Introduction: Prior to release of Server Manager in Windows Server 2008, Enterprise solution was to use different third party vendors which includes CA, HP utilities to manage servers and workstations from centralized location. Today's release of Server Manager on Windows Server 2012 provides enhanced functionality to manage Servers from a centralized location. One of the key aspect of Server Operations is to monitor the event logs. Day- day the servers register thousands of different event logs, which provide vital information to Support Engineers or Operations Center to manage and monitor those events. Server Manager can be strictly considered for Mid-size organization for managing and monitor servers. One of the key task is to monitor the
events and find the root cause of the issue based on the DLL or EXE which registers the event.

**Server Manager** can provide satisfying information for administrators to troubleshoot the errors or collect the event logs based on the Microsoft Product / applications and provide the information to Microsoft in the event of troubleshooting high Severity issues.

**Installation Requirements:** Server Manager is shipped by default on all the Windows Server based Operating Systems 2008 and above (GUI). Following are the installation requirements to manage Windows Servers

- .Net Framework 4.0 or above
- Windows Management framework 3.0
- Windows Remote Management (WinRM)

**Server Manager Walkthrough:** Server Manager can be invoked from the Task Bar, Administrative Tools, or via C:\windows\System32\Servermanager.exe.

1. **Navigation Pane:** Navigation pane provide access to Dashboard, Server Roles and Computer Groups. Administrators can have centralized view over the resources / servers and perform efficient and quick actions based on the requirements. Navigation pane provides 3 default functions such as
   - Dashboard
   - Local Server
   - All Servers

   The Navigation pane list increases based on the Server Roles installed and the Computer groups created. Below is an example of Navigation pane.
2. **Menu Bar:**

Server Manager Menu bar contains the following options
a) **Search Bar:** This option allows administrators to quickly navigate between the features. Administrators can use the following format to quickly navigate

Example 1: *Server manager\Hyper-v*

![Server Manager](image)

The above command will navigate the control to the Hyper-v role under Server Manager. Another nested example would be

Example 2: *Server Manager\File and Storage Services\Servers*

**Note:** The Server Manager navigation pane would only display the **Roles** and would not display the **Features**

b) **Manage:** The Manage option provides the ability to

- Add Roles and Features
- Remove Roles and Features
- Add Servers
- Create Server Group
- Server Manager Properties

**Add Roles and Features:** This option would launch **Add Roles and Features** Wizard and provides administrators to install Roles and Features on specific server which are added under Server Manager or Server Group under Server Manager respectively.
**Remove Roles and Features**: This option would launch **Remove Roles and Features** Wizard which allows administrators to uninstall Roles and Features on specific server which are added under Server Manager or Server Group under Server Manager respectively.

**Add Servers**: This option is the key feature of Server Manager which allows administrators to add the servers for monitoring. Following are the server supported by Server Manager 2012 for monitoring and management

- Windows Server 2012 all editions
- Windows Server 2008 all editions
- Windows Server 2008 R2 all editions
- Windows Server 2003

The above wizard allows administrators to add servers based on Active directory, DNS and also through Import function. From the above wizard
it is clear that my server is not joined to Active directory domain, but I can still join the Servers to manage using DNS option.

**Scenario:** Following is a scenario which I have created to test the Server Manager functionality. My test lab is configured on Windows Server 2012 Hyper-v with two servers hosted on it with the below roles and applications installed on them.

- Domain Controller
- System center Orchestrator
- System Center Configuration Manger
- SQL Server 2008 R2.

Though the wizard prompts to add the Hyper-v to active directory domain, I can still manage the servers using the below format. All the above features are installed on 2 virtual machines.

From the above wizard, I have entered the IP Address of my Domain Controller and Server Manager wizard was able to retrieve the information based on the virtual network configured on the Host computer.
The above example would give a scenario to monitor Virtual Machines hosted on Hyper-v Server using Server manager.

The **Import** tab would browse Text file as an input and reads the DNS or IP Address information of the servers. The wizard would also accepts the FQDN or IP Address of the server and would add them even though they are not discovered. An example is shown below.

![Server Manager](image)

This could help in the scenarios where the IT administrators can pre-populate the servers and later join them to the AD Domain or build the servers. But one of the disadvantage of the process is to manage the servers which are obsolete, just like Server Swarm.

c) **Create Server Group**: Create Server Group is used to group Servers based on AD Site, IP Address, Operating System Version, Cluster, Windows Activation, Manufacturer, Processors, Type, FQDN etc.. This grouping would allow Server Operation center engineers to efficiently manage the events and report back or troubleshoot the issues efficiently. To create server group select **Manage → Create Server Group**
Enter the Group name to be created under **Server Group Name** option and select the servers based on Active directory / DNS or Imported list of servers. The group would get added under the navigation pane as shown below. In my example I created group called “**Virtual Servers**”
On the created Server group, the administrator can perform **Edit** or **Delete** operations to add or remove computers in a group or dissolve a group completely.

**Note:** We cannot create Nested groups or Sub groups respectively.

d) **Server Manager Properties:** Server Manager Properties windows provides option to manage refresh interval and Server Manager loading behavior.

The first option provides administrators to control the refresh interval from servers which are part of Server Manager. Administrators should calculate the amount of RAM, Hard disk space and backup methods to successfully monitor the events from the servers.

For a standalone server management, Server Manager can be loaded on demand basis and can set the second option “**Do not Start**... “

e) **Tools:** The Tools option provide administrators to perform day to day Server Operation activities which includes either checking memory, logging to Active directory domain to configured / monitor sites or subnets or
resources, monitor disk health / performance issues etc. Below are list of standard tools provided by Server Manager.

<table>
<thead>
<tr>
<th>Tool Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Directory Domains and Trusts</td>
</tr>
<tr>
<td>Active Directory Sites and Services</td>
</tr>
<tr>
<td>Active Directory Users and Computers</td>
</tr>
<tr>
<td>ADSI Edit</td>
</tr>
<tr>
<td>Certification Authority</td>
</tr>
<tr>
<td>Component Services</td>
</tr>
<tr>
<td>Computer Management</td>
</tr>
<tr>
<td>Defragment and Optimize Drives</td>
</tr>
<tr>
<td>Disk Cleanup</td>
</tr>
<tr>
<td>Event Viewer</td>
</tr>
<tr>
<td>Hyper-V Manager</td>
</tr>
<tr>
<td>Internet Information Services (IIS) Manager</td>
</tr>
<tr>
<td>iSCSI Initiator</td>
</tr>
<tr>
<td>Local Security Policy</td>
</tr>
<tr>
<td>ODBC Data Sources (32-bit)</td>
</tr>
<tr>
<td>ODBC Data Sources (64-bit)</td>
</tr>
<tr>
<td>Performance Monitor</td>
</tr>
<tr>
<td>Resource Monitor</td>
</tr>
<tr>
<td>Security Configuration Wizard</td>
</tr>
<tr>
<td>Services</td>
</tr>
<tr>
<td>System Configuration</td>
</tr>
<tr>
<td>System Information</td>
</tr>
<tr>
<td>Task Scheduler</td>
</tr>
<tr>
<td>Windows Firewall with Advanced Security</td>
</tr>
<tr>
<td>Windows Memory Diagnostic</td>
</tr>
<tr>
<td>Windows PowerShell</td>
</tr>
<tr>
<td>Windows PowerShell (x86)</td>
</tr>
<tr>
<td>Windows PowerShell ISE</td>
</tr>
<tr>
<td>Windows PowerShell ISE (x86)</td>
</tr>
<tr>
<td>Windows Server Backup</td>
</tr>
<tr>
<td>Windows Server Update Services</td>
</tr>
</tbody>
</table>

Each tool would open corresponding MMC and allows administrators to perform the task. These tools doesn’t get embed into the Server Manager dashboard.
f) **View:** View option allow administrators to minimize or maximize the Server Manager Console.

![View Options](image)

*Note:* The “Hide Welcome Tile” option only available for Dashboard and not to other groups under Navigation Panes.

g) **Help:** Help option provides administrators to access valuable resources which includes the built-in help, access to Server Manager forum and Server Manager technology center. Below are the option provided with Help option

![Help Options](image)
3. **Server Manager Dashboard:**

Dashboard provides operational status for all the roles and computer groups created by administrators. Dashboard has two major sections

- Welcome Title
- Roles and Server Groups

a) **Welcome Tile** can be enabled or disabled through View option from the Menu bar. Welcome Title has 3 groups such as

- Quick Start
- What’s New
- Learn More

**QUICK START** provides common administrative tasks such as Configuring Local Server, Add roles and features, Add other servers to manage and Create a Server group. These options acts as shortcuts and calls the relevant executable to perform the activity.

**WHAT’S NEW** option explains what is new in Server Manager 2012. The links referenced under will navigate users to Server Manager Help file.
LEARN MORE option will allow administrators to find solution over internet.

b) **Roles and Server Groups** tile provides thumbnail view for the Server roles and the Groups configured. Each thumbnail has specific sub tasks in form of row such as

- Manageability
- Events
- Services
- Performance
- BPA results

Below diagram shows the Roles and Server Group wizard under Dashboard. Each tile represent specific Role or Server Groups.
1) **Manageability:** This option provides various measures regarding the status of the servers added under Server Manager. Some of the common and standard monitoring metrics are included under Manageability feature. Below are the list of Manageability error criteria which can be filtered on the servers.

Manageability option is enabled for individual Role or custom server groups. In order to view standard error / alert options for specific Role / Computer group, click on the hyperlink which opens a window as shown below. In my example, I have selected Hyper-v Role.

![Hyper-V - Manageability Detail View](image)

The manageability wizard consist of following options
- **Status** – provides different error / alert criteria
- **Servers** – displays all the servers in the group or role
- **Link to actual role or computer group**

The **Status** option provides administrators with the following options
In a scenario where there are multiple servers configured in a farm, the above error options provides administrators to identify the errors / alerts centrally. Below is an example
In the above example, I have selected my custom Server Group called **Virtual Servers** and added multiple servers to the group. I have filtered servers based on **“WinRM Negotiate authentication error”** and I found one of the server is exhibiting the problem. The next step would be to troubleshoot and fix the issue (The above error occurs if my Host Server is unable to authenticate the guest server, I my example my Host server is a workgroup and WIN-PRHVJ5GRJ7A is a domain controller, and quick way to resolve the issue is to add the server to TrustedHosts group under winrm)

2) **Events:** The events tab provide administrators with a centralized view of events which gets registered on Servers. Administrator can filter the events based on
- Server
- Event ID
- Event Severity levels
- Event Sources
- Time Period
The events tab captures events based on the services configured for specific role. For Example: Server Manager captures events related to Hyper-v services which includes

- Microsoft-Windows-Hyper-V-Config
- Microsoft-Windows-Hyper-V-VMMS
- Microsoft-Windows-Hyper-V-Worker
- Microsoft-Windows-Hyper-V-Integration-VSS
- Microsoft-Windows-Hyper-V-Integration-Data-Exchange

Administrators can add custom filter to view event id as shown below

**Without Custom Filter**

![Hyper-V Events Detail View](image)

**With Custom Filter**
3) **Performance**: The key in Server management is to constantly monitor Server for CPU or memory spikes or performance issues. Most Enterprise monitoring solutions focus on CPU and Memory monitoring, which is vital for servers involving in data transactions which might include (SQL, backup's, Exchange, Applications, Active directory, SCCM, SCORCH, etc..) Every transaction involves Memory and CPU, Microsoft Server manager Performance provides centralized view of CPU and Memory statistics of all the servers configured under Server Manager. The performance option is specific to Server Roles or computer groups under Server manager.

Performance Wizard provides following options
- Resource Type – CPU or Memory
- Servers – Servers configured under Server Manager
- Time Period
- Link to Server manager Role or Computer Group

Example 1
There is no critical events registered for Hyper-v, which is the reason the Performance wizard is not displaying any information. In order to configure the performance counters for CPU / Memory, click on the Role or Computer group under Navigation pane and configure the counters accordingly.

Example2: The below performance wizard shows the information about the local server performance.
4) **Services**: The services wizard displays the information related to Role specific service or services running under custom server group. Below are the options available for monitoring

- Start Types
- Service Status
- Services
- Servers

Start types has the following options
Services display the Role specific services. In my example I have selected IIS.

For testing purpose, I have disabled the IIS admin service on my server and that gets registered under IIS Services and displayed on Server Manager Dashboard as shown below.
5) **BPA Results:** BPA displays alerts for the Server Roles or the Computer Groups. BPA provides different categories and the severity levels.
Categories are displayed below

Severities are displayed below

4. **Local Server**: Local Server provides administrators with detailed monitoring view of the local server where the Server Manager is running. When monitoring couple of tens of servers, it is always necessary to check the local server status.
and this option helps administrators understand the Events getting generated by local server, complete view of services running on the local server, Local server CPU / memory statistics and the Roles and Features which are installed on the local server.

a) **Properties:** Properties provides the information regarding local server which includes
   - Computer Name
   - Windows Updates
   - Windows Firewall
   - Operating System Version
   - RAM
   - Networking Information
   - Processor Information

b) **Events:** Events section displays events registered by server and administrators has an option to filter the events based on specific criteria as shown below

Administrators can create custom queries to filter against 1000’s of events getting generated from different source and save the filter as query, as shown below

   Create Query
One of the important features of the Events option is the ability to configure the necessary events and prioritize on the events needs to be monitored. This is provided with the **configure event data**. Administrators can configure the source of event needs to get registered as shown below.
The above wizard provides the severity levels and the time that can be customized along with the source.

c) **Services:** Displays the services running on the local server. Administrators can add filter criteria and create custom queries respectively.

**Filter Criteria**
Server Manager provides the following filter options.
Administrators has the ability to perform the following tasks within the services wizard

I have created a custom query as shown below

Note: When you select start type, it provides administrator with following options
d) **Performance**: Provides detailed information about the performance of the local server. Administrators can configure Performance counters for CPU and Memory. Administrators can configure Performance alerts by selecting the **Tasks → Configure Performance Alerts** which displays the wizard below.

From the above wizard, I have configured CPU usage as 1 percent (to generate load for testing purpose and memory to 1MB), ideally the
Administrators can configure depending upon their application load on the servers.

Below diagram shows the performance graph on my local server. The pink bar represents CPU threshold and Grey bar represents the Memory threshold.

Administrators can configure the following alerts to monitor the events related to CPU or memory

- Server Name
- FQDN
- Counter Status
- CPU Alert Count
- Memory Alert Count
- First Occurrence
- Last Occurrence

Below example shows that my server is throwing 61 CPU alerts, that is because of the threshold I have set and when you right click on the alert, administrators can have detailed view of the events as shown below

<table>
<thead>
<tr>
<th>Server Name</th>
<th>Counter Status</th>
<th>CPU Alert Count</th>
<th>Memory Alert Count</th>
<th>First Occurrence</th>
<th>Last Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>W2012-AVAUSER22</td>
<td>On</td>
<td>61</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The above properties window displays information about the Memory and CPU usage in a more descriptive way.

**Note:** Administrators cannot add the custom perfmon counter under Server manager.

e) **Roles and Features:** Roles and Features option provide administrators to Add or Remove Roles and Features on the local computer. The wizard also provide administrator to customize using filters as shown below
Add Roles and Features option can be accessed through **Tasks** option. This option will invoke the Add Roles and Features UI and provide administrators to install roles or features based on the active directory permissions the user has.

Remove Roles and Features option can be accessed through **Tasks** option. This option will invoke the Remove Roles and Features UI and provide administrators to install roles or features based on the active directory permissions the user has.

**All Servers** option on the navigation pane provides the similar features as described under Local server. For rest of the Server roles which are configured on local server or on Server Group, the options vary depending on the Role and the ability to monitor the roles would be different.

**Summary:** This document focus on monitoring capabilities of Server Manager and allows users to understand different sections of Server Manager.