User Guide - English

FUJITSU Software ServerView

Out-Of-Band Performance Monitoring Management Pack V8.5 for Microsoft SCOM

June 2019 Edition

Contents

1 Introduction

The PRIMERGY ServerView Suite from Fujitsu offers numerous ServerView integration modules which enable PRIMERGY servers to be integrated easily into other enterprise management systems.

This manual describes the *Fujitsu PRIMERGY Out-Of-Band Server - Performance Monitoring Management Pack*, which provides additional Out-Of-Band Temperature and Power Consumption Performance Data collection functionality for the integration of Fujitsu PRIMERGY Out-Of-Band Servers into Microsoft System Center Operations Manager (SCOM).

This Management Pack is an Add-On Management Pack to the *Fujitsu PRIMERGY Out-Of-Band Server - Base Management Pack* and is part of the ServerView Out-Of-Band Server Integration Pack for SCOM.

Out-Of-Band within the context of this Management Pack and document means that no installed SCOM agent is required on the monitored PRIMERGY server and all communication for discovery and monitoring is done Out-Of-Band with the integrated Remote Management Controller (iRMC) of the PRIMERGY server. This allows integration and monitoring of servers running Operating System versions which are typically unsupported by SCOM. No additional software is needed on the monitored Out-Of-Band Server.

Performance Monitoring of a Fujitsu PRIMERGY Out-Of-Band Server is implemented by SCOM rules using the DMTF Redfish protocol. If Redfish is not supported by the iRMC firmware version the proprietary Fujitsu System Report interface is used instead as in earlier versions of the Integration Pack.
Performance Data can be visualized with standard SCOM Performance Views or Performance Dashboard Widgets.

The current ServerView Out-Of-Band Server Integration Pack for SCOM is provided on the latest PRIMERGY ServerView Suite DVD2 from Fujitsu or under:

http://download.ts.fujitsu.com/prim_supportcd/SVSSoftware/

1.1 Purpose and target groups

This manual is intended for system administrators, network administrators and service technicians who have a thorough knowledge of hardware and software. Likewise, a sound basic knowledge of the Microsoft System Center Operations Manager is required.

1.2 Changes since the last edition

1.2.1 Changes since version 8.4

The *Fujitsu PRIMERGY Out-Of-Band Server - Performance Management Pack* V8.5 contains the following changes compared to the V8.4 version

- Add support for the DMTF Redfish protocol for out-of-band monitoring. If Redfish is not supported by the iRMC firmware version the Fujitsu System Report interface is used as in earlier versions of the Management Pack.
- Integrate the *Fujitsu ServerView Server - Collect Health State to OMS* and the *Fujitsu PRIMERGY Out-of-Band Server - Collect Performance Data to OMS* Management Packs together with the *'Whitepaper SCOM OMS integration-en.pdf '* and sample OMS Views into the Integration Pack which were previously available as a separate download. For details on how to use the optional Management Packs together with a Microsoft Operations Management Suite workspace see the installed white paper.

1.2.2 Changes since version 8.3

The *Fujitsu PRIMERGY Out-Of-Band Server - Performance Management Pack* V8.4 contains no changes compared to the V8.3 version

1.2.3 Changes since version 8.2

The *Fujitsu PRIMERGY Out-Of-Band Server - Performance Management Pack* V8.3 contains the following changes compared to the V8.2 version

- Add iRMC S5 as supported platform
- Remove dependency to 'Microsoft System Center Out-of-Band SMASH Library' Management Pack by providing 'Fujitsu PRIMERGY iRMC Management Pack' which provides additional features compared to the Microsoft SMASH MP, such as better identification of Fujitsu PRIMERGY Servers during discovery and IPv6 support.

1.2.4 Changes since version 8.1

The *Fujitsu PRIMERGY Out-Of-Band Server - Performance Management Pack* includes the following changes compared to the V8.1 version:

- Add contextual Dashboard Performance Views which will be displayed in the Task Pane when an Out-Of-Band Server is selected
- Add Sensor Units to all Counter instances to enable optional non metric performance counter for °Fahrenheit and BTU/h (available as separate Management Pack)
  - e.g. 'Processor (°C)' instead of 'Processor'
- Rename some Counter Names to be consistent with the in-band Performance MP's.
  - Rename 'Air Inlet' to 'Ambient'
  - Rename 'Memory Device' to 'Memory'
  - Rename 'Power Monitoring' to 'Total'
- Provide unsealed Management Pack containing overrides for recommended performance collection rules.

1.3 ServerView Suite link collection

Via the link collection, Fujitsu provides their customers with numerous downloads and further information on the ServerView Suite and PRIMERGY servers

In "ServerView Suite" on the left side, links are offered on the following topics:

- Forum
- Service Desk
- Manuals
- Product information
- Security information
- Software downloads
- Training

The downloads include the following:

- Current software versions for the ServerView Suite and additional Readme files.
- Information files and update sets for system software components (BIOS, firmware, drivers, ServerView Agents and ServerView Update Agents) for updating the PRIMERGY servers via ServerView Update Manager or for locally updating individual servers via ServerView Update Manager Express.
- The current version of all documentation on the ServerView Suite.

All downloads from the Fujitsu web server are free of charge.

For PRIMERGY servers, links are offered on the following topics:

- Service Desk
- Manuals
- Product information
- Spare parts catalogue

Access to the ServerView link collection

You can reach the link collection of the ServerView Suite in various ways:

1. Via ServerView Operations Manager.
   - Select *Help – Links* on the start page or on the menu bar.
     This opens the start page of the ServerView link collection.
2. Via the start page of the online documentation for the ServerView Suite on the Fujitsu manual server.

   The start page of the online documentation can be reached via the following link: http://manuals.ts.fujitsu.com

   - In the selection list on the left, select *x86 servers*.
   - Click the menu item *PRIMERGY ServerView Links*.
     This opens the start page of the ServerView link collection.
3. Via the ServerView Suite DVD2
   - In the start window of the ServerView Suite DVD2, select the option *Select ServerView Software Products*.
   - Click *Start* to open the page with the software products of the ServerView Suite.

- On the menu bar select *Links* to open the start page of the ServerView link collection.

1.4 Documentation for ServerView Suite

The documentation can be downloaded free of charge from the Internet. You will find the online documentation at http://manuals.ts.fujitsu.com under the link *x86 servers*.

For an overview of the documentation to be found under ServerView Suite as well as the filing structure, see the ServerView Suite sitemap (*ServerView Suite -Site Overview*).

1.5 Notational Conventions

The following notational conventions are used in this manual:

	**Warning** This symbol is used to draw attention to risks which may represent a health hazard or which may lead to data loss or damage to the hardware
	**Information** This symbol highlights important information and tips.
▶	This symbol refers to a step that you must carry out in order to continue with the procedure.
italics	Commands, menu items, names of buttons, options, file names and path names are shown in italics in descriptive text.
<variable>	Angle brackets are used to enclose variables which are replaced by values.

Screen Output

Please note that the screen output shown in this manual may not correspond to the output from your system in every detail. System-related differences between the menu items available can also arise.

2 Integration requirements

The requirements specified below must be satisfied for integration.

Management station

- Microsoft System Center 2019 / 2016 / 2012 R2 / 2012 SP1 Operations Manager with latest updates
- SQL Server 2019 / 2016 / 2014 / 2012 / 2008.
  See the requirements for the relevant SCOM version
- Installed .NET Framework 4.5 or later is highly recommended
- Installed 'Fujitsu PRIMERGY Out-Of-Band Server - Base Management Pack'

Managed PRIMERGY servers

- Network access to the embedded Management Controller iRMC (integrated Remote Management Controller)
  - Out-of-band Server monitoring in SCOM based on System Report interface:
    - iRMC S4 with firmware 8.24F or later is supported.
    - iRMC S5 with firmware 1.10P or later is supported.
  - Out-of-band Server monitoring based on the DMTF Redfish protocol
    - iRMC S5 with firmware 1.23P or later is supported
    - iRMC S4 with firmware 9.04F or later is supported
- Local iRMC user account
  - For DMTF Redfish protocol out-of-band monitoring
    - Configured Redfish Role for the used iRMC account
- For iRMC S4 firmware up to 8.4x: the setting for 'Temperature Units' has to be set to the default value of degree Celsius (°C).

3 Installation and uninstallation

3.1 Installing ServerView Integration Pack

The installation program *SVISCOM-OutOfBand.exe* for the Out-Of-Band Integration Pack (which contains multiple Management Packs) is located on the ServerView Suite DVD2 at

<DVDroot>\SVSSoftware\Software\Integration_Solutions\SCOM

Alternatively it is available as a download from:
http://download.ts.fujitsu.com/prim_supportcd/SVSSoftware/

The installation program first runs some basic checks then start the Installation Wizard. Follow the instructions displayed during the installation process.

3.1.1 Installed files

The default installation path on the management station is:

– %ProgramFiles%\Fujitsu\ServerView Suite\SCOM Integration

The following files are copied into the installation directories:

Folder	Files

Common sub folder	• *sv-intpack-scom-adm-en.pdf*
	• *Whitepaper SCOM OMS integration-en.pdf*
	• *OMS Views Subfolder:*
	  ○ ServerView® PRIMERGY Server Health.omsview
	  ○ ServerView® PRIMERGY Power Consumption.omsview
	  ○ ServerView® PRIMERGY Ambient Temperature.omsview
	  ○ ServerView® iRMC Login and AVR Started.omsview
	  ○ Windows Power Consumption.omsview

SVSICOM-OutOfBand sub folder	• *EULA_en.pdf* • *EULA_ja.pdf* • *Quick Installation Guide.pdf* • *sv-intpack-scom-outofband-en.pdf* • *sv-intpack-scom-outofband-perfmon-en.pdf (this file)* • *sv-intpack-scom-outofband-RAID-en.pdf*
Management Packs sub folder	• *Fujitsu.ServerView.Library.mp* • *Fujitsu.ServerView.Image.Library.mpb* • *Fujitsu.ServerView.IntegrationPackAdmin.mpb (optional)* • *Fujitsu.ServerView.Monitoring.Cloud.mpb (optional)* • *Fujitsu.Servers.PRIMERGY.OutOfBand.iRMC.mpb* • *Fujitsu.Servers.PRIMERGY.OutOfBand.mpb* • *Fujitsu.Servers.PRIMERGY.OutOfBand.PowerMgmtTask.mpb (optional)* • *Fujitsu.Servers.PRIMERGY.OutOfBand.PerfMon.mpb (optional)* • *Fujitsu.Servers.PRIMERGY.OutOfBand.PerfMon.Overrides.xml (optional)* • *Fujitsu.Servers.PRIMERGY.OutOfBand.PerfMon.Cloud.mpb (optional)* • *Fujitsu.Servers.PRIMERGY.OutOfBand.PerfMon.Cloud.Overrides.xml (optional)* • *Fujitsu.Servers.PRIMERGY.OutOfBand.RAID.mpb (optional)*

No automatic import of the installed Management Pack files is performed. You have to manually import the desired Management Packs into SCOM.

After installation start the SCOM console with the command *Microsoft.EnterpriseManagement.Monitoring.Console.exe /clearcache.*

In case other Fujitsu Integration Packs are also installed on the SCOM, the folder *Management Packs* may contain both the old *ServerView Core Library* (*Fujitsu.ServerView.Library.mp*) and the new *ServerView Core Library* (*Fujitsu.ServerView.Library.mpb*) after installation.

Please note that to install the new *ServerView Core Library* (*Fujitsu.ServerView.Library.mpb*) it is imperative not to also select the old *ServerView Core Library* (*Fujitsu.ServerView.Library.mp*) for import into SCOM. If both Libraries are selected, SCOM will refuse to import any of them.

3.1.2 Importing Management Packs

Management packs installed by the ServerView Out-Of-Band Server Integration Pack are located the folder 'Management Packs' within the installation folder. This folder holds all management packs from ServerView Integration Packs for System Center Operations Manager not only from the ServerView Out-Of-Band Server Integration Pack.

PRIMERGY Management Packs are imported in the usual way from the SCOM Console.

Close the SCOM Console once after importing management packs to avoid locked files.

3.2 Update to a new version

Update installation is currently not supported by the ServerView Out-Of-Band Server Integration Pack. The recommended process is a full uninstallation of the old version followed by the installation of the new version.

The Management Packs of the ServerView Out-Of-Band Server Integration Pack themselves are usually update-compatible starting with version 8.3.
New management packs can be imported on top of the old management packs.

You can do this either manually or use the Fujitsu ServerView Administration Page. See *sv-intpack-scom-adm-en.pdf* for its usage.

Follow chapter 3.3 Uninstalling ServerView Integration Pack to uninstall the old ServerView Out-Of-Band Server Integration Pack.

Follow chapter 3.1 Installing ServerView Integration Pack to install the new ServerView Out-Of-Band Server Integration Pack.

3.3 Uninstalling ServerView Integration Pack

The ServerView Out-Of-Band Server Integration Pack is uninstalled via the following steps:

- Remove the corresponding override management packs if any from SCOM.
  To keep existing override settings, e.g. to re-use in a new version, the override management packs should be exported and saved.
- Remove the PRIMERGY Out-Of-Band Server Management Packs from SCOM.

If other ServerView Integration Packs for System Center Operations Manager have been installed, the ServerView Library Management Packs cannot be uninstalled.

- Uninstall the ServerView Out-Of-Band Server Integration Pack from the SCOM server.

  To remove the Management Packs you need SCOM administrator rights. The old ServerView Out-Of-Band Server Integration Pack should be removed from all SCOM Remote Consoles.

3.4 Updating the ServerView Library Management Packs

The ServerView Library Management Pack and the ServerView Image Library Management Pack are used and referenced by all Fujitsu ServerView Integration Packs for System Center Operations Manager.

If a ServerView Integration Pack contains a newer version of one of the ServerView Library Management Packs this new version can usually be imported into SCOM without impact to any other Fujitsu ServerView Integration Management Packs.

In the rare case that a new version of one of the ServerView Library Management Packs is not compatible with the old version, it is necessary to uninstall all Fujitsu Management Packs including their Override Management Packs and reinstall all Fujitsu Management Packs from the folder 'Management Packs' together with the updated ServerView Library and ServerView Image Library Management Packs.

4 Properties of the Out-Of-Band Performance Monitoring Management Packs

4.1 Management Packs

The *Fujitsu PRIMERGY Out-Of-Band Servers - Performance Monitoring* Management Pack Bundle contains additional performance collection rules for Temperature or Power Consumption related Sensor components via the integrated iRMC independent from the installed Server Operating System (Windows/Linux/ESXi/BSD or any other operating system). It cannot be modified or exported.
The file name of this package is *Fujitsu.Servers.PRIMERGY.OutOfBand.PerfMon.mpb.*

The *Fujitsu PRIMERGY Out-Of-Band Servers - Overrides for Performance Monitoring* Management Pack contains overrides to enable the recommended performance collection rules.
You can modify this unsealed Management Pack to your monitoring requirements with any text editor to enable additional performance collection rules or modify the default performance collection interval for the rules. See the comments in the XML file for further details.
The file name of is *Fujitsu.Servers.PRIMERGY.OutOfBand.PerfMon.Overrides.xml*

The optional *Fujitsu PRIMERGY Out-Of-Band Servers - Collect Performance Data to OMS* Management Pack Bundle contains the same set of Temperature or Power Consumption performance collection rules. But instead of storing the performance data in the local SCOM database the performance data is independently forwarded to a connected Microsoft Operations Management Suite workspace.

The Management Pack cannot be modified or exported.
The file name of this package is *Fujitsu.Servers.PRIMERGY.OutOfBand.PerfMon.Cloud.mpb.*

The *Fujitsu PRIMERGY Out-Of-Band Server - Overrides for Collect Performance Data to OMS* Management Pack contains overrides to enable the recommended performance collection rules.
You can modify this unsealed Management Pack to your monitoring requirements with any text editor to enable additional performance collection rules or modify the default performance

collection interval for the rules. See the comments in the XML file for further details.
The file name of is *Fujitsu.Servers.PRIMERGY.OutOfBand.PerfMon.Cloud.Overrides.xml*

Since OMS performance data is stored as log entry in the cloud the collection interval can be shorter than standard SCOM performance collection interval. OMS supports collection intervals as low as 10 seconds up to 30 minutes as Near Realtime Performance (NRT) Counter.

4.2 Performance Data Collection

Performance data in SCOM is typically collected by rules. A performance data collection rule consists of a Data Source which outputs performance data, an optional single Condition Detection Module and one or more Write Actions which store the resulting performance data into the data warehouse.

The collected performance data can then visualized and filtered with standard SCOM Performance Views or Performance Widget views over a configurable time span and is available up to 100 days.

The main difference between any in-band Management Solution and Out-Of-Band Server Management is that some Out-Of-Band information is always available even when the server is powered down or the Operating System is in a hang state. When the server is powered down, the iRMC still delivers information for some, but not all sensors. This means that while the total server power consumption is low due to the standby power of the server, the sensor still delivers a reading of typically a few Watts.

The 'Ambient' temperature sensor also delivers a reading when the system is powered down, while the CPU Power Consumption sensor or CPU Temperature sensors typically do not deliver a reading.

Individual Performance Collection Rules can be enabled or disabled with standard SCOM overrides.

4.2.1 Temperature Performance Data

All 'Temperature' performance collection rules are disabled by default. You have to enable the desired performance collection rule(s) with an override.

While the actual current sensor reading value is typically evaluated by health state monitors, collecting and storing these data for long time trend analysis can be of interest for certain scenarios as well. Potential use cases scenarios include, but are not limited to, finding peak or weekly reoccurring workload areas within a data center and proactive actions such as cooling adjustments. Another option could be finding temperature hot spot locations within the data center by comparing performance data from multiple servers in different locations of the data center.

The *Fujitsu PRIMERGY Out-Of-Band Server - Performance Monitoring* Management Pack supports the following temperature sensors based on the IPMI entity ID.

Recommended Temperature Performance Monitors:

- 'Ambient' (Entity ID 0x37 from the DCMI extensions to the IPMI Spec.)

Optional Temperature Performance Monitors:

- 'Processor' (Entity ID 0x03/0x09/0x12)
- 'Memory' (Entity ID 0x20/0x08)
- 'System Board' (Entity ID 0x07)
- 'Power Supply' (Entity ID 0x0A)

Individual temperature performance data collection rules can be enabled or disabled with standard SCOM overrides.

4.2.2 Power Consumption Performance Data

All 'Power Consumption' performance collection rules are disabled by default. You have to enable the desired performance collection rule(s) with an override.

Selected PRIMERGY servers provide the possibility to monitor the actual Power Consumption within the embedded integrated Remote Management Controller (iRMC). Based on the actual server monitoring capabilities, this can be a single sensor reflecting the total power consumption of the system or additional component specific sensors.

Power Consumption sensors are implemented in the iRMC by means of IPMI sensors. Since the IPMI Specification does not define a standard Power Consumption sensor type (in comparison to the 'Voltage' or 'Current' sensor type) the sensor type for all Power Consumption sensors in the iRMC therefore is threshold based (analog, SDR Type 1), with Sensor Type set to 'Other Units Based' and the Unit specified as Watts. Entity ID and Entity instance further describe the logical entity this sensor is associated with.

The *Fujitsu PRIMERGY Out-Of-Band Server - Performance Monitoring* Management Pack supports the following Power Consumption sensors based on the IPMI entity ID.

Recommended Power Consumption Performance Monitors:

- 'Total' (Entity ID 0xE0, Instance 0)
- 'System Chassis' (Entity ID 0x17, Instance 0)
  Note: these are typically available only on Multi Node PRIMERGY servers, e.g. PRIMERGY CX

Optional Power Consumption Performance Monitors:

- 'Processor' (Entity ID 0x03/0x09/0x12)
- 'Power Supply' (Entity ID 0x0A)

Individual Power Consumption performance data collection rules can be enabled or disabled with standard SCOM overrides.

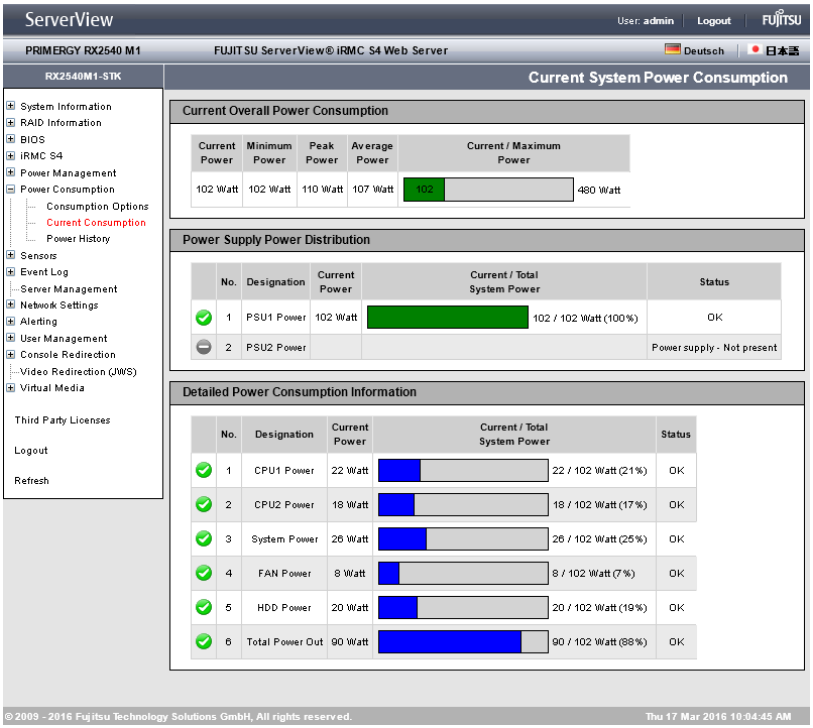

Figure 1- RX Server with detailed power consumption

Overall system or node Power Consumption is modelled in the iRMC with an IPMI OEM Entity ID of 0xE0. For this specific Entity ID the sensor with Entity Instance 0 represents the

primary/external power consumption (e.g. the energy which is billed from the provider on the power plug) and an optional sensor with Entity ID 0xE0 and Entity Instance 1 represents the secondary power available after the AC/DC or DC/DC converter(s). This sensor is typically labeled as "Total Power Out" and represents the overall Power Supply efficiency (external power minus PSU/converter losses equal available power for actual server components).

Compute Node (e.g. PRIMERGY CX) Server typically include in addition to the node specific power consumption sensor a sensor for the total chassis power consumption which is shared between all Compute Nodes.

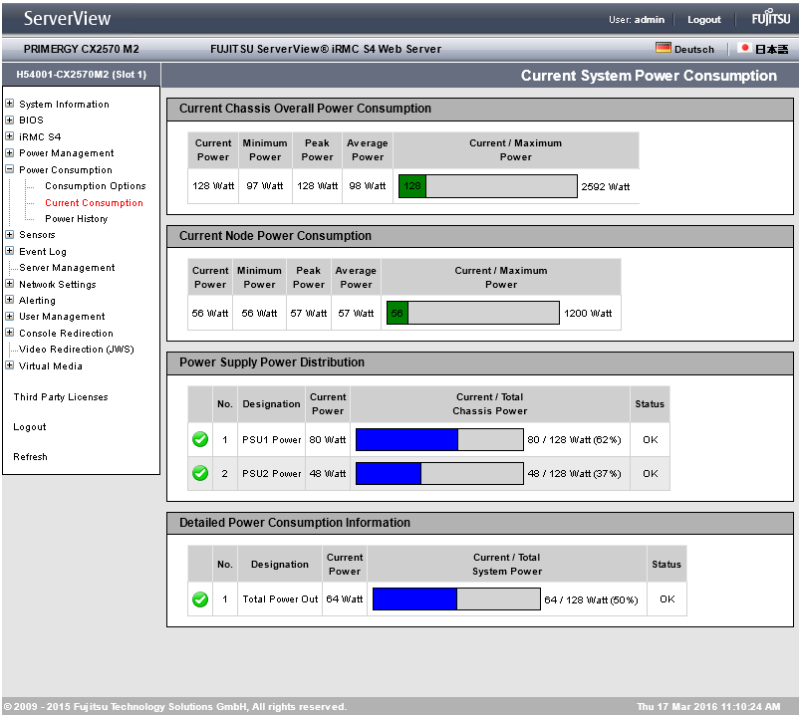

Figure 2 - Compute Node (CX) with shared Chassis and shared Power Supply sensor

4.2.3 Monitoring Repeated Communication Problems

In addition to the performance data collection rules the Management Pack also contains monitors for multiple event log entries within a certain time period in relation to specific components. If there are multiple events within the specified period of time with the same

event number and the same Out-Of-Band Server IP in the event data the Health State of the Communication Monitor Object is set and a Warning alert is generated.

These monitors will reset itself to a healthy state if there are no more event log entries written within a second configurable timespan (the default value is 3000 seconds which is slightly larger than 3 times the default Performance Data collection interval of 900 seconds).

You can change the settings for these monitors with an override.

When you change the configuration for the Performance Data collection rules keep in mind that you also might need to re-configure the values for the associated repeated communication monitor.

Repeated Communication Problem	Repeat Count	Time Interval in Seconds	Remarks
Sensor Data (SDR) retrieval	3	7200 (2 hours)	Detected and logged in Temperature Performance Sensor Monitoring (only when the iRMC System Report interface is used).
Temperature	3	7200 (2 hours)	Detected and logged during Temperature Performance Sensor Monitoring.
Power Consumption	3	7200 (2 hours)	Detected and logged during Power Consumption Sensor Monitoring.

4.3 Views

The Management Pack provides standard SCOM Performance views for the recommended sensor instances. You can create additional performance views or dashboard views with widgets in the SCOM console if needed. See page 24 for details.

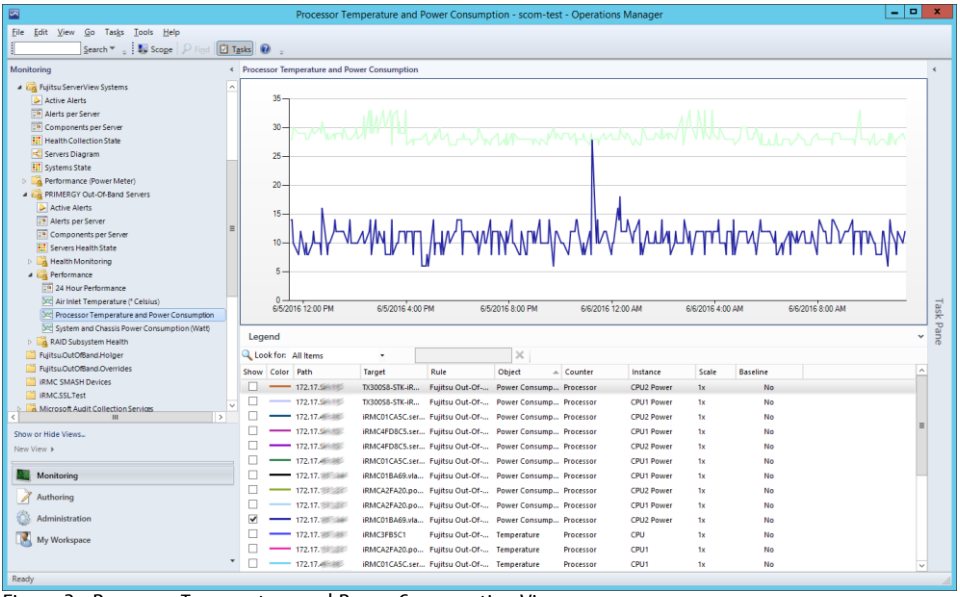

Figure 3 - Processor Temperature and Power Consumption View

4.3.1 Dashboard Views

In addition to standard SCOM Performance Views Microsoft provides a set of flexible Widgets which can be used to author complex Dashboard views. Dashboard Views can contain information from different data sources in multiple tiles, providing a flexible overview based on specific needs of the SCOM user. For step-by-step guide of creating a Dashboard View containing a Status Widget and a Performance Widget see section 5.6.3.

5 Appendix

5.1 Supported PRIMERGY servers

The *Out-Of-Band Performance Monitoring Management Pack* is an Add-On Management Pack to the *Base Out-Of-Band Server - Base Management Pack*, so the requirements for the Out-Of-Band Server to be supported in SCOM apply also to the *Out-Of-Band Performance Monitoring Management Pack*.

5.2 List of performance collection rules

5.2.1 SCOM Temperature Performance Collection Rules

Rule Name	Default Enabled	Default Interval
Fujitsu Out-Of-Band 'Ambient (°C)' Temperature Performance Data Collection Rule	False	900
Fujitsu Out-Of-Band 'Processor (°C)' Temperature Performance Data Collection Rule	False	900
Fujitsu Out-Of-Band 'Memory (°C)' Temperature Performance Data Collection Rule	False	900
Fujitsu Out-Of-Band 'Power Supply (°C)' Temperature Performance Data Collection Rule	False	900
Fujitsu Out-Of-Band 'System Board (°C)' Temperature Performance Data Collection Rule	False	900

5.2.2 SCOM Power Consumption Performance Collection Rules

Rule Name	Default Enabled	Default Interval
Fujitsu Out-Of-Band 'Total (Watt)' Power Consumption Performance Data Collection Rule	False	900
Fujitsu Out-Of-Band 'System Chassis (Watt)' Power Consumption Performance Data Collection Rule for Multi Node Systems	False	900
Fujitsu Out-Of-Band 'Processor (Watt)' Power Consumption Performance Data Collection Rule	False	900
Fujitsu Out-Of-Band 'Power Supply (Watt)' Power Consumption Performance Data Collection Rule	False	900

5.2.3 OMS Temperature Performance Collection Rules

Rule Name	Default Enabled	Default Interval
Fujitsu Out-Of-Band 'Ambient (°C)' to OMS Temperature Data Collection Rule	False	600
Fujitsu Out-Of-Band 'Processor (°C)' to OMS Temperature Data Collection Rule	False	600
Fujitsu Out-Of-Band 'Memory (°C)' to OMS Temperature Data Collection Rule	False	600
Fujitsu Out-Of-Band 'Power Supply (°C)' to OMS Temperature Data Collection Rule	False	600

Fujitsu Out-Of-Band 'System Board (°C)' to OMS Temperature Data Collection Rule	False	600

5.2.4 OMS Power Consumption Performance Collection Rules

Rule Name	Default Enabled	Default Interval
Fujitsu Out-Of-Band 'Total (Watt)' to OMS Power Consumption Data Collection Rule	False	300
Fujitsu Out-Of-Band 'System Chassis (Watt)' to OMS Power Consumption Data Collection Rule for Multi Node Systems	False	300
Fujitsu Out-Of-Band 'Processor (Watt)' to OMS Power Consumption Data Collection Rule	False	300
Fujitsu Out-Of-Band 'Power Supply (Watt)' to OMS Power Consumption Data Collection Rule	False	300

5.3 Entries in the Operations Manager's Event Log

The PowerShell Script for retrieving the PRIMERGY Out-Of-Band Server performance data writes messages to the Operations Manager's Event Log when an error occurs.

These entries can be found on the SCOM server under the name *Health Service Script*, while the message text specifies which Script generated the message.

Rules defined in the MP check the event log for the above mentioned entries, which, if present, are displayed in the *Active Alerts* view.

The following table lists the used error numbers from the Out-Of-Band Performance Monitoring Management Pack:

Error Number	Script Name	Description
8209	PerfMonMonitor.ps1	Used to log generic problems encountered during Discovery Script execution, like exceptions or no data
8231	PerfMonMonitor.ps1	No Sensor Data Record information available. If this is a repeated event, an alert will be generated.
8233	PerfMonMonitor.ps1	No Temperature information available If this is a repeated event, an alert will be generated.
8237	PerfMonMonitor.ps1	No Power Consumption information available If this is a repeated event, an alert will be generated.
8299	All (Logging/Tracing)	Error parsing trace/logging XML configuration file.
8399	All (WebRequest)	SSL Certificate Error (CA related)
8499	All (WebRequest)	SSL Certificate Error (CN related)
8599	All (WebRequest)	Used to indicate 'no response' from the iRMC after retries. This is typically the case when the https handshake is aborted internally within 5 seconds and retries could not solve the problem.
8699	All (WebRequest)	Used to indicate invalid credentials for the iRMC access.
8799	All (WebRequest)	Used to indicate a timeout when accessing an iRMC resource, e.g. when the iRMC is not reachable from the network.
8999	All (WebRequest)	Used to indicate 'iRMC Busy'. The Web Server has responded with the 503 HTTP status code (Service Unavailable). This HTTP response is returned when there is no connection slot available to handle the request or the iRMC is out of resources.

5.4 Creating test entries in the Windows Event Log

To check whether an rule alert is enabled, disabled, or recognized, you can create test entries for these events in the Event Log of the relevant server using PowerShell.

The easiest way of doing so is by using the Operations Manager Shell.

See also https://msdn.microsoft.com/en-us/library/bb437630.aspx for details of the parameters.

- Open a 'Operations Manager Shell' window
- In this Power Shell window type the following commands (replace parameters as needed)
  - `$ScriptApi = New-Object -comObject "MOM.ScriptAPI"`
  - `$ScriptApi.LogScriptEvent("Event Source String" , 4711, 2, "Event Message String")`

5.5 Creating log files

Log files can be created for error analysis. The log files are stored in the subdirectory *SVISCOM\SVISCOM-OutOfBand* of the directory entered in the system environment variable *TEMP*. Usually this is the *C:\Windows\TEMP* directory (where *C:* represents the system partition in this example).

Logging options are defined in the file *SVISCOM-OutOfBand.xml* in this folder. If the file does not exist or was created by an older version of the Management Pack, a copy of the file with the name *SVISCOM-OutOfBand.xm_* is generated on the SCOM server in the *%TEMP%\SVSCOM\SVISCOM-OutOfBand* folder.

Note that changes to the logging options will only be added to the *SVISCOM-OutOfBand.xm_* file. *SVISCOM-OutOfBand.xml* from an older version of the ServerView Out-Of-Band Server Integration Pack may need to be updated accordingly.

*SVISCOM-OutOfBand.xm_* contains debug options for all discovery and monitoring features of the management pack. See *SVISCOM-OutOfBand.xm_*on the SCOM server for details.

In the case of error analysis using log files proceed as follows.

- Rename *SVISCOM-OutOfBand.xm_* on the SCOM server to *SVISCOM-OutOfBand.xml*. If *SVISCOM-OutOfBand.xml* already exists, check that all options of *SVISCOM-OutOfBand.xm_* also exist in the existing version of *SVISCOM-OutOfBand.xml*.
- Check the debug options (documented in detail within the *SVISCOM-OutOfBand.xm_* file) for each feature to be monitored and set to the desired value.

The following log files are created as required:

— *PerfMonMonitorTrace_<servername>.log*

— *WARNINGTrace_<servername>.log*

— *ERRORTrace_<servername>.log*

These files must be sent to Fujitsu Support for further analysis.

If you wish to disable the creation of log files again, delete or rename *SVISCOM-OutOfBand.xml* or change the logging options within the file.

Note that the *WARNINGTrace_* and *ERRORTrace_* files will only be created on demand if the scripts detect a warning or error condition during script execution and any logging is enabled for the Out-Of-Band server.

5.5.1 Currentness of log files

When Fujitsu Management Packs are imported log files are generated promptly only if the initialization file is already available.

If the management pack already is imported log files are generated depending on the execution interval if the discovery or monitoring scripts.

In the worst case, 24 hours are necessary for all log files to be generated.

The server and component discovery is executed by default every 4 hours.

After the component discovery was successful, monitoring is run every 5 minutes.

Alternatively:

To create a current set of log files, put the server in maintenance mode for a short time and let SCOM exit the maintenance mode.

5.6 How to create additional Performance Monitoring Views

All performance collection rules are disabled by default. You have to enable the desired performance collection rule(s) with an override.

Performance Views and the Performance Widget provide a slightly different set of functionality. Select the building block which best suits your needs.

Make sure the Performance Data collection rule for the Sensor Type of interest is enabled via overrides. Temperature and Power Consumption Sensors are identified by their IPMI Entity ID which maps directly into the Performance Counter Name.

5.6.1 Create a Performance View based on specific rules

- In the 'My Workspace' Pane or an unsealed Management Pack in the Monitoring Pane (e.g. the Management Pack where you saved your overrides) create a 'Performance View' via Right Click → New → Performance View and give it a descriptive Name (e.g. 'Power Supply Power Consumption')
    a. Select an existing server group (e.g. 'Fujitsu Out-Of-Band Servers Group') or create a new group containing only the servers of interest.
    b. Select the Checkbox 'with a specific counter name', and click the underlined specific in the criteria selection pane.
    c. Select one or multiple rules, confirm all selections with 'OK'
    d. When the view is displayed, select one or more performance counter instances of interest.

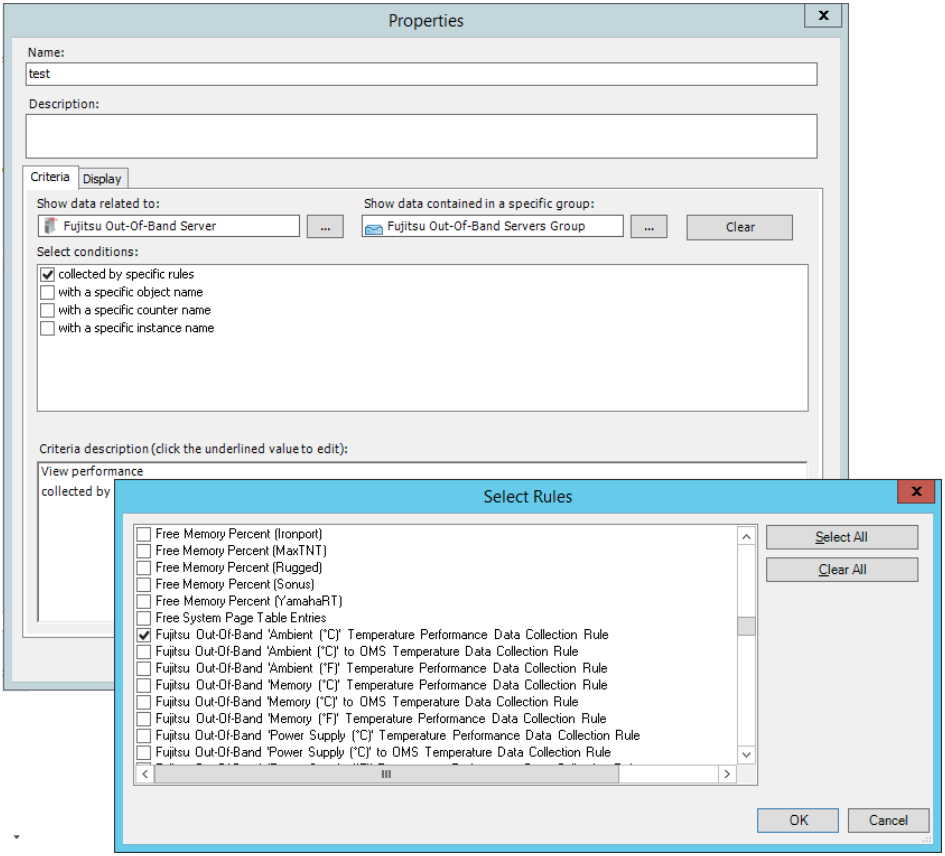

Figure 4 - Performance View by specific rules

You can later on change the view settings and configuration via Right Click → Properties.

5.6.2 Create a Performance View based on specific performance objects and counters

- In the 'My Workspace' Pane or an unsealed Management Pack in the Monitoring Pane (e.g. the Management Pack where you saved your overrides) create a 'Performance View' via Right Click → New → Performance View and give it a descriptive Name (e.g. 'Rack Server Processor Power Consumption')

a. Select an existing server group (e.g. 'Fujitsu Out-Of-Band RX Servers Group') or create a new group containing only the servers of interest.

b. Select the Checkbox 'with a specific object name', and click the underlined specific in the criteria selection pane. The following Object names are supported:

    i. Power Consumption
    ii. Temperature

c. Select the Checkbox 'with a specific counter name', and click the underlined specific in the criteria selection pane.

d. For Power Consumption Sensors the following Counter Names based on the IPMI Entity ID are supported:

    i. Total
    ii. System Chassis
    iii. Processor
    iv. Power Supply

e. For Temperature Sensors the following Counter Names based on the IPMI Entity ID are supported:

    i. Ambient
    ii. System Board
    iii. Processor
    iv. Memory
    v. Power Supply

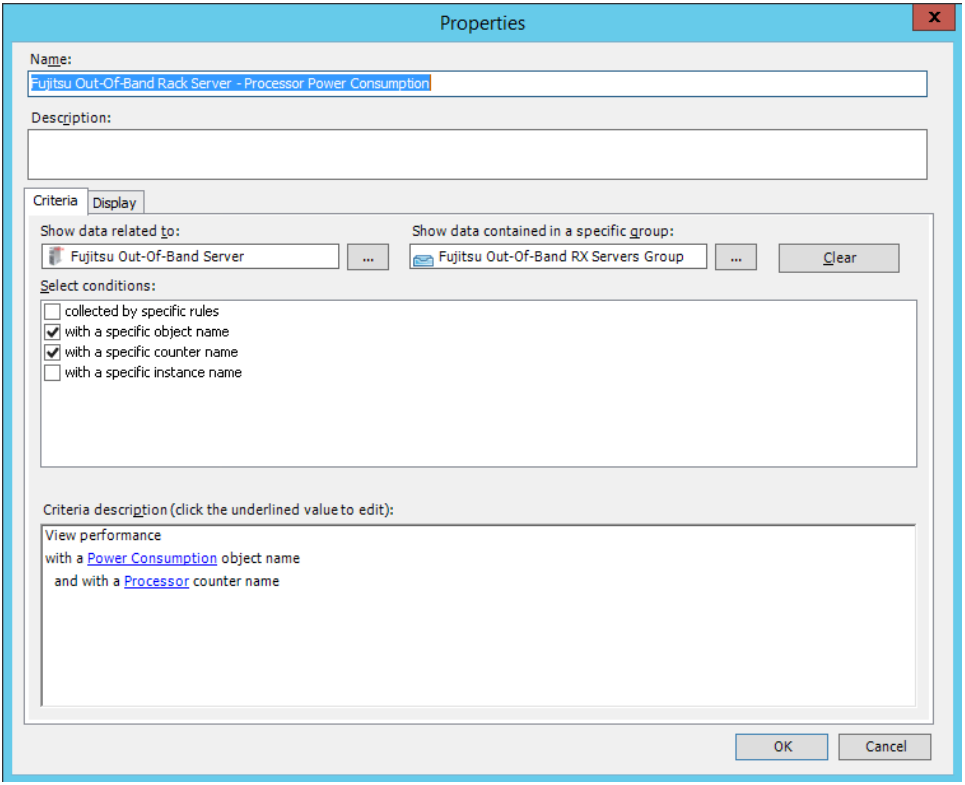

Figure 5 - Performance Object and Counter Selection

5.6.3 Create a Dashboard View containing a State and a Performance Widget

The following steps show how to create a dashboard view containing a state widget for the Out-Of-Band Servers as well as a Performance Widget showing the Systems Power Consumption.

- In the 'My Workspace' Pane or an unsealed Management Pack in the Monitoring Pane (e.g. the Management Pack where you saved your overrides) create a 'Dashboard View' via Right Click → New → Dashboard View and give it a descriptive Name (e.g. 'Server State and Power Consumption')

5.6.3.1 Define the dashboard layout

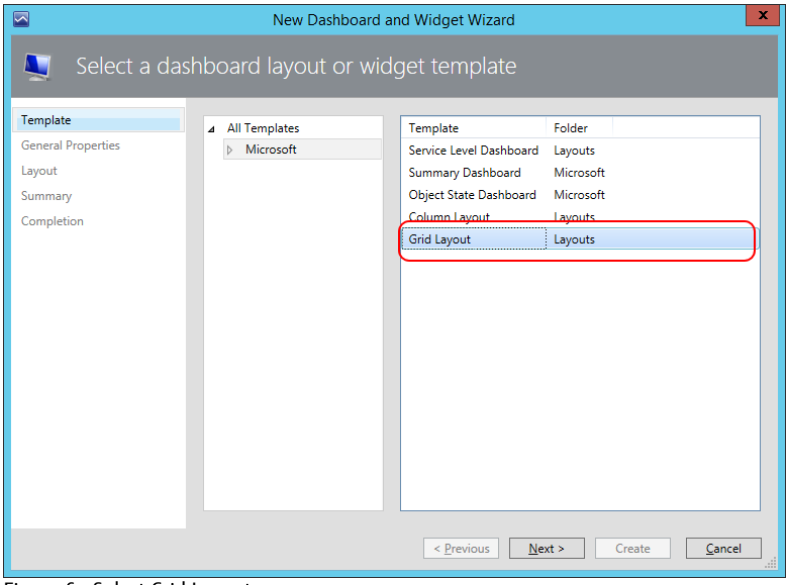

Figure 6 - Select Grid Layout

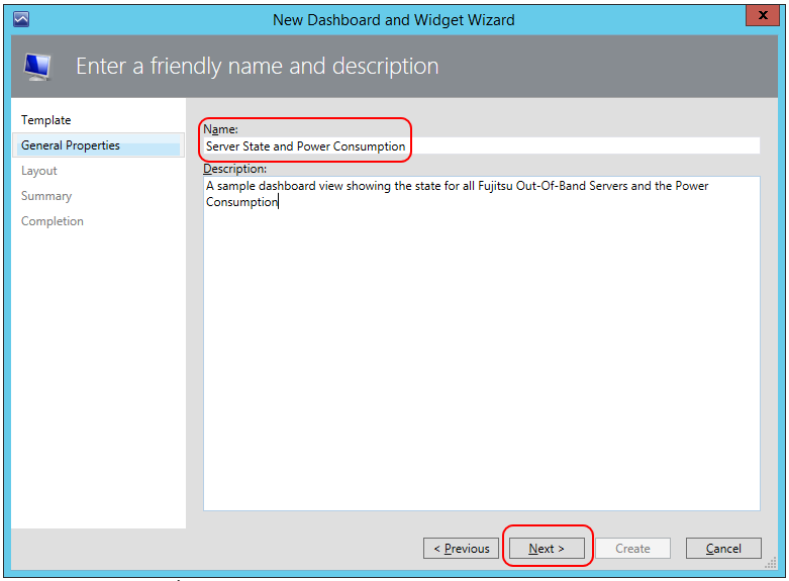

Figure 7 - Give it a descriptive name

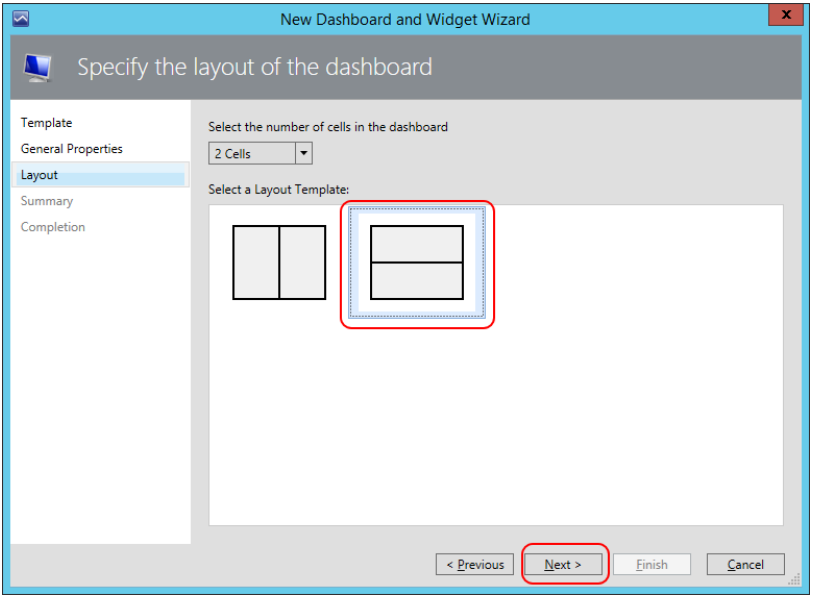

Figure 8 - Select 2 Cell Layout

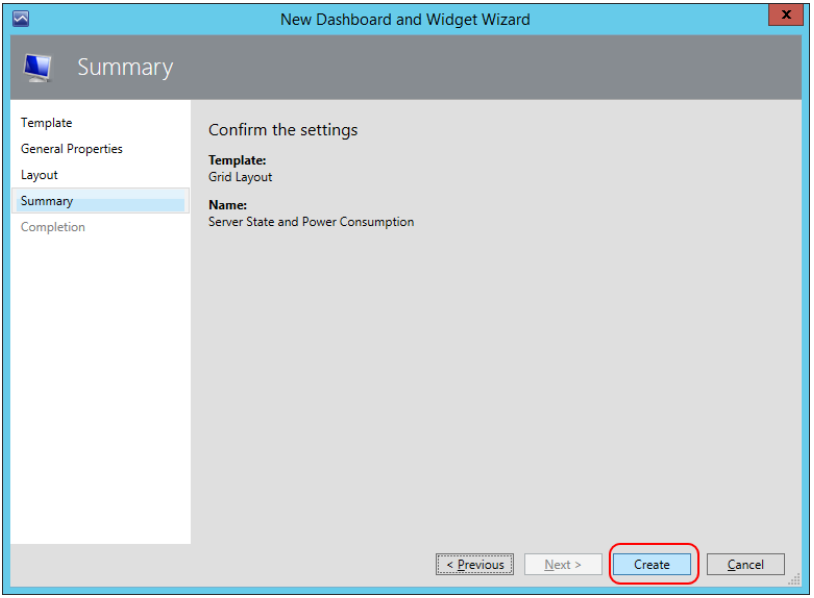

Figure 9 - Confirm settings and create the View layout

5.6.3.2 Configuring the State Widget

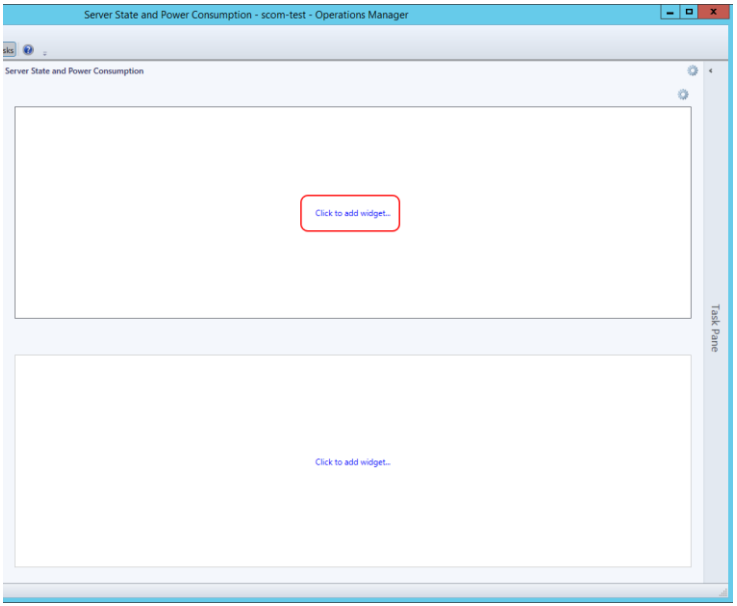

Figure 10 - Select the cell where you want to place the state widget

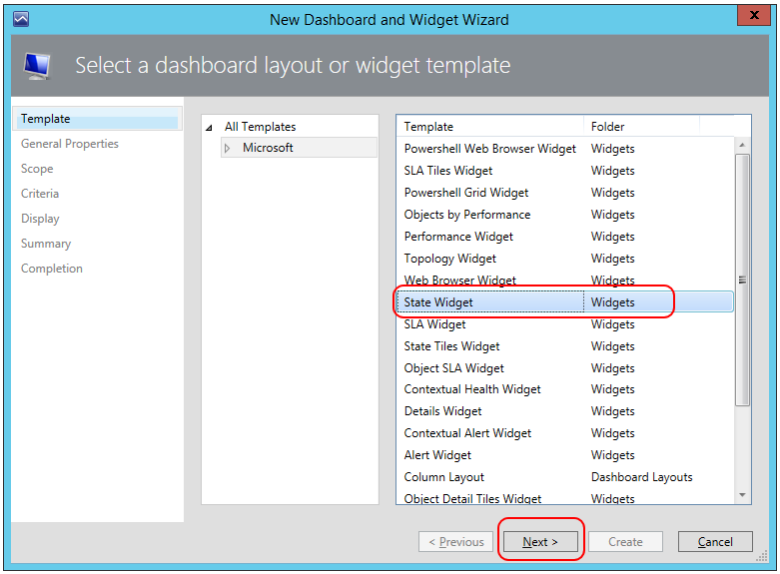

Figure 11 - Select State Widget

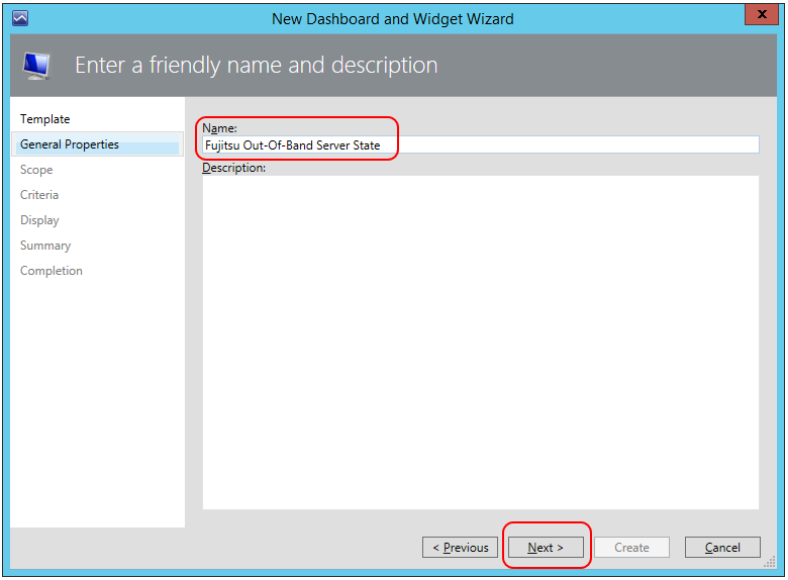

Figure 12 - Give the state widget a descriptive name

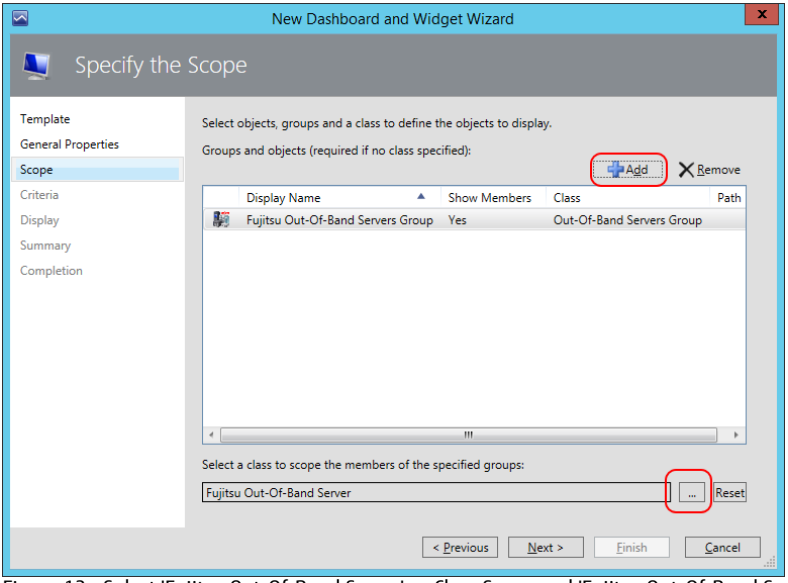

Figure 13 - Select 'Fujitsu Out-Of-Band Server' as Class Scope and 'Fujitsu Out-Of-Band Servers' Group as Object. Note: You can add multiple Groups containing Fujitsu Out-Of-Band Servers if needed.

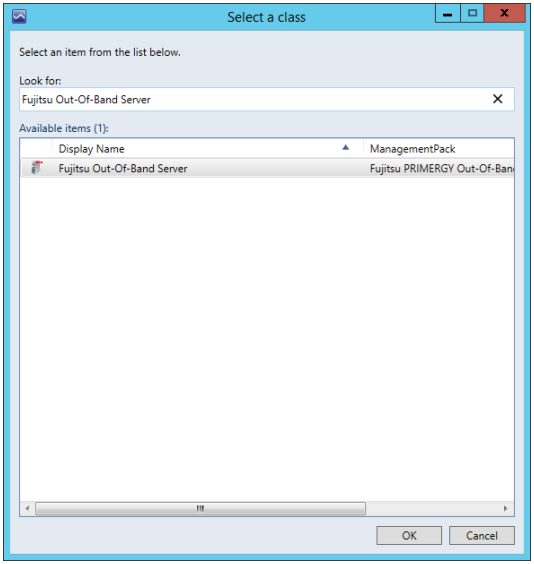

Figure 14 - Class Selection. Note: This defines which properties can be displayed as columns later on.

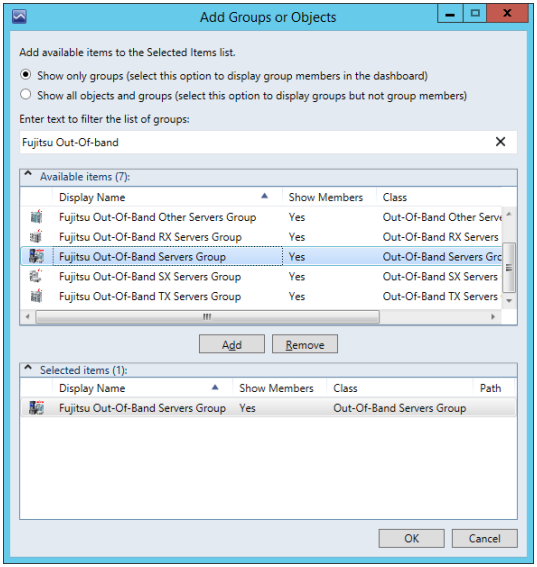

Figure 15 - Group Selection. Note: This defines which objects are shown in the state view.

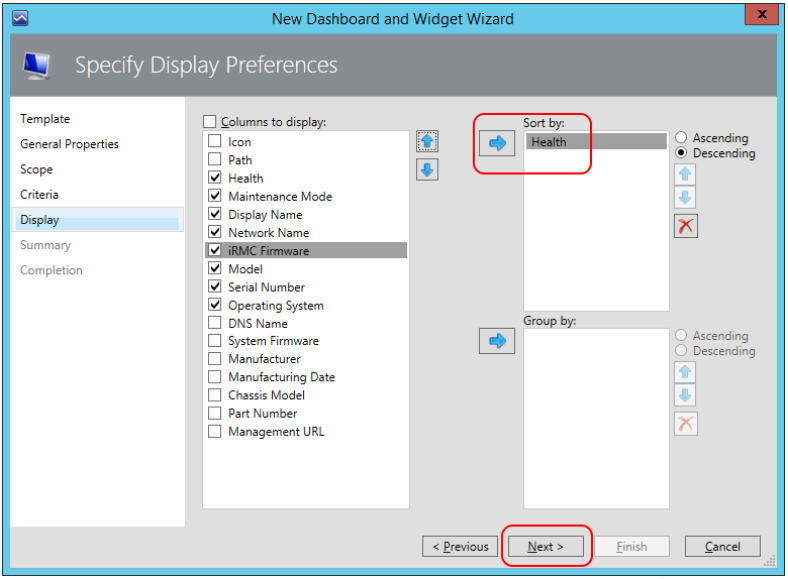

Figure 16 - Select Object Properties to be shown. Optionally select sorting (e.g. by health state) and re-order columns as needed

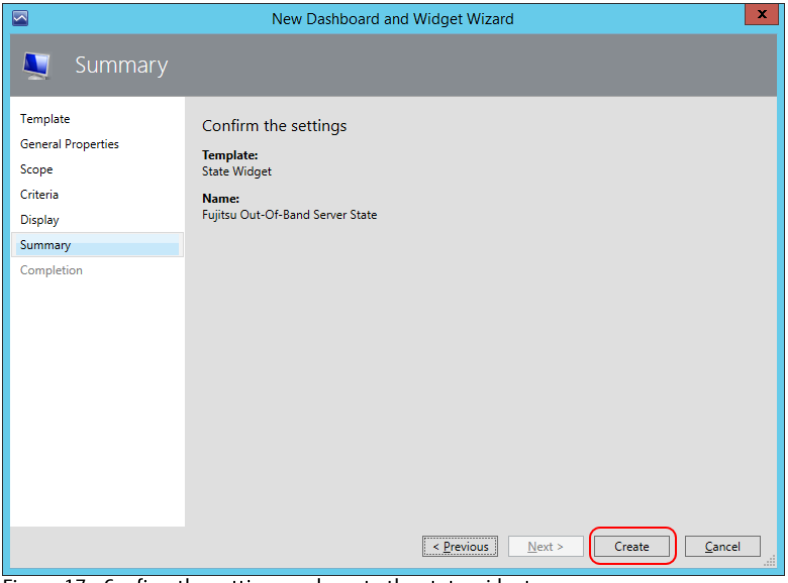

Figure 17 - Confirm the settings and create the state widget

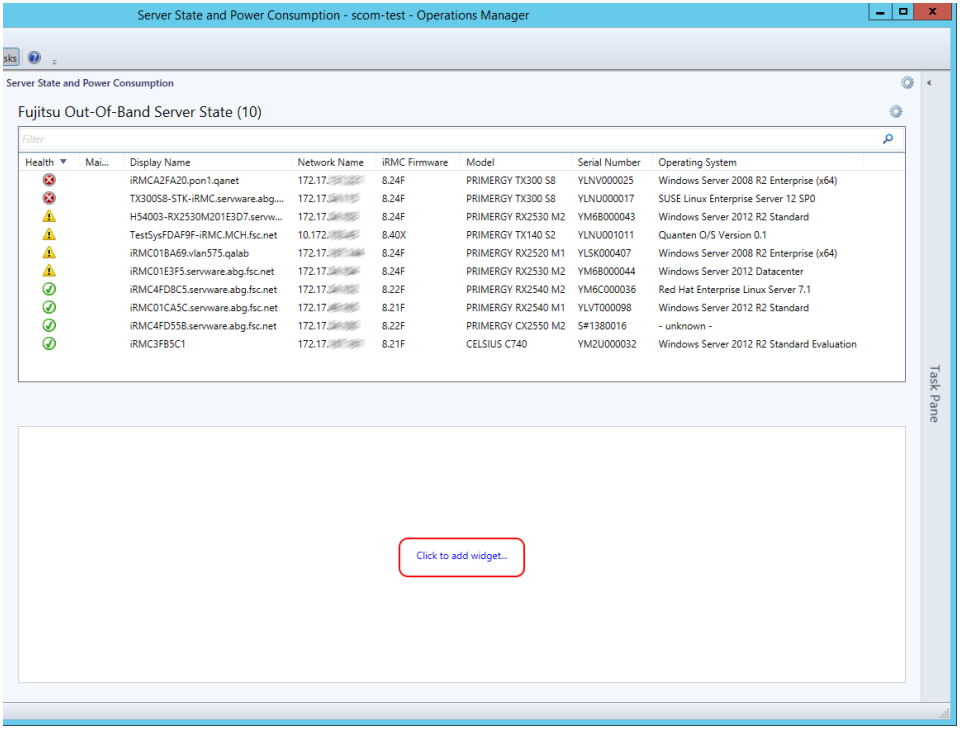

Figure 18 - Dashboard view with the finished State Widget

5.6.3.3 Configuring the Performance Widget

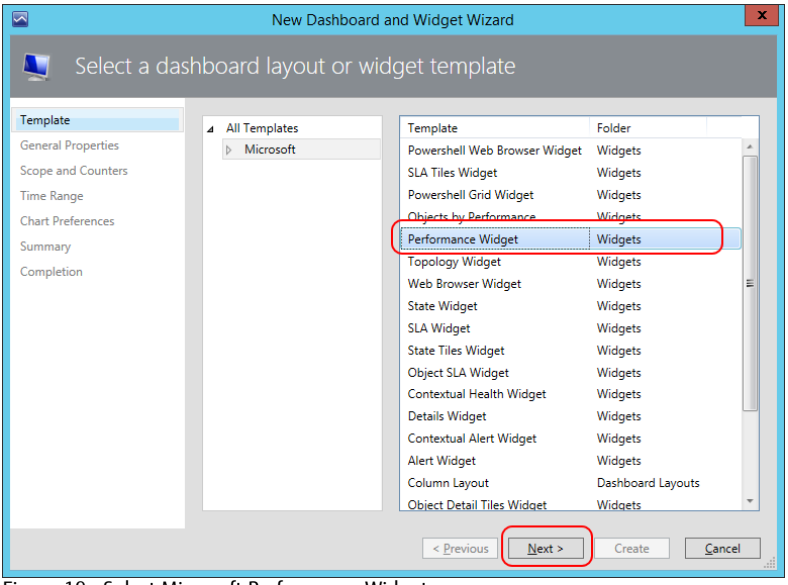

Figure 19 - Select Microsoft Performance Widget

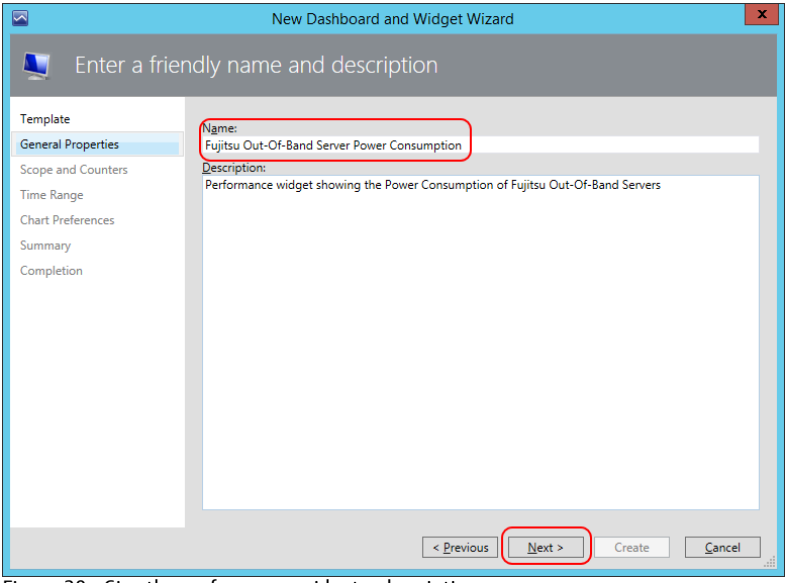

Figure 20 - Give the performance widget a descriptive name

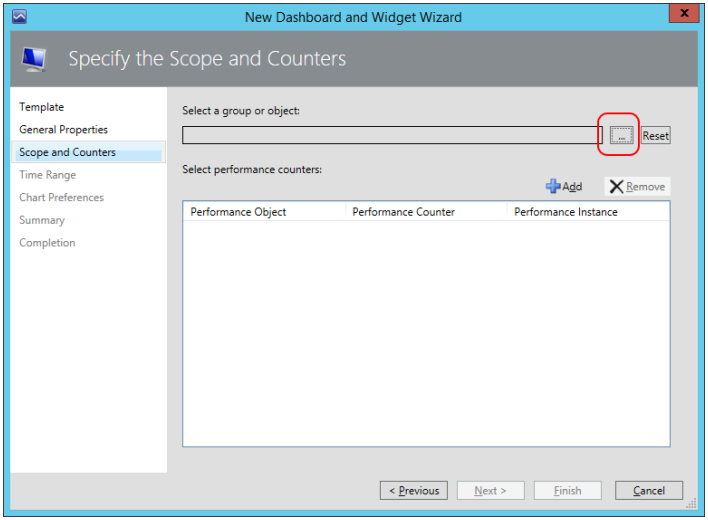

Figure 21 - Click Group Selection

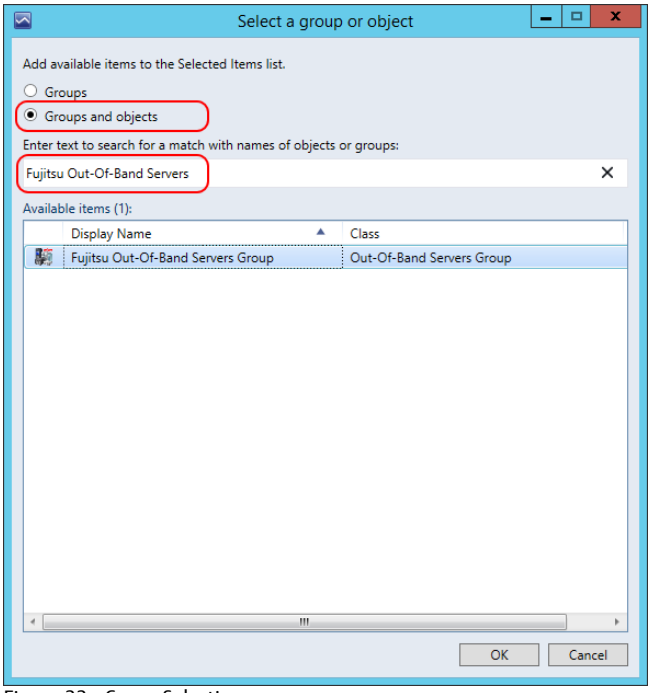

Figure 22 - Group Selection

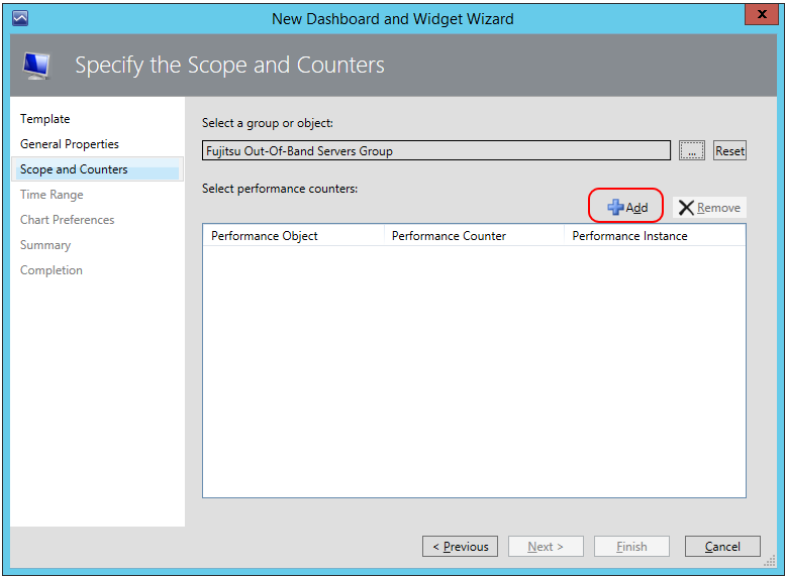

Figure 23- Click Performance Counter Selection

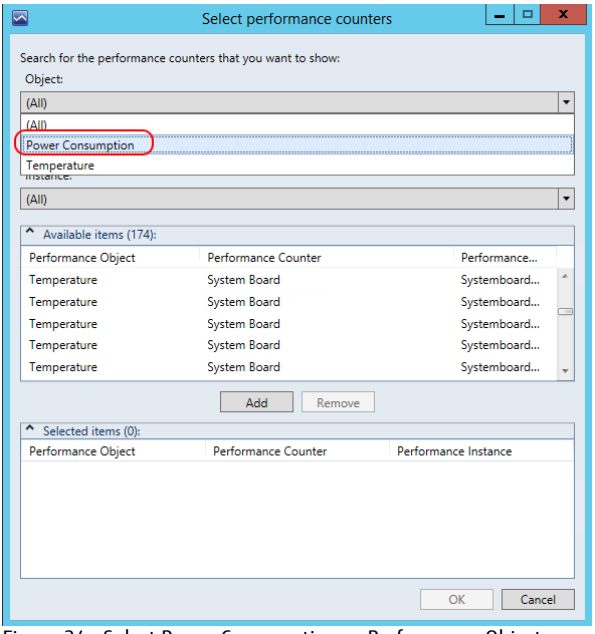

Figure 24 - Select Power Consumption as Performance Object

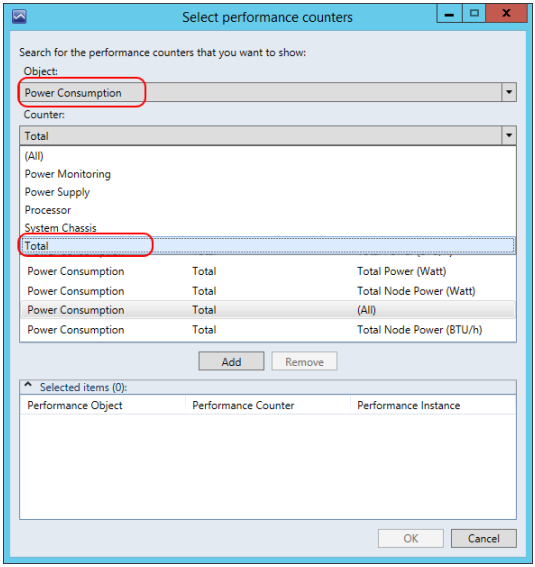

Figure 25 - Select Total as Performance Counter

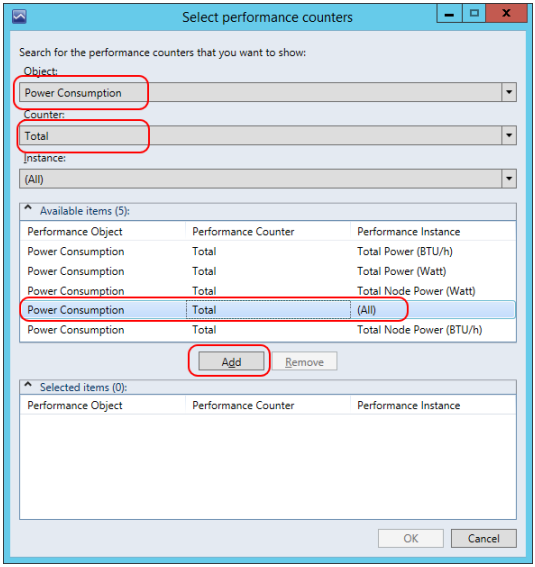

Figure 26 - Scroll down the list of available instances and select the 'All' entry. Click 'Add'

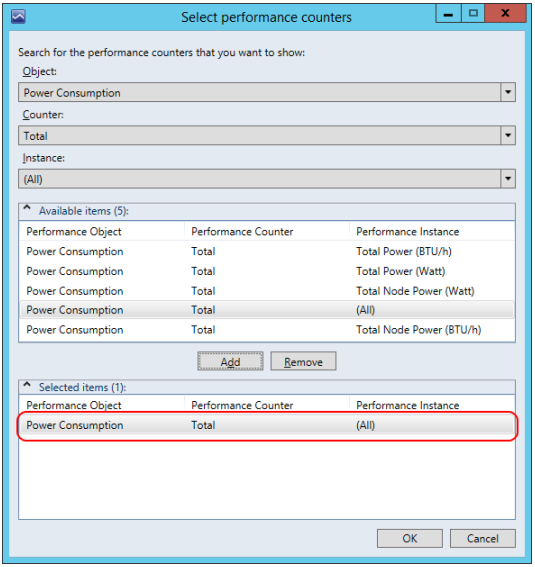

Figure 27 - Verify the selection and click 'OK'

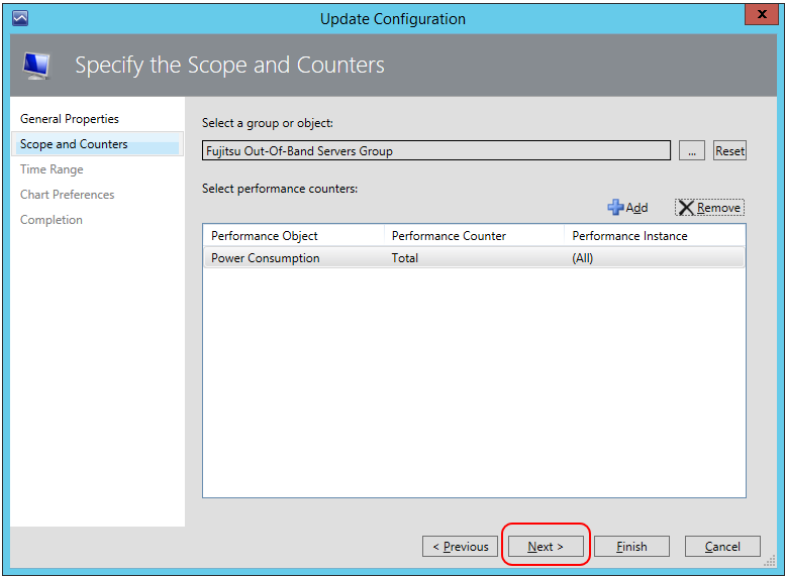

Figure 28 - Click 'Next' in the Wizzard

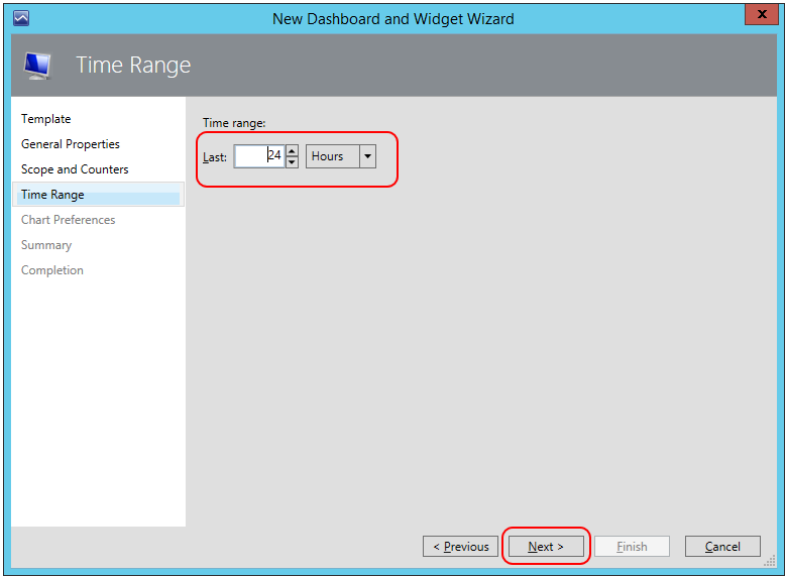

Figure 29 - Select time range for the performance data

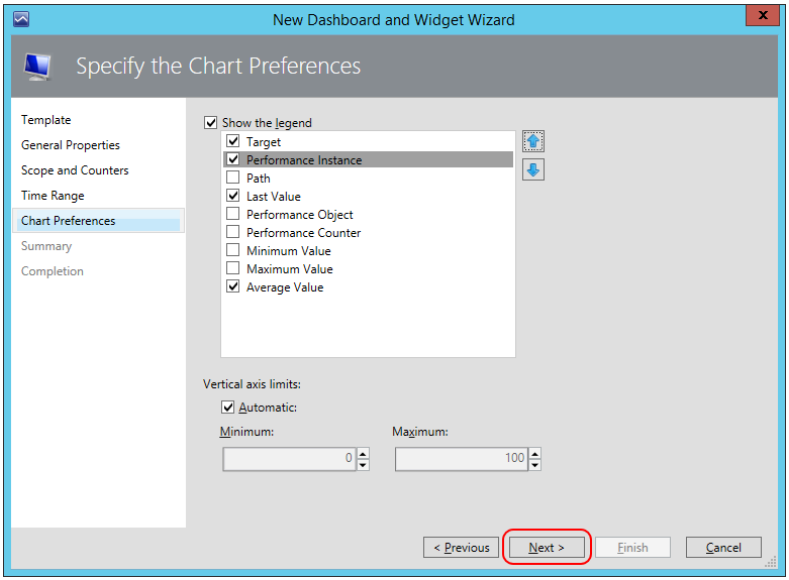

Figure 30 - Select the columns you want to display in the legend area of the widget. You can re-arrange the order as needed.

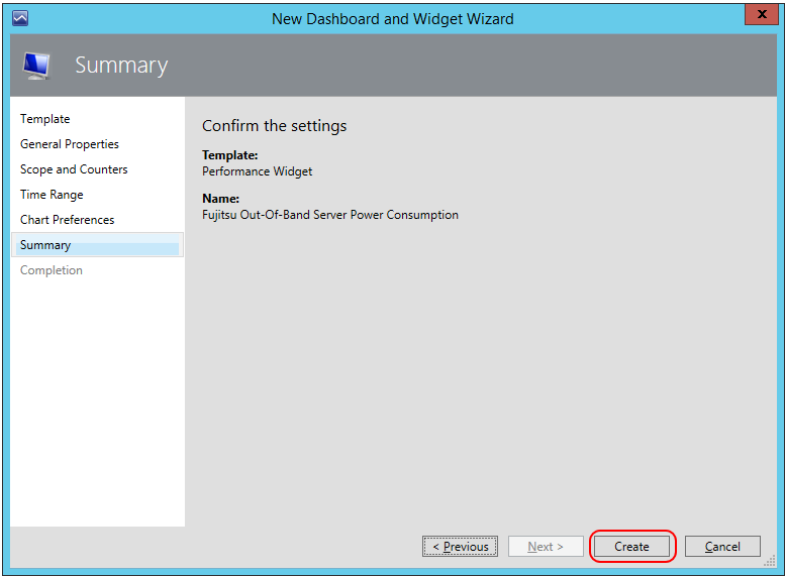

Figure 31 - Confirm Settings and Click 'Create'

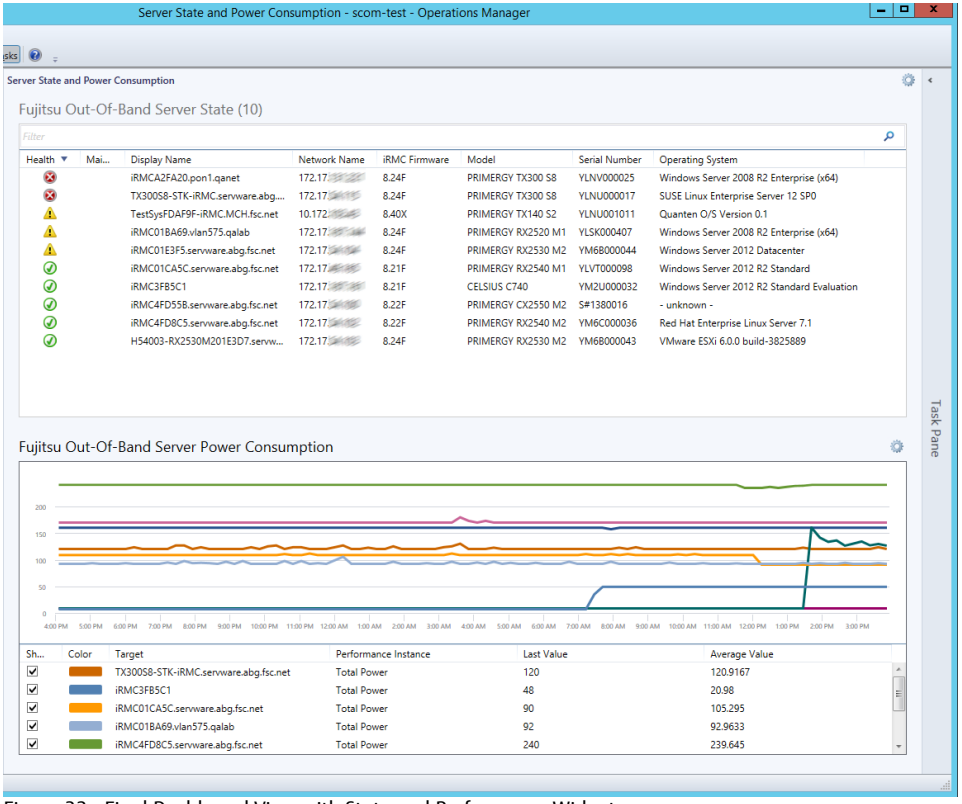

Figure 32 - Final Dashboard View with State and Performance Widget