 Split MIBs with too many enterprise definitions

SV Operations Manager only supports one type of enterprise within the trap definitions of a MIB. If a MIB contains more than one type of enterprise, this MIB needs to be split (e.g. HP's cpqhlth.mib).

To this end, copy the MIB as many times as enterprises are contained within the MIB. Then – keeping the MIB format intact – remove all but one enterprise from each MIB.

The following is an example for this for cpqhlth.mib:

- Copy cpqhlth.mib.
Rename the copied file cpqhlth_2.mib.
- Edit cpqhlth.mib in the following way:
 - Find the section that starts with these lines:

```
-- Trap definitions for Insight Manager version 2.00 and greater
-- use the Compaq Enterprise (232) and have unique trap numbers between all
-- of the MIBs.
```
 - Delete everything below this line, including the above header section but leave the last line (END) intact.
This will leave only traps for enterprise cpqHealth in cpqhlth.mib
- Edit cpqhlth_2.mib in the following way:
 - change this line
`CPQHLTH-MIB DEFINITIONS ::= BEGIN`
to this
`CPQHLTH-MIB_2 DEFINITIONS ::= BEGIN`
 - Find the section that starts with these lines:

```
*****
Health MIB Trap Definitions
=====
```
 - Delete all lines including those above until you reach the section starting with these lines:

```
-- Trap definitions for Insight Manager version 2.00 and greater
-- use the Compaq Enterprise (232) and have unique trap numbers between all
-- of the MIBs.
```


This will leave only traps for enterprise compaq in cpqhlth_2.mib

2.6 Installing rules for HP servers

To recognize HP servers, ServerView® Operations Manager must be informed of the rules for recognition and administration of these servers. The HP-specific rules are defined in 3 XML files, which must be distributed into different directories of the ServerView® installation. This is accomplished by the HPtoSV Toolkit.

Unzip the HPtoSV toolkit into a folder, open a command shell and change into this folder. To install the HP-specific rules, call:

```
HPtoSV.cmd
```

Now the 'ServerView Services' (former 'FSC ServerView Services') service and ServerView® Operations Manager must be restarted so that the HP-specific rules are observed by ServerView®. Make sure all ServerView® Operations Manager windows are closed before restarting the service.

The service administration can be opened via 'Start' – 'Control Panel' – 'Administrative Tools' – 'Services' in order to restart the service.

2.7 Removing the HPtoSV toolkit

To remove the HPtoSV toolkit, follow these steps:

1. Remove all HP servers from the ServerView® Operations Manager.
2. Open a command shell, change into the HPtoSV folder and call:

```
HPtoSV.cmd remove
```

This removes the HP-specific rules from ServerView.
3. Delete all HP MIBs from the ServerView® MIBs directory (<SvRoot>\ServerView Services\scripts\ServerView\common\mibs).
4. Finally, close all ServerView® Operations Manager windows and restart the 'ServerView Services' service.

Notes:

- Newer versions of SV Operations Manager (6.20 and later) carry a version of cpqghost.mib and cpqida.mib. When removing the HP MIBs from the ServerView® MIBs directory (<SvRoot>\ServerView Services\scripts\ServerView\common\mibs) make sure to leave a version of cpqghost.mib and cpqida.mib in the SVOM MIB folder.
- If the HP servers are not removed prior to de-installing the HPServer rules using 'HPtoSV.cmd remove', they will no longer be displayed in ServerView's ServerList but will still exist within ServerView's data base. This results in these servers not being able to be properly removed or re-integrated. To solve this problem re-install the HPtoSV toolkit and restart the 'ServerView Services' service. Then follow the above steps.

3 Displaying the server in ServerView®

3.1 ServerView® and HP servers

You add a server to the "ServerList" by using the "Server Browser". Right-click the Server List display and select the option "New Server" or use "Administration" – "Server Browser" from the navigation bar. Here you can then enter the necessary data (server name, IP address, etc.) to find the server.

Note:

Usually ServerView® Operations Manager can automatically detect that an HP server is an HP server, since the HP server rules have been imported (see section 2.6 Installing rules for HP servers).

If this is not the case, select 'HPServer' in the right-hand column before you confirm your input with "Apply".

After a few seconds the server appears in the Server List.

For an integrated HP server, clicking the server name opens not the ServerView® status page but the HP System Management Homepage, which is better suited to the actual management of the server.

The data for authentication on the HP System Management Homepage cannot be supplied by ServerView®, so additional login on the managed server is required.

4 Restrictions and notes

This White Paper uses the example of an HP server to describe how a third-party system can be integrated into ServerView® Suite. This document may contain technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication.

Fujitsu Technology Solutions reserves the right to make improvements and/or changes to the products or programs described in this publication at any time without notice.

Fujitsu Technology Solutions does not guarantee the operability of the described or similar configurations.

5 Appendices

5.1 Appendix 1: Overview of the HP MIBs to be integrated

MIB	Reason	Comment
cpq54nn.mib	Trap integration	
cpqclus.mib	Trap integration	Must be edited. See section 2.5.1
cpqcmc.mib	Trap integration	Must be edited. See section 2.5.1
cpqcr.mib	Trap integration	Must be edited. See section 2.5.1
cpqdceo.mib	Trap integration	Must be edited. See section 2.5.1
cpqdmii.mib	Trap integration	
cpqdscs.mib	Trap integration	Must be edited. See section 2.5.1
cpqfca.mib	Trap integration	Must be edited. See section 2.5.1
cpqgen.mib	Trap integration	
cpqhlth.mib	Server monitoring / Trap integration	Must be edited. See sections 2.5.1, 2.5.2
cpqhost.mib	Server recognition / Trap integration	This ServerView® MIB must not be overwritten with the HP MIB.
cpqhsv110v3.mib	Trap integration	
cpqica.mib	Trap integration	Must be edited. See section 2.5.1
cpqida.mib	Trap integration	This ServerView® MIB must not be overwritten with the HP MIB
cpqide.mib	Trap integration	Must be edited. See section 2.5.1
cpqinfo.mib	Server recognition / Trap integration	Must be edited. See section 2.5.1
cpqioldrv.mib	Trap integration	Must be edited. See section 2.5.1
cpqn5226a.mib	Trap integration	
cpqnic.mib	Trap integration	Must be edited. See section 2.5.1
cpqnode.mib	Trap integration	Must be edited. See section 2.5.1
cpqpower.mib	Trap integration	Must be edited. See section 2.5.1
cpqrack.mib	Trap integration	Must be edited. See section 2.5.1
cpqrecov.mib	Trap integration	Must be edited. See section 2.5.1
cpqsanapp.mib	Trap integration	
cpqsanevent.mib	Trap integration	
cpqSasSwitch.mib	Trap integration	Must be edited. See section 2.5.1
cpqscsi.mib	Trap integration	Must be edited. See section 2.5.1
cpqservice.mib	Trap integration	Must be edited. See section 2.5.1
cpqsinfo.mib	Trap integration	Must be edited. See section 2.5.1
cpqsm2.mib	Trap integration	Must be edited. See section 2.5.1
cpqsrvmn.mib	Trap integration	Must be edited. See section 2.5.1
cpqstdeq.mib	Trap integration	Must be edited. See section 2.5.1
cpqstsys.mib	Trap integration	Must be edited. See section 2.5.1
cpqswcc.mib	Trap integration	Must be edited. See section 2.5.1
cpqthrsh.mib	Trap integration	Must be edited. See section 2.5.1
cpq-traps.mib	Trap integration	
cpqups.mib	Trap integration	Must be edited. See section 2.5.1
cpqwcrm.mib	Trap integration	Must be edited. See section 2.5.1
cpqwinos.mib	Trap integration	Must be edited. See section 2.5.1

5.2 Appendix 2: Overview of duplicate ServerView® and HP MIBs

MIB	Comment
cpqhost.mib	This ServerView® MIB must not be overwritten with the HP MIB.
cpqida.mib	This ServerView® MIB must not be overwritten with the HP MIB.
ETHER.MIB	This ServerView® MIB must not be overwritten with the HP MIB.
mlxraid.mib	This ServerView® MIB must not be overwritten with the HP MIB.
powernet.mib	This ServerView® MIB must not be overwritten with the HP MIB.
rfc1213.mib	This ServerView® MIB must not be overwritten with the HP MIB.
VMWARE-CIMOM-MIB.mib	This ServerView® MIB must not be overwritten with the HP MIB.
VMWARE-ENV-MIB.mib	This ServerView® MIB must not be overwritten with the HP MIB.
VMWARE-OBSOLETE-MIB.mib	This ServerView® MIB must not be overwritten with the HP MIB.
VMWARE-TRAPS-MIB.mib	This ServerView® MIB must not be overwritten with the HP MIB.
VMWARE-VC-EVENT-MIB.mib	This ServerView® MIB must not be overwritten with the HP MIB.
VMWARE-VMINFO-MIB.mib	This ServerView® MIB must not be overwritten with the HP MIB.