

Apache HTTP Server Management Pack for System Center – Operations Manager

Microsoft Corporation

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Apache HTTP Server Management Pack Guide

The Apache HTTP Server Management Pack helps you monitor installations of Apache HTTP Server running on Linux computers that are managed by System Center Operations Manager.

The Apache HTTP Server Management Pack alerts you to problems with components such as web sites and certificates so you can continuously monitor the services on which your business depends.

This guide was written based on the 7.6.1065.0 version of the Apache HTTP Server Management Pack.

## Guide History

| **Release Date** | **Changes** |
| --- | --- |
| 04/16/2015 | Original release of this guide |
| 10/12/2016 | General Availability Update |

## Supported Configurations

### Supported Versions of Apache HTTP Server

* Version 2.2
* Version 2.4

### Supported Installations of Apache HTTP Server

Apache HTTP Server installations are discovered and supported for monitoring when:

* Apache HTTP Server was installed from a package provided by the Linux distribution vendor (i.e. from the distribution repository)
* Apache HTTP Server was compiled and installed from source, using the default file and directory locations

### Supported Operating Systems

* All versions of Linux supported by the current version of Operations Manager

### Prerequisites

The System Center Linux agent must be installed on the managed computer. For agent prerequisites, see: [Supported UNIX and Linux Operating](http://go.microsoft.com/fwlink/?LinkID=244214)

[System Versions](http://go.microsoft.com/fwlink/?LinkID=244214) (http://go.microsoft.com/fwlink/?LinkID=244214)

## Files in this Management Pack

The following table describes the files that are included in this management pack:

| **File name** | **Display name** |
| --- | --- |
| Microsoft.Oss.Library | Microsoft Monitoring Library for Open Source Software |
| Microsoft.ApacheHTTPServer.Library.mpb | Microsoft Apache HTTP Server Library |

## Management Pack Purpose

The Apache HTTP Server Management Pack provides both proactive and reactive monitoring of Apache HTTP Server running on managed Linux computers.

The monitoring provided by this management pack includes availability and configuration monitoring, performance data collection, and default thresholds. You can integrate the monitoring of Apache HTTP Server components into your service-oriented monitoring scenarios.

In addition to health monitoring capabilities, this management pack includes reports, diagnostics, tasks, and views that enable near real-time diagnosis and resolution of detected issues.

For details on the discoveries, rules, monitors, views, and reports contained in this management pack, see [Appendix: Management Pack Contents](#zf475f3cc57b84a049d89cda7b1f37ba8).

## Monitoring Scenarios

| **Monitoring scenario** | **Description** | **Associated rules and monitors** |
| --- | --- | --- |
| Apache HTTP Server Health | Availability and performance monitoring for Apache HTTP Server instances | See Appendix: ManagementPack Contents |
| Virtual Host Health | Availability and performance monitoring for Virtual Host instances | See Appendix: ManagementPack Contents |
| Virtual Host SSL Certificate Health | Availability and performance monitoring for SSL Certificate instances | See Appendix: ManagementPack Contents |

## Configuring the Apache HTTP Server Management Pack

This section provides guidance on configuring and tuning this management pack.

 [Best Practice: Create a Management Pack for Customizations](#z2)

 Deploying and Enabling the CIM Provider

 [Tuning Performance Threshold Monitors](#_Tuning_Performance_Threshold)

### Best Practice: Create a Management Pack for Customizations

By default, Operations Manager saves all customizations such as overrides to the Default Management Pack. As a best practice, you should instead create a separate management pack for each sealed management pack you want to customize.

When you create a management pack for the purpose of storing customized settings for a sealed management pack, it is helpful to base the name of the new management pack on the name of the management pack that it is customizing, such as “AIX Customizations”.

Creating a new management pack for storing customizations of each sealed management pack makes it easier to export the customizations from a test environment to a production environment. It also makes it easier to delete a management pack, because you must delete any dependencies before you can delete a management pack. If customizations for all management packs are saved in the Default Management Pack and you need to delete a single management pack, you must first delete the Default Management Pack, which also deletes customizations to other management packs.

### Deploying and Enabling the CIM Provider

Monitoring of Apache HTTP Server requires that the corresponding CIM Provider s deployed to the managed computer. The CIM Provider package includes an OMI Provider, which is registered with the Linux agent for Operations Manager, as well as an Apache module (mod\_cimprov), which exposes data about the Apache HTTP Server to the OMI provider. The Apache module (mod\_cimprov) must be loaded in the Apache HTTP Server configuration to enable monitoring.

**Deploying the CIM Provider**

The Apache CIM provider package is automatically deployed during the installation of the Linux agent Operations Manager, if Apache HTTP Server is detected at that time. This detection and automatic installation occurs when installing the Linux agent for the first time on a computer, and it also occurs when upgrading a previous agent version to the current version. If the Apache HTTP Server is installed to the Linux computer *after* the Operations Manager agent is installed, the CIM Provider can be manually installed through the following mechanisms:

**Installing the Apache CIM Provider:**

* Copy the appropriate “scx” installation bundle to the target computer. The available packages can be found on the Management Server in the Operations Manager program files directory, under \Server\AgentManagement\UnixAgents\DownloadedKits. For example, an Ubuntu 14.04 x64 server would require the *scx-1.6.0-<build number>.universald.1.x64.sh* package.
* Run the installation package with the -*-upgrade --force* switches. This will reinstall the package but not modify any existing configuration customization:

|  |
| --- |
| sudo sh ./scx-1.6.0-156.universald.1.x64.sh --ugprade --force  |

* The “scx” installation bundle contains .rpm or .deb packages for OMI and the Operations Manager agent providers, as well as bundles for additional software monitoring, such as Apache HTTP Server. If you prefer to install the CIM Provider with native package managers such as RPM or DPKG, you can extract the bundle to access the .rpm or .deb packages:

|  |
| --- |
| sudo sh ./scx-1.6.0-156.universald.1.x64.sh --extractcd scxbundle.\*sudo ./apache-cimprov-1.0.0-423.universal.1.x86\_64.sh --extractcd apache\_24 #For Apache HTTP Server version 2.4 |

**Enabling the CIM Provider**

In order to enable monitoring, the apache-cimprov module must be loaded into the Apache HTTP Server configuration (and the Apache HTTP Server must be restarted). Operations Console tasks and a script on the Linux computer are provided to simplify this configuration.

***Enabling the CIM Provider from Operations Console***

In the **Apache HTTP Servers** view, select the Apache server that you wish to manage and run the **Load Monitoring Module** task. To unload the module, run the **Unload Monitoring Module** task. These tasks will restart the Apache HTTP Server.

*Note: when the apache-cimprov module is unloaded, it will remain in a monitored state until OMI server is restarted and the periodic management pack discovery or Update Discovered Properties task is run.*

***Enabling the CIM Provider from the Linux Computer***

To enable the CIM Provider, run the *apache\_config.sh* script with the “-c” argument:

|  |
| --- |
| sudo /opt/microsoft/apache-cimprov/bin/apache\_config.sh -c |

To disable the CIM Provider, run the apache\_config.sh script with the “-u” argument

|  |
| --- |
| sudo /opt/microsoft/apache-cimprov/bin/apache\_config.sh -u |

*Note: when the apache-cimprov module is unloaded, it will remain in a monitored state until OMI server is restarted and the periodic management pack discovery or Update Discovered Properties task is run.*

**Automating Loading of the Apache Module**

*Note: loading of the apache-cimprov module will restart the Apache HTTP Server and will cause a brief period of unavailability for the web server.*

The Management Pack task to load the apache-cimprov module can be run with PowerShell. This is useful for automating the deployment. The example script below illustrates use of the Start-SCOMTask cmdlet to invoke the Management Pack task for instances of Apache HTTP Servers that do not have the Apache module loaded.

|  |
| --- |
| $MgmtServerName = "localhost"ipmo "C:\Program Files\Microsoft System Center 2012 R2\Operations Manager\Powershell\OperationsManager\OperationsManager.psd1"New-SCOMManagementGroupConnection $MgmtServerName #Get the installation task$InstallTask = Get-SCOMTask -Name:"Microsoft.ApacheHTTPServer.LoadModule.Task"$DiscoverTask = Get-SCOMTask -Name:"Microsoft.ApacheHTTPServer.DiscoverServer.Task"#Get instances of Apache installations$InstallationClass = Get-SCOMClass -Name:"Microsoft.ApacheHTTPServer.Installation"ForEach ($Instance in Get-SCOMClassInstance -class:$InstallationClass){ #Check if CIM module is already installed $isManaged = $Instance.'[Microsoft.ApacheHTTPServer.Installation].IsManaged'.Value if ($isManaged -eq $false){  $Name = $instance.Path #Prompt for approval to install $Input = Read-Host "Load Apache module to $Name (Y or N) ? This will restart the Apache server." if ($Input.Trim() -eq "Y"){  #Invoke the installation task $TaskOut = Start-SCOMTask -Task:$InstallTask -Instance:$Instance  #Get the task output, and wait for it to complete.  $MyBatch = $taskout.batchid if ($MyBatch -ne $null){  $ResultStatus = "Started" while ($ResultStatus -eq "Started")  {  $MyResult = Get-SCOMTaskResult -BatchID:$MyBatch -EA SilentlyContinue [string]$ResultStatus = $MyResult.Status Start-Sleep -s 3 } } $MyResult.Output Write-Output $ResultStatus If ($ResultStatus -eq "Succeeded"){ Write-output "Triggering on-demand discovery." $TaskOut = Start-SCOMTask -Task:$DiscoverTask -Instance:$Instance } } }}   |

#### Required Access for CIM Provider Installation

##### Run As Account

The Run As Account used for the Load and Unload Apache Module tasks is the Run As account associated the UNIX/Linux Privileged Account Run As Profile for the Linux computer.

**Sudo Configuration**

In order to use the sudo elevation to load or unload the Apache module with the Management Pack task, the configuration script must be authorized for sudo elevation (without password) for the user account in /etc/sudoers. The following example illustrates the command requiring authorization.

|  |
| --- |
| monuser ALL=(root) NOPASSWD: /opt/microsoft/apache-cimprov/bin/apache\_config.sh |

#### Upgrading the CIM Provider to a new version

The CIM Provider will be upgraded automatically to the latest available version when upgrading the Linux agent for Operations Manager to the latest available version.

### Enabling Remote HTTP Monitoring

The Apache HTTP Server includes several optional rules and monitors that implement remote monitoring of the web sites hosted on the Apache server. Remote monitoring of web site availability and performance can offer additional insights into the end-to-end health of the web server environment. Each of these remote monitoring rules and monitors is disabled by default. In order to use them, they should be enabled with overrides. Because the Virtual Host configuration on the Linux computer may not have complete information necessary to remotely access the website (such as proxy configuration, URL, authentication, etc), be sure to override the configuration of the rule or monitor to supply required configuration as well.

The remote monitoring rules and monitors are:

**Monitors:**

* Apache Virtual Host Web Request Status Code
* Apache Virtual Host Web Request Total Response Time

**Rules**

* Apache Virtual Host Total Web Response Time Collection

For information on configuration of overridable properties for these remote HTTP probe rules and monitors, reference the documentation for the [Microsoft.SystemCenter.WebApplication.UrlProbe](http://msdn.microsoft.com/en-us/library/hh442319.aspx) probe action module type.

### Tuning Performance Threshold Monitors

The following table lists performance threshold monitors that have default thresholds that might require additional tuning to suit your environment. Evaluate these monitors to determine whether the default thresholds are appropriate for your environment. If a default threshold is not appropriate for your environment, you should obtain a baseline for the relevant performance counters, and then adjust the thresholds by applying an override to them.

| **Monitor Name** | **Default Threshold** | **Default Repeat Count** |
| --- | --- | --- |
| Apache HTTP Server Pct Busy Workers | 80 | 3 |
| Apache HTTP Server Total Pct CPU | 80 | 3 |
| Apache HTTP Server Used KBytes Memory | Warning: 262144Critical: 524288 | 2 |
| Apache Virtual Host Total Requests per Second | 100 | 3 |
| Apache Virtual Host Errors per Minute - Client | 10 | 3 |
| Apache Virtual Host Errors per Minute - Server | 1 | 3 |
| Apache Virtual Host Web Request Total Response Time | Warning: 5Critical: 10 | 1 |
| Apache SSL Certificate Expiration | Warning: 21Critical: 7 | 1 |

# Appendix: Management Pack Contents

The Apache HTTP Server management pack discovers the object types described in the following sections.

[Monitored Apache HTTP Server](#ApacheHTTPServer)

[Apache Virtual Host (Linux)](#ApacheHTTPVirtualhost)

[Apache SSL Certificate (Linux)](#ApacheCertificate)

##  Monitored Apache HTTP Server

Discovery Information

| **Interval** | **Enabled** | **When to Enable** |
| --- | --- | --- |
| 14400 | True | Not applicable |

Related Monitors

| **Monitor** | **Interval** | **Alert** | **Reset Behavior** | **Enabled** | **When to Enable** |
| --- | --- | --- | --- | --- | --- |
| Apache HTTP Server Status Monitor | 300 | Alert priority: MediumAlert severity: Critical | Automatic | True | Not applicable |
| Apache HTTP Server Pct Busy Workers | 300 | Alert priority: MediumAlert severity: Critical | Automatic | True | Not applicable |
| Apache HTTP Server Total Pct CPU | 300 | Alert priority: MediumAlert severity: Warning/Critical | Automatic | True | Not applicable |
| Apache HTTP Server Used KBytes Memory | 300 | Alert priority: MediumAlert severity: Warning/Critical | Automatic | True | Not applicable |
| Apache HTTP Server Configuration Check | 300 | Alert priority: MediumAlert severity: Warning/Critical | Automatic | True | Not applicable |

Related Rules

| **Rule** | **Alert** | **Notes** | **Enabled** | **When to Enable** |
| --- | --- | --- | --- | --- |
| Apache HTTP Server Total Percent CPU Collection | False |  | True | Not applicable |
| Apache HTTP Server Total Used Memory KBytes Collection | False |  | True | Not applicable |
| Apache HTTP Server Idle Workers Collection | False |  | True | Not applicable |
| Apache HTTP Server Busy Workers Collection | False |  | True | Not applicable |
| Apache HTTP Server Percent Busy Workers Collection | False |  | True | Not applicable |
| Apache HTTP Server Requests per Second Collection | False |  | True | Not applicable |
| Apache HTTP Server KB per Request Collection | False |  | True | Not applicable |
| Apache HTTP Server KB per Second Collection | False |  | True | Not applicable |
| Apache HTTP Server Errors per Minute (Client) Collection | False |  | True | Not applicable |
| Apache HTTP Server Errors per Minute (Server) Collection | False |  | True | Not applicable |

Related Views

| **View** | **Description** | **Rules and Monitors that Populate the View** |
| --- | --- | --- |
| Active Alerts | All active Apache HTTP Server alerts | * All alert-generating rules
 |
| Apache HTTP Servers | Apache HTTP Servers state view | * Apache HTTP Server Installation Discovery (Linux)
* Managed Apache HTTP Server Discovery (Linux)
 |
| All Performance Data | All Apache HTTP Server performance view | * All performance collection rules
 |

Related Reports

| **Report** | **Description** | **Class Selection Criteria** |
| --- | --- | --- |
| Apache HTTP Server Performance | Performance history report (Daily aggregation)Metrics:* Apache HTTP Server Total Percent CPU Collection
* Apache HTTP Server Percent Busy Workers Collection
 | Monitored Apache HTTP Server (Linux) |
| Apache HTTP Server Total Requests | Performance history report (Daily aggregation)Metrics:* Apache HTTP Server Requests per Second Collection
* Apache HTTP Server KB per Second Collection
 | Monitored Apache HTTP Server (Linux) |

## Apache Virtual Host (Linux)

Discovery Information

| **Interval** | **Enabled** | **When to Enable** |
| --- | --- | --- |
| 14400 | True | Not applicable |

Related Monitors

| **Monitor** | **Interval** | **Alert** | **Reset Behavior** | **Enabled** | **When to Enable** |
| --- | --- | --- | --- | --- | --- |
| Apache Virtual Host Total Requests per Second | 300 | Alert priority: MediumAlert severity: Warning | Automatic | True | Not applicable |
| Apache Virtual Host Errors per Minute - Client | 300 | Alert priority: MediumAlert severity: Warning | Automatic | True | Not applicable |
| Apache Virtual Host Errors per Minute - Server | 300 | Alert priority: MediumAlert severity: Critical | Automatic | True | Not applicable |
| Apache Virtual Host Web Request Status Code | 300 | Alert priority: MediumAlert severity: Critical | Automatic | False | See [Enabling Remote HTTP Monitoring](#EnableRemoteMonitoring) |
| Apache Virtual Host Web Request Total Response Time | 300 | Alert priority: MediumAlert severity: Warning | Automatic | False | See [Enabling Remote HTTP Monitoring](#EnableRemoteMonitoring) |

Related Rules

| **Rule** | **Alert** | **Notes** | **Enabled** | **When to Enable** |
| --- | --- | --- | --- | --- |
| Apache Virtual Host Requests per Second Collection | False |  | True | Not applicable |
| Apache Virtual Host KB per Request Collection | False |  | True | Not applicable |
| Apache Virtual Host KB per Second Collection | False |  | True | Not applicable |
| Apache Virtual Host Errors per Minute (Client) Collection | False |  | True | Not applicable |
| Apache Virtual Host Errors per Minute (Server) Collection | False |  | True | Not applicable |
| Apache Virtual Host Total Web Response Time Collection | False |  | False | See [Enabling Remote HTTP Monitoring](#EnableRemoteMonitoring) |
| Apache Virtual Host Error Log Event Alert | True |  | False | Enable this rule and set the Regular Expression to match to alert on specific error messages in the Virtual Host’s error log |

Related Views

| **View** | **Description** | **Rules and Monitors that Populate the View** |
| --- | --- | --- |
| Apache Virtual Hosts | Apache Virtual Hosts state view | * Apache HTTP Server Virtual Host Discovery (Linux)
 |
| Virtual Host Performance | Apache Virtual Hosts performance view | * Apache Virtual Host Requests per Second Collection
* Apache Virtual Host KB per Request Collection
* Apache Virtual Host KB per Second Collection
* Apache Virtual Host Errors per Minute (Client) Collection
* Apache Virtual Host Errors per Minute (Server) Collection
* Apache Virtual Host Total Web Response Time Collection
 |
| Virtual Host Error Rate | Apache Virtual Host Error Rate performance view | * Apache Virtual Host Errors per Minute (Client) Collection
* Apache Virtual Host Errors per Minute (Server) Collection
 |
| Virtual Host Response Time | Apache Virtual Host Response Time performance view | * Apache Virtual Host Total Web Response Time Collection
 |

Related Reports

| **Report** | **Description** | **Class Selection Criteria** |
| --- | --- | --- |
| Apache Virtual Host Requests | Performance history report (Daily aggregation)Metrics:* Apache Virtual Host Requests per Second Collection
* Apache Virtual Host KB per Second Collection
 | Apache Virtual Host (Linux) |
| Apache Virtual Host Error Rate | Performance history report (Daily aggregation)Metrics:* Apache Virtual Host Errors per Minute (Client) Collection
* Apache Virtual Host Errors per Minute (Server) Collection
 | Apache Virtual Host (Linux) |
| Apache Virtual Host Response Time | Performance history report (Daily aggregation)Metrics:* Apache Virtual Host Total Web Response Time Collection
 | Apache Virtual Host (Linux) |

## Apache SSL Certificate (Linux)

Discovery Information

| **Interval** | **Enabled** | **When to Enable** |
| --- | --- | --- |
| 14400 | True | Not applicable |

Related Monitors

| **Monitor** | **Interval** | **Alert** | **Reset Behavior** | **Enabled** | **When to Enable** |
| --- | --- | --- | --- | --- | --- |
| Apache SSL Certificate Expiration | 28800 | Alert priority: MediumAlert severity: Warning/Critical | Automatic | True | Not applicable |

Related Views

| **View** | **Description** | **Rules and Monitors that Populate the View** |
| --- | --- | --- |
| SSL Certificates | SSL Certificates for Virtual Hosts | * Apache HTTP Server Certificate Discovery (Linux
 |