This document explains the required steps to configure the RAP as a Service for SharePoint Server.

There are **two scenarios** available to configure the assessment. Determine which scenario fits best for your organization.

1. Data collection machine does not have Internet access
2. Data collection machine has Internet access

**Data collection machine does not have Internet access**

In this scenario, the data collection machine has no Internet connection and connects to either an OMS Gateway or a SCOM server (with or w/o OMS Gateway) to upload the data to log analytics. The OMS Gateway must have Internet access. This scenario is recommended for environments where the Internet connection is restricted from the data collection machine or where security is a concern due to this schedule task requirement.

In the scenario where you use an OMS Gateway, we require two computers. One will be designated as the data collection machine, and the second machine will be the OMS Gateway.

For information about the OMS Gateway, go to [https://go.microsoft.com/fwlink/?linkid=830157](https://go.microsoft.com/fwlink/?linkid=830157).

The data collection machine must be a member of the SharePoint farm being assessed. It will collect data from all the servers in the SharePoint farm. After the data is collected, the data collection machine will analyze the information, and for increased security, will forward the data to an OMS Gateway to upload it to log analytics.

The following path shows the relationship between your Windows computers and log analytics after you have installed and configured the OMS Gateway and data collection machine.

*Data collection machine ➔ Collects data from all SharePoint servers in the environment ➔ Forward collected data to the OMS Gateway ➔ Submit data to the log analytics workspace*

**Data collection machine has Internet access**

This scenario can be used when the data collection machine can contact log analytics directly. It requires one computer that will be designated as the data collection machine which has to be able to access the Internet to upload data to log analytics. This scenario can be used in environments where the Internet connection is not restricted.

The data collection machine must be a member of the SharePoint farm being assessed. It will collect data from all the SharePoint Servers in the farm. After the data is collected, the data collection machine will analyze the information and then upload the data to log analytics directly, which will require HTTPS connectivity to your log analytics workspace. The following path shows the relationship between your Windows computers and log analytics after you have installed and configured the data collection machine:

*Data collection machine ➔ Collects data from all SharePoint servers in the environment ➔ Submit data to the log analytics workspace.*

**Detailed information on these configurations and requirements are listed later in this document.**
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System Requirements and Configuration at Glance

According to the scenario you use, review the following details to ensure that you meet the necessary requirements.

Supported Versions

Common to Both Scenarios
- You will need an Azure subscription
- You will need a log analytics workspace
- User account rights:
  - A domain account with the following rights:
    - Farm Administrator.
    - Local Admin rights on All SharePoint & SQL Servers associated with the SharePoint farm being assessed.
    - Sysadmin rights on all Instances housing SharePoint databases.

Data Collection Machine
- The Data collection machine must be joined or be one of the servers in the SharePoint farm. We recommend using the server running Central Administration.
- Data collection machine hardware: Minimum 16 gigabytes (GB) of RAM, 2 gigahertz (GHz) dual-core processor, minimum 10 GB of free disk space.
- The data collection machine is used to connect to all servers in the farm and retrieve information from them. The machine is communicating over Remote Procedure Call (RPC), Server Message Block (SMB), WMI, remote registry, SQL Queries, PowerShell cmdlets.
- Microsoft .NET Framework 4.6.2 or newer installed.
- The data collection machine must be able to connect to the Internet using HTTPS to submit the collected data to your log analytics workspace. This connection can be direct, via a proxy.
- For the Microsoft Monitoring Agent to connect to and register with the log analytics service, it must have access to the Internet. If you use a proxy server for communication between the agent and the log analytics service, you will need to ensure that the appropriate resources are accessible. If you use a firewall to restrict access to the Internet, you need to configure your firewall to permit access to log analytics. To ensure data can be submitted follow the steps in Configure Proxy and Firewall Settings in Log Analytics at https://azure.microsoft.com/en-in/documentation/articles/log-analytics-proxy-firewall/.

OMS Gateway (required in the data collection machine does not have Internet access scenario)
- The OMS Gateway can be a standalone or a member server. It requires Windows Server 2012 R2 or later.
- The OMS Gateway must be able to connect to the Internet using HTTPS to submit the collected data to your log analytics workspace. This connection can be direct, via a proxy.
- OMS Gateway hardware: Minimum 4 GB of RAM and 2 GHz processor.
- OMS Gateway user account rights: None required.
PowerShell Remoting

To complete the assessment with the accurate results, you will need to configure all in-scope target machines for PowerShell remoting.

PowerShell on the tools machine is used to scan the servers for installed security patches as well as audit policy configuration.

- Windows Update Agent must be running on all SharePoint servers for the security update scan
- PowerShell version 2 or greater is required on the SharePoint server and comes installed by default starting with Windows Server 2008 R2. For Windows Server 2008 SP2, PowerShell version 2 is not installed by default. It is available for download here https://aka.ms/wmf3download

**Additional requirements for Windows Server 2008-2012 R2 (or later if defaults modified) Target Machines:**

The following three items must be configured on SharePoint servers to support data collection: PowerShell Remoting, WinRM service and Listener, and Inbound Allow Firewall Rules.

**Note 1:** Windows Server 2012 R2 and Windows Server 2016 have WinRM and PowerShell remoting enabled by default. The following configuration steps detailed below will only need to be implemented if the default configuration for target machines has been altered.

**Note 2:** Windows Server 2008—Windows Server 2012 have WinRM disabled by default. The following settings will need to be configured to support PowerShell Remoting:

- Execute **Enable-PSRemoting** Powershell cmdlet on each target machine within the scope of the assessment. This one command will configure PS-Remoting, WinRM service and listener, and enable required Inbound FW rules. A detailed description of everything Enable-PSRemoting does is documented here.

OR

- Configure **WinRM / PowerShell remoting** via Group Policy (Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Remote Management (WinRM)\WinRM Service)
  - In 2008 R2 it’s “Allow automatic configuration of listeners”.
  - In 2012 R2 (and later) it’s “Allow remote server management through WinRM”.
- Configure **WinRM service for automatic start** via Group Policy (Computer Configuration\Policies\Windows Settings\Security Settings\SystemServices)
  - Define Windows Remote Management (WS-Management) service for **Automatic startup mode**
- Configure **Inbound allow Firewall Rules**: This can be done individually in the local firewall policy of every in-scope target SharePoint server or via a group policy which allow communication from the tools machine.

Two steps are involved to configure a group policy to enable both WinRM listener and the required inbound allow firewall rules:

A) Identify the IP address of the source computer where data collection will occur from.

B) Create a new GPO linked to the SharePoint servers organizational unit, and define an inbound rule for the tools machine

A.) Log into the chosen data collection machine to identify its current IP address using IPCfg.exe from the command prompt.

An example output is as follows
C:\>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . : 
Link-local IPv6 Address . . . . . . : fe80::X:X:X:X%13
IPv4 Address. . . . . . . . . . . . : X.X.X.X
Subnet Mask . . . . . . . . . . . . : X.X.X.X
Default Gateway . . . . . . . . . : X.X.X.X

Make a note of the IPv4 address of your machine. The final step in the configuration will use this address to ensure only the data collection machine can communicate with the Windows Update Agent on the SharePoint servers.

B.) Create, configure, and link a group policy object to the SharePoint servers OU in each domain in the forest.

1. Create a new GPO. Make sure the GPO applies to the SharePoint server’s organizational unit. Give the new group policy a name based on your group policy naming convention or something that identifies its purpose similar to “SP Assessment”
Management (WinRM)\WinRM Service). Enable “Allow remote server management through WinRM” or “Allow automatic configuration of listeners” depending on your OS.

3. Create an advanced Inbound Firewall Rule to allow all network traffic from the tools machine to the SharePoint servers. This can be the applied to the same GPO that was used in step 1 above. (Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security – LDAP:/xxx\Inbound Rules)

4. To create the new rule, Right Click on “Inbound Rules” and select “New”

5. Create a custom rule and choose “Next”
6. Allow “All programs” from the tools machine and click “Next”.

7. Allow all protocols and ports, then click “Next”.

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8. Specify the IP address of the tools machine and click “Next”.

9. Choose to “Allow the connection” and click Next

10. Choose to select network profile “Domain” and click “Next”

11. Choose a name for the rule (Example: SPAssessmentToolsMachine)

After you have finished the installation of the Microsoft Monitoring Agent/OMS Gateway, and configured PowerShell Remoting on the target machines, continue with the next section to set up the assessment.

**User Profile Service**

It is necessary to modify the default behavior of the User Profile Service as it relates to user logoff. Windows, by default, forcibly unloads user registry hive on logoff even if there are applications with open handles to the user registry hive. This default behavior interferes with remote PowerShell initialization routines during execution of the on-demand assessment via scheduled task and can prevent successful collection and submission of assessment data to the log analytics portal.

On the data collection machine, change the following setting in the group policy editor (gpedit.msc) from “not configured” to “enabled”:

**Computer Configuration -> Administrative Templates -> System -> User Profiles**

‘Do not forcefully unload the user registry at user logoff’
A PFE will assist with the setup, configure both machines and scheduling the SharePoint assessment during the scoping call.
If you do not have an Azure Log Analytics workspace, the PFE assists you creating one and link that workspace with our Services Hub portal where you enable the assessment.
Depending on the scenario you have chosen, have one or two machines installed and account ready according to the requirements mentioned above. These machines can be VMs.

The appendix has the information how to setup the data collection machine and assessment.
Appendix A – Setting up the Environment

Enable the assessment in Services Hub portal
1. To ensure the Microsoft Monitoring Agent knows what assessments can be run, you need to add the assessment you want to run.
   If you have not added the assessment you are setting up, do this now. In https://serviceshub.microsoft.com go to Health -> Assessments, select the assessment you want to enable and click Add Assessment.

2. Click **Add** on the Assessment you want to setup

The option changes from Add to View in Azure Log Analytics. You are now all set for the next steps.

Determine the steps to follow to successfully setup the environment for your scenario:

**Data collection machine has Internet access**
- Follow Step 2. Data Collection Machine Setup, then Appendix B – Setup Assessment

**Data Collection machine has no Internet access**
- Using OMS Gateway
  - Start with Step 1, then Step 2 and next Appendix B - Setup Assessment
- Using SCOM
  - Start with Step 3

1. Log Analytics OMS Gateway Setup
If your scenario includes the installation of an OMS Gateway, follow this section. If not, move to the step 2. On the designated OMS Gateway machine, you must install both the OMS Gateway and the Microsoft Monitoring Agent. Follow the instructions in the sections below to set up both components.

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Download and install the OMS Gateway

On the designated OMS Gateway server, complete the following:

1. Download the Setup file from https://go.microsoft.com/fwlink/?linkid=837444
2. On the Welcome page, click Next.
3. On the License Agreement page, select I accept the terms in the License Agreement to agree to the EULA, and then click Next.
4. On the Port and Proxy Address page, do the following:
   - Type the TCP port number to be used for the OMS Gateway. Setup opens this port number from Windows firewall. The default value is 8080.
   - [Optional] If the server on which the OMS Gateway resides needs to go through a proxy, input the proxy address where the OMS Gateway needs to connect. For example, myorgname.corp.contoso.com:80. This is an optional value. If it is blank, the OMS Gateway will try to connect to the Internet directly. Otherwise, the OMS Gateway will connect through your internal proxy. If your proxy requires authentication, you can provide a username (domain\user) and password. (NOTE: If you do not provide a domain for the user, it will not work).
   - Click Next.
5. On the Destination Folder page, either retain the default folder location of %ProgramFiles%\OMS Gateway, or type the location where you want to install, and then click Next.
6. On the Ready to install page, select Install. A User Account Control dialog box might appear requesting permission to install. If so, click OK.
7. After Setup completes, click Finish. You can verify that the service is running by opening the Services.msc snap-in and checking the status of the service called OMS Gateway.
8. Download and install the Microsoft Monitoring Agent setup file from log analytics.

Note. It is required to install the Microsoft Monitoring Agent on the OMS Gateway and configure it to with the log analytics workspace that you configure on the data collection machine. Follow the instructions in the next section in this document, Data Collection Machine Setup.
2. Data Collection Machine Setup

Download and install the Microsoft Monitoring Agent setup file from Azure Log Analytics

On the designated data collection machine or OMS Gateway server complete the following:

**Note.** If the collection machine does not have an Internet connection, perform the first 3 steps from an Internet Connected machine.

1. In the Azure portal, go to log analytics, select your workspace and click the **Advanced Settings** Icon.

2. **Click Connected Sources**, and then select **Windows Servers**.

3. **Click the Download Windows Agent** link that is applicable to your computer processor type to download the setup file. If the agent is downloaded on another machine, copy the Setup file over to the data collection machine or OMS Gateway server.

**Note.** If a monitoring client was installed for System Center Operations Manager (SCOM), the setup only offers to Upgrade the agent, preserving existing settings. The upgrade does not include any of the configuration steps below.

The next steps apply to installations where no monitoring client was installed for SCOM. Refer to the [Microsoft Monitoring Agent Upgrade](#) section in this document when you are performing an upgrade of the Monitoring Agent for SCOM.

4. Run Setup to install the agent.
5. On the **Welcome** page, click **Next**.
6. On the **License Terms** page, read the license and then click **I Agree**
7. On the **Destination Folder** page, change or keep the default installation folder and then click **Next**.
8. On the **Agent Setup Options** page, choose the **Connect the agent to Azure Log Analytics (OMS)** option. Click **Next**.

![Microsoft Monitoring Agent Setup dialog box with Connect the agent to Azure Log Analytics (OMS) option highlighted.](image)

9. On the Overview, Settings Dashboard page, click **Connected Sources**, and then copy and paste the **Workspace ID** and **Workspace Key (Primary Key)** from the log analytics portal. (Hint: Click the copy button then paste in the corresponding **Agent Setup** field).

Select **Azure Commercial** or if you are using an Azure US Government cloud select **Azure US Government** from the **Azure Cloud** drop down menu and click **OK**.

10. If you are currently installing the agent on the data collection machine and using an OMS Gateway as part of the **OMS Gateway and Data Collection Machine** scenario, or if your company requires access through a proxy server, click the **Advanced** button to provide **HTTP proxy** configuration. If you do not use any of the above, click **Next** and go to **step 12**.

![Overview > Settings Windows Servers](image)

11. Specify the fully qualified domain name (FQDN) or the IP address and port of the OMS Gateway.
If you use a proxy server instead of an OMS Gateway, add the information for your proxy server and if required, authentication credentials (not required for the OMS Gateway), then click Next twice.

12. On the Microsoft Update page, optionally select Use Microsoft Update when I check for updates (recommended), then click Next.

13. On the Ready to Install page, review your choices, and then click Install.


15. When complete, the Microsoft Monitoring Agent appears in Control Panel. You can review your configuration there and verify that the agent is connected to log analytics. When connected to log analytics, the agent displays a message stating: The Microsoft Monitoring Agent has successfully connected to the log analytics service.
Note. If you have been installing the Microsoft Monitoring Agent on the OMS Gateway, you need to repeat the installation on the data collection machine.

After setting up the data collection machine, continue with the setup of the Assessment as outlined in the prerequisites and configuration documentation for each technology.
Microsoft Monitoring Agent Upgrade

If a monitoring agent is already installed, the Microsoft Monitoring Agent setup will only display the upgrade option. The upgrade will keep the existing configuration and adds a new option to configure a log analytics workspace.

Follow the steps below to perform an upgrade and configure the agent for the log analytics Workspace.

1. Run Setup to install the agent.
2. On the Welcome page, click Next.
3. On the License Terms page, read the license and then click I Agree
4. On the begin Upgrade page, click Upgrade.
5. On the Completion page, click Finish.
6. Once the agent installation completed, go to the Control Panel.

7. Click Microsoft Monitoring Agent
8. If the OMS Gateway scenario is chosen or a Proxy server is in place go to the Proxy Settings tab
   When this scenario is not used go to step 9.

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Select **Use a proxy server** and specify the fully qualified domain name (FQDN) or the IP address and port of the OMS Gateway. If you use a proxy server instead of an OMS Gateway, add the information for your proxy server and if required, authentication credentials (not required for the OMS Gateway), then Select **Apply**

9. Select the **Azure Log Analytics (OMS)** tab and click **Add...**

![Microsoft Monitoring Agent Properties](image)

10. Copy and paste the **Workspace ID** and **Workspace Key (Primary Key)** from the log analytics portal. (Hint: Click the copy button then paste in the corresponding **Agent Setup** field). Select **Azure Commercial** or, if you are using an Azure US Government cloud select **Azure US Government** from the **Azure Cloud** drop down menu and click **OK**.

11. An exclamation mark will be visible in the Workspaces pane. Click **Apply**. This will stop and start the agent, and the Workspaces pane should look like the following example after a few seconds.

![Microsoft Monitoring Agent Properties](image)

12. Click **OK** to finish the Microsoft Monitoring Agent upgrade for log analytics.
3. Setup and configure log analytics using SCOM

If SCOM is already in use and you want to use SCOM and the already installed agents, follow the steps in this section. In this configuration SCOM will either act as the gateway or it leverages the OMS Gateway itself to send data to log analytics.

**Pre-requisites**

The SCOM 2012 SP1 UR6 (UR7 for proxy/gateway support) or SCOM 2012 R2 UR2 (UR3 for proxy/gateway support) agent is the minimum version required to fully support log analytics functionality.

If you are using multi homing of log analytics workspaces, we would suggest that you not use the agent that comes with SCOM but use the Microsoft Monitoring Agent from Microsoft Update/log analytics workspace instead. The current Microsoft Monitoring Agent version is backwards compatible and supported with all SCOM 2012 R2/2016 management groups.

1. On the SCOM Administration Console go to **Administration -> Operations Management Suite -> Connection**

2. Click on **Register to Operations Management Suite**
   A login window will appear. Log in with an account that has administrative rights to connect to the log analytics workspace. Select the proper workspace (if there is more than one) and click **Next**. In the **Confirm the settings** window click on **Create**.

3. Go to the log analytics workspace.
4. From the log analytics workspace, to confirm that the Management Group is connected, go to **Advanced Settings** -> **Connected Sources** -> **System Center**.

Back in the SCOM Administration Console you need to opt-in the agents for log analytics/OMS:

1. Go to **Administration** -> **Operations Management Suite** -> **Connection**
2. In the right pane, click on **Add a Computer/Group** below **Actions**:

3. Select the **object type** (Windows Computer or Groups) and optionally leave the **Filter** field empty to return all objects of the type selected
Verify the solution is downloaded on the data collection machine.

Every agent opted-in will receive Management Packs (MPs) from the log analytics workspace. The MPs will depend on which solutions are added. For the Microsoft Unified Support Assessment, the MPs are named:

```
Microsoft.IntelligencePacks.<technology>.Assessment
```

The Microsoft Unified Support assessments MPs will be downloaded as soon as the solution is added to the log analytics workspace. The MPs are downloaded into the Management Pack folder of the agent (this is true regardless of the setup – direct, through GW, or through SCOM):

You can also look at the OperationsManager event log (it’s the same for the SCOM agent or the stand alone MMA agent) for the events indicating the MPs have been downloaded:
Below picture shows how the Management Packs flow from the OMS Workspace

Collected data from any agent that is running the scheduled task is sent back to the SCOM Management Server which in turn will upload to the log analytics/OMS Workspace

**Note:** the SCOM Management Group might connect directly to the log analytics service or through the OMS Gateway. The OMS Gateway in the picture above is used for certain solutions that cannot leverage SCOM.

Appendix B - Setting up the SharePoint Assessment

When you have finished the installation of the Microsoft Monitoring Agent/OMS Gateway, you are ready to setup the SharePoint Assessment.

On the designated data collection machine, complete the following:

1. Open the Windows PowerShell command prompt as an Administrator

   ![Windows PowerShell prompt with Run as Administrator option]

2. Run the `Add-SharePointAssessmentTask -ServerName <DataCollectionMachine> -WorkingDirectory <Directory>` command where `<Directory>` is the path to an existing directory used to store the files created while collecting and analyzing the data from the environment. And the `<DataCollectionMachine>` is the name of the server that the agent is installed on.

   ```powershell
   PS C:\Users\robin> Add-SharePointAssessmentTask -ServerName "attest.redmond.corp.microsoft.com" -WorkingDirectory "C:\OMS\SharePoint"
   ```

3. Provide the required user account credentials. These credentials are used to run the SharePoint Assessment.
   - **NOTE:** If the `ServerName` switch was not used in the previous step, you will be prompted to provide the server name before providing the credentials as per screenshot below.

   ![Screenshot of PowerShell prompt with credentials]

   ```powershell
   PS C:\Users\robin> Add-SharePointAssessmentTask -ServerName "attest.redmond.corp.microsoft.com" -WorkingDirectory "C:\OMS\SharePoint"
   [SharePointAssessment]Detected agent configuration for Management Group ADI-49900795-7a08-4eee-a2de-ca8a46fc8c9e
   [SharePointAssessment]Please provide SharePoint Farm Admin Credentials
   [SharePointAssessment]User (DomainName\UserName): redmond\robin
   [SharePointAssessment]Enter the password for redmond\robin: ***********
   ```

   **NOTE:** This domain account must have all the following rights:

   - Farm Administrator.
   - Local Admin rights on All SharePoint & SQL Servers associated with the SharePoint farm being assessed.
   - Sysadmin rights on all Instances housing SharePoint databases.
   - Unrestricted network access to every SharePoint server in the farm.

4. The script will continue with the necessary configuration. It will create a scheduled task that will trigger the data collection.
5. Data collection is triggered by the **scheduled task** named **SharePointAssessment -ServerName <Server Name>** within an hour of running the previous script and then every 7 days. The task can be modified to run on a different date/time or even forced to run immediately.

6. During collection and analysis, data is temporarily stored under the **WorkingDirectory** folder that was configured during setup, using the following structure:

7. After data collection and analysis is completed on the tools machine, it will be submitted to your log analytics workspace depending on the scenario you have chosen:
   - **Directly** if the Data Collection Machine is connected to the Internet and configured to submit directly.
   - **Through the OMS Gateway Server** if this option is configured, then the data will be submitted to your log analytics workspace.

8. Data Collection takes approximately 30 minute to 60 minutes.

9. Once Data Collection has been completed it will then be automatically uploaded to your log analytics workspace. Your assessment results will be available to view on your log analytics dashboard. Click the **SharePoint Server Assessment** tile to review:
10. You will then be presented with findings grouped by the focus area.

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>High Priority Recommendations</th>
<th>Low Priority Recommendations</th>
<th>Passed Checks</th>
</tr>
</thead>
<tbody>
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<td>Security and Compliance</td>
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<tr>
<td>Availability and Business Continuity</td>
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<td>Performance and Scalability</td>
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<td>Upgrade, Migration, and Deployment</td>
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<td>3</td>
<td>41</td>
</tr>
</tbody>
</table>
Appendix – C Data Collection Methods

The SharePoint Assessment in the log analytics workspace and Microsoft Unified Support Solution Pack uses multiple data collection methods to collect information from your environment. This section describes the methods used to collect data from your environment. No Microsoft Visual Basic (VB) scripts are used to collect data.

**Data collection uses workflows and collectors. The collectors are:**

1. Registry Collectors
2. Event Log Collector
3. Windows PowerShell
4. File Data Collector
5. SQL Data Collector
6. Windows Management Instrumentation (WMI)

**Registry Collectors**
Registry keys and values are read from the data collection machine and all servers. They include items such as:
- Service information from HKLM\SYSTEM\CurrentControlSet\Services.
- This allows to analyze the status of Operations Manager services

**Event Log Collector**
Collects event logs from the servers. We collect the last 5 days of Information, Warnings and Errors from the SharePoint Server & Associated SQL Servers, Application and System event logs.

**Windows PowerShell**
Collects various information, such as:
- SharePoint Farm information
- SharePoint Content Database Information

**File Data Collector**
Enumerates files in a folder on a remote machine, and optionally retrieves those files.

**SQL Data Collector**
SQL queries are used to collect information regarding SharePoint Farm Configuration including SQL Server Setup.

**Windows Management Instrumentation (WMI)**
WMI is used to collect various information such as:
- **WIN32_Volume**
  Collects information on Volume Settings for each server in the environment. The information is used for instance to determine the system volume and drive letter which allows clients to collect information on files located on the system drive.
- **Win32_Process**
  Collects information on the processes running on each server in the environment. The information provides insight in processes that consume a large amount of threads, memory or have a large page file usage.
- **Win32_LogicalDisk**
  Used to collect information on the logical disks. We use the information to determine the amount of free space on the disk where the database or log files are located.