



NetIQ® AppManager® for Microsoft Hyper-V Management Guide

April 2015

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About this Book and the Library

The NetIQ AppManager product (AppManager) is a comprehensive solution for managing, diagnosing, and analyzing performance, availability, and health for a broad spectrum of operating environments, applications, services, and server hardware.

AppManager provides system administrators with a central, easy-to-use console to view critical server and application resources across the enterprise. With AppManager, administrative staff can monitor computer and application resources, check for potential problems, initiate responsive actions, automate routine tasks, and gather performance data for real-time and historical reporting and analysis.

Intended Audience

This guide provides information for individuals responsible for installing an AppManager module and monitoring specific applications with AppManager.

Other Information in the Library

The library provides the following information resources:

Installation Guide for AppManager

Provides complete information about AppManager pre-installation requirements and step-by-step installation procedures for all AppManager components.

User Guide for AppManager Control Center

Provides complete information about managing groups of computers, including running jobs, responding to events, creating reports, and working with Control Center. A separate guide is available for the AppManager Operator Console.

Administrator Guide for AppManager

Provides information about maintaining an AppManager management site, managing security, using scripts to handle AppManager tasks, and leveraging advanced configuration options.

Upgrade and Migration Guide for AppManager

Provides complete information about how to upgrade from a previous version of AppManager.

Management guides

Provide information about installing and monitoring specific applications with AppManager.

Help

Provides context-sensitive information and step-by-step guidance for common tasks, as well as definitions for each field on each window.

The AppManager library is available in Adobe Acrobat (PDF) format from the [AppManager Documentation](#) page of the NetIQ Web site.

About NetIQ Corporation

We are a global, enterprise software company, with a focus on the three persistent challenges in your environment: Change, complexity and risk—and how we can help you control them.

Our Viewpoint

Adapting to change and managing complexity and risk are nothing new

In fact, of all the challenges you face, these are perhaps the most prominent variables that deny you the control you need to securely measure, monitor, and manage your physical, virtual, and cloud computing environments.

Enabling critical business services, better and faster

We believe that providing as much control as possible to IT organizations is the only way to enable timelier and cost effective delivery of services. Persistent pressures like change and complexity will only continue to increase as organizations continue to change and the technologies needed to manage them become inherently more complex.

Our Philosophy

Selling intelligent solutions, not just software

In order to provide reliable control, we first make sure we understand the real-world scenarios in which IT organizations like yours operate — day in and day out. That's the only way we can develop practical, intelligent IT solutions that successfully yield proven, measurable results. And that's so much more rewarding than simply selling software.

Driving your success is our passion

We place your success at the heart of how we do business. From product inception to deployment, we understand that you need IT solutions that work well and integrate seamlessly with your existing investments; you need ongoing support and training post-deployment; and you need someone that is truly easy to work with — for a change. Ultimately, when you succeed, we all succeed.

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- ◆ Security Management
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1 Introducing AppManager for Microsoft Hyper-V

AppManager for Microsoft Hyper-V lets you monitor the operation, performance, and availability of your servers running Hyper-V. This module provides a set of Knowledge Scripts designed to give you a comprehensive view of how computers running Microsoft Hyper-V perform in your environment.

You can use AppManager for Microsoft Hyper-V to monitor the following:

- ◆ Health and availability of Hyper-V host computers, including the running status of Hyper-V core services and the number of virtual machines in critical state
- ◆ Percentage of overall physical memory usage for the host
- ◆ Overall system CPU usage by virtual machines (VMs), overall system CPU usage for the host, overall system CPU usage by the Microsoft Hypervisor, overall system CPU usage by the root partition, and ratio of virtual processors per logical processor
- ◆ CPU and memory reservation for virtual machines on the Hyper-V host
- ◆ Inventory information about virtual machines on the Hyper-V host computer
- ◆ Logical disk statistics, such as disk free space, disk queue length, the percentage of disk space in use, drive latency, and byte transfer rate
- ◆ Physical disk statistics, such as average queue length, disk latency, and disk byte transfer rate
- ◆ Virtual machine disk statistics, such as disk free space and percentage of disk space used, average memory pressure, number of disk errors, CPU usage for guests, and disk reads and writes on the storage disks on virtual machines on the Hyper-V host computer
- ◆ Network utilization, network queue length, and number of errors in outbound and inbound packets for network interface cards (NICs) present on the Hyper-V host computer
- ◆ Switch transfer rates in MB per second and packets per second
- ◆ Virtual network adapter transfer rates in MB per second and packets per second
- ◆ Version status and the availability of Virtual Machine Integration Services components on virtual machines on the Hyper-V host computer
- ◆ Hyper-V event logs, which you can scan for potential problems and other issues

2 Installing AppManager for Microsoft Hyper-V

This chapter provides installation instructions and describes system requirements for AppManager for Microsoft Hyper-V.

This chapter assumes you have AppManager installed. For more information about installing AppManager or about AppManager system requirements, see the *Installation Guide for AppManager*, which is available on the [AppManager Documentation](#) page.

2.1 System Requirements

For the latest information about supported software versions and the availability of module updates, visit the [AppManager Supported Products](#) page. Unless noted otherwise, this module supports all updates, hotfixes, and service packs for the releases listed below.

AppManager for Microsoft Hyper-V has the following system requirements:

Software/Hardware	Version
NetIQ AppManager installed on the AppManager repository (QDB) computers, on the computers running Hyper-V that you want to monitor (AppManager agents), and on all console computers	8.2 or later The following hotfixes are required for AppManager 8.2: <ul style="list-style-type: none">◆ QDB Hotfix 8.2.0.4 or later for AppManager Repository 8.2◆ MS hotfix 8.2.0.3 or later for AppManager Management Server 8.2◆ MC hotfix 8.2.0.2 or later for AppManager Windows Agent 8.2 For more information, see the AppManager Suite Hotfixes page.
Agent computer requirements	<ul style="list-style-type: none">◆ Disk Space: 100 GB free◆ Memory: 16 GB recommended◆ Processors: 8 (2.8 GHz and above dual core or multiprocessor)
Management server requirements	<ul style="list-style-type: none">◆ Disk Space: 100 GB free◆ Memory: 8 GB recommended◆ Processors: 8 (2.8 GHz and above dual core or multiprocessor)
AppManager repository computer requirements	<ul style="list-style-type: none">◆ Disk Space: 100 GB free◆ Memory: 16 GB recommended◆ Processors: 8 (2.8 GHz and above dual core or multiprocessor)

Software/Hardware	Version
Microsoft Windows operating system on the proxy agent computers	One of the following: <ul style="list-style-type: none"> ◆ Windows Server 2012 R2 <p>Note This module does not support Server Core for Windows Server 2012 R2 or Windows Server 2008 R2.</p> <ul style="list-style-type: none"> ◆ Windows Server 2008 R2 ◆ Windows Server 2008 (64-bit)
Microsoft Hyper-V host	One of the following versions: <ul style="list-style-type: none"> ◆ Hyper-V Server 2012 R2 ◆ Hyper-V Server 2012 ◆ Hyper-V Server 2008 R2 ◆ Hyper-V Server 2008
Microsoft .NET Framework on the agent computers	4.5.1 or later
Windows Management Framework (WMF)	3.0 for agents running Windows Server 2008 R2 and 2008 (64-bit)

2.2 Pre-installation Considerations

As a part of installing AppManager for Hyper-V, you install an agent with the module. You can install the module in one of the following locations:

- ◆ On the Hyper-V host
- ◆ On a Windows computer that serves as a proxy agent computer

A proxy agent remotely monitors the Hyper-V host computer. Using a proxy agent computer can help avoid any possible performance issues the agent might cause if installed on the Hyper-V host computer.

2.3 Installing the Module

Run the module installer on the agent computers to install the agent components, and run the module installer on all console computers to install the Help and console extensions.

Access the `AM70-Hyper-V-8.x.x.0.msi` module installer from the `AM70_Hyper-V_8.x.x.0` self-extracting installation package on the [AppManager Module Upgrades & Trials](#) page.

For Windows environments where User Account Control (UAC) is enabled, install the module using an account with administrative privileges. Use one of the following methods:

- ◆ Log in to the server using the account named Administrator. Then, run the module installer `.msi` file from a command prompt or by double-clicking it.
- ◆ Log in to the server as a user with administrative privileges and run the module installer `.msi` file as an administrator from a command prompt. To open a command-prompt window at the administrative level, right-click a command-prompt icon or a Windows menu item and select **Run as administrator**.

You can install the Knowledge Scripts and the Analysis Center reports into local or remote AppManager repositories (QDBs). The module installer installs Knowledge Scripts for each module directly into the QDB.

You can install the module manually, or you can use Control Center to deploy the module to a remote computer where an agent is installed. For more information, see [Section 2.4, “Deploying the Module with Control Center,” on page 14](#). However, if you use Control Center to deploy the module, Control Center only installs the *agent* components of the module. The module installer installs the QDB and console components as well as the agent components on the agent computer.

To install the module manually:

- 1 Double-click the module installer .msi file.
- 2 Accept the license agreement.
- 3 Review the results of the pre-installation check. You can expect one of the following three scenarios:
 - ♦ **No AppManager agent is present:** In this scenario, the pre-installation check fails, and the installer does not install agent components.
 - ♦ **An AppManager agent is present, but some other prerequisite fails:** In this scenario, the default is to not install agent components because of one or more missing prerequisites. However, you can override the default by selecting **Install agent component locally**. A missing application server for this particular module often causes this scenario. For example, installing the AppManager for Microsoft SharePoint module requires the presence of a Microsoft SharePoint server on the selected computer.
 - ♦ **All prerequisites are met:** In this scenario, the installer installs the agent components.
- 4 To install the Knowledge Scripts into the QDB:
 - 4a Select **Install Knowledge Scripts** to install the repository components, including the Knowledge Scripts, object types, and SQL stored procedures.
 - 4b Specify the SQL Server name of the server hosting the QDB, as well as the case-sensitive QDB name.

Note Microsoft .NET Framework 3.5 is required on the computer where you run the installation program for the QDB portion of the module. For computers running more recent versions of Windows operating systems that use a newer version of .NET, install .NET 3.5 with the Add Roles and Features wizard in Windows Server Manager, as described in this [Microsoft article](#).
- 5 Run the module installer only for the primary QDB. Control Center automatically replicates this module to secondary QDBs.
- 6 Run the module installer on all console computers to install the Help and console extensions.
- 7 Run the module installer on the agent computers to install the agent components.
- 8 (Conditional) If you have not discovered Hyper-V resources, run the Discovery_Hyper-V Knowledge Script on all agent computers where you installed the module. For more information, see [Section 2.10, “Discovering Hyper-V Resources,” on page 23](#).

After the installation has completed, the `Hyper-V_Install.log` file, located in the `\NetIQ\Temp\NetIQ_Debug\ServerName` folder, lists any problems that occurred.

2.4 Deploying the Module with Control Center

You can use Control Center to deploy the module to a remote computer where an agent is installed. This topic briefly describes the steps involved in deploying a module and provides instructions for checking in the module installation package. For more information, see the *Control Center User Guide for AppManager*, which is available on the [AppManager Documentation](#) page.

2.4.1 Deployment Overview

This section describes the tasks required to deploy the module on an agent computer.

To deploy the module on an agent computer:

- 1 Verify the default deployment credentials.
- 2 Check in an installation package. For more information, see [Section 2.4.2, “Checking In the Installation Package,” on page 14](#).
- 3 Configure an email address to receive notification of a deployment.
- 4 Create a deployment rule or modify an out-of-the-box deployment rule.
- 5 Approve the deployment task.
- 6 View the results.

2.4.2 Checking In the Installation Package

You must check in the installation package, `AM70-Hyper-V-8.x.x.0.xml`, before you can deploy the module on an agent computer.

To check in a module installation package:

- 1 Log in to Control Center using an account that is a member of a user group with deployment permissions.
- 2 Navigate to the **Deployment** tab.
- 3 In the Deployment folder, select **Packages**.
- 4 On the Tasks pane, click **Check in Deployment Packages**.
- 5 Navigate to the folder where you saved `AM70-Hyper-V-8.x.x.0.xml` and select the file.
- 6 Click **Open**. The Deployment Package Check in Status dialog box displays the status of the package check in.

2.5 Silently Installing the Module

To silently (without user intervention) install a module using the default settings, run the following command from the folder in which you saved the module installer:

```
msiexec.exe /i "AM70-Hyper-V-8.x.x.0.msi" /qn
```

where `x.x` is the actual version number of the module installer.

To create a log file that describes the operations of the module installer, add the following flag to the command noted above:

```
/L* "AM70-Hyper-V-8.x.x.0.msi.log"
```

The log file is created in the folder in which you saved the module installer.

NOTE: To perform a silent install on an AppManager agent running Windows Server 2012, Windows Server 2008 R2 or Windows Server 2008 (64-bit), open a command prompt at the administrative level and select **Run as administrator** before you run the silent install command listed above.

To silently install the module to a remote AppManager repository, you can use Windows authentication or SQL authentication.

Windows authentication:

```
AM70-Hyper-V-8.x.x.0.msi /qn MO_B_QDBINSTALL=1 MO_B_MOINSTALL=0  
MO_B_SQLSVR_WINAUTH=1 MO_SQLSVR_NAME=SQLServerName MO_QDBNAME=AM-RepositoryName
```

SQL authentication:

```
AM70-Hyper-V-8.x.x.0.msi /qn MO_B_QDBINSTALL=1 MO_B_MOINSTALL=0  
MO_B_SQLSVR_WINAUTH=0 MO_SQLSVR_USER=SQLLogin MO_SQLSVR_PWD=SQLLoginPassword  
MO_SQLSVR_NAME=SQLServerName MO_QDBNAME=AM-RepositoryName
```

2.6 Scalability Considerations

To achieve the best performance when you are monitoring up to 50 host computers, NetIQ Corporation recommends you configure the following settings before deploying AppManager for Microsoft Hyper-V:

On the AppManager Management Server:

1. Edit the Data Thread and PIOC file setting:
 - a. Navigate to the following location in the Registry Editor:
 \SOFTWARE\Wow6432Node\NetIQ\AppManager\4.0\NetIQms\Config
 - b. Set Data Thread to **4**. The default is 2.
 - c. Set PIOC Data Map File Size MB to **100**. The default is 25.
 - d. Restart the NetIQms service.
2. Disable tracing:
 - a. Navigate to the AppManager installation path.
 - b. Double-click the NetIQDiag.exe program.
 - c. On the NetIQ Diagnostic Trace Setting page:
 - i. Set the trace level for selected components to **Disable Tracing**.
 - ii. Select **AppManager Agent**, **AppManager Management Service**, and **AppManager KS**.
 - iii. Click **Set**.
 - iv. Restart the NetIQ AppManager Client Resource Monitor service and NetIQ AppManager Management service.
3. Disable antivirus software.
4. Disable User Account Control (UAC) and firewall.
5. Disable Windows Update.

On the QDB computer:

1. Set minimum memory per query:
 - a. Start the SQL Server Management Studio on the SQL Server computer.
 - b. Right-click the server and click **Properties**.
 - c. Click **Memory**.
 - d. Set `Minimum memory per query (in KB)` to 4096. The default value is 1024.
 - e. Click **OK**.
2. Disable antivirus software.
3. Disable User Account Control (UAC) and firewall.
4. Disable Windows Update.

2.7 Configuring Windows Remote Management

AppManager for Microsoft Hyper-V uses Windows Remote Management (WinRM), the Microsoft implementation of the WS-Management Protocol, to allow various hardware and operating systems to work together.

AppManager for Microsoft Hyper-V uses WinRM to access the monitoring and management information from Hyper-V hosts. The WS-Management Protocol and the WinRM service that implements the WS-Management Protocol in Windows support the Windows PowerShell remote features used by this module.

Before using this module, verify the availability of WinRM in your environment, and then enable Windows PowerShell for remote actions on each AppManager agent and each Hyper-V host computer you want to monitor. You might also need to add the remote computer to the list of trusted hosts for the local computer in WinRM and manage quotas for remote management. The following sub-topics describe these operations.

2.7.1 Configuring Windows PowerShell for Remote Operations

To enable Windows PowerShell for remote operations:

- 1 Start Windows PowerShell as an administrator.
- 2 Change the start-up type for the WinRM service from Manual to Automatic, and then start the service.
- 3 Verify that the WinRM service is running by running the following command:

```
Get-Service WinRM
```

- 4 Verify that the Status value in the output is *Running*.
- 5 For Windows Server 2008 and Windows Server 2008 R2 Hyper-V hosts, type the following command to configure Windows PowerShell for remote operations:

```
Enable-PSRemoting -force
```

By default, Windows PowerShell Remoting uses port 5985, but you can change the port as needed.

To change the default port used by Windows PowerShell remote operations:

- 1 Start Windows PowerShell as an administrator and run the following command:

```
cd WSMAN:\localhost\Listener
```


2 Run the following command to locate the listener name:

```
ls Check for transport=HTTP
```

3 Copy the listener name and run the following command:

```
Set-Item WSMAN:\localhost\listener\ListenerName\Port Value
```

4 Re start the WinRM Services.

5 On the proxy agent, update the `HyperVMonitoring.dll.config` in the `\NetIQ\AppManager\bin` folder with the following settings:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <appSettings>
    <add key="MonitoringInterval" value="1" />
    <add key="Host1" value="Value1" />
    <add key="Host2" value="Value2" />
  </appSettings>
</configuration>
```

NOTE: In this example, `Host1` is the name of the Hyper-V host computer, and `Value1` is the value of the new port number (other than the default port number).

2.7.2 Creating the TrustedHosts List

In most cases, you will be able to work with remote computers in other domains. However, if the remote computer is not in a trusted domain, the remote computer might not be able to authenticate your credentials.

To enable authentication, you need to add the remote computer to the list of trusted hosts for the local computer in WinRM. Also, when Hyper-V hosts are discovered in a format other than fully qualified domain name (FQDN) format, such as Hostname or IP Address format, you must add those entries in the TrustedHosts list on the agent computer in WinRM.

If the entry is not found in the TrustedHosts list, the monitoring jobs do not collect data or generate event notifications.

Run the following command on the Windows PowerShell prompt as Administrator:

```
winrm set winrm/config/client '@{TrustedHosts="Hyper-VHost1,Hyper-VHost2,Hyper-VHost3,Hyper-VHost4"}'
```

where `Hyper-VHost` is the Hostname or IP Address of the Hyper-V host computer. You can use a combination of IP addresses and hostnames, separated by commas.

2.7.3 WinRM Shell Quota Requirement for Hyper-V Monitoring

AppManager requires seven WinRM shells on the target Hyper-V host when you run monitoring jobs run with default settings. The following Knowledge Scripts require one WinRM shell each to perform monitoring action at any given point of time:

- ♦ `Hyper-V_EventLog`
- ♦ `Hyper-V_HostOverallHealth`
- ♦ `Hyper-V_HostReservation`

- ♦ Hyper-V_Inventory (requires two WinRM shells)
- ♦ Hyper-V_VmIntegrationServices

All other Knowledge Scripts combined use only one WinRM shell when run with the *Use global cache to store metrics?* parameter set to **Yes** for each script.

If you run any Knowledge Script with the *Use global cache to store metrics?* parameter set to **No**, then each script uses one WinRM shell.

The maximum number of WinRM shells used by AppManager when you run Knowledge Scripts with the *Use global cache to store metrics?* parameter set to **No** is the total number of monitoring jobs plus 1 for this module.

NOTE: Depending on the total number of monitoring jobs you plan to run, ensure that the target host has a sufficient number of available WinRM shells for that user.

2.7.4 Configuring Quota Management for WinRM Shells

Quota management lets you manage system resources more efficiently. WinRM includes a specific set of quotas that provide a better quality of service, help prevent denial-of-service issues, and allocate server resources to concurrent users.

Implementing quotas improve performance by limiting the number of shells, limiting the maximum number of concurrent users, and managing the amount of memory that is allocated to a shell.

To change the quota setting on Hyper-V hosts:

1 Start Windows PowerShell as an administrator.

2 To view the current quota, run the following commands:

```
s1 WSMAN:\localhost\Plugin\Microsoft.PowerShell\Quotas
dir
```

3 If the `Quotas` path is not available, run the following commands:

```
s1 WSMAN:\localhost\Shell
dir
```

4 Change the quota limit using the `Set-Item` command. Run this command on the server you are connecting to remotely using WinRM or Windows Remote Shell (WinRS). The quota limit is permanent until an administrator changes the setting.

Examples of this command include:

```
Set-Item MaxShellsPerUser 25
Set-Item MaxShells 50
Set-Item MaxConcurrentUsers 5
```

NOTE: For Windows Server 2008 R2 and Windows Server 2008, Hyper-V hosts have a default value of 5 for *MaxShellsPerUser*. The administrator can increase this value as needed.

5 Restart the WinRM service:

```
Restart-Service WinRM
```

2.7.5 Troubleshooting Windows Remote Management

The following topics describe how to address issues related to Windows Remote Management in AppManager for Microsoft Hyper-V.

For additional troubleshooting information, see the [about_Remote_Troubleshooting](#) topic on Microsoft TechNet.

WinRM Service

Related error messages:

The client cannot connect to the destination specified in the request. Verify that the service on the destination is running and is accepting requests.

WinRM cannot complete the operation. Verify that the specified computer name is valid, that the computer is accessible over the network, and that a firewall exception for the WinRM service is enabled and allows access from this computer.

Resolutions:

Ensure that the WinRM service Status it is set to *Running*.

Ensure that the firewall exception for WinRM service is not blocked.

WinRM Port

Related error messages:

Error Code: 400

Error: Unable to connect to Remote host.

Type System.Management.Automation.Remoting.PSRemotingTransportException

Message = Connecting to remote server <HostName> failed with the following error message: The client cannot connect to the destination specified in the request. Verify that the service on the destination is running and is accepting requests. Consult the logs and documentation for the WS-Management service running on the destination, most commonly IIS or WinRM.

Resolution:

Check the port configured for WinRM listener on the host computer. Run the following commands on the Hyper-V host computer:

```
cd WSMAN:\localhost\Listener
ls Check for transport=HTTP
Get-Item WSMAN:\localhost\listener\\Port
```

If the port configured on the host computer is not the default port, see [Section 2.8.3, "Changing the Port Number used by this Module,"](#) on page 22.

MaxShellsPerUser

Related error messages:

This user has exceeded the maximum number of concurrent shells allowed for this plugin. Close at least one open shell or raise the plugin quota for this user.

This user is allowed a maximum number of x concurrent shells, which has been exceeded. Close existing shells or raise the quota for this user.

Resolution:

Increase the *MaxShellsPerUser* value.

MaxConcurrentUsers

Related error messages:

This service is configured to allow a maximum of x concurrent shell users, which has been exceeded. Retry your request after sometime or raise the quota for concurrent shell users.

The maximum number of users executing remote operations has been exceeded for this plugin. Retry the request later or raise the quota for concurrent users.

Resolution:

Increase the *MaxConcurrentUsers* value.

MaxMemoryPerShellMB

Related error messages:

Exception of type 'System.OutOfMemoryException' was thrown.

Remoting data is missing TargetObject property.

Not enough storage is available to complete this operation.

Processing data from remote server 10.10.100.10 failed with the following error message: The WSMAN provider host process did not return a proper response. A provider in the host process may have behaved improperly.

```
Connecting to remote server 10.10.100.10 failed with the following error message : <f:WSManFault
xmlns:f="http://schemas.microsoft.com/wbem/wsman/1/wsmanfault" Code="3762507597"
Machine="10.10.100.10"><f:Message><f:ProviderFault provider="microsoft.powershell"
path="C:\Windows\system32\pwrshplugin.dll"></f:ProviderFault></f:Message></f:WSManFault>
```

```
Connecting to remote server windows100 failed with the following error message : <f:WSManFault
xmlns:f="http://schemas.microsoft.com/wbem/wsman/1/wsmanfault" Code="3762504530"
Machine="windows100"><f:Message><f:ProviderFault provider="microsoft.powershell"
path="C:\Windows\system32\pwrshplugin.dll"></f:ProviderFault></f:Message></f:WSManFault>
```

Resolution:

Increase the *MaxMemoryPerShellMB* value.

MaxShells (for Windows Server 2012 R2 Hyper-V hosts)

Related error messages:

The maximum number of concurrent shells allowed for this plugin has been exceeded. Retry the request later or raise the Maximum Shells per Plugin quota.

Note If WinRM shells are already in connected state (even when a job is stopped), starting a new monitoring job adds to the number of shells, which could result in a MaxShells quota violation.

Resolution:

Increase the *MaxShells* value.

2.8 Customizing the HyperVMonitoring.dll.config File

To customize the settings for this module, you can edit the *HyperVMonitoring.dll.config* file in the *\NetIQ\AppManager\bin* folder on the proxy agent.

2.8.1 Enabling PowerShell Scripts for Logging

This module can produce PowerShell scripts that collect diagnostic data from running jobs, which the module stores in the *\NetIQ\Temp\NetIQ_Debug\ServerName* folder. However, the module does not generate these PowerShell scripts by default.

To generate these scripts, update *HyperVMonitoring.dll.config* with the following settings:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <appSettings>
    <add key="ScriptGenerationRequired" value="1" />
  </appSettings>
</configuration>
```

In this example, set the *ScriptGenerationRequired* key to **1** to generate the scripts. The default is 0 (do not generate the scripts).

NOTE: Restart *Netiqmc.exe* after you save the *HyperVMonitoring.dll.config* file.

2.8.2 Setting the Timeout Value for the Global Cache

If you experience a timeout while waiting for the global cache to refresh after collecting data from remote hosts, you can increase the timeout value for the global cache. The default timeout value is 30 seconds for global cache jobs, and the default timeout value is never for jobs that do not use the global cache.

For example, if you have a slow, unhealthy host in your environment delaying the whole cycle, you can adjust the length of the time for each host to execute the script.

To adjust the timeout value, update `HyperVMonitoring.dll.config` with the following settings:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <appSettings>
    <add key="DataFetchTimeoutForEachHostInGCJob" value="4" />
    <add key="DataFetchTimeoutForEachHostInNonGCJob" value="10" />
  </appSettings>
</configuration>
```

In this example, the `DataFetchTimeoutForEachHostInGCJob` key is the time required in minutes for each host to respond when the job is running as part of global cache (4 minutes in this example).

The `DataFetchTimeoutForEachHostInNonGCJob` key is the time required in minutes for each host to respond when the job is not running as part of global cache (10 minutes in this example).

Under normal conditions, you should not need to change the timeout value. However, if you receive event messages stating *Error: Terminating connection for host <hostname>*, ensure that the specified host is healthy, and that the network speed is adequate.

The timeout value should always be less than the value set for the *Monitoring interval value* parameter in the [SetMonitoringInterval](#) Knowledge Script for global cache jobs.

You can use the `MonitoringInvokeTimeoutForNonGlobalCache` key for jobs that are not part of the global cache. The default interval of these jobs is more because these jobs might take more time to complete, such as the `Hyper-V_EventLog` and `Hyper-V_Inventory` scripts. By default this value is 10 minutes.

2.8.3 Changing the Port Number used by this Module

To change the port number on the host computer, update the `HyperVMonitoring.dll.config` file with the following settings:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <appSettings>
    <add key="MonitoringInterval" value="1" />
    <add key="Host1" value="Value1" />
  </appSettings>
</configuration>
```

In this example, `Host1` is the name of the Hyper-V host computer, and `Value1` is the value of the new port number (other than the default port number).

2.9 Configuring Hyper-V Host Connection Credentials

For each Hyper-V host computer that you want to monitor, configure the Hyper-V host credentials in AppManager Security Manager before you run the Hyper-V Knowledge Scripts.

On the **Custom** tab in Security Manager for the proxy agent, complete the following fields for every computer group entered in the discovery input file:

Field	Description
Label	Hyper-V
Sub-label	<p>The group name provided in column 2 of the discovery input file, such as <code>Group1</code> in the sample discovery input CSV file as an example.</p> <p>If you want to discover the Hyper-V host computer as <code>localhost</code>, set this field to <code>localhost</code>. When using this option, ensure that the AppManager agent and the AppManager for Microsoft Hyper-V module are installed on the Hyper-V host computer.</p>
Value 1	<p>User name for the account that has the permission to connect to the Hyper-V host computer and retrieve the required information. You can type the user name with the domain name, such as <code>Domain\User name</code>.</p> <p>The user specified in this field should have Administrator privileges, preferably the domain user or the Administrator user. If the user is local, then list user as <code>.\<username></code>, such as <code>.\Administrator</code>.</p>
Value 2	Password for the user name identified in the Value 1 field.
Value 3	Leave this field blank.
Extended application support	Required field. Encrypts the user name and password in Security Manager. Do not leave this option unselected.

2.10 Discovering Hyper-V Resources

Before you run the `Discovery_Hyper-V` Knowledge Script, you must set up a text file in comma-separated value (CSV) format that contains information about the Hyper-V host computers you want to discover and monitor.

If a computer you want to discover is not in a trusted domain, the computer has to be part of the `TrustedHosts` list. For more information, see [“Creating the TrustedHosts List” on page 17](#).

2.10.1 Discovering Hyper-V Hosts Listed in the Input File

On the proxy agent computer, set up each line of the discovery input file by listing all the Hyper-V host computers you want to monitor in the following format:

ComputerName, GroupName

where:

- ♦ *ComputerName*: List the NetBIOS, FQDN, or IP Address of the Hyper-V host computer in the first column of the file.
- ♦ *GroupName*: All Hyper-V host computers that use the same set of credentials can be grouped together and provided a common group name. List the group name to which the Hyper-V host computer belongs in the second column of the file.

Every Hyper-V host computer you want to monitor must have an entry on a separate row in this file. Save the file in CSV format. To run the `Discovery_Hyper-V` script, you need to provide the full path to this discovery input file in the *Full path to file containing list of hosts to discover* parameter in the **Discover Hyper-V** section of the `Discovery_Hyper-V` script.

2.10.2 Running the Discovery_Hyper-V Knowledge Script

Use the `Discovery_Hyper-V Knowledge Script` to discover all Hyper-V hosts listed in the discovery input file. For each discovered host, the script discovers CPU, memory, networks, and file systems installed on the host. The script also discovers all guest virtual machines created on the host, online or offline, and the amount of CPU, memory, networks, and file systems assigned to and used by each virtual machine.

Depending on network bandwidth, the configuration of your environment, and the number of Hyper-V hosts you want to discover, the discovery job might take several minutes. For maximum efficiency, place your proxy computer in the same network as your Hyper-V hosts.

If you want to discover the Hyper-V host computer as `localhost`, ensure that the AppManager agent and the AppManager for Microsoft Hyper-V module are installed on the Hyper-V host computer. For Security Manager information, see [“Configuring Hyper-V Host Connection Credentials” on page 23](#).

If you delete or add a resource object, or if you make any other kind of change that might affect the monitoring of your resources, run the `Discovery_Hyper-V Knowledge Script` again to update your list of resource objects. In addition, you can use the delta discovery feature in Control Center to run discovery on a schedule to more quickly detect changes to your environment.

Set the following parameters on the **Values** tab as needed:

Description	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the discovery job fails unexpectedly. The default is 5.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.

Description	How to Set It
Event Settings	
Raise event if discovery succeeds?	Select Yes to raise an event in which this script successfully discovers Hyper-V resources. The default is Yes.
Event severity when discovery succeeds	Set the event severity level, from 1 to 40, to reflect the importance when this script successfully discovers Hyper-V resources. The default is 25.
Raise event if discovery is partial?	Select Yes to raise an event in which this script partially discovers Hyper-V resources. The default is Yes.
Event severity when discovery is partial	Set the event severity level, from 1 to 40, to reflect the importance when this script partially discovers Hyper-V resources. The default is 15.
Raise event if discovery fails?	Select Yes to raise an event in which this script fails to discover Hyper-V resources. The default is Yes.
Event severity when discovery fails	Set the event severity level, from 1 to 40, to reflect the importance when the script fails to discover Hyper-V resources. The default is 5.
Discover Hyper-V	
Discover local host as Hyper-V host?	Select Yes if you want to discover the agent machine itself as a Hyper-V host computer. The discovery succeeds if the agent machine where this module is installed is a Hyper-V server. The default is unselected. If you select Yes for this parameter, NetIQ Corporation recommends that you do <i>not</i> specify a file location in the <i>Full path to file containing list of hosts to discover</i> parameter.
Full path to file containing list of hosts to discover	Specify the location of the path that contains the list of Hyper-V hosts that you want to discover. Click the Ellipsis (...) button to navigate to the file. If you specify a file for this parameter, NetIQ Corporation recommends that you do <i>not</i> select Yes for the <i>Discover local host as Hyper-V host</i> parameter.
Discover virtual machines?	Select Yes to discover virtual machines on the Hyper-V host. The default is Yes.
Discover virtual machine details?	Select Yes to gather details about the virtual machines discovered by this script. The default is unselected. This parameter works in conjunction with the <i>Discover virtual machines?</i> parameter. If you set this parameter to Yes, then you must set the <i>Discover virtual machines?</i> parameter to Yes. NOTE: If you do not select Yes for this parameter, you cannot use the following Hyper-V Knowledge Scripts for monitoring VMs: VmDiskSpace, VmDiskStats, VmMemory, and VmNetworkAdapterTransferRate.

3 Hyper-V Knowledge Scripts

AppManager for Microsoft Hyper-V provides the following Knowledge Scripts for monitoring Microsoft Hyper-V resources. From the Knowledge Script view of Control Center, you can access more information about any Knowledge Script by selecting it and clicking **Help**. In the Operator Console, select any Knowledge Script in the Knowledge Script pane and press **F1**.

For help with issues related to Windows Remote Management, see [“Troubleshooting Windows Remote Management” on page 19](#).

NOTE: If you run a Knowledge Script that is included by default in the global cache, the jobs for that script do not collect data and do not raise events during the first iteration of that script. Jobs for subsequent iterations work as expected. In addition, the *Run Once* scheduling option does not work for scripts that are included in the global cache. For more information, see [“SetMonitoringInterval” on page 52](#).

Knowledge Script	What It Does
EventLog	Scans Hyper-V event logs for entries matching the criteria you specify and raises an event if such entries are found.
HostCPUUtilization	Monitors Hyper-V host computers for the overall system CPU usage, CPU usage by guests, CPU usage by the Microsoft Hypervisor, and overall CPU usage by the root partition. Also monitors the CPU idle run time and the number of active virtual processors per logical processor.
HostLogicalDiskSpace	Monitors the free space and the percentage of disk space used on logical disk drives on the Hyper-V host computer.
HostLogicalDiskStats	Monitors the average queue length, disk latency, and disk byte transfer rate of the logical disks on the Hyper-V host computer.
HostMemory	Monitors Hyper-V hosts for the overall system physical memory usage, the total memory available, and the average dynamic memory pressure exerted by the virtual machines on the host for acquiring the memory.
HostNetworkUtilization	Monitors Hyper-V host computers for the network utilization of network interface controller (NIC) cards present on the host computer. Also monitors the network queue length of each NIC, and the number of errors in outbound and inbound packets.
HostOverallHealth	Monitors the running status of Hyper-V core services, which include Hyper-V Image Management, Hyper-V Networking Management, and Hyper-V Virtual Machine Management. Also monitors the number of virtual machines that have critical health.
HostPhysicalDiskStats	Monitors the average queue length, disk latency, and disk byte transfer rate of the physical disks on the Hyper-V host computer.
HostReservation	Monitors the CPU reservation and memory reservation for virtual machines or guest machines on the Hyper-V host computer. Also monitors the count of allocated virtual processors on virtual machines per logical processor.

Knowledge Script	What It Does
HostVirtualSwitchTransferRate	Monitors Hyper-V host computers for virtual switch transfer rates in MB per second and packets per second.
HyperVAvailability	Monitors the availability of the hypervisor on host computers.
Inventory	Runs an inventory of virtual machines and the details for virtual machines on the Hyper-V host computer, and raises an event if VMs are added or removed. For Windows Server 2012 R2 Hyper-V hosts only.
SetMonitoringInterval	Sets the monitoring interval for Knowledge Scripts that use the global cache. Run this script before running any of the scripts that use the global cache.
VmAvailability	Monitors the availability, health, and uptime of a virtual machine on a Hyper-V host.
VmCPUUtilization	Monitors the CPU usage of a virtual machine on the Hyper-V host computer.
VmDiskSpace	Monitors the free space and the percentage of disk space used on the storage disk of the virtual machines on the Hyper-V host computer.
VmDiskStats	Monitors the number of disk errors and disk reads and writes in bytes per second on the storage disks on virtual machines on the Hyper-V host computer.
VmIntegrationServices	Monitors the version status and the availability of Virtual Machine Integration Services components on virtual machines on the Hyper-V host computer.
VmMemory	Monitors the average memory pressure on virtual machines on the Hyper-V host computer.
VmNetworkAdapterTransferRate	Monitors virtual network adapter transfer rates in MB per second and packets per second on virtual machines on the Hyper-V host computer.

3.1 EventLog

Use the `Hyper-V_EventLog` Knowledge Script to scan Hyper-V event logs for entries matching the categories and filters you specify. This script raises an event if such entries are found. You can also choose to collect data on the number of event log entries found that match your criteria.

3.1.1 Resource Objects

Hyper-V host object

3.1.2 Default Schedule

By default, this script runs **every fifteen minutes**.

3.1.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the EventLog job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Event Log Monitoring	
Event Categories	
Hyper-V-Config	Select Yes to search the Hyper-V-Config event log for data. This log contains entries related to the configuration files for individual virtual machines. The default is unselected.
Hyper-V-High-Availability	Select Yes to search the Hyper-V-High-Availability event log for data. This log contains entries related to failover clustering with Hyper-V. The default is unselected.
Hyper-V-Hypervisor	Select Yes to search the Hyper-V-Hypervisor event log for data. This log contains entries related to the hypervisor itself, such as the creation and destruction of partitions for virtual machines. The default is Yes.
Hyper-V-Image-Management-Service	Select Yes to search the Hyper-V-Image-Management-Service event log for data. This log contains entries related to the handling of virtual hard drive files. The default is unselected.
Hyper-V-Integration	Select Yes to search the Hyper-V-Integration event log for data. This log contains entries related to the Integration Services on virtual machines. The default is Yes.
Hyper-V-Network	Select Yes to search the Hyper-V-Network event log for data. This log contains entries from the virtual switches in your deployment, such as events about the creation of virtual networks and the pairing of external networks to physical network cards. The default is Yes.
Hyper-V-SynthNic	Select Yes to search the Hyper-V-SynthNic event log for data. This log contains entries related to synthetic network cards in virtual machines. The default is unselected.
Hyper-V-SynthStor	Select Yes to search the Hyper-V-SynthStor event log for data. This log contains entries related to virtual storage controller drivers. The default is unselected.

Parameter	How to Set It
Hyper-V-VMMS	Select Yes to search the Hyper-V-VMMS event log for data. This log contains entries from the Virtual Machine Management Service. The default is Yes.
Hyper-V-Worker	Select Yes to search the Hyper-V-Worker event log for data. This log contains entries related to Hyper-V worker threads. The default is unselected.
Number of minutes to go back when scanning logs	Specify how many minutes the script should go back to scan the event logs for the first iteration. The default is 15 minutes.
Maximum number of entries to be returned per event	Specify the maximum number of entries in each event report. The default is 30 entries per event.
Event Log Filters	
Event Types	
Monitor critical events?	Select Yes to monitor critical events from the event log. The default is Yes.
Monitor error events?	Select Yes to monitor error events from the event log. The defaults is Yes.
Monitor warning events?	Select Yes to monitor warning events from the event log. The default is unselected.
Monitor information events?	Select Yes to monitor information events from the event log. The default is unselected.
Event Notification	
Raise event if Hyper-V event log entries match criteria?	Select Yes to raise an event if the script finds Hyper-V event log entries that match the criteria you specify. The default is Yes.
Event severity when Hyper-V event log entries match criteria	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the script finds Hyper-V event log entries that match your criteria. The default is 15.
Data Collection	
Collect data for Hyper-V event log entries that match criteria	Select Yes to collect data on the number of event log entries that match the criteria you specified. The default is unselected.

3.2 HostCPUUtilization

Use this script to monitor Microsoft Hyper-V host computers for the overall system CPU usage, CPU usage by guests, CPU usage by the Microsoft Hypervisor, and overall CPU usage by the root partition. This script also monitors the number of active virtual processors per logical processor, and it monitors overall CPU idle run time, which helps you determine how well CPU resources are being utilized.

This script raises an event if any of the CPU usages exceeds the threshold, or if the number of virtual processors per logical processor exceeds a threshold. This script also generates data streams for overall processor usage and the number of virtual processors per logical processor.

Use this script to determine if a CPU bottleneck exists in the Hyper-V environment, and if so, where that bottleneck is located, such as in the root partition, or in the Hypervisor or VM usage.

3.2.1 Source Objects

Hyper-V host CPU object

3.2.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.2.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HostCPUUtilization job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Overall CPU Usage	
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Event Notification	
Raise event if overall CPU usage exceeds threshold?	Select Yes to raise an event if the percentage of the overall system CPU usage exceeds the threshold you set. The default is Yes.

Parameter	How to Set It
Threshold - Maximum overall CPU usage	Specify the maximum percentage of overall system CPU usage that can be in use before an event is raised. The default is 90%.
Event severity when overall CPU usage exceeds the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the overall system CPU usage exceeds the threshold you set. The default is 5.
Raise event if overall CPU usage by guests exceeds threshold?	Select Yes to raise an event if the percentage of the overall system CPU usage by guests exceeds the threshold you set. The default is Yes.
Threshold - Maximum percentage of overall CPU usage by guests	Specify the maximum percentage of overall system CPU usage by guests that can be in use before an event is raised. The default is 80%.
Event severity when overall CPU usage by guests exceeds the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the overall system CPU usage the guests exceeds the threshold you set. The default is 15.
Raise event if overall CPU usage by hypervisor exceeds threshold?	Select Yes to raise an event if the percentage of the overall system CPU usage by the hypervisor exceeds the threshold you set. The default is Yes.
Threshold - Maximum overall CPU usage by hypervisor	Specify the maximum percentage of overall system CPU usage by the hypervisor that can be in use before an event is raised. The default is 25%.
Event severity when overall CPU usage by hypervisor exceeds the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the overall system CPU usage by the hypervisor exceeds the threshold you set. The default is 15.
Raise event if overall CPU usage by root partition exceeds threshold?	Select Yes to raise an event if the percentage of the overall system CPU usage by the root partition exceeds the threshold you set. The default is Yes.
Threshold - Maximum overall CPU usage by root partition	Specify the maximum percentage of overall system CPU usage by the root partition that can be in use before an event is raised. The default is 10%.
Event severity when overall CPU usage by root partition exceeds the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the overall system CPU usage by the root partition exceeds the threshold you set. The default is 15.
Raise event if processor Hv LP0 usage (indicates I/O activities) exceeds threshold?	Select Yes to raise an event if the percentage of processor Hv LP0 usage, which indicates I/O activities, exceeds the threshold you set. The default is unselected.
Threshold - Maximum processor Hv LP0 usage	Specify the maximum percentage of processor Hv LP0 usage that can exist before an event is raised. The default is 90%.
Event severity when processor Hv LP0 usage exceeds the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the processor Hv LP0 usage exceeds the threshold you set. The default is 5.
Raise event if number of active virtual processors per logical processor exceeds threshold?	Select Yes to raise an event if the number of active virtual processors per logical processor exceeds the threshold you set. The default is Yes.
Threshold - Maximum number of active virtual processors per logical processor	Specify the maximum number of active virtual processors per logical processor that can be in use before an event is raised. The default is 4.

Parameter	How to Set It
Event severity when number of active virtual processors per logical processor exceeds the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the number of active virtual processors per logical processor exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for overall CPU usage?	Select Yes to collect data about the overall CPU usage for charts and reports. The default is unselected.
Collect data for overall CPU usage by guests?	Select Yes to collect data about the overall CPU usage by the VMs for charts and reports. The default is unselected.
Collect data for overall CPU usage by hypervisor?	Select Yes to collect data about the overall CPU usage by the Hypervisor for charts and reports. The default is unselected.
Collect data for overall CPU usage by the root partition?	Select Yes to collect data about the overall CPU usage by the root partition for charts and reports. The default is unselected.
Collect data for overall CPU idle run time?	Select Yes to collect data about the overall CPU idle run time for charts and reports. The default is unselected.
Collect data for processor Hv LPO usage?	Select Yes to collect data about I/O bottlenecks for charts and reports. The default is unselected.
Collect data for active virtual processors per logical processor?	Select Yes to collect data about the number of active virtual processors per logical processor for charts and reports. The default is unselected.

3.3 HostLogicalDiskSpace

Use the Hyper-V_HostLogicalDiskSpace Knowledge Script to monitor the free space and the percentage of disk space used on logical disk drives on the Hyper-V host computer. You can provide a list of drives to exclude from monitoring.

This script raises events if the free space for a logical disk goes below a threshold, or the percentage of logical disk space usage exceeds a threshold you set. This script also generates data streams for logical disk free space or percentage of logical disk space usage.

3.3.1 Resource Objects

Hyper-V host logical disk object

3.3.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.3.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HostLogicalDiskSpace job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Logical Disk	
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Drives to exclude	<p>Specify the names of any logical disk drives you want to exclude from monitoring, separated by commas.</p> <p>For example: E: , G: , Z:</p>
Ignore disks with minimal total size?	Select Yes to not monitor disks that have fewer MB than the amount you specified in the <i>Minimum size for disk monitoring</i> parameter. The default is Yes.
Minimum size for disk monitoring	Specify the minimum disk size, in MB, of the disks you do <i>not</i> want to monitor with this script. The default is 100 MB.
Event Notification	
Disk Utilization	
Raise event if disk free space falls below the threshold?	Select Yes to raise an event if the free space of the logical disk falls below the threshold you set. The default is Yes.
Threshold - Minimum disk free space	Specify the minimum amount of logical disk free space that can exist before an event is raised. The default is 1024 MB.

Parameter	How to Set It
Event severity when disk free space usage falls below threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the free space on the logical disk goes below the threshold you set. The default is 15.
Raise event if disk space usage exceeds the threshold?	Select Yes to raise an event if the percentage of logical disk space usage exceeds the threshold you set. The default is Yes.
Threshold - Maximum disk space usage	Specify the maximum percentage of logical disk space that can be in use before an event is raised. The default is 90%.
Event severity when disk space usage exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the percentage of logical disk space usage exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for disk free space?	Select Yes to collect data about the logical disk free space for charts and reports. The default is unselected.
Collect data for disk space usage?	Select Yes to collect data about the logical disk space usage for charts and reports. The default is unselected.

3.4 HostLogicalDiskStats

Use the Hyper-V_HostLogicalDiskStats Knowledge Script to monitor the average disk queue length, disk latency, and disk byte transfer rate of the logical disks on the Hyper-V host computer.

This script raises events if the disk queue length, disk latency, or disk byte transfer rate exceed the threshold you set. This script also generates data streams for those metrics. You can provide a list of drives to exclude from monitoring.

3.4.1 Resource Objects

Hyper-V host logical disk object

3.4.2 Default Schedule

By default, this script runs **every ten minutes**.

- ◆ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ◆ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.4.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HostLogicalDiskStats job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Logical Disk	
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Drives to exclude	<p>Specify the names of any logical disk drives you want to exclude from monitoring, separated by commas.</p> <p>For example: E: , G: , Z:</p>
Event Notification	
Busy Notification	
Raise event if average disk queue length exceeds threshold?	Select Yes to raise an event if the average disk queue length exceeds the threshold you set. The default is Yes.
Threshold - Maximum average disk queue length	Specify the maximum average disk queue length that can exist before an event is raised. The default queue length is 2.
Event severity when average disk queue length exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the average disk queue length exceeds the threshold you set. The default is 15.
Disk Latency	

Parameter	How to Set It
Raise event if average number of disk reads (milliseconds per read) exceeds threshold?	Select Yes to raise an event if the average number of disk reads (in milliseconds per read) on the logical disk exceeds the threshold you set. The default is Yes.
Threshold - Maximum average number of disk reads	Specify the maximum average number of disk reads (in milliseconds per read) on the logical disk that can exist before an event is raised. The default is 26 milliseconds per read.
Event severity when average number of disk reads exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the average number of disk reads exceed the threshold you set. The default is 15.
Raise event if average number of disk writes (milliseconds per write) exceeds threshold?	Select Yes to raise an event if the average number of disk writes (in milliseconds per write) on the logical disk exceed the threshold you set. The default is Yes.
Threshold - Maximum average number of disk writes	Specify the maximum average number of disk writes (in milliseconds per write) on the logical disk that can exist before an event is raised. The default is 26 milliseconds per write.
Event severity when average number of disk writes exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the average number of disk writes exceeds the threshold you set. The default is 15.
Logical Disk I/O	
Raise event if disk byte transfer rate (MB/sec) exceeds threshold?	Select Yes to raise an event if the disk byte transfer rate exceeds the threshold you set. The default is Yes.
Threshold - Maximum disk byte transfer rate	Specify the maximum disk byte transfer rate that can exist before an event is raised. The default is 20 MB per second.
Event severity when disk byte transfer rate exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the disk byte transfer rate exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for average disk queue length?	Select Yes to collect data about the average disk queue length for charts and reports. The default is unselected.
Collect data for average disk reads?	Select Yes to collect data about average disk reads for charts and reports. The default is unselected.
Collect data for average disk writes?	Select Yes to collect data about average disk writes for charts and reports. The default is unselected.
Collect data for disk byte transfer rate? (MB/sec)	Select Yes to collect data about the disk byte transfer rate for charts and reports. The default is unselected.

3.5 HostMemory

Use this script to monitor Hyper-V hosts for the overall system memory usage, the total available memory, and the average memory pressure exerted by the virtual machines on the host for acquiring the memory.

This script raises an event if overall system memory usage, the total available memory, or the average memory pressure exerted by the virtual machines exceed the threshold you set. This script also generates data streams for these metrics.

Use this script to determine if the Hyper-V environment is running low on memory. This script detects low system memory if the virtual machines use static memory, dynamic memory, or a combination of both.

3.5.1 Resource Objects

Hyper-V host memory object

3.5.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.5.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HostMemory job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.

Parameter	How to Set It
Monitor Memory Usage	
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Event Notification	
Raise event if overall system memory usage exceeds the threshold?	Select Yes to raise an event if the percentage of the overall system memory usage exceeds the threshold you set. The default is Yes.
Threshold - Maximum overall system memory usage	Specify the maximum percentage of overall system memory usage that can be in use before an event is raised. The default is 90%.
Event severity when overall system memory usage exceeds the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the overall system memory usage exceeds the threshold you set. The default is 5.
Raise event if total available memory on host computer falls below the threshold?	Select Yes to raise an event if the total available memory on the Hyper-V host computer falls below the threshold you set. The default is Yes.
Threshold - Minimum memory currently available on host computer	Specify the smallest amount of total available memory that can be in use on the Hyper-V host computer before an event is raised. The default is 1024 MB.
Event severity when total available memory falls below the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the total available memory (in MB) falls below the threshold you set. The default is 15.
Raise event if the average memory pressure by the VMs exceeds threshold?	Select Yes to raise an event if the average dynamic memory pressure by the VMs exceeds the threshold you set. The default is Yes.
Threshold - Maximum average memory pressure by the VMs	Specify the maximum threshold for average memory pressure by the VMs that can be in use before an event is raised. The default is 100.
Event severity when average memory pressure by the VMs exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the average memory pressure by the VMs exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for overall system memory usage?	Select Yes to collect data about the overall system memory usage for charts and reports. The default is unselected.
Collect data for total available memory on the host computer?	Select Yes to collect data about the total available memory (in MB) on host computers for charts and reports. The default is unselected.
Collect data for average memory pressure by the VMs?	Select Yes to collect data about the average memory pressure by the VMs for charts and reports. The default is unselected.

3.6 HostNetworkUtilization

Use the Hyper-V_HostNetworkUtilization Knowledge Script to monitor host computers for the network utilization of network interface controller (NIC) cards present on the host computer. The script also monitors the network queue length of each NIC, and the number of errors in outbound and inbound packets.

This script raises events if the network queue length or the network utilization exceeds the threshold, or if the number of outbound or inbound packets with errors exceeds a threshold. This script also generates data streams for these metrics.

3.6.1 Resource Objects

Hyper-V host network interface controller object

3.6.2 Default Schedule

By default, this script runs **every ten minutes**.

- ◆ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ◆ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.6.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HostNetworkUtilization job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Network Utilization	

Parameter	How to Set It
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Network interfaces to exclude	<p>Specify any network interfaces you do not want to monitor, separated by commas. The defaults are *Wireless*, *WiFi*, *Virtual*.</p> <p>To exclude a network interface, you can only use an asterisk (*) as a wildcard character. The exclusion filter is case-sensitive.</p>
Event Notification	
Network Busy Notification	
Raise event if network queue length exceeds the threshold	Select Yes to raise an event if the network queue length exceeds the threshold you set. The default is unselected.
Threshold - Maximum network queue length	Specify the maximum amount of network queue length that can be in use before an event is raised. The default queue length is 2.
Event severity when network queue length exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the network queue length exceeds the threshold you set. The default is 15.
Network Utilization	
Raise event if network utilization exceeds the threshold	Select Yes to raise an event if the network utilization exceeds the threshold you set. The default is Yes.
Threshold - Maximum network utilization	Specify the maximum amount of network utilization that can be in use before an event is raised. The default is 35%.
Event severity when network utilization exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the network utilization exceeds the threshold you set. The default is 15.
Network Error Notification	
Raise event if number of outbound packets with errors exceeds the threshold	Select Yes to raise an event if the number of outbound packets containing errors exceeds the threshold you set. The default is Yes.
Threshold - Maximum number of outbound packets with errors	Specify the maximum number of number of outbound packets containing errors that can exist before an event is raised. The default is 0.
Event severity when number of outbound packets with errors exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the number of outbound packets containing errors exceeds the threshold you set. The default is 15.
Raise event if number of inbound packets with errors exceeds the threshold	Select Yes to raise an event if the number of inbound packets containing errors exceeds the threshold you set. The default is Yes.

Parameter	How to Set It
Threshold - Maximum number of inbound packets with errors	Specify the maximum number of inbound packets containing errors that can exist before an event is raised. The default is 0.
Event severity when number of inbound packets with errors exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the number of inbound packets containing errors exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for network queue length?	Select Yes to collect data about the network queue length for charts and reports. The default is unselected.
Collect data for network utilization?	Select Yes to collect data about the network utilization for charts and reports. The default is unselected.
Collect data for outbound packets with errors?	Select Yes to collect data about outbound packets containing errors for charts and reports. The default is unselected.
Collect data for inbound packets with errors?	Select Yes to collect data about inbound packets containing errors for charts and reports. The default is unselected.

3.7 HostOverallHealth

Use the Hyper-V_HostOverallHealth Knowledge Script to monitor the running status of Hyper-V core services. These services include Hyper-V Image Management, Hyper-V Networking Management, and Hyper-V Virtual Machine Management. This script also monitors the number of virtual machines that have critical health.

This script raises an event if a service is not running, or if a specific number of VMs have critical health. This script also generates data streams for those metrics.

3.7.1 Resource Objects

Hyper-V host object

3.7.2 Default Schedule

By default, this script runs **every 30 minutes**.

3.7.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HostOverallHealth job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.

Parameter	How to Set It
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Health of Hyper-V Environment on Host Computer	
Event Notification	
Raise event if Hyper-V Virtual Machine Management service is not running?	Select Yes to raise an event if the Hyper-V Virtual Machine Management service is not running. The default is Yes.
Event severity when Hyper-V Virtual Machine Management service is not running	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Hyper-V Virtual Machine Management service is not running. The default is 5.
Raise event if Hyper-V Networking Management service is not running? (Windows 2008 R2 only)	Select Yes to raise an event if the Hyper-V Networking Management service is not running. This parameter applies only to Windows Server 2008 R2 computers. The default is Yes.
Event severity when Hyper-V Networking Management service is not running	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Hyper-V Networking Management service is not running. The default is 5.
Raise event if Hyper-V Image Management service is not running (Windows Server 2008 R2 only)?	Select Yes to raise an event if the Hyper-V Image Management service is not running. This parameter applies only to Windows Server 2008 R2 computers. The default is Yes.
Event severity when Hyper-V Image Machine Management service is not running	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Hyper-V Image Management service is not running. The default is 5.
Raise event if number of VMs in critical state exceeds threshold?	Select Yes to raise an event if the number of VMs in critical state exceeds the threshold you set. The default is Yes.
Threshold - Maximum number of VMs in critical state	Specify the maximum number of VMs in critical state that can exist before an event is raised. The default is 0.
Event severity when number of VMs in critical state exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the number of VMs in critical state exceeds the threshold you set. The default is 5.
Data Collection	
Collect data for Hyper-V Virtual Machine Management service availability?	Select Yes to collect data about Hyper-V Virtual Machine Management service availability for charts and reports. The default is unselected.
Collect data for Hyper-V Networking Management service availability?	Select Yes to collect data about Hyper-V Networking Management service availability for charts and reports. The default is unselected.

Parameter	How to Set It
Collect data for Hyper-V Image Management service availability?	Select Yes to collect data about Hyper-V Image Management service availability for charts and reports. The default is unselected.
Collect data for number of VMs in critical state?	Select Yes to collect data about the number of VMs in critical state for charts and reports. The default is unselected.

3.8 HostPhysicalDiskStats

Use the Hyper-V_HostLogicalDiskStats Knowledge Script to monitor the average disk queue length, the disk byte transfer rate, and the number of disk transfers per second of the physical disks on the Hyper-V host computer.

This script raises events on the average disk queue length, the disk byte transfer rate, and the number of disk transfers per second. This script also generates data streams for those metrics.

3.8.1 Resource Objects

Hyper-V host physical disk object

3.8.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.8.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HostPhysicalDiskStats job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.

Parameter	How to Set It
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Physical Disk	
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Event Notification	
Busy Notification	
Raise event if average disk queue length exceeds threshold?	Select Yes to raise an event if the average disk queue length exceeds the threshold you set. The default is Yes.
Threshold - Maximum average disk queue length	Specify the maximum average disk queue length that can be in use before an event is raised. The default disk queue length is 2.
Event severity when average disk queue length exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the average disk queue length exceeds the threshold you set. The default is 15.
I/O Notification	
Raise event if disk byte transfer rate (MB/sec) exceeds threshold?	Select Yes to raise an event if the disk byte transfer rate (in MB per second) exceeds the threshold you set. The default is Yes.
Threshold - Maximum disk byte transfer rate	Specify the maximum disk byte transfer rate that can occur before an event is raised. The default is 20 MB per second.
Event severity when disk byte transfer rate exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the disk byte transfer rate exceeds the threshold you set. The default is 15.
Raise event if number of disk transfers per second exceeds threshold?	Select Yes to raise an event if the number of disk transfers per second exceeds the threshold you set. Disk transfers are the number of read and write operations on the disk per second. The default is unselected.
Threshold - Maximum number of disk transfers per second	Specify the maximum number of disk transfers per second that can occur before an event is raised. The default is 150 disk transfers per second.
Event severity when number of disk transfers exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the disk transfers per second exceeds the threshold you set. The default is 15.
Data Collection	

Parameter	How to Set It
Collect data for average disk queue length?	Select Yes to collect data about the average disk queue length for the physical disk for charts and reports. The default is unselected.
Collect data for disk byte transfer rate (MB/sec)?	Select Yes to collect data about the disk byte transfer rate for charts and reports. The default is unselected.
Collect data for number of disk transfers per second?	Select Yes to collect data about the number of disk transfers per second for charts and reports. The default is unselected.

3.9 HostReservation

Use the Hyper-V_HostReservation Knowledge Script to monitor the CPU reservation and memory reservation for virtual machines or guest machines on the Hyper-V host computer. This script does *not* monitor CPU and memory reservation for the host. This script also monitors the count of allocated virtual processors on virtual machines per logical processor.

This script raises an event if any of the following metrics exceeds a threshold: overall host system CPU reservation by virtual machines, overall host system memory reservation by virtual machines, and the number of allocated virtual processors on virtual machines per logical processor. This script also generates data streams for these metrics.

3.9.1 Resource Objects

Hyper-V host object

3.9.2 Default Schedule

By default, this script runs **every hour**.

3.9.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HostReservation job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	

Parameter	How to Set It
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Host Configuration	
Event Notification	
Raise event if number of allocated virtual processors on VMs per logical processor exceeds threshold?	Select Yes to raise an event if the number of allocated virtual processors on virtual machines per logical processor exceeds a threshold you set. The default is Yes.
Threshold - Maximum number of allocated virtual processors on VMs per logical processor	Specify the maximum number of allocated virtual processors on virtual machines per logical processor that can exist before an event is raised. The default is 4 virtual processors on virtual machines per logical processor.
Event severity when number of allocated virtual processors on VMs per logical processor exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the number of allocated virtual processors on virtual machines per logical processor exceeds the threshold. The default is 15.
Raise event if overall CPU reserved by VMs exceeds threshold?	Select Yes to raise an event if the overall system CPU reserved by virtual machines exceeds a threshold you set. The default is Yes.
Threshold - Maximum overall CPU reserved by VMs	Specify the maximum percentage of overall system CPU that can be reserved by virtual machines before an event is raised. The default is 90% of the CPU.
Event severity when overall CPU reserved by VMs exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the overall system CPU reserved by virtual machines exceeds the threshold you set. The default is 15.
Raise event if overall memory reserved by VMs exceeds threshold?	Select Yes to raise an event if the overall system memory reserved by virtual machines exceeds a threshold you set. The default is Yes.
Threshold - Maximum overall memory reserved by VMs	Specify the maximum percentage of overall system memory that can be reserved by VMs before an event is raised. The default is 90% of the memory.
Event severity when overall memory reserved by VMs exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the overall system memory reserved by virtual machines exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for allocated virtual processors on VMs per logical processor?	Select Yes to collect data about the number of allocated virtual processors on virtual machines per logical processor. The default is unselected.
Collect data for overall CPU reserved by VMs?	Select Yes to collect data for the overall system CPU reserved by virtual machines. The default is unselected.
Collect data for overall memory reserved by VMs?	Select Yes to collect data about the overall system memory reserved by virtual machines. The default is unselected.

3.10 HostVirtualSwitchTransferRate

Use the Hyper-V_HostVirtualSwitchTransferRate Knowledge Script to monitor Hyper-V host computers for virtual switch transfer rates in MB per second and virtual switch packets per second.

This script raises an event if the transfer rate exceeds a threshold you set. This script also generates data streams for switch byte transfer rates and switch packet transfer rates.

3.10.1 Resource Objects

Hyper-V host virtual switch object

3.10.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ◆ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ◆ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.10.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HostVirtualSwitchTransferRate job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Hyper-V Virtual Switch Monitoring	

Parameter	How to Set It
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Virtual switch interfaces to exclude	<p>Specify the names of the virtual interfaces you do not want to monitor, separated by commas. The default is *Private*.</p> <p>To exclude a switch, you can only use an asterisk (*) as a wildcard character. The exclusion filter is case-sensitive.</p>
Event Notification	
Raise event if virtual switch transfer rate (MB/sec) exceeds threshold?	Select Yes to raise an event if the virtual switch transfer rate in MB per second exceeds the threshold you set. The default is Yes.
Threshold - Maximum virtual switch transfer rate	Specify the maximum virtual switch transfer rate that can be in use before an event is raised. The default is 80 MB per second.
Event severity when virtual switch transfer rate exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the virtual switch transfer rate exceeds the threshold you set. The default is 15.
Raise event if virtual switch packet transfer rate exceeds threshold?	Select Yes to raise an event if the virtual switch packet transfer rate per second exceeds the threshold you set. The default is unselected.
Threshold - Maximum virtual switch packet transfer rate	Specify the maximum virtual switch packet transfer rate that can be in use before an event is raised. The default is 2000 packets per second.
Event severity when virtual switch packet transfer rate exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the virtual switch packet transfer rate exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for virtual switch byte transfer rate (MB/sec)?	Select Yes to collect data about the virtual switch byte transfer rate for charts and reports. The default is unselected.
Collect data for virtual switch packet transfer rate?	Select Yes to collect data about the virtual switch packets transfer rate for charts and reports. The default is unselected.

3.11 HyperVAvailability

Use the Hyper-V_HyperVAvailability Knowledge Script to monitor the availability of the hypervisor on host computers.

This script raises an event if the hypervisor is not available for monitoring. This script also generates data streams for the hypervisor availability and the host computer uptime on since its last restart.

3.11.1 Resource Objects

Hyper-V host object

3.11.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.11.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the HyperVAvailability job fails unexpectedly. The default is 5.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Hypervisor Availability	
Use global cache to store metrics?	Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes. Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.
Event Notification	
Raise event if hypervisor is not available for monitoring?	Select Yes to raise an event if the hypervisor does not respond. The default is Yes.
Event severity when hypervisor is not available for monitoring	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the hypervisor is not available for monitoring. The default is 5.
Data Collection	

Parameter	How to Set It
Collect data for hypervisor availability?	Select Yes to collect data about the availability for the hypervisor. The default is unselected.
Collect data for host computer uptime?	Select Yes to collect data about the uptime for the Hyper-V host computer. The default is unselected.

3.12 Inventory

Use the Hyper-V_Inventory Knowledge Script to run an inventory of virtual machines and the details for virtual machines on the Hyper-V host computer. This script raises an event if virtual machines are added or removed.

NOTE: This scripts runs only on Windows Server 2012 R2 Hyper-V hosts.

3.12.1 Resource Objects

Hyper-V host object

3.12.2 Default Schedule

By default, this script runs **every hour**.

3.12.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Inventory job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available on the Hyper-V host computer. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available on the Hyper-V host computer. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Event Log Scanning (only for first iteration)	

Parameter	How to Set It
Number of minutes to go back from current time (only for first iteration)	Specify how many minutes the script should go back to scan the event logs for the first iteration. The default is 15 minutes.
Inventory Hyper-V	
Event Notification	
Raise event if VMs are added or deleted?	Select Yes to raise an event when virtual machines are added or deleted from the Hyper-V host computer. The default is Yes.
Event severity when VMs are added or deleted	Set the event severity level, from 1 to 40, to indicate the importance of an event in which virtual machines are added or deleted. The default is 25.
Hyper-V host is localhost (AppManager agent is present on Hyper-V host)?	Select Yes if the AppManager agent is present on Hyper-V host. The default is unselected.
Run an inventory of virtual machines?	Select Yes to run an inventory of virtual machines. The default is Yes.
Run an inventory of virtual machine details?	Select Yes to run an inventory of virtual machine details. The default is unselected. NOTE: If you set the <i>Discover virtual machine details</i> parameter in the Discovery_Hyper-V Knowledge Script to Yes, you must also set this parameter to Yes to prevent this script from rediscovering the entire host and removing the VM details discovered during discovery.

3.13 SetMonitoringInterval

Use the Hyper-V_SetMonitoringInterval Knowledge Script to specify the monitoring interval for all the Knowledge Scripts that use the global cache for storing and retrieving metrics. Run this script before you run any of the scripts that use the global cache.

A default set of Knowledge Scripts that run in very short intervals, such as 10 minutes, are part of the global cache to achieve better scale. If you do not want to include a script in the global cache, de-select the *Use global cache to store metrics?* parameter for that script. For example, you might want to run that particular script more or less often than the global cache interval.

This script raises an event if setting the monitoring interval succeeds or fails.

NOTE: If you run a Knowledge Script that is included by default in the global cache, the jobs for that script do not collect data and do not raise events during the first iteration of that script. Jobs for subsequent iterations work as expected. In addition, the *Run Once* scheduling option does not work for scripts that are included in the global cache.

3.13.1 Troubleshooting Global Cache Jobs

Jobs that use the global cache might exceed the monitoring interval set in the Hyper-V_SetMonitoringInterval script. The default interval for the *Monitoring interval value* parameter for all jobs that use the global cache is 10 minutes.

If any monitoring job takes longer than the set monitoring interval time to complete the iteration, the job might experience data loss. At a certain point, you will not be able to monitor additional Hyper-V hosts at that specified monitoring interval.

When jobs take more than the monitoring interval time to complete, it is a sign that the AppManager for Microsoft Hyper-V module is working at its full capacity, and the module cannot continue monitoring the discovered Hyper-V hosts and virtual machines at the current monitoring interval.

To help you monitor this situation, NetIQ Corporation recommends you use the AMHealth_HeartBeatWin Knowledge Script to monitor the job interval of each job that uses the global cache.

To set the AMHealth_HeartBeatWin script to monitor global cache jobs:

- 1 Select **Yes** for the *Raise an event if job exceeds max job run time* parameter in the AMHealth_HeartBeatWin script.
- 2 Set the *Maximum job run time* parameter value to match the *Monitoring interval value* parameter that you set in the Hyper-V_SetMonitoringInterval script.

If you receive an event message from the AMHealth_HeartBeatWin job, the current monitoring interval set in the Hyper-V_SetMonitoringInterval script is not long enough to handle monitoring you Hyper-V hosts. See the following options to address this situation.

To prevent issues with the global cache:

- ♦ Increase the *Monitoring interval value* parameter in the Hyper-V_SetMonitoringInterval script.
- ♦ Reduce the number of Hyper-V hosts you are currently monitoring.
- ♦ Set up a new proxy agent for this module to better distribute the load.

3.13.2 Resource Objects

NT Machine Folder object

3.13.3 Default Schedule

By default, this script runs once. Run this script *before* running any of the other Knowledge Scripts that are part of the global cache.

3.13.4 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	

Parameter	How to Set It
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the SetMonitoringInterval job fails unexpectedly. The default is 5.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Event Settings	
Raise event if setting monitoring interval succeeds?	Select Yes to raise an event when the script succeeds in setting the monitoring interval for the global cache. The default is Yes.
Event severity when setting monitoring interval succeeds	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the script succeeds in setting the monitoring interval for the global cache. The default is 25.
Raise event if setting monitoring interval fails?	Select Yes to raise an event when the script fails to set the monitoring interval for the global cache. The default is Yes.
Event severity when setting monitoring interval fails	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the script fails to set the monitoring interval for the global cache. The default is 5.
Global Cache Monitoring Interval	
Monitoring interval value	Specify how often you want to run the Knowledge Scripts that use the global cache. The default is 10 minutes.

3.14 VmAvailability

Use the Hyper-V_VmAvailability Knowledge Script to monitor the availability, health, and uptime of a virtual machine on a Hyper-V host.

This script raises an event if a virtual machine is down or not healthy, and it collects data for availability, health status, and uptime since last restart for a virtual machine on a Hyper-V host.

3.14.1 Resource Objects

Hyper-V virtual machine object

3.14.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.14.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the VmAvailability job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Virtual Machine	
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Event Notification	
Raise event if the virtual machine is down?	Select Yes to raise an event if the virtual machine is down. The default is Yes.
Event severity when virtual machine is down	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the virtual machine is down. The default is 15.
Raise event if the virtual machine is not healthy?	Select Yes to raise an event if the virtual machine is not healthy. The default is Yes.
Event severity when virtual machine is not healthy	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the virtual machine is not healthy. The default is 15.
Data Collection	
Collect data for virtual machine availability?	Select Yes to collect data about the availability for the virtual machine. The default is unselected.
Collect data for virtual machine health status?	Select Yes to collect data about the health status for the virtual machine. The default is unselected.
Collect data for virtual machine uptime (in minutes)?	Select Yes to collect data about the uptime for the virtual machine. The default is unselected.

3.15 VmCPUUtilization

Use the Hyper-V_VmCPUUtilization Knowledge Script to monitor the CPU usage of a virtual machine on a Hyper-V host.

This script raises an event if the CPU usage of virtual machine exceeds a threshold you set, and it collects data for that metric, if needed.

3.15.1 Resource Objects

Hyper-V virtual machine CPU object

3.15.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ◆ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ◆ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.15.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the VmCPUUtilization job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor CPU Usage of Virtual Machine	

Parameter	How to Set It
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Event Notification	
Raise event if CPU usage of a virtual machine exceeds the threshold?	Select Yes to raise an event if the CPU usage of a virtual machine exceeds the threshold. The default is Yes.
Threshold - Maximum CPU usage of a virtual machine	Specify the maximum percentage of the CPU usage of a virtual machine that can be in use before an event is raised. The default is 95%.
Event severity when CPU usage of a virtual machine exceeds the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the CPU usage of a virtual machine exceeds the threshold. The default is 5.
Data Collection	
Collect data for CPU usage of a virtual machine?	Select Yes to collect data about the CPU usage of a virtual machine. The default is unselected.

3.16 VmDiskSpace

Use the Hyper-V_VmDiskSpace Knowledge Script to monitor the free space and the percentage of disk space used by the storage disk of the virtual machines on the Hyper-V host computer.

This script raises events if the free space for a storage disk goes below a threshold you set, or the disk usage goes above the threshold. This script also generates data streams for storage disk free space or percentage of disk space usage.

NOTE: The VMDiskSpace script does not monitor fixed-size virtual hard disks.

Also, because of an issue with the way in which Microsoft handles free disk space on a system using the Inspect Disk utility of Hyper-V Manager, the VmDiskSpace script might display inaccurate free disk space values for virtual machines on the Hyper-V host that use snapshots.

3.16.1 Resource Objects

Hyper-V virtual machine logical disk object

3.16.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.16.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the VmDiskSpace job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Disk Utilization	
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Event Notification	
Raise event if disk free space falls below the threshold?	Select Yes to raise an event if the free space of the storage disk of the virtual machines falls below the threshold you set. The default is Yes.
Threshold - Minimum disk free space usage	Specify the minimum amount of disk free space that can be in use before an event is raised. The default is 1024 MB.
Event severity when disk free space usage falls below threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the free space on the disk goes below the threshold you set. The default is 15.

Parameter	How to Set It
Raise event if disk space usage exceeds the threshold?	Select Yes to raise an event if the percentage of disk space usage exceeds the threshold you set. The default is Yes.
Threshold - Maximum disk space usage	Specify the maximum percentage of disk space that can be in use before an event is raised. The default is 90%.
Event severity when disk space usage exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the percentage of disk space usage exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for disk free space?	Select Yes to collect data about the free space of the storage disk of the virtual machines for charts and reports. The default is unselected.
Collect data for disk space usage?	Select Yes to collect data about the disk space usage for charts and reports. The default is unselected.

3.17 VmDiskStats

Use the Hyper-V_VmDiskStats Knowledge Script to monitor the number of disk errors, and the disk reads and writes in bytes per second on the storage disks on virtual machines on the Hyper-V host computer.

This script raises events if the number of disk errors, read bytes per second, or write bytes per second exceed the threshold you set. This script also generates data streams for those metrics.

3.17.1 Resource Objects

Hyper-V virtual machine logical disk object

3.17.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.17.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	

Parameter	How to Set It
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the VmDiskStats job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Disk Statistics	
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Event Notification	
Disk Errors	
Raise event if number of disk errors exceeds threshold?	Select Yes to raise an event if the number of disk errors exceeds the threshold you set. The default is Yes.
Threshold - Maximum number of disk errors	Specify the maximum number of disk errors that can exist before an event is raised. The default is 0 errors.
Event severity when number of disk errors exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the number of disk errors exceeds the threshold you set. The default is 15.
I/O Notification	
Raise event if disk read bytes/sec exceeds threshold?	Select Yes to raise an event if the number of disk read bytes per second exceeds the threshold you set. The default is unselected.
Threshold - Maximum disk read bytes/sec	Specify the maximum number of disk read bytes per second that can exist before an event is raised. The default is 20 MB per second.
Event severity when disk read bytes/sec exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the disk read bytes per second exceeds the threshold you set. The default is 15.
Raise event if disk write bytes/sec exceeds threshold?	Select Yes to raise an event if the number of disk write bytes per second exceeds the threshold you set. The default is unselected.
Threshold - Maximum disk write bytes/sec	Specify the maximum number of disk write bytes per second that can exist before an event is raised. The default is 20 MB per second.

Parameter	How to Set It
Event severity when disk write bytes/sec exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the disk write bytes per second exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for number of disk errors?	Select Yes to collect data about the number of disk errors for charts and reports. The default is unselected.
Collect data for disk read bytes/sec?	Select Yes to collect data about the disk read bytes per second for charts and reports. The default is unselected.
Collect data for disk write bytes/sec	Select Yes to collect data about the disk write bytes per second for charts and reports. The default is unselected.

3.18 VmIntegrationServices

Use the Hyper-V_VmIntegrationServices Knowledge Script to monitor the version status and the availability of Virtual Machine Integration Services components on virtual machines on the Hyper-V host computer.

This script raises an event if the Integration Services version is not current, or if individual component services are not enabled and operational.

3.18.1 Resource Objects

Hyper-V virtual machine object

3.18.2 Default Schedule

By default, this script runs **every day**.

3.18.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the VmIntegrationServices job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available. The default is 15.
Additional Settings	

Parameter	How to Set It
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Event Notification	
Monitor Virtual Machine Integration Services Version Status	
Raise event if VM Integration Services version is not up to date?	Select Yes to raise an event if the VM Integration Services version is not current. The default is Yes.
Event severity when VM Integration Services version is not up to date	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the VM Integration Services version is not current. The default is 25.
Monitor Virtual Machine Integration Services Component Availability	
Raise event if Operating System Shutdown service is not operational?	Select Yes to raise an event if the Operating System Shutdown service is not operational. The default is unselected.
Event severity when Operating System Shutdown service is not operational	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Operating System Shutdown service is not operational. The default is 25.
Raise event if Time Synchronization service is not operational?	Select Yes to raise an event if the Time Synchronization service is not operational. The default is unselected.
Event severity when Time Synchronization service is not operational	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Time Synchronization service is not operational. The default is 25.
Raise event if Data Exchange service is not operational?	Select Yes to raise an event if the Data Exchange service is not operational. The default is unselected.
Event severity when Data Exchange service is not operational	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Data Exchange service is not operational. The default is 25.
Raise event if Heartbeat service is not operational?	Select Yes to raise an event if the Heartbeat service is not operational. The default is unselected.
Event severity when Heartbeat service is not operational	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Heartbeat service is not operational. The default is 25.
Raise event if Backup (volume checkpoint) service is not operational?	Select Yes to raise an event if the Backup (volume checkpoint) service is not operational. The default is unselected.
Event severity when Backup (volume checkpoint) service is not operational	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Backup (volume checkpoint) service is not operational. The default is 25.
Raise event if Guest services (for Windows Server 2012 R2) is not operational?	Select Yes to raise an event if Guest services is not operational. The default is unselected. For Windows Server 2012 R2 only.
Event severity when Guest services is not operational	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the Guest services is not operational. The default is 25.

3.19 VmMemory

Use the Hyper-V_VmMemory Knowledge Script to monitor average memory pressure on guest virtual machines on the Hyper-V host computer.

This script raises an event if the average memory pressure exceeds the threshold. This script also generates data streams for average memory pressure on guest virtual machines.

NOTE

- ♦ The VmMemory script does not gather data about the current or average memory pressure if the operating system of the virtual machine is older than Microsoft Windows 2008 R2. In this situation, the current or average memory pressure always shows as zero. Also, the pressure always shows as zero if the Integrations Services are not updated correctly on a virtual machine running Linux.
 - ♦ The VmMemory script does not collect data for virtual machines where dynamic memory is disabled.
-

3.19.1 Resource Objects

Hyper-V virtual machine memory object

3.19.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.19.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the VmMemory job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available. The default is 15.
Additional Settings	

Parameter	How to Set It
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Use global cache to store metrics?	<p>Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes.</p> <p>Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.</p>
Event Notification	
Raise event if average memory pressure exceeds the threshold?	Select Yes to raise an event if the average memory pressure exceeds the threshold you set. The default is Yes.
Threshold - Maximum average memory pressure	Specify the maximum average memory pressure that can exist before an event is raised. The default is 90%.
Event severity when average memory pressure exceeds the threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the average memory pressure exceeds the threshold. The default is 15.
Data Collection	
Collect data for average memory pressure?	Select Yes to collect data about the average memory pressure. The default is unselected.

3.20 VmNetworkAdapterTransferRate

Use the `Hyper-V_VmNetworkAdapterTransferRate` Knowledge Script to monitor virtual network adapter transfer rates in MB per second and transfer rates in packets per second on virtual machines of a Hyper-V host. You can also monitor legacy network adapters.

This script raises an event if a transfer rate exceeds the threshold. This script also generates data streams for virtual network adapter transfer rates in MB per second and packets per second on virtual machines.

3.20.1 Resource Objects

Hyper-V virtual machine network interface controller object

3.20.2 Default Schedule

By default, this script runs **every 10 minutes**.

- ♦ If you want to use the global cache to retrieve and store metrics, run the [SetMonitoringInterval](#) script *before* running this script. The value set in the *Monitoring interval value* parameter for the SetMonitoringInterval script determines how often global cache scripts run, which is 10 minutes by default.
- ♦ If you do not want to use the global cache for this script, select **No** for the *Use global cache to store metrics?* parameter for this script.

3.20.3 Setting Parameter Values

Set the following parameters on the **Values** tab as needed:

Parameter	How to Set It
General Settings	
Job Failure Notification	
Event severity if job fails unexpectedly	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the VmNetworkAdapterTransferRate job fails unexpectedly. The default is 5.
Raise event if metric data is not available?	Select Yes to raise an event if the metric data is not available. The default is Yes.
Event severity when metric data is not available	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the metric data is not available. The default is 15.
Additional Settings	
Event Details	
Event detail format	Select either HTML Table or Plain Text as the format for event detail. The default is HTML Table.
Monitor Hyper-V Virtual Network Adapter	
Use global cache to store metrics?	Select Yes to include this script in the group of Knowledge Scripts that use the global cache to retrieve and store metrics to achieve better scale. These scripts all use the same interval for monitoring, which you can set with the <i>Monitoring interval value</i> parameter in the SetMonitoringInterval Knowledge Script. The default is Yes. Select No if you do not want this script to use the global cache. An example of when you might not want to do so is if you want to run this script on a different interval than the interval used by the SetMonitoringInterval Knowledge Script.
Monitor legacy network adapter?	Select Yes to monitor a legacy network adapter. The default is unselected.
Event Notification	
Raise event if byte transfer rate (MB/sec) exceeds threshold?	Select Yes to raise an event if the byte transfer rate, in MB per second, for the virtual network adapter exceeds the threshold you set. The default is Yes.

Parameter	How to Set It
Threshold - Maximum byte transfer rate	Specify the maximum byte transfer rate for the virtual network adapter that can exist before an event is raised. The default transfer rate is 80 MB per second.
Event severity when byte transfer rate exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the byte transfer rate for the virtual network adapter exceeds the threshold you set. The default is 15.
Raise event if packet transfer rate (packets/sec) exceeds threshold?	Select Yes to raise an event if the packet transfer rate, in MB per second, for the virtual network adapter exceeds the threshold you set. The default is Yes.
Threshold - Maximum packet transfer rate	Specify the maximum packet transfer rate for the virtual network adapter that can exist before an event is raised. The default transfer rate is 80 packets per second.
Event severity when packet transfer rate exceeds threshold	Set the event severity level, from 1 to 40, to indicate the importance of an event in which the packet transfer rate for the virtual network adapter exceeds the threshold you set. The default is 15.
Data Collection	
Collect data for byte transfer rate?	Select Yes to collect data about the byte transfer rate in MB per second for charts and reports. The default is unselected.
Collect data for packet transfer rate?	Select Yes to collect data about the packet transfer rate for charts and reports. The default is unselected.