SolarWinds® Orion®
Network Performance
Monitor Quick Start Guide

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View the NPM Getting Started Guide.
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SolarWinds, Inc develops and markets an array of network management, monitoring, and discovery tools to meet the diverse requirements of today’s network management and consulting professionals. SolarWinds products continue to set benchmarks for quality and performance and have positioned the company as the leader in network management and discovery technology. The SolarWinds customer base includes over 45 percent of the Fortune 500 and customers from over 90 countries. Our global business partner distributor network exceeds 100 distributors and resellers.

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                   | www.solarwinds.com
                   | 1.866.530.8100
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SolarWinds Orion Network Performance Monitor Documentation Library

The following documents are included in the SolarWinds Orion Network Performance Monitor documentation library:

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<tr>
<td>Administrator Guide</td>
<td>Provides detailed setup, configuration, and conceptual information.</td>
</tr>
<tr>
<td>Orion Common Components Administrator Guide</td>
<td>Provides detailed setup, configuration, and conceptual information relevant to all products in the Orion family. Material from the SolarWinds Orion Common Components Administrator Guide that is relevant to Orion NPM has been included in this SolarWinds Orion NPM Administrator Guide.</td>
</tr>
<tr>
<td>Evaluation Guide</td>
<td>Provides an introduction to Orion Network Performance Monitor features and instructions for installation and initial configuration.</td>
</tr>
<tr>
<td>Page Help</td>
<td>Provides help for every window in the Orion Network Performance Monitor user interface.</td>
</tr>
<tr>
<td>Quick Start Guide</td>
<td>Provides installation, setup, and common scenarios for which Orion Network Performance Monitor provides a simple, yet powerful, solution.</td>
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Conventions

The documentation uses consistent conventions to help you identify items throughout the printed and online library.

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Chapter 1

Introduction

SolarWinds Network Performance Monitor (NPM) delivers comprehensive fault and network performance management that scales with rapid network growth and expands with your network monitoring needs, allowing you to collect and view availability and realtime and historical statistics directly from your web browser. While monitoring, collecting, and analyzing data from routers, switches, firewalls, servers, and any other SNMP-, ICMP-, or WMI-enabled devices, SolarWinds NPM successfully offers you a simple-to-use, scalable network monitoring solution for IT professionals juggling any size network. Users find that it does not take a team of consultants and months of unpleasant surprises to get SolarWinds NPM up and running because the NPM experience is far more intuitive than conventional, complex enterprise network management systems. Because it can take less than an hour to deploy and no consultants are needed, NPM provides quick and cost-effective visibility into the health of network devices, servers, and applications on your network, ensuring that you have the realtime information you need to keep your systems running at peak performance.

Why Install SolarWinds Orion NPM

Out of the box, SolarWinds NPM monitors the following critical performance metrics for physical and virtual devices on your network:

- Network availability
- Bandwidth capacity utilization
- Buffer usage and errors
- CPU and memory utilization
- Interface errors and discards
- Network latency
- Node, interface, and volume status
- Volume usage

These monitoring capabilities, along with a fully customizable web-based interface, alerting, reporting engines, and flexible expansion capabilities, make SolarWinds Orion Network Performance Monitor the easiest choice you will make involving your network performance monitoring needs.
Benefits of Orion Network Performance Monitor

Consider the following benefits of Orion Network Performance Monitor.

Out-of-the-box Productivity

Automatic discovery and wizard-driven configuration offer an immediate return on your investment. Within minutes of installing SolarWinds NPM, you can be monitoring your critical network devices.

Easy to Understand and Use

SolarWinds NPM is designed for daily use by staff that also have other responsibilities. The SolarWinds interface provides what you need where you expect to find it and offers advanced capabilities with minimal configuration overhead.

Affordable Value

While SolarWinds NPM provides functionality that is comparable, if not superior, to most other solutions, the cost and maintenance of your SolarWinds installation is less than the initial cost of most other solutions.

Scalability

By adding individual polling engines, you can scale your SolarWinds NPM installation to any environment size. By sharing the same database, you can also share a unified user interface, making the addition of polling engines transparent to your staff.

thwack.com Online Community

thwack.com is a community site that SolarWinds developed to provide SolarWinds users and the broader networking community with useful information, tools and valuable resources related to SolarWinds network management solutions. Resources that allow you both to see recent posts and to search all posts are available from the Orion Web Console, providing direct access to the thwack.com community.

Key Features of SolarWinds NPM

Considering the previously listed benefits of SolarWinds NPM and the following features, NPM is a simple choice to make.

Routing Information

Discover and view routing table information for monitored nodes, identify flapping routes, and create alerts for detected routing table changes. RIP v2, OSPF v2 and v3, and BGP are currently supported protocols.
Multicast Routing Status and Performance Monitoring

Multicast-specific resources provide group status and realtime monitoring of multicast traffic. Web console resources allow you to see multiple routing table levels. You can also configure alerts to trigger on route changes and traffic thresholds.

Web Console User Auditing

Audit events for web console users are stored in the SolarWinds database, allowing you to keep track of which users are making changes to your network monitoring profile.

Customizable and Flexible Orion Web Console

Detailed graphs, tables, and lists are displayed in a fully customizable web-based interface allowing you to remotely view network fault, availability, and performance information. Using the award-winning, intuitive SolarWinds web interface, you can conduct administrative tasks, such as adding new devices, both individually and in groups, create custom resources and views, establish unique user accounts and views for departments, geographic areas, or any other user-defined criteria, and customize web console displays from anywhere on your network. These features allow you to save time by administering NPM tasks remotely without having to RDP directly into your SolarWinds server.

Hardware Health Monitoring

Get immediate, visual insight into the operational state of your network with hardware health charts and alerts that show you the number of devices on your network that are functioning in Warning and Critical states.

F5 BIG-IP Monitoring

Orion NPM now specifically supports performance monitoring for F5 devices. NPM monitoring for F5 devices includes device status and availability, CPU and memory performance statistics, and related graphs and charts.

Interactive Charting for Node and Interface Statistics

SolarWinds NPM charting not only provides historical performance data; the new interactive charting package enables you to zoom in on your charted data, using either fixed time periods or custom date ranges.

Training View

The Training view on the Home tab of the SolarWinds Web Console provides a variety of helpful documents and videos that are regularly updated to help you optimize your SolarWinds monitoring environment.
Automatic and Scheduled Device Discovery

Wizard-driven device discovery further simplifies the addition of devices and interfaces to SolarWinds NPM. Answer a few general questions about your devices, and the discovery application takes over, populating the SolarWinds database and immediately beginning network analysis. You can also create network discovery schedules to independently and automatically run Network Sonar Discovery jobs whenever you need them. Network Discovery also performs IP address de-duplication automatically when any single, discovered, network device is associated with multiple IP addresses.

Intuitive SolarWinds NPM Administration

Using the award-winning, intuitive web interface, you can now conduct administrative tasks, such as adding new devices, both individually and in groups, establish unique user accounts, and customize web console displays from anywhere on your network. These administration features allow you to save time by administering NPM tasks remotely without having to RDP directly into your SolarWinds server.

Open Integration

Enterprise-tested standards, including a Microsoft® SQL Server database and industry-standard MIBs and protocols, are the backbone of the SolarWinds NPM network monitoring solution.

Integrated Wireless Poller

An integrated wireless device poller enables you to leverage proven Orion NPM alerts, reports, and web console resources as you monitor and manage wireless thin and autonomous access points in the same views in which you are already monitoring your wired network devices.

Cisco EnergyWise Monitoring

Cisco EnergyWise technology allows you to responsibly manage energy usage across the enterprise. With Orion NPM, you can view EnergyWise device management data to measure, report, and reduce the energy consumption of any devices connected to EnergyWise-enabled switches.

Network Atlas with ConnectNow

Network Atlas, the Orion network mapping application, gives you the ability to create multi-layered, fully customizable, web-based maps of your network to visually track the performance of any device in any location across your network in real time. The ConnectNow feature uses ARP table data to draw virtual and physical links between nodes discovered on your network.
Unpluggable Port Mode
Orion NPM enables you to designate selected ports as unpluggable, so you don’t receive unnecessary alerts when users undock or shutdown connected devices. This feature is particularly useful for distinguishing low priority ports connected to laptops and PCs from more critically important infrastructure ports.

Universal Device Pollers
The Universal Device Poller allows you to easily add any SNMP-enabled device into the local monitoring database and collect any statistics or information that are referenced in device MIB tables. Using poller transforms available in the Universal Device Poller Wizard, you can also manipulate data collected from multiple Universal Device Pollers to create your own custom statistics and then choose your own customized data display.

VMware Infrastructure Monitoring
SolarWinds NPM enables you to monitor your VMware servers, datacenters, and clusters, including VMware ESX and ESXi, Virtual Center, and any virtual machines (VMs) hosted by ESX servers on your network. Available resources include lists of VMs on selected ESXi and ESX servers, performance details for ESXi and ESX servers and hosted VMs, and relevant charts and reports.

Data Center Monitoring
Orion NPM offers predefined reports and web console views and resources specifically tailored to provide performance data about Cisco Unified Computing Systems (UCS) and Fibre Channel devices manufactured by Cisco MDS, Brocade, and McData.

Incident Alerting
You can configure custom alerts to respond to hundreds of possible network scenarios, including multiple condition checks. SolarWinds NPM alerts help you recognize issues before your network users experience productivity hits. Alert delivery methods and responses include email, paging, SNMP traps, text-to-speech, Syslog messaging, and external application execution.

Integrated Trap and Syslog Servers
SolarWinds NPM allows you to save time when investigating network issues by giving you the ability to use traps and Syslog messages to access network information from a single interface instead of requiring that you poll multiple machines. You can use SolarWinds NPM to easily set up alerts and then receive, process, forward, and send syslog and trap messages.
Detailed Historical Reports

Easily configure reports of data from the Orion database over custom time periods. Data is presented in an easily reviewed format in the web console or in the Orion Report Writer application. With over 40 built-in reports available, you can project future trends and capacity needs, and immediately access availability, performance, and utilization statistics. You can also download new reports for import into Report Writer from www.thwack.com.

Groups and Dependencies

The ability to define device groups and dependencies allows you to more effectively manage your network. Groups give you the ability to logically organize monitored objects, regardless of device type or location, and dependencies allow you to more faithfully represent what can actually be known about your network, eliminating “false positive” alert triggers and providing more accurate insight into the status of monitored network objects.

Coordinated Network, Application, and Configuration Management

SolarWinds provides a complete network management and monitoring solution when SolarWinds NPM is installed with SolarWinds Server & Application Monitor (SAM, formerly Application Performance Monitor, APM), SolarWinds IP Address Manager (IPAM), and the SolarWinds Network Configuration Manager (NCM) integration to monitor network applications, manage IP address and subnet allocations, and manage network device configuration, respectively.

Extensible SolarWinds NPM Modules

With additional SolarWinds modules NetFlow Traffic Analyzer (NTA) and IP SLA Manager (formerly Orion VoIP Monitor) SolarWinds NPM can analyze network traffic and monitor VoIP and WAN traffic using Cisco IP SLA, respectively. NPM modules save time by leveraging the existing SolarWinds NPM deployment to add feature functionality without requiring additional standalone software.

Product Update Notifications

Receive regular, automatic notification of updates to your installed Orion monitoring and management applications in the Orion Web Console as soon as they are available from SolarWinds. Product updates can include upgrade opportunities, service packs, and hotfixes.

Orion Product Team Blog

Stay in touch with the people who bring you the products in the Orion family by following the Orion Product Team Blog on thwack, the SolarWinds online user community. Read posts from Orion product managers and developers
to learn how to extend and optimize your Orion installation to best meet the needs of your network.

**Networking Concepts and Terminology**

The following sections define the networking concepts and terminology that are used within Orion NPM.

- Internet Control Message Protocol (ICMP)
- Simple Network Management Protocol (SNMP)
- SNMP Credentials
- Management Information Base (MIB)
- Windows Management Instrumentation (WMI)

**Internet Control Message Protocol (ICMP)**

Orion NPM uses the Internet Control Message Protocol (ICMP) to poll for status using `ping` and `echo` requests of managed devices. When Orion NPM polls a managed device using ICMP, if the device is operationally up, it returns a response time and record of any dropped packets. This information is used by Orion NPM to monitor status and measure average response time and packet loss percentage for managed devices.

**Note:** Orion NPM only uses ICMP to poll devices for status, average response time, and packet loss percentage. Other information displayed in the Orion Web Console is obtained using SNMP requests.

**Simple Network Management Protocol (SNMP)**

For most network monitoring and management tasks, Orion NPM uses the Simple Network Management Protocol (SNMP). SNMP-enabled network devices, including routers, switches, and PCs, host SNMP agents that maintain a virtual database of system status and performance information that is tied to specific Object Identifiers (OIDs). This virtual database is referred to as a Management Information Base (MIB), and Orion NPM uses MIB OIDs as references to retrieve specific data about a selected, SNMP-enabled, managed device. Access to MIB data may be secured either with SNMP Community Strings, as provided with SNMPv1 and SNMPv2c, or with optional SNMP credentials, as provided with SNMPv3.

**Notes:**

- To properly monitor devices on your network, you must enable SNMP on all devices that are capable of SNMP communications. The steps to enable
SNMP differ by device, so you may need to consult the documentation provided by your device vendor.

- If SNMPv2c is enabled on a device you want Orion NPM to monitor, by default, Orion NPM will attempt to use SNMPv2c to poll the device for performance information. If you only want Orion NPM to poll using SNMPv1, you must disable SNMPv2c on the device to be polled.

For more information about MIBs, see “Management Information Base (MIB)” on page 8. For more information about SNMP credentials, see “SNMP Credentials” on page 8.

**SNMP Credentials**

SNMP credentials secure access to SNMP-enabled managed devices. SNMPv1 and SNMPv2c credentials serve as a type of password that is authenticated by confirming a match between a cleartext SNMP Community String provided by an SNMP request and the SNMP Community String stored as a MIB object on an SNMP-enabled, managed device. SNMPv3 provides a more secure interaction by employing the following fields:

- The **User Name** is a required cleartext string that identifies the agent or poll request that is attempting to access an SNMP-enabled device. User Name functions similarly to the SNMP Community String of SNMP v1 and v2c.

- The **Context** is an optional identifying field that can provide an additional layer of organization and security to the information available in the MIB of an SNMP-enabled device. Typically, the context is an empty string unless it is specifically configured on an SNMP-enabled device.

- SNMPv3 provides two optional **Authentication Methods**: Message Digest 5 (MD5) and Secure Hash Algorithm 1 (SHA1). Both methods, MD5 and SHA1, include the **Authentication Key** with the SNMPv3 packet and then generate a digest of an entire SNMPv3 packet that is then sent. MD5 digests are 20 bytes long, and SHA1 digests are 16 bytes long. When the packet is received, the User Name is used to recreate a packet digest using the appropriate method. Both digests are then compared to authenticate.

- SNMPv3 also provides two optional **Privacy/Encryption Methods**: Data Encryption Standard (DES56) and Advanced Encryption Standard (AES128) using a 128 bit key. DES56 uses a 56 bit key with a 56 bit salt, and AES128 uses a 128 bit key with a 128 bit salt to encrypt the full SNMP v3 packet.

**Management Information Base (MIB)**

A Management Information Base (MIB) is the formal description of a set of objects that can be managed using SNMP. MIB-I refers to the initial MIB definition, and MIB-II refers to the current definition. Each MIB object stores a
value such as `sysUpTime`, `bandwidth utilization`, or `sysContact`. During polling, SolarWinds NPM sends a `SNMP GET` request to each device to poll the specified MIB objects. Received responses are then recorded in the SolarWinds database for use in NPM, including within Orion Web Console resources.

Most network devices can support several different types of MIBs. While most devices support the standard MIB-II MIBs, they may also support any of a number of additional MIBs that you may want to monitor. Using a fully customizable Orion Universal Device Poller, you can gather information from virtually any MIB on any network device to which you have access.

**Windows Management Instrumentation (WMI)**

Windows Management Instrumentation (WMI) is a proprietary technology used to poll performance and management information from Windows-based network devices, applications, and components. When used as an alternative to SNMP, WMI can provide much of the same monitoring and management data currently available with SNMP-based polling with the addition of Windows-specific communications and security features.

**Note:** Due to specific characteristics of WMI polling requests, polling a single WMI-enabled object uses approximately five times the resources required to poll the same or similar object with SNMP on the same polling frequency.

For more information about WMI, see the Microsoft article, “About WMI”.

**How Orion Network Performance Monitor Works**

Through ICMP, SNMP, WMI, and Syslog communication and data collection, NPM continuously monitors the health and performance of your network, and it does this without interfering with the critical functions of your network devices. Unlike many other network monitoring products, Orion NPM helps you maintain the overall performance of your network in the following ways:

- Orion NPM does not install outside agents on your mission-critical servers
- Orion NPM does not employ services that take vital resources from critical applications
- Orion NPM does not install any code on monitored network devices. Unmanaged or outdated code can open security holes in your network.

After installing Orion NPM, you can automate the initial discovery of your network, and then simply add new devices as you add them to your network. NPM stores gathered information in a SQL database (the SolarWinds database) and provides a user-friendly, highly customizable web console in which to view current and historical network status.
The following procedure and diagram provide an outline of how SolarWinds NPM monitors your network.

1. After Network Sonar Discovery has populated the SolarWinds Database with the network objects you want to monitor, node and volume information is passed to the Business Layer.

2. The Business Layer passes node and volume information to the Collector Polling Controller and provides licensing information to the SolarWinds Information Service (SWIS).

3. The Collector Polling Controller creates the required polling jobs and then passes them on to the Job Engine v2.

4. The Job Engine v2 performs requested polling jobs, using SNMP, ICMP and WMI, as configured in Network Sonar Discovery.

   **Note:** All other SolarWinds modules perform polling in this way, as well.

5. The Job Engine v2 then passes the results of all requested polling jobs to the Collector Polling Controller.

6. The Collector Polling Controller places all polling results into the Microsoft Message Queue (MSMQ).

7. The Collector Data Processor pulls polling results from the MSMQ, and then performs the following operations:
   a. The Collector Data Processor performs any required calculations, and then inserts these "cooked" results into the SolarWinds database.
b. The Collector Data Processor checks with the SolarWinds Information Service (SWIS) for any existing dependencies that are defined for the polled nodes.

c. The Collector Data Processor checks polling results against existing basic alert definitions to determine if any basic alerts and corresponding actions should be triggered.
12 ✶ Introduction
Chapter 2

Installing SolarWinds Orion Network Performance Monitor

Orion Network Performance Monitor (Orion NPM) provides a simple, wizard-driven installation process. For an enterprise-class product, system hardware and software requirements are nominal.

**Licensing Orion Network Performance Monitor**

Orion NPM can collect data and detailed information from any of your version 3 or earlier SNMP-enabled devices, including routers, switches, firewalls, and servers. Orion NPM is licensed in accordance with the largest number of the following three types of monitored network elements:

**Nodes**

Nodes include entire devices, for example, routers, switches, virtual and physical servers, access points, and modems.

**Interfaces**

Interfaces include switch ports, physical interfaces, virtual interfaces, sub-interfaces, VLANs, and any other single point of network traffic.

**Volumes**

Volumes are equivalent to the logical disks you are monitoring.

**NPM Licensing Levels**

The following list provides the different types of Orion Network Performance Monitor licenses that are available:

- An SL100 license allows you to monitor up to 100 nodes, 100 interfaces, and 100 volumes (300 elements in total).
- An SL250 license allows you to monitor up to 250 nodes, 250 interfaces, and 250 volumes (750 elements in total).
- An SL500 license allows you to monitor up to 500 nodes, 500 interfaces, and 500 volumes (1500 elements in total).
- An SL2000 license allows you to monitor up to 2000 nodes, 2000 interfaces, and 2000 volumes (6000 elements in total).
An SLX license allows you to monitor a virtually unlimited number of elements. For more information about relevant server sizing considerations, see “Server Sizing” on page 18.

Database size increases with the addition of monitored elements. Depending on the number of elements and the amount of traffic on your network, monitoring more than 8,000 elements can require additional polling engines. For more information about polling engines, see “Using Additional Polling Engines” in the SolarWinds Orion NPM Administrator Guide.

Licensing NPM with Other SolarWinds Products

Your NPM license interacts additively with your other SolarWinds licenses. For example, if you have an NPM SL500 (500 nodes and 500 volumes) installed with APM AL50, you can monitor a total of 550 nodes (500 NPM nodes + 50 APM nodes), 500 interfaces, 550 volumes (matching the node count), and 50 applications.

**Orion NPM Requirements**

SolarWinds recommends installing Orion NPM on its own server, with the Orion database hosted separately, on its own SQL Server. Installations of multiple Orion servers, including Orion NPM, Orion Application Performance Monitor, and Orion Network Configuration Manager using the same database are not supported. For more information, see “Orion Requirements” on page 14.

**Note:** Any and all installed Additional Polling Engines and Additional Web Servers must use the same version of Orion NPM that is installed on the primary Orion server.

**Orion Requirements**

SolarWinds recommends installing Orion and your SQL Server on separate servers. Installations of multiple Orion NPM servers using the same database are not supported. The following sections provide specific requirements:

- Orion Server Software Requirements
- Orion Server Hardware Requirements
- Requirements for the Orion Database Server (SQL Server)
- Requirements for Virtual Machines and Servers
- Additional Required Components
Orion Server Software Requirements

The following table lists minimum software requirements and recommendations.

<table>
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| Operating System          | Windows Server 2003 SP2, including R2, 32- or 64-bit, with IIS in 32-bit mode. Windows Server 2008, 2008 SP2, 2008 R2, 2008 R2 SP1, and 2012 IIS and MSMQ must be installed. SolarWinds recommends that Orion administrators have local administrator privileges to ensure full functionality of local Orion tools. Accounts limited to use of the Orion Web Console do not require administrator privileges. **Notes:**

    - SolarWinds does not support production installations of Orion products on Windows XP, Windows Vista, Windows 7, or Windows 8 systems.
    - Orion NPM is not compatible with installations of Internet Information Services version 6.0 (IIS6) that make use of web gardens. |
| Operating System Languages| English (UK or US), German, Japanese, or Simplified Chinese                                                                                   |
| IP Address Version        | IPv4 or IPv6 implemented as a dual stack. For more information, see "RFC 4213 - Basic Transition Mechanisms for IPv6 Hosts and Routers". **Note:** CIDR notation is not currently supported for IPv6 addresses. |
| Application Ports         | 25 for SSL/TLS-enabled email alert actions. 161, 162, 443 (SNMP). VMware ESX/ESXi Servers are polled on 443. 1801 (TCP) for MSMQ WCF binding. For more information see: http://support.microsoft.com/kb/183293 17777 (TCP) open for Orion module traffic 17778 (HTTPS) open to access the SolarWinds Information Service API 17779 (HTTP and HTTPS) for the SolarWinds Toolset Integration |
| Web Server                | Microsoft IIS, version 6.0 or higher, in 32-bit mode. DNS specifications require that hostnames be composed of alphanumeric characters (A-Z, 0-9), the minus sign (-), and periods (.). Underscore characters (_) are not allowed. For more information, see “RFC 952 - DOD Internet Host Table Specification” **Warning:** The following Windows accounts, as configured by IIS 6.0 on Windows Server 2003 with their default security settings, are required:

    - IUSR_<hostname>, as a member of the Guests group ONLY.
    - IWAM_<hostname>, as a member of the IIS_WPG group ONLY.

Disabling these accounts or changing any default settings of these accounts may negatively affect the operation of your Orion installation. SolarWinds strongly recommends against altering these accounts or their settings. **Notes:**

    - SolarWinds does not support installing Orion NPM on domain controllers.
    - SolarWinds neither recommends nor supports the installation of any Orion product on the same server or using the same database server as a Research in Motion (RIM) Blackberry server. |
| .NET Framework            | Version 3.5. SP1 and 4.0 **Note:** Both versions 3.5 SP1 and 4.0 are required.                                                                |
| Web Console Browser       | Microsoft Internet Explorer version 7 or higher with Active scripting. Mozilla Firefox 3.5 or higher (Toolset Integration is not supported on Firefox) Google Chrome 8 or higher **Note:** JavaScript must be enabled on all browsers to ensure full web console functionality. |
Orion Server Hardware Requirements

The following table lists minimum hardware requirements and recommendations for your Orion server.

**Note:** Hardware requirements are listed by Orion NPM license level.

<table>
<thead>
<tr>
<th>Hardware</th>
<th>SL100, SL250, or SL500</th>
<th>SL2000</th>
<th>SLX</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Speed</td>
<td>2.0 GHz</td>
<td>2.4 GHz</td>
<td>3.0 GHz</td>
</tr>
<tr>
<td>Note:</td>
<td>A dual-core processor is required, but a quad-core processor is recommended. Physical Address Extension (PAE) should not be enabled.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard Drive Space</td>
<td>2.5 GB</td>
<td>5 GB</td>
<td>20 GB</td>
</tr>
<tr>
<td>Note:</td>
<td>A RAID 1 drive for server operating system, Orion installation, and tempdb files is recommended. Orion requires at least 1.5GB for job engine, information service, collector service, MIB database and other required files. The Orion installer needs 1GB on the drive where temporary Windows system or user variables are stored. Per Windows standards, some common files may need to be installed on the same drive as your server operating system. For more information, see &quot;Working with Temporary Directories&quot; in the SolarWinds Orion Network Performance Monitor Administrator Guide.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>3 GB</td>
<td>4 GB</td>
<td>8 GB</td>
</tr>
</tbody>
</table>

Requirements for the Orion Database Server (SQL Server)

The following table lists software and hardware requirements for your Orion database server. Orion NPM license levels are provided as a reference.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>SL100, SL250, or SL500</th>
<th>SL2000</th>
<th>SLX</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>SolarWinds supports Express, Standard, or Enterprise versions of the following: - SQL Server 2005 SP1, SP2, SP3, or SP4 - SQL Server 2008 no SP, SP1, SP2, or SP3 - SQL Server 2008 R2 no SP, SP1, or SP2 - SQL Server 2012 no SP or SP1 Notes: - The FullWithSQL NPM installer package automatically installs SQL Server 2008 R2 SP1 Express. This is recommended for evaluations. - SolarWinds strongly recommends maintaining SolarWinds servers as physically separate from your SQL server. - SQL Server Express 3.5 SP2 is only supported for NPM evaluations. - Due to latency effects, SolarWinds does not recommend installing your SQL Server and your Orion server or additional polling engine in different locations across a WAN. For more information, see SolarWinds Knowledge Base article, &quot;Can I install my Orion server or Additional Polling Engine and my Orion database (SQL Server) in different locations across a WAN?&quot; - Either mixed-mode or SQL authentication must be supported. - If you are managing your Orion database, SolarWinds recommends you install the SQL Server Management Studio component. - Use the following database select statement to check your SQL Server version, service pack or release level, and edition:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Requirements for Virtual Machines and Servers

Orion installations on VMware Virtual Machines and Microsoft Virtual Servers are fully supported if the following minimum requirements are met for each VM.

**Notes:**

- SolarWinds strongly recommends that you maintain your SQL Server database on a separate physical server.
- SolarWinds does not support or allow installations of SolarWinds Orion NPM on domain controllers.

<table>
<thead>
<tr>
<th>VM Configuration</th>
<th>Orion Requirements by License Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SL100, SL250, or SL500</td>
</tr>
<tr>
<td>CPU Speed</td>
<td>2.0 GHz</td>
</tr>
<tr>
<td>Allocated Hard Drive Space</td>
<td>2.5 GB</td>
</tr>
<tr>
<td></td>
<td>Note: Due to intense I/O requirements, SQL Server should be hosted on a separate physical server configured as RAID 1+0. RAID 5 is not recommended for the SQL Server hard drive.</td>
</tr>
<tr>
<td>Memory</td>
<td>3 GB</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>VM Configuration</th>
<th>Orion Requirements by License Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Interface</td>
<td>Each virtual machine on which Orion is installed should have its own, dedicated network interface card. <strong>Note:</strong> Since Orion uses SNMP to monitor your network, if you are unable to dedicate a network interface card to your Orion server, you may experience gaps in monitoring data due to the low priority generally assigned to SNMP traffic.</td>
</tr>
</tbody>
</table>

**Additional Required Components**

The Orion Installation Wizard installs the following required x86 components if they are not found on your Orion database server:

- SQL Server System Common Language Runtime (CLR) Types. Orion products use secure SQL CLR stored procedures for selected, non-business data operations to improve overall performance.
- Microsoft SQL Server Native Client
- Microsoft SQL Server Management Objects

**Server Sizing**

Orion NPM is capable of monitoring networks of any size, ranging from small corporate LANs to large enterprise and service provider networks. Most Orion NPM systems perform well on 3.0 GHz systems with 3 GB of RAM, using default polling engine settings. However, when monitoring larger networks, you should give additional consideration to the hardware used and the system configuration.

There are three primary variables that affect scalability. The most important consideration is the number of monitored elements, where an element is defined as a single, identifiable node, interface, or volume. Systems monitoring more than 1,000 elements may require tuning for optimal performance. The second variable to consider is polling frequency. For instance, if you are collecting statistics every five minutes instead of the default nine, the system will have to work harder and system requirements will increase. Finally, the number of simultaneous users accessing Orion NPM directly impacts system performance.

When planning an Orion NPM installation, there are four main factors to keep in mind with respect to polling capacity: CPU, memory, number of polling engines, and polling engine settings. For minimum hardware recommendations, see “Orion Server Hardware Requirements” on page 16. For more information about polling engines, see “Using Additional Polling Engines” in the SolarWinds Orion NPM Administrator Guide.

In most situations, installing Orion NPM and SQL Server on different servers is highly recommended, particularly if you are planning to monitor 2000 elements or more. If you experience performance problems or you plan to monitor a very large network, you should certainly consider this option. This scenario offers
several performance advantages, as the Orion NPM server does not perform any database processing, and it does not have to share resources with SQL Server.

If you plan to monitor 10000 or more elements, SolarWinds recommends that you install additional polling engines on separate servers to help distribute the work load. For more information about sizing Orion NPM to your network, contact the SolarWinds sales team or visit www.solarwinds.com. For more information about polling engines, see “Using Additional Polling Engines” in the SolarWinds Orion NPM Administrator Guide.

**SNMP Requirements for Monitored Devices**

SolarWinds NPM can monitor the performance of any SNMPv1-, SNMPv2c-, or SNMPv3-enabled device on your network. If a device is SNMPv2c-enabled, by default, Orion NPM will attempt to use SNMPv2c to poll the device for performance information. If you only want Orion NPM to poll using SNMPv1, you must disable SNMPv2c on the device to be polled. Consult your device documentation or a technical representative of your device manufacturer to acquire specific instructions for configuring SNMP on your device.

**Notes:**

- Unix-based devices should use the configuration of Net-SNMP version 5.5 or higher that is specific to the type of Unix-based operating system in use.
- Orion NPM is capable of monitoring VMware ESX and ESXi Servers versions 3.5 and higher with VMware Tools installed. For more information about enabling SNMP and VMware Tools on your VMware device, consult your VMware documentation or technical representative.

**Enabling Microsoft Internet Information Services (IIS)**

To host the Orion Web Console, Microsoft Internet Information Services (IIS) must be installed and enabled on your Orion server. Windows Server 2003 requires IIS version 6, and Windows Server 2008 requires IIS version 7, as detailed in the following sections:

- Enabling IIS on Windows Server 2003
- Enabling IIS on Windows Server 2008

**Enabling IIS on Windows Server 2003**

The following procedure enables IIS on Windows Server 2003.

**To enable IIS on Windows Server 2003:**

1. Click Start > Control Panel > Add or Remove Programs.
2. Click **Add/Remove Windows Components**.

3. Click **Application Server**, confirm it is checked, and then click **Details**.

4. Click **Internet Information Services (IIS)**, confirm it is checked, and then click **Details**.

5. Click **World Wide Web Service**, confirm it is checked, and click **Details**.

6. Select **World Wide Web Service**, confirm it is checked, and then click **OK**.

7. Click **OK** on the **Internet Information Services (IIS)** window, and then click **OK** on the **Application Server** window.

8. Click **Management and Monitoring Tools**, confirm it is checked, and then click **Details**.

9. Confirm that both **Simple Network Management Protocol** and **WMI SNMP Provider** are checked, and then click **OK**.

10. Click **Next** on the Windows Components window, and then click **Finish** after completing the Windows Components Wizard.

**Note:** You may be prompted to install additional components, to provide your Windows Operating System media, or to restart your computer. Restart your server if prompted, but Orion does not require the Phone Book Service.

11. **If you are currently enabling IIS as part of an Orion installation**, restart the Orion installer. For more information, see the installation instructions in the *Administrator Guide* for your specific Orion product.

### Enabling IIS on Windows Server 2008

The following procedure enables IIS on Windows Server 2008.

**To enable IIS on Windows Server 2008:**

1. Click **Start > All Programs > Administrative Tools > Server Manager**.

2. Click **Roles** in the left pane, and then click **Add Roles** in the main pane.

3. Click **Next** to start the Add Roles Wizard.

4. Click **Web Server (IIS)**.

5. **If you are prompted to add features required for Web Server (IIS)**, click **Add Required Features**.

6. Click **Next** on the Select Server Roles window, and then click **Next** on the Web Server (IIS) window.

7. Confirm that **Common HTTP Features > Static Content** is installed.

8. Check **Application Development > ASP.NET**, and then click **Add Required Role Services**.
9. Check both **Security > Windows Authentication** and **Security > Basic Authentication**.

10. Check **Management Tools > IIS 6 Management Compatibility**, and then click **Next** on the Select Role Services window.

11. Click **Install** on the Confirm Installation Selections window, and then click **Close** on the Installation Results window.

12. **If you are currently enabling IIS as part of an Orion installation**, restart the Orion installer. For more information, see the installation instructions in the *Administrator Guide* for your specific Orion product.

## Installing Orion Network Performance Monitor

Any installation or upgrade of Orion NPM requires completion of both the installer and the Configuration Wizard, as detailed in the following sections:

**Note:** Downgrades of Orion products are not supported. If you are upgrading or installing multiple Orion products, confirm that you are installing them in the order given in the Upgrade Instructions located in your [SolarWinds Customer Portal](https://support.solarwinds.com).

- Completing an Orion NPM Installation
- Completing the Orion Configuration Wizard

## Completing an Orion NPM Installation

Before completing an Orion NPM installation, ensure that the server on which you are installing Orion NPM currently meets or exceeds stated requirements. For more information, see “Orion Requirements” on page 14.

**Notes:**

- SolarWinds strongly recommends that you create a backup of your database before performing any upgrade.
- If you are upgrading from a previous version of Orion Network Performance Monitor, see “Upgrading Orion Network Performance Monitor” on page 27.
- SolarWinds does not currently support upgrades from one locale to another. If you want to upgrade your SolarWinds installation to use a new locale, you must complete a clean SolarWinds installation using the new locale.
- If you are using Internet Explorer, SolarWinds recommends that you add the URL of your Orion website (http://FullOrionServerName/), the URL of SolarWinds support (http://support.solarwinds.com), and about:blank to the list of trusted sites. For more information about adding sites to your trusted sites list, see the Microsoft article, “[Working with Internet Explorer 6 Security Settings](http://support.microsoft.com/kb/820939)”.

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- For evaluation purposes only, Orion NPM may be installed on Windows 7, Windows XP, or Windows Vista. SolarWinds does not, however, support or recommend installing Orion NPM on these operating systems in production environments.

- When installing Orion NPM on Windows XP, you must confirm that Shared Memory, Named Pipes, and TCP/IP are enabled on remote databases.

- SolarWinds does not support or allow installations of SolarWinds Orion NPM on domain controllers.

The following procedure installs Orion NPM.

To install Orion Network Performance Monitor:

1. As an administrator, log on to your Orion NPM server.

2. *If you downloaded the product from the SolarWinds website*, navigate to your download location, and then launch the executable file.

3. *If you received physical media*, browse to the SolarWinds Orion executable, and then launch it.

4. *If you are prompted to install requirements*, click **Install**, and then complete the installation, including a reboot, if required.

   **Notes:**
   
   - Downloading and installing both Microsoft .NET Framework 3.5 SP1 and Microsoft .NET Framework 4.0 may take more than 20 minutes, depending on your existing system configuration.
   
   - If a reboot is required, after restart, click **Install** to resume installation, and then click **Next** on the Welcome window.

5. *If you want to use the Orion Improvement Program to send anonymous data about your Orion usage to SolarWinds*, click **Yes, send data**.

6. Review the Welcome text, and then click **Next**.

7. Select your preferred language, and then click **Next**.

   **Note:** This selection cannot be changed later.
8. **If the Orion Network Performance Monitor Setup Wizard detects that Microsoft Internet Information Services (IIS) is not installed**, select Suspend installation to manually install IIS, click Finish, quit setup, and then install IIS.

**Notes:**
- The Orion Web Console requires that Microsoft IIS is installed on the Orion NPM Server. If you do not install IIS at this point, you must install IIS later, and then configure a website for the Orion Web Console to use.
- A browser window may open automatically to display the SolarWinds Knowledge Base article, "Enabling IIS: What IIS components does Orion NPM require?". This article provides instructions for enabling IIS on Windows Server 2003 and 2008, Windows XP, Windows Vista, and Windows 7.

9. **If an IIS installation was required**, launch the installer again, and then click Next on the Welcome window.

**Note:** A server reboot may be required after installing IIS.

10. Accept the terms of the license agreement, and then click Next.

11. **If you want to install Orion NPM in a destination folder other than the default given**, click Browse, select an installation folder, and then click OK.

12. Click Next on the Choose Destination Location window.

13. Confirm the current installation settings, and then click Next.

14. Click Finish when the Setup Wizard completes.

15. **If you are evaluating Orion NPM**, click Continue Evaluation.

16. **If you are installing a production version of Orion NPM**, click Enter Licensing Information, and then complete the following procedure to license Orion NPM:

   a. **If you have both an activation key and access to the internet**, select the first option, I have internet access and an activation key..., enter your Activation Key, and then click Next.

      **Note:** If you are using a proxy server to access the internet, check I access the internet through a proxy server, and then provide the Proxy address and Port.

   b. **If you do not have access to the internet from your designated Orion NPM server**, select This server does not have internet access..., click Next, and then complete the steps provided.

The Orion Configuration Wizard should load automatically. For more information about completing the Orion Configuration Wizard, see “Completing the Orion Configuration Wizard” on page 24.
Completing the Orion Configuration Wizard

The following procedure using the Orion Configuration Wizard completes and configures your Orion NPM installation.

Notes:

- Confirm that you have designated a SQL Server database instance for Orion NPM. For more information, see “Orion NPM Requirements” on page 14.
- Confirm that the Internet Information Services (IIS) Manager is not open while the Configuration Wizard is running.
- SolarWinds recommends that you close any and all browsing sessions that may be open to the web console before starting the Configuration Wizard.
- During configuration, the Orion polling engine will shut down temporarily with the result that, if you are actively polling, you may lose some polling data. SolarWinds recommends that you perform upgrades during off-peak hours of network usage to minimize the impact of this temporary polling stoppage.

To configure Orion Network Performance Monitor:

1. **If the Configuration Wizard has not loaded automatically**, click Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Configuration Wizard.

2. Click **Next** on the Welcome dialog of the Configuration Wizard.

3. **If you are prompted to stop services**, click **Yes**.
   
   **Note:** To ensure that all updates and changes are installed correctly, it is imperative that you stop all services.

4. Specify the **SQL Server** instance you want to use to store network data.
   
   **Notes:**
   
   - **If you are using SQL Express**, specify your instance as (local) and use a strong password. For more information about authentication with strong passwords, see [http://msdn.microsoft.com/ms143705.aspx](http://msdn.microsoft.com/ms143705.aspx). Due to its inherent limitations, SolarWinds recommends against the use of SQL Express in production environments.
   
   - The selected instance must support either mixed-mode or Windows authentication with strong passwords. A strong password must meet at least three of the following four criteria:
     
     o Contains at least one uppercase letter.
     
     o Contains at least one lowercase letter.
5. Select the type of authentication you want to use, and then provide credentials, if required, to log into the selected instance.

Notes:
- In general, SolarWinds recommends using **SQL Server Authentication** to ensure that the Orion NPM server can always access the SQL Server, even when it is hosted remotely on a separate server.
- **If you are using an existing database**, the user account needs only to be in the `db_owner` database role for the existing database.
- **If you are using an existing SQL account**, the user account needs only to be in the `db_owner` database role for the Orion NPM database.
- **If you are creating a new database**, the user account must be a member of the `dbcreator` server role. The `sysadmin` role and the `sa` user account are always members of `dbcreator`.
- **If you are creating a new SQL account for use with Orion NPM**, the user account must be a member of the `securityadmin` server role. Note: The `sysadmin` role and the `sa` user account are always members of `securityadmin`.

6. Click **Next**.

7. **If you are creating a new database**, select **Create a new database**, provide a name for the New Database, and then click **Next**.

   **Note:** SolarWinds recommends against using non-alphanumeric characters in database names.

8. **If you are using an existing database**, select **Use an existing database**, type the database name or select it from the list, and then click **Next**.

9. **If you want to create a new SQL account for the Orion NPM polling engine and web console to use for accessing the database**, select **Create a new account**, provide an account name and password, confirm the account password, and then click **Next**.

10. **If you want to use an existing SQL account to provide database access to the Orion NPM polling engine and web console**, select the existing account, provide the appropriate password, and then click **Next**.
11. **If you need to specify a particular IP Address for the Orion NPM Web Console**, provide the **IP address** of the host web server.

   **Note:** SolarWinds recommends the default (All Unassigned) unless your environment requires a specific IP address for your Orion Web Console.

12. Specify both the **Port** through which you want to access the web console and the **Website Root Directory** into which you want to install web console files.

   **Note:** If you specify any port other than 80, you must include that port in the URL used to access the web console. For example, if you specify an IP address of 192.168.0.3 and port 8080, the URL used to access the web console is `http://192.168.0.3:8080`.

13. **If you want to enable automatic login using Windows Authentication**, select **Yes – Enable automatic login using Windows Authentication**.

   **Note:** Manual login using Windows Authentication is always available, regardless of whether or not automatic login is enabled.

14. Click **Next**.

15. **If you are prompted to create a new directory**, click **Yes**.

16. **If you are prompted to create a new website**, click **Yes**.

   **Note:** Choosing to overwrite the existing website will not result in the deletion of any custom Orion NPM website settings you may have previously applied.

17. Confirm that all services you want to install are checked.

   **Note:** Typically, all listed services should be selected for installation.

18. Click **Next**.

19. **If you are prompted to disable the SNMP Trap Service and enable the SolarWinds Trap Service**, click **Yes** to disable the (Windows) SNMP Trap Service and enable the SolarWinds Trap Service.

20. Review the final configuration items, and then click **Next**.

21. Click **Next** on the Completing the Orion Configuration Wizard dialog.

22. Click **Finish** when the Orion Configuration Wizard completes.

23. Log in to the Orion Web Console as an administrator.

**Notes:**

- By default, until you change your account, you can log in with User name **Admin** and no password.

- If you are prompted to install the Toolset integration (**SWToolset.exe**), click **More Options**, select a response, and then click **Install** or **Don’t Install**, as appropriate.
24. If you need to discover and add network devices to the Orion database, the Network Discovery Wizard starts. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 34.

**Upgrading Orion Network Performance Monitor**

Complete the following procedure when you are upgrading Orion NPM from a previous version or upgrading the licensed number of elements you can monitor.

Notes:

- SolarWinds recommends that you backup your database before any upgrade. For more information about creating database backups, see “Creating Database Backups” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.
- While it is being upgraded, your Orion polling engine will shutdown temporarily with the result that you may lose some polling data. SolarWinds recommends that you perform upgrades during off-peak hours of network usage to minimize the impact of this temporary polling stoppage.
- Discovery profiles from older Orion NPM versions are not retained through upgrades. If you want to retain a discovery profile, prior to starting your upgrade, externally record the configuration of the profiles you want to retain.
- **If your currently installed version of Orion NPM is older than version 7.8.5**, you must upgrade to Orion NPM 7.8.5.
- **If you currently have Orion NPM version 7.8.5 through 8.5 installed**, you must upgrade to Orion NPM 8.5.1.
- **If you currently have Orion NPM version 8.5.1**, upgrade to version 9.1.
- **If you currently have Orion NPM version 9.0 through 9.5.1**, you must upgrade to version 10.1 before upgrading to the current version.

Specific instructions for completing an upgrade are available in the SolarWinds Customer Portal. For more information about upgrading Orion NPM, particularly if you are upgrading an Orion NPM installation that includes Orion modules, log in to your SolarWinds Customer Portal at www.solarwinds.com/customerportal/, click License Management, and then click Upgrade Instructions under the license listing of any Orion product. The following procedure completes an Orion NPM upgrade.

**To upgrade Orion Network Performance Monitor:**

1. If you are using more than one polling engine to collect network information, shut down all polling engines before continuing.
2. Using the local administrator account, log on to the computer on which you want to upgrade Orion Network Performance Monitor.
3. **If you downloaded the product from the SolarWinds website**, navigate to your download location and then launch the executable.

4. Review the Welcome text, and then click **Next**.

5. Orion Network Performance Monitor automatically detects the previous installation. When prompted to upgrade the current installation, click **Next**.
   
   **Note:** All customizations, including web console settings, are preserved.

6. Accept the terms of the license agreement, and then click **Next**.

7. Confirm the current installation settings, and then click **Next** on the Start Copying Files window.

8. Provide required information on the Install Software License Key window.
   
   **Note:** You need your customer ID and password to successfully install the key.

9. Click **Continue**, and then click **Continue** again when the license is installed.

10. Review the Upgrade Reminder, and then click **Next**.

11. Click **Finish** on the InstallShield Wizard Complete window.

12. Complete the Configuration Wizard. For more information, see “Completing the Orion Configuration Wizard” on page 24.

**Upgrading an Evaluation License**

The standard Orion NPM evaluation period is 30 days. At the end of this period you will be prompted to either buy a license to Orion NPM or enter information corresponding to an Orion NPM license you have already purchased. At any point in your evaluation period, if you have purchased an Orion NPM license, you may upgrade your evaluation license as indicated in the following procedure.

**To upgrade an Orion NPM evaluation license:**

1. Click **Start > All Programs > SolarWinds Orion > Network Performance Monitor > Network Performance Monitor Licensing**.

2. Click **Enter Licensing Information**.

3. **If the computer on which you installed Orion NPM is connected to the Internet**, complete the following procedure:
   
   a. Select **I have internet access**...
   

   **Note:** If you do not know your SolarWinds CustomerID and password and you are not on active maintenance, contact the SolarWinds
Maintenance Renewal team at maintenance@solarwinds.com. If you do not know your SolarWinds CustomerID and password and you are on active maintenance, submit a customer service ticket at www.solarwinds.com/support/ticket/.

c. Click License Management.

d. Browse to Orion Network Performance Monitor, and then locate the Unregistered Licenses list.

e. Copy your unregistered Orion NPM activation key to the clipboard, and then paste it into the Activation Key field on the Activate NPM window.

f. If you are using a proxy server to access the Internet, check I access the internet through a proxy server, and then type the proxy address and port number.

g. Click Next.

4. If the computer on which you are installing Orion NPM is not connected to the Internet, complete the following procedure:

a. Select This server does not have internet access, and then click Next.

b. On the Activate Product window, click Copy Unique Machine ID.

c. Paste the copied data into a new document in a text editor, and then save the text document.

d. Transfer the document to a computer with internet access.

e. On the computer with internet access, browse to http://www.solarwinds.com/customer portal/.

f. Log in using your SolarWinds CustomerID and password.

   Note: If you do not know your SolarWinds CustomerID and password and you are not on active maintenance, contact the SolarWinds Maintenance Renewal team at maintenance@solarwinds.com. If you do not know your SolarWinds CustomerID and password and you are on active maintenance, submit a customer service ticket at www.solarwinds.com/support/ticket/.

g. Click License Management.

h. Browse to Orion Network Performance Monitor, and then click Manually Register License.

i. Provide the Unique Machine ID you transferred in Step 3, above, and then download your license key.

j. Transfer the license key to a shared location, and then, on the server that does not have internet access, browse to the shared License Key File location from the Activate Product window.
Maintaining Licenses with License Manager

SolarWinds License Manager is a free utility allows you to easily migrate Orion licenses from one computer to another without contacting SolarWinds Customer Service. The following sections provide procedures for installing and using License Manager:

- Installing License Manager
- Using License Manager

Installing License Manager

Install License Manager on the computer from which you are migrating currently licensed products.

Note: You must install License Manager on a computer with the correct time. If the time on the computer is even slightly off, in either direction, from Greenwich Mean Time (GMT), you cannot reset licenses without contacting SolarWinds Customer Service. Time zone settings neither affect nor cause this issue.

To install License Manager:

1. Click Start > All Programs > SolarWinds > SolarWinds License Manager Setup.
2. Click I Accept to accept the SolarWinds EULA.
3. If you are prompted to install the SolarWinds License Manager application, click Install.

Using License Manager

You must run License Manager on the computer where the currently licensed SolarWinds product is installed before you can migrate licenses to a new installation. The following procedure deactivates currently installed licenses that can then be transferred to a new installation.

To deactivate currently installed licenses:

1. Click Start > All Programs > SolarWinds > SolarWinds License Manager.
2. Check the products you want to deactivate on this computer, and then click Deactivate.
3. Specify your SolarWinds Customer ID and password when prompted, and then click Deactivate.

Note: Deactivated licenses are now available to activate on a new computer.
When you have successfully deactivated your products, log on to the computer on which you want to install your products, and then begin installation. When asked to specify your licenses, provide the appropriate information. The license you deactivated earlier is then assigned to the new installation.
Chapter 3

Getting Started with Orion NPM

Orion products use either Network Sonar discovery and import or Node Management in the Orion Web Console to discover objects for monitoring. The method recommended largely depends on the number of devices to be added.

- To discover and add a larger number of devices across your enterprise, the Network Sonar and Network Sonar Results Wizards are available. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 34.
- The web console provides an easy-to-use Web Node Management to add individual objects for monitoring. For more information, see “Adding Devices for Monitoring in the Web Console” on page 50.

Discovery Central

Discovery Central provides a centralized overview of the types and number of network objects you are monitoring with your currently installed SolarWinds products. The Discovery Central view is subdivided into sections corresponding to the SolarWinds products you have installed. The Network Discovery section displays for all node-based products. For more information about Network Discovery, see “Network Discovery” on page 33. For more information about specific sections, see the Administrator Guide for the corresponding SolarWinds product.

Clicking Go to Orion Home opens the Summary Home view for your entire monitored network.

Network Discovery

The Network Discovery resource provides the number of nodes and volumes that are currently monitored. This information is both available and applicable to all installed SolarWinds products.

Click Network Sonar Discovery to start a Network Sonar Discovery. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 34.

Click Add a Single Device to open the Add Node – Define Node view of the Orion Node Management utility.
Interface Discovery

The Interface Discovery resource provides the number of interfaces on which you can monitor network traffic. To discover interfaces on your network, simply discover or add the parent node and SolarWinds will automatically discover any and all interfaces on the designated parent node. This information is available and applicable to SolarWinds Network Performance Monitor (NPM) and all installed SolarWinds NPM modules.

Click Network Sonar Discovery to start a Network Sonar Discovery. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 34.

Network Discovery Using the Network Sonar Wizard

The easy-to-use Network Sonar Wizard directs you in the discovery of objects for monitoring on your network. Before using the Network Sonar Wizard, consider the following points about network discovery and SolarWinds NPM:

- The Network Sonar Wizard recognizes network devices that are already in your SolarWinds database and prevents you from importing duplicate devices.
- CPU and Memory Utilization charts are automatically enabled for your Windows, Cisco Systems, VMware, and Foundry Networks devices.
- The community strings you provide in the Network Sonar Wizard are only used for SNMP GET requests, so read-only strings are sufficient.
- The Interfaces page of the Network Sonar Results Wizard allows you to select interfaces for monitoring.

The following procedure steps you through the discovery of devices on your network using the Network Sonar Wizard.

To discover devices on your network:

1. **If the Network Sonar Wizard is not already open**, click Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Network Discovery.

2. **If you want to create a new discovery**, click Add New Discovery.

3. **If you have already defined a network discovery**, a number of options are available on the Network Sonar Discovery tab. Select one of the following:
   - **If you want to edit an existing discovery before using it**, select the discovery you want to edit, and then click Edit.
   - **If you want to use an existing discovery to rediscover your network**, select the discovery to use, click Discover Now, and then complete the
Network Sonar Results Wizard after discovery completes. For more information, see “Using the Network Sonar Results Wizard” on page 40.

- **If you want to import some or all devices found in a defined discovery that you may not have already imported for monitoring**, select a defined discovery, and then click **Import All Results**. For more information, see “Using the Network Sonar Results Wizard” on page 40.

- **If you want to import any newly enabled devices matching a defined discovery profile**, select a currently defined discovery, and then click **Import New Results**. For more information about network discovery results, see “Using the Network Sonar Results Wizard” on page 40.

- **If you want to delete an existing discovery profile**, select a currently defined discovery and then click **Delete**.

4. **If the devices on your network do not require community strings other than the default strings public and private provided by Orion NPM**, click **Next** on the SNMP Credentials view.

5. **If any of your network devices require community strings other than public and private or if you want to use an SNMPv3 credential**, complete the following steps to add the required SNMP credential.

   **Notes:**

   - If you intend to use SNMPv3 for monitoring VLAN interfaces on Cisco devices, confirm that all relevant VLAN contexts are added to all VLAN groups defined for your monitored Cisco devices.
   - Repeat the following procedure for each new community string. To speed up discovery, highlight the most commonly used community strings on your network, and then use the arrows to move them to the top of the list.

   a. Click **Add New Credential**, and then select the **SNMP Version** of your new credential.
   
   b. **If you are adding an SNMPv1 or SNMPv2c credential**, provide the new **SNMP Community String**.
   
   c. **If you are adding an SNMPv3 credential**, complete the following fields:

      - User Name, Context, and Authentication Method
      - Authentication Password/Key, Privacy/Encryption Method and Password/Key, if required.
   
   d. Click **Add**.

6. **Click Next** on the SNMP Credentials view.
If you want to discover any VMware VCenter or ESX Servers on your network, confirm that Poll for VMware is checked.

Note: If you know there are VMware devices on your network that you want to monitor, confirm that you check Poll for VMware. Nodes cannot be identified as VMware devices unless Poll for VMware is enabled.

If you want to discover VMware devices on your network, repeat the following procedure for each VMware credential you add or edit. To speed up discovery, use the arrows to move the most commonly used credentials on your network to the top of the list.

a. Click Add vCenter or ESX Credential.

b. If you are using an existing VMware credential, select the appropriate credential from the Choose Credential dropdown menu.

c. If you are adding a new VMware credential, select <New Credential> in the Choose Credential dropdown menu, and then provide a new credential name in the Credential Name field.

   Note: SolarWinds recommends against using non-alphanumeric characters in credential names.

d. Add or edit the credential User Name and Password, as necessary.

e. Confirm the password, and then click Add.

If you want to discover any WMI- or RPC-enabled Windows devices on your network, complete the following steps to add or edit credentials.

Notes:

- SolarWinds does not poll interfaces on WMI- or RPC-enabled nodes.
- Repeat the following procedure for each new credential. To speed up discovery, use the arrows to move the most commonly used credentials on your network to the top of the list.

a. Click Add New Credential.

b. If you are using an existing Windows credential, select the appropriate credential from the Choose Credential dropdown menu.

c. If you are adding a new Windows credential, select <New Credential> in the Choose Credential dropdown menu, and then provide a new credential name in the Credential Name field.

   Note: SolarWinds recommends against using non-alphanumeric characters in credential names.

d. Add or edit the credential User Name and Password, as necessary.
e. Confirm the password, and then click Add.

11. Click Next on the Windows Credentials view.

12. If you want to discover devices located on your network within a specific range of IP addresses, complete the following procedure.

   Note: Only one selection method may be used per defined discovery.

   a. Click IP Ranges in the Selection Method menu, and then, for each IP range, provide both a Start address and an End address.

      Note: Scheduled discovery profiles should not use IP address ranges that include nodes with dynamically assigned IP addresses (DHCP).

   b. If you want to add another range, click Add More, and then repeat the previous step.

      Note: If you have multiple ranges, click X to delete an incorrect range.

   c. If you have added all the IP ranges you want to poll, click Next.

13. If you want to discover devices connected to a specific router or on a specific subnet of your network, complete the following procedure:

   Note: Only one selection method may be used per defined discovery.

   a. Click Subnets in the Selection Method menu.

   b. If you want to discover on a specific subnet, click Add a New Subnet, provide both a Subnet Address and a Subnet Mask for the desired subnet, and then click Add.

      Note: Repeat this step for each additional subnet you want to poll.

   c. If you want to discover devices using a seed router, click Add a Seed Router, for each seed router, provide the IP address of the Router, and then click Add.

   Notes:

   - Network Sonar reads the routing table of the designated router and offers to discover nodes on the Class A network (255.0.0.0 mask) containing the seed router and, if you are discovering devices for an Orion NPM installation, the Class C networks (255.255.255.0 mask) containing all interfaces on the seed router, using the SNMP version chosen previously on the SNMP Credentials page.

   - Networks connected through the seed router are NOT automatically selected for discovery.

   d. Confirm that all networks on which you want to conduct your network discovery are checked, and then click Next.
14. **If you already know the IP addresses or hostnames of the devices you want to discover and include in the Orion database**, complete the following procedure:

   **Note**: Use this method to add devices with both IPv4 and IPv6 addresses.
   
a. Click **Specific Nodes** in the Selection Method menu.

b. Type the IP addresses or hostnames of the devices you want to discover for monitoring into the provided field.

   **Note**: Type only one IP address or hostname per line.

c. Click **Validate** to confirm that the provided IP addresses and hostnames are assigned to SNMP-enabled devices.

d. **If you have provided all the IP addresses and hostnames you want to discover**, click **Next**.

15. Configure the options on the Discovery Settings view, as detailed in the following steps.

   a. Provide a **Name** and **Description** to distinguish the current discovery profile from other profiles you may use to discover other network areas.

   **Note**: This Description displays next to the **Name** in the list of available network discovery configurations on the Network Sonar view.

   b. Position the slider or type a value, in ms, to set the **SNMP Timeout**.

   **Note**: If you are encountering numerous SNMP timeouts during Network Discovery, increase the value for this setting. The SNMP Timeout should be at least a little more than double the time it takes a packet to travel the longest route between devices on your network.

   c. Position the slider or type a value, in ms, to set the **Search Timeout**.

   **Note**: The Search Timeout is the amount of time Network Sonar Discovery waits to determine if a given IP address has a network device assigned to it.

   d. Position the slider or type a value to set the number of **SNMP Retries**.

   **Note**: This value is the number of times Network Sonar Discovery will retry a failed SNMP request, defined as any SNMP request that does not receive a response within the SNMP Timeout defined above.

   e. Position the slider or type a value to set the **Hop Count**.

   **Note**: If the Hop Count is greater than zero, Network Sonar Discovery searches for devices connected to any discovered device. Each connection to a discovered device counts as a hop.
f. Position the slider or type a value to set the **Discovery Timeout**.

   **Note:** The Discovery Timeout is the amount of time Network Sonar Discovery is allowed to complete a network discovery. If a discovery takes longer than the Discovery Timeout, the discovery is terminated.

16. **If you only want to discover devices that respond to SNMP or WMI polling**, check **Ignore nodes that only respond to ICMP (ping)**.

   **Note:** By default, Network Sonar uses ICMP ping requests to locate devices. Most information about monitored network objects is obtained using SNMP queries, but WMI is supported for Windows devices.

17. **If multiple Orion polling engines are available in your environment**, select the **Polling Engine** you want to use for this discovery.

18. Click **Next**.

19. **If you want the discovery you are currently defining to run on a regular schedule**, select either **Custom** or **Daily** as the discovery **Frequency**, as shown in the following steps:

   **Notes:**
   - Scheduled discovery profiles should not use IP address ranges that include nodes with dynamically assigned IP addresses (DHCP).
   - Default Discovery Scheduling settings execute a single discovery of your network that starts immediately, once you click **Discover**.
   - Results of scheduled discoveries are maintained on the Scheduled Discovery Results tab of Network Discovery. For more information about managing scheduled discovery results, see “Managing Scheduled Discovery Results” on page 43.
   
   a. **If you want to define a custom discovery schedule to perform the currently defined discovery repeatedly in the future**, select **Custom** and then provide the period of time, in hours or minutes, between discoveries.

   b. **If you want your scheduled discovery to run once daily**, select **Daily**, and then provide the time at which you want your discovery to run every day, using the format **HH:MM AM/PM**.

20. **If you do not want to run your network discovery at this time**, select **No, don’t run now**, and then click **Save** or **Schedule**, depending on whether you have configured the discovery to run once or on a schedule, respectively.

21. **If you want your Network Sonar discovery to run now**, click **Discover** to start your network discovery.
Note: Because some devices may serve as both routers and switches, the total number of Nodes Discovered may be less than the sum of reported Routers Discovered plus reported Switches Discovered.

Using the Network Sonar Results Wizard

The Network Sonar Results Wizard directs you through the selection of devices for monitoring, and it opens whenever discovery results are requested, either when the Network Sonar Wizard completes or when either Import All Results or Import New Results is clicked for a selected discovery. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 34.

To select the results of a network discovery for monitoring in Orion NPM:

1. On the Device Types to Import page, check the device types you want Orion NPM to monitor, and then click Next.

   Note: If you are not sure you want to monitor a specific device type, check the device type in question. If, later, you do not want to monitor a selected device, simply delete the device using Web Node Management. For more information, see “Managing Devices in the Web Console” on page Error! Bookmark not defined.

2. The Interfaces view of the Network Discovery Wizard provides powerful selection and filtering options to customize your discovery results, as follows:

   Note: If you are not sure you want to monitor a specific interface type, check the interface type in question. If, later, you do not want to monitor a selected interface, delete it using Web Node Management. For more information, see “Managing Devices in the Web Console” on page Error! Bookmark not defined.

   a. In the Selection Criteria area, check the appropriate Status, Port Type, and Hardware properties of the interfaces you want to monitor.

   b. If you want to select discovered interfaces using keywords, phrases or regular expressions, click + to expand Advanced selection options, select from the available advanced options, as desired, and then click Reselect Interfaces.

   c. In the List of Interfaces area, check the Interface Types you want Orion NPM to monitor, and then click Next.

3. On the Volume Types to Import page, check the volume types you want Orion NPM to monitor, and then click Next.

   Note: If you are not sure you want to monitor a specific volume type, check the volume type in question. If, later, you do not want to monitor any volume of the selected type, delete the volume using Web Node Management. For
more information, see “Managing Devices in the Web Console” on page Error! Bookmark not defined..  

4. **If you want to import nodes, even when they are already known to be polled by another polling engine**, check the option in the **Allow Duplicate Nodes** section. For more information about working with multiple polling engines, see “Managing Orion Polling Engines” on page Error! Bookmark not defined..  

5. Check valid states for imported interfaces on the NPM Import Settings page, and then click **Next**.  

   **Note**: By default, Orion NPM NPM imports interfaces that are discovered in an **Operationally Up** state. However, because interfaces may cycle off and on intermittently, the Import Settings page allows you to select interfaces found in **Operationally Down** or **Shutdown** states for import, as well.  

6. **If there are any devices on the Import Preview that you do not ever want to import**, check the device to ignore, and then click **Ignore**. Selected nodes are added to the Discovery Ignore List. For more information, see “Using the Discovery Ignore List” on page 44.  

7. Confirm that the network objects you want to monitor are checked on the Import Preview page, and then click **Import**.  

8. **If you are discovering devices for an Orion NPM installation**, after the import completes, click **Finish**.  

   **Note**: Imported devices display in the All Nodes resource.  

### Importing a List of Nodes Using a Seed File  

In versions of Orion NPM products following the release of Orion NPM version 10.0, the Specific Nodes option in the Network Discovery Wizard may be used to import devices from a seed file, as indicated in the following procedure.  

**Note**: A Seed File discovery option is available in Orion NPM prior to version 10.  

#### To import devices from a seed file:  

1. Open your seed file.  

2. **If the Network Sonar Wizard is not already open**, click **Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Network Discovery**.  

3. **If you want to create a new discovery**, click **Add New Discovery**, click **Add New Discovery**.
4. If you have already defined a network discovery, a number of options are available on the Network Sonar Discovery tab. Select one of the following:
   - If you want to edit an existing discovery before using it, select the discovery you want to edit, and then click Edit.
   - If you want to use an existing discovery to rediscover your network, select the discovery to use, click Discover Now, and then complete the Network Sonar Results Wizard after discovery completes. For more information, see “Using the Network Sonar Results Wizard” on page 40.
   - If you want to import some or all devices found in a defined discovery that you may not have already imported for monitoring, select a defined discovery, and then click Import All Results. For more information, see “Using the Network Sonar Results Wizard” on page 40.
   - If you want to import any newly enabled devices matching a defined discovery profile, select a currently defined discovery, and then click Import New Results. For more information about network discovery results, see “Using the Network Sonar Results Wizard” on page 40.
   - If you want to delete an existing discovery profile, select a currently defined discovery and then click Delete.

5. If the devices on your network do not require community strings other than the default strings public and private provided by Orion NPM, click Next on the SNMP Credentials view.

6. If you need to supply new SNMP credentials to discover the devices in your seed file, click Add New Credential, provide the required information, and then click Add. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 34.

7. Click Next on the SNMP Credentials view.

8. If you intend to import known VMware vCenter or ESX servers and you need to supply new VMware credentials to discover these servers in your seed file, complete the following steps on the Local vCenter or ESX Credentials for VMware view:
   a. Check Poll for VMware, and then click Add vCenter or ESX Credential.
      Note: If you know there are VMware devices on your network that you want to monitor, confirm that you check Poll for VMware. Nodes cannot be identified as VMware devices unless Poll for VMware is enabled.
   b. Provide the required information, and then click Add.
      Note: For more information, see “Network Discovery Using the Network Sonar Wizard” on page 34.
9. Click **Next**, and then click **Specific Nodes** in the Selection Method menu.

10. Copy and then paste the IP addresses or hostnames of the devices you want to discover from your seed file into the provided field.

   **Note:** Confirm that no line has more than one IPv4 address or hostname.

11. Click **Validate** to confirm that the provided IP addresses and hostnames are assigned to SNMP-enabled devices.

12. **If you have provided all the IP addresses and hostnames you want to discover,** click **Next**.

13. Complete the Network Discovery and Network Discovery Results Wizards. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 34.

**Managing Scheduled Discovery Results**

The Scheduled Discovery Results tab of Network Discovery provides a list of all recently discovered, changed, or imported devices on your monitored network. Results are compared between discoveries, and results are listed on this tab. The following procedure provides guidelines for managing discovery results.

To manage scheduled discovery results:

1. Click **Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Network Discovery**.

2. Click **Scheduled Discovery Results**.

3. Select the type of devices you want to view from the Status menu in the left pane. The following options are available:

   - Select **Found** to view all devices discovered by a scheduled discovery.
   - Select **Changed** to view all devices that have changed between recent scheduled discoveries. Changes include the addition of interfaces and device configuration changes.
   - Select **Imported** to view all devices you have recently imported you’re your Orion database. For more information about importing devices, see “Using the Network Sonar Results Wizard” on page 40.
   - Select **Ignored** to view all devices you have added to your Discovery Ignore List. For more information about the Discovery Ignore List, see “Using the Discovery Ignore List” on page 44.
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- Select **Found and Changed** to view a combined list of all devices found or changed as described above.
- Select **All except Ignored** to view all discovered, changed or imported devices you have not already designated as Ignored, as detailed above.

4. **If you want to apply a grouping criterion to organize your listed results**, select an appropriate criterion from the **Group by:** menu in the left pane.

5. **If there are changed or discovered nodes in the results list that you want to update your Orion database to include**, check all nodes to update or to add, and then click **Import Nodes**.

6. **If there are devices you want Orion NPM to ignore in future discoveries, regardless of discovered updates or changes**, check all nodes to ignore, and then click **Add to Ignore List**. For more information about the Discovery Ignore List, see “Using the Discovery Ignore List” on page 44.

**Using the Discovery Ignore List**

Often, devices are found during a network discovery that you never intend to monitor with Orion NPM. The Discovery Ignore List is a record of all such devices on your network. By placing a device on the Discovery Ignore List you can minimize the SNMP processing load associated with discovering devices that you never intend to monitor.

To manage devices on the Discovery Ignore List:

1. Click **Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Network Discovery**.

2. **If you want to view the current Discovery Ignore List**, click Discovery Ignore List.

3. **If you want to add devices to the Discovery Ignore List**, complete the following procedure:
   a. Click **Scheduled Discovery Results**.
   b. Check devices you want to ignore, and then click **Add to Ignore List**.

4. **If you want to remove devices from the Discovery Ignore List**, complete the following procedure:
   a. Click **Scheduled Discovery Results**, and then
   b. Check the devices you want to remove from the list.
   c. Click **Remove from Ignore List**.
   d. Confirm that you want to stop ignoring selected items by clicking **OK**.

44  Getting Started with Orion NPM
Using the Web Console Notification Bar

Below the web console menu bar, the Orion notification bar provides informational messages related to the following Orion NPM features:

- The Orion Product Team Blog offers regular posts from members of the Orion product team to help you take full advantage of features provided by Orion NPM and its modules.
- If you have configured the Orion Web Console to store blog posts, new and unread posts to the Orion Product Team Blog are announced in the notification bar.
- If you have currently configured a scheduled discovery, results display in the notification bar when the discovery completes. For more information about Scheduled Discovery, see “Network Discovery Using the Network Sonar Wizard” on page 34.
- If you are currently using Orion NPM to monitor any VMware ESX or ESXi Servers, the notification bar can display messages communicating the number of ESX nodes found during any discovery, and, if any discovered ESX nodes require credentials, the notification bar tells you. For more information about monitoring VMware ESX Servers, see “Virtualization” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

For more information about any displayed notification bar message, click More Details and a web console view relevant to the displayed message opens.

To delete a posted message, either click Dismiss Message next to the displayed message, or properly address the situation mentioned in the posted notification.

To remove the notification bar from your web console, click Close (X) at the right end of the notification bar.

Navigating the Orion Web Console

The Orion Web Console offers two primary methods of navigation: top-level web console tabs and view-level breadcrumbs. The following sections describe how these navigation methods are used:

Using Web Console Tabs

In the case of a basic Orion NPM installation, the Orion Web Console displays the following tabs:

Home

The Home tab provides a menu bar of links to views aiding you in general network management and monitoring. Information, like events and Top 10
lists, and technologies, like alerts, used to generate the views linked from the Home menu are generally available to all Orion modules. By default, the Orion Summary Home view displays when you click Home from any view in the web console.

Applications (Orion APM)

If you are viewing the Orion Web Console on a server on which Orion APM is also installed, the Applications tab opens a menu of default views for some of the many different types of applications Orion APM can monitor. If Orion APM is installed without Orion NPM, the APM Summary Home view displays by default when you click Home from any web console view.

Network (Orion NPM)

The Network tab opens a menu bar of links to views and technologies, like EnergyWise, wireless network and interface monitoring, that are specific to the features provided by Orion NPM NPM. If Orion NPM is installed, the NPM Summary Home view displays by default when you click Home from any web console view.

Configs (Orion NPM and NCM)

If the Orion NCM Integration for Orion NPM is installed, theConfigs tab provides links to default device configuration management views. If Orion NPM is installed, clicking Home from any web console view displays the NPM Summary Home view by default.

Virtualization

The Virtualization tab provides access to specific views and resources that are tailored for monitoring virtual devices. For more information about virtualization monitoring in Orion, see “Virtualization” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

The web console provides an additional module-specific tab for each installed Orion module. These tabs offer access to views and tools specific to the Orion module added. For more information about additional Orion modules, see www.solarwinds.com. For more information about customizing menu bars, see “Managing the Orion Web Console” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Using and Disabling Web Console Breadcrumbs

As you navigate web console views, your location is recorded as a series of links, or breadcrumbs, to the views you have opened. Each breadcrumb offers the following navigation options:

- Clicking a breadcrumb opens the corresponding view directly.
Clicking > next to a breadcrumb opens a clickable list of all other views at the same navigation level in the web console. For example, if you are on a Node Details view, clicking > displays a list of other monitored nodes.

**Note:** Only the first 50 monitored nodes, listed in alphanumeric order by IP address, are displayed.

### Customizing Web Console Breadcrumbs
Dropdown breadcrumb lists are customizable, as shown in the following steps.

**To customize the items in a breadcrumb dropdown:**

1. Click > at an appropriate level in a breadcrumb to open the dropdown.
2. Click **Customize this list**.
3. Select a criterion from the menu, and then click **Submit**.

**Note:** All items in the customized list will be identical for the selected criterion.

### Disabling Web Console Breadcrumbs
To ensure access is appropriately restricted for account-limited users, you may want to disable breadcrumbs, as indicated in the following procedure.

**To disable web console breadcrumb navigation:**

1. Log on to your Orion server using an account with administrative access.
2. Open `web.config` (default location `C:\Inetpub\SolarWinds\`) for editing.
3. In the `<appsettings>` section, locate the following setting:
   ```xml
   <add key="DisableBreadCrumbs" value="false"/>
   ```
4. Change “false” to “true”, as follows:
   ```xml
   <add key="DisableBreadCrumbs" value="true"/>
   ```
5. Save `web.config`.

**Note:** If you run the Configuration Wizard after editing this setting, your changes may be overwritten.

### Configuring the Orion Web Console
The primary user interface for Orion NPM is the Orion Web Console, where performance data for your network devices is most easily viewed. The following sections describe the primary administrative functions performed by an Orion Web Console administrator. For more information about administrative functions in the Orion Web Console, including extensive configuration examples, see “Managing the Orion Web Console” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*. 

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Logging in for the First Time as an Administrator

The first time you start the Orion Web Console, you will be presented with a login page requiring both a User Name and a Password. Log in to the Orion Web Console as shown in the following steps.

To log in to the Orion Web Console:

1. Launch the Orion Web Console using either of the following methods:
   - Click Start > All Programs > SolarWinds Orion > Orion Web Console.
   - Or launch a browser on your Orion NPM server and enter http://ip_address or http://hostname, where ip_address is the IP address of your Orion NPM host server, or where hostname is the domain name of the server hosting your Orion NPM installation.

2. Enter Admin as your User Name, and then click Login.

Notes:
- The latest version of the Orion Web Console supports authentication of defined Active Directory users and groups.
- Until you set a password, you can log in as Admin with no Password. After your first login, you may want to change the Admin password. For more information, see “Changing an Account Password” on page 48.

Windows Authentication with Active Directory

As of Orion Core version 2010.2, the Orion Web Console can authenticate Active Directory users and users who are members of Active Directory security groups.

To enable Active Directory Windows authentication to the web console:

1. Install and configure Active Directory on your local network.

Notes:
- For more information about Active Directory on Windows Server 2008, see the Microsoft TechNet article, “Active Directory Services”.
- For more information about installing Active Directory on Windows Server 2003, see the Microsoft Support article, “How To Create an Active Directory Server in Windows Server 2003”.

2. If you want to enable automatic login for web console accounts using Windows Authentication, configure the Orion Web Console as shown in the following steps:
Getting Started with Orion NPM

1. Click Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Configuration Wizard.
2. Check Website, and then click Next.
3. After providing the appropriate IP Address, Port, and Website Root Directory, select Yes – Enable automatic login using Windows Authentication.
4. Click Next, and then complete the Configuration Wizard.

3. Log in to the web console using the appropriate domain and user, providing Domain\Username or Username@Domain as the web console User name.

Changing an Account Password

Orion NPM administrators may change user account passwords at any time, as shown in the following procedure.

To change an account password:

1. Log in to the web console as an administrator.
2. Click Settings in the top right corner of the web console.
3. Click Account Manager in the Accounts grouping of the Orion Website Administration page.
4. Select the user account with the password you want to change, and then click Change Password.
5. Complete the New Password and Confirm Password fields, and then click Change Password.
6. Click Continue when the password is successfully changed.

Managing Devices in the Orion Web Console

Managing all the monitored devices on your network is greatly simplified with the Node Management feature of the Orion Web Console. Using this tool, you can easily add and remove nodes, interfaces, and virtual servers and quickly view and edit device properties. Any user that has been granted node management rights can directly access the Node Management tool either from any All Nodes resource or through the Orion Website Administration page. For more information about granting node management rights, see “Editing User Accounts” in the SolarWinds Orion Network Performance Monitor Administrator Guide.
The following sections describe the various functions that allow you to view and manage all your network devices from the Orion Web Console.

**Note:** The Node Management feature is accessible by clicking **Manage Nodes** either in the header of any All Nodes resource or in the Node & Group Management group of the Orion Website Administration page. The All Nodes resource is included on the Orion Summary Home view by default, but you can include it on any other web console view as well. Confirm that the All Nodes resource is available on an appropriate Web Console view before continuing. For more information about adding resources to Orion NPM views, see “Editing Views” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

**Adding Devices for Monitoring in the Web Console**

The following procedure details the steps required to add a device and its interfaces and volumes for monitoring in the Orion Web Console.

**To add a device for monitoring in the Orion Web Console:**

1. Log in to the Orion Web Console as an administrator, and then click **Settings** in the top right of the web console.
2. Click **Manage Nodes** in the Node & Group Management grouping of the Orion Website Administration page.
3. Click **Add Node** on the Node Management toolbar.
4. Provide the hostname or IP Address of the node you want to add in the **Hostname or IP Address** field.
5. If you only want to use **ICMP (Ping only)** to monitor node status, response time, or packet loss for the added node, check **ICMP (Ping only)**.
6. If you are adding a **VMware ESX Server**, check **Poll for ESX** to ensure that Orion NPM acquires any data the ESX Server provides to SNMP polling requests, and then complete the following steps to provide required ESX Server credentials. For more information about monitoring VMware ESX Servers, see “Virtualization” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.
   a. Provide an appropriate **VMware credential name**.

**Notes:**

- If you are editing an existing credential, select the credential you are editing from the **Choose Credential** field.
- SolarWinds recommends against using non-alphanumeric characters in VMware credential names.
b. Provide an appropriate **User name** and a **Password**.

c. Provide the password again in the **Confirm password** field.

d. Click **Validate VMware** to confirm the ESX credentials you provided.

7. **If you want to add an External node to monitor a hosted application with Orion Application Performance Monitor**, check **External**.

   **Note:** Orion NPM does not collect or monitor any network performance data from nodes designated as External. The External status is reserved for nodes hosting application that you want to monitor with Orion Application Performance Monitor.

8. **If you want to use SNMP to monitor the added node**, confirm that **ICMP (Ping only)** is cleared, and then complete the following steps:

   a. Select the **SNMP Version** for the added node.

      **Notes:**
      
      - Orion NPM uses **SNMPv2c** by default. If the device you are adding supports or requires the enhanced security features of SNMPv3, select **SNMPv3**.
      - If SNMPv2c is enabled on a device you want Orion NPM to monitor, by default, Orion NPM will attempt to use SNMPv2c to poll for performance information. If you only want Orion NPM to poll using SNMPv1, you must disable SNMPv2c on the device to be polled.

   b. **If you have installed multiple polling engines**, select the **Polling Engine** you want to use to collect statistics from the added node.

      **Note:** This option may not be available if you are only using one polling engine to collect information from your network.

   c. **If the SNMP port on the added node is not the Orion NPM default of 161**, provide the actual port number in the **SNMP Port** field.

   d. **If the added node supports 64 bit counters and you want to use them**, check **Allow 64 bit counters**.

      **Note:** Orion NPM fully supports the use of 64-bit counters; however, these high capacity counters can exhibit erratic behavior depending on manufacturer implementation. If you notice peculiar results when using these counters, use the Node Details view to disable the use of 64-bit counters for the device and contact the hardware manufacturer.

9. **If you want Orion NPM to use SNMPv2c to monitor the added node**, provide valid community strings for the added node.

   **Note:** The **Read/Write Community String** is optional, but Orion NPM does require the **public Community String**, at minimum, for node monitoring.
10. **If you want Orion NPM to use SNMPv3 to monitor the added node**, provide the following SNMP Credentials, Authentication, and Privacy/Encryption settings:
   - SNMPv3 Username and Context
   - SNMPv3 Authentication Method and Password/Key
   - SNMPv3 Privacy/Encryption Method and Password/Key

11. **If you are using SNMP to communicate with your added node**, click Validate SNMP after entering all required credentials to confirm your SNMP settings.

12. Click **Next**.

13. Check the interfaces, volumes, and interface charts for the added node that you want Orion NPM to monitor. The following options are available:
   - Clicking **All** selects all listed devices and charts for monitoring.
   - Clicking **None** clears any checked interfaces, volumes, or interface charts that have been selected for monitoring.
   - Clicking **All Active Interfaces** selects only currently active interfaces and the associated interface charts for monitoring.
   - Clicking **All Volumes** selects all listed volumes for monitoring.
   - Clicking **All Interfaces** selects all listed interfaces for monitoring.

14. After you have selected interfaces, volumes, or interface charts for monitoring, click **Next**.

15. **If you want to apply pollers to the added node**, click + to expand poller groups, as necessary, check the appropriate pollers, and then click **Next**.

   **Note:** For more information about using predefined pollers or about defining your own universal device pollers, see “Monitoring MIBs with Universal Device Pollers” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

16. **If you want to edit the SNMP settings you provided earlier**, change the appropriate values in the SNMP area of the Change Properties page, and then click **Validate SNMP** to confirm your new settings.

17. **If you want to edit the default polling settings for your added node**, change the Node Status Polling or Collect Statistics Every values in the Polling area of the Change Properties page, as appropriate.

   **Note:** The **Node Status Polling** value refers to the number of seconds, between the node status checks Orion NPM performs on the added node.
The Collect Statistics Every value refers to the period of time between the updates Orion NPM makes to displayed statistics for the added node.

18. **If you have defined any custom properties for monitored nodes**, provide appropriate values for the added node in the Custom Properties area of the Change Properties page.

   **Note:** The Custom Properties area is empty if you have not defined any custom properties for monitored nodes in Orion NPM.

19. Click OK, Add Node when you have completed properties configuration for your added node.

20. **If you have successfully added the node**, click OK on the dialog.

### Deleting Devices from Monitoring

The following procedure deletes devices from monitoring in the web console.

**Warning:** Deleting nodes from monitoring in the web console automatically terminates monitoring of all interfaces and volumes on deleted nodes.

**Note:** You can select multiple devices to delete at the same time. Additionally, using the search tool above the node list, you can select multiple interfaces on different nodes for simultaneous deletion.

**To delete devices from monitoring in the Orion Web Console:**

1. Log in to the Orion Web Console as an administrator, and then
2. Click **Settings** in the top right of the web console.
3. Click **Manage Nodes** in the Node & Group Management grouping of the Orion Website Administration page.
4. **If you want to delete a node with all its monitored interfaces**, complete the following steps.
   a. Locate the node to delete using either of the following methods:
      - Use the search tool above the node list to search your Orion database for the node you want to delete.
      - Select an appropriate **Group by:** criterion, and then click the appropriate group including the node to delete.
   b. Check the node to delete in the list, and then click **Delete** on the toolbar.
5. **If you want to delete an interface or a volume**, use the following steps.
   
a. Locate the element to delete using either of the following methods:
   
   - Use the search tool above the node list to search your Orion database either for the interface or for the parent node of the interface or volume to delete.
   
   - Select a **Group by:** criteria, and then click the appropriate group including the parent node of the interface or volume to delete.
   
   b. **If you have a list of node results**, click + to expand the parent node of the interface or volume you want to delete.
   
   c. Check the interface or volume to delete, and then click **Delete** on the Node Management toolbar.
   
6. Click **OK** to confirm deletion.

### Editing Device Properties

The following procedure provides the steps required to edit node, interface, or volume properties using the Node Management utility of the Orion Web Console.

**Note:** Editing multiple devices in multiple browser tabs in the same session may result in lost data or database errors. Limit device management activities to a single browser tab to prevent database errors and data losses.

**To edit device properties in the Orion Web Console:**

1. Log in to the Orion Web Console as an administrator.

2. Click **Settings** in the top right of the web console, and then click **Manage Nodes** in the Node & Group Management grouping.

3. Locate the device to edit using either of the following methods:
   
   - Use the search tool above the node list to search your Orion database for either the node or interface you want to edit or the parent node of the volume you want to edit.
   
   - Select an appropriate **Group by** criteria, and then click the appropriate group including either the node to edit or the parent node of the interface or volume to edit.
   
4. **If you want to edit the properties of a monitored node**, check the node you want to edit, and then click **Edit Properties**.

5. **If you want to edit the properties of a monitored interface**, click + next to the parent node of the interface you want to edit, check the interface you want to edit, and then click **Edit Properties**.
6. **If you are editing the SNMP properties of a node**, click **Validate SNMP** after providing new settings to confirm they are valid for the edited node.

7. **If the selected node is a VMware ESX Server and you want to poll it for data using the VMware API**, Confirm that **Poll for ESX** is checked.

8. **If you want to poll for ESX data using an existing ESX credential**, select the appropriate credential from the **VMware credentials** dropdown menu.

9. **If you want to poll for ESX data using a new ESX credential**, complete the following steps:
   
   a. Select **<New Credential>** in the **Choose Credential** dropdown menu, and then provide a new credential name in the **Credential Name** field.
      
      **Note:** SolarWinds recommends against using non-alphanumeric characters in VMware credential names.
   
   b. Add the credential **User name** and **Password**, as necessary.
   
   c. Confirm the password, and then click **Validate VMware** to confirm the credentials you have provided are valid for the edited node.

10. Edit additional device properties as needed, and then click **Submit**.

---

**Viewing Node Resources**

The List Resources feature of the Orion Web Console Node Management utility allows you to immediately see all monitored interfaces, volumes, and interface charts on a selected node, as shown in the following procedure.

**To view a list of all resources present on a node:**

1. Log in to the Orion Web Console as an administrator.

2. Click **Settings** in the top right of the web console, and then click **Manage Nodes** in the Node & Group Management grouping.

3. Locate the node to view using either of the following methods:
   
   - Use the search tool above the node list to search your Orion database for the node you want to view.
   
   - Select an appropriate **Group by** criteria, and then click the appropriate group including the node to view.

4. Check the node you want to view from the list.

5. Click **List Resources** on the Node Management toolbar.
Setting Device Management States

Monitored devices are regularly polled for operational status. Collected statistics are displayed in the Orion Web Console. Using the Node Management feature of the Orion Web Console, the management status of monitored nodes, is easily set or changed, allowing you to either temporarily suspend data collection or resume polling and statistics collection, as necessary. The following procedure sets or changes management states for monitored nodes in the Orion Web Console.

**Note:** Setting a node to an unmanaged state automatically suspends the management of all interfaces and volumes on the selected node.

**To set or change the management state of a node:**

1. Log in to the Orion Web Console as an administrator.
2. Click **Settings** in the top right of the web console, and then click **Manage Nodes** in the Node & Group Management grouping.
3. Locate the node to manage using either of the following methods:
   - Use the search tool above the node list to search your Orion database for the device you want to manage.
   - Select an appropriate **Group by** criteria, and then click the appropriate group including the node to manage.
4. Check the node to change, and then click **Unmanage** or **Remanage**, as appropriate, for the selected node.
5. **If you have selected Unmanage**, provide start and end times and dates for your management suspension, and then click **OK**.

Assigning Pollers to Monitored Devices

Orion NPM provides both a selection of predefined pollers and the Universal Device Poller utility for defining your own pollers to monitor specific aspects of your network devices. In the Orion Web Console, the assignment of pollers to monitored devices is a straightforward process, as shown in the following steps.

**Note:** If you do not see a poller that meets your specific monitoring needs, use the Universal Device Poller to create your own poller. For more information, see “Monitoring MIBs with Universal Device Pollers” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

**To assign a poller to a monitored device:**

1. Log in to the Orion Web Console as an administrator.
2. Click **Settings** in the top right of the web console.
3. Click **Manage Nodes** in the Node & Group Management grouping of the Orion Website Administration page.

4. Locate the node to poll, the interface to poll, or the parent node of the interface or volume to poll using either of the following methods:
   - Use the search tool above the node list to search your Orion database.
   - Select an appropriate **Group by** criteria, and then click the appropriate group including either the node to poll or the parent node of the interface or volume to poll.

5. **If you want to assign a poller to a node**, complete the following steps:
   a. Check the monitored node to which you want to assign the poller.
   b. Click **Assign Pollers** in the Node Management toolbar.
   c. Check the pollers you want to assign to the selected node, and then click **Submit**.
   d. Click **OK** to confirm the assignment.

6. **If you want to assign a poller to an interface or volume**, complete the following steps:
   a. Click + next to the parent node of the interface or volume to which you want to assign the poller.
   b. Check the interface or volume to which you want to assign the poller.
   c. Click **Assign Pollers** in the Node Management toolbar.
   d. Check the pollers you want to assign to the selected interface or volume, and then click **Submit**.
   e. Click **OK** to confirm the assignment.
Viewing Node and Interface Data in Tooltips

Node and interface tooltips in Orion NPM provide immediate status overviews of monitored nodes and interfaces. To view a quick overview of any monitored node or interface in the web console, hover over the device name. Depending on the selected device, the information in the following tables is displayed immediately.

### Interface Data

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface Name</td>
<td>The name of the interface as discovered from its parent node</td>
</tr>
<tr>
<td>Operational Status</td>
<td>Operational status of the interface</td>
</tr>
<tr>
<td>Administrative Status</td>
<td>Administrative status of the interface (enabled or disabled)</td>
</tr>
<tr>
<td>Interface Type</td>
<td>Numerical type of the interface, as determined by Orion NPM when the parent node is discovered.</td>
</tr>
<tr>
<td>Transmitted Current Traffic</td>
<td>The amount of traffic the interface was transmitting as of the last interface poll</td>
</tr>
<tr>
<td>Transmitted Percent Utilization</td>
<td>The percent of available bandwidth used for traffic transmitted from the interface as of the last interface poll</td>
</tr>
<tr>
<td>Received Current Traffic</td>
<td>The amount of traffic the interface was receiving as of the last interface poll</td>
</tr>
<tr>
<td>Received Percent Utilization</td>
<td>The percent of available bandwidth used for traffic received by the interface as of the last interface poll</td>
</tr>
</tbody>
</table>

### Node Data

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Node Status</td>
<td>Current status of the node. (up, down, warning, unplugged, or unmanaged)</td>
</tr>
<tr>
<td>IP Address</td>
<td>The IP address currently assigned to the selected node</td>
</tr>
<tr>
<td>Machine Type</td>
<td>The vendor icon and vendor description of the selected node</td>
</tr>
<tr>
<td>Average Response Time</td>
<td>The measured average response time of the selected node as of the last node poll</td>
</tr>
<tr>
<td>Packet Loss</td>
<td>The percent of all transmitted packets that are lost by the selected node as of the last node poll</td>
</tr>
<tr>
<td>CPU Load</td>
<td>The percent of available processing capacity on the selected node that is currently used as of the last node poll</td>
</tr>
<tr>
<td>Memory Used</td>
<td>The percent of available memory on the selected node that is currently used as of the last node poll</td>
</tr>
</tbody>
</table>
Adding Views to the Admin Toolbar

As an example of a useful customization in the Orion Web Console, the following procedure adds a Network Trends chart view to the Admin toolbar.

To add the Network Trends chart view to the Admin toolbar:

1. Click Start > All Programs > SolarWinds Orion > Orion Web Console.
2. Log in to the Web Console as an administrator, and then click Settings in the top right of the web console.
3. Click Customize Menu Bars in the Customize grouping of the Orion Website Administration page, and then click Edit under the Admin menu bar.
4. Click and drag Network Trends from the Available items list on the left to the Selected items list on the.
   
   Note: The Edit Admin Menu Bar lists a wide array of views that can be added directly to the Orion Web Console Views toolbar. Hover over any view title to read a view description. Selected views may be further customized by clicking Edit next to the view title.
   
   Note: Selected items display from left to right in the edited menu bar as they are listed from top to bottom.
5. Click Submit on the Edit Admin Menu Bar page.
6. Click Network Trends on the Admin toolbar.
   
   Note: Due to the amount of data queried from the database, the Network Trends resources may take a significant time to load. You can also edit the number of resources included in the view to reduce the time to load. For more information about customizing views, see “Customizing Views” in the SolarWinds Orion Network Performance Monitor Administrator Guide.
Chapter 4

Using Orion Network Performance Monitor

A wealth of information can be collected about your network using the powerful tools that comprise Orion Network Performance Monitor (Orion NPM). The first two sections in this chapter introduce the configuration of Orion NPM reports and alerts, and a third section details additional Orion NPM features:

- Creating Custom Orion NPM Reports
- Using Orion NPM Alerts
- Additional Orion NPM Features

Creating Custom Orion NPM Reports

Using Orion Report Writer, you can create custom network monitoring reports. A variety of predefined reports are also included. Icons preceding report names distinguish available report types. The following procedure starts Report Writer.

**Note:** Before Report Writer can create useful reports Orion NPM must have collected at least a few minutes worth of data in the Orion database populated with the network devices that you want to monitor.

To start Report Writer:

1. Click **Start > All Programs > SolarWinds Orion > Report Writer.**
2. Click **File > Settings.**
3. In the General tab of the Report Writer Settings window, select either of the following as a default viewing mode:
   - **Preview** displays the report as it will appear in printed form. For more information, see “Preview Mode” on page 62.
   - **Report Designer** is the report creation and editing interface. For more information, see “Design Mode” on page 62.

   **Note:** You can toggle between Preview and Report Designer modes at any time by clicking **Preview** or **Design**, respectively, on the toolbar.

4. **If you want to separate the data for individual network objects with horizontal lines,** click **Report Style**, and then check **Display horizontal lines between each row.**
5. Click **OK** to exit Report Writer Settings.
Preview Mode

Preview mode shows a report as it will print. When you open a report in Preview mode, or switch to Preview mode from Design mode, Orion NPM runs the query to generate the report and Report Writer displays the results.

The Preview window toolbar provides the following actions and information:

- Current page number and total number of pages in the report in the form `current# / total#`
- Page navigation buttons: First Page, Page Up, Page Down, and Last Page
- Zoom views
  
  **Note:** Double-click on a report preview to zoom in and double-right-click to zoom out.
- Print report

Design Mode

Use Design mode to create new reports and modify or rename existing reports. The options available for both creating and modifying reports are the same. Design mode options are also dynamic, based upon the type of report, included report data, and report presentation. Available options differ according to the type of report that you are designing, but all reports require that you select the data to include and decide how that data will be sorted, ordered, filtered, and presented.

Creating and Modifying Reports

The following procedure guides you in the creation and modification of reports in Report Writer.

Notes:

- The SQL query used to generate a report may be viewed in an additional tab. Click **Report > Show SQL** to add a read-only SQL tab to the Design window.
- A preview of your report is also available at any time. Click **Preview** to enter Preview Mode, and then click **Design** to return to Design Mode.

To open a report with Report Writer:

1. **If you want to modify an existing report**, select an existing report from the inventory in the left pane of the main Report Writer window.

2. **If you want to create a new report**, click **File > New Report**, select the type of report that you would like to create, and then click **OK**.
The following sections provide procedures for formatting your reports in Design mode. Each of the following sections corresponds to an available tab containing report formatting options.

**Note:** Each report, depending on its type, offers unique options on separate tabs of the Report Designer. Depending on the type of report, some of the following formatting tabs may not be available.

**General Options**
The General tab opens by default and shows titling and display options that may be configured as follows.

**To configure General options:**

   - **Note:** If you use an existing report group name, the new report is added to that existing group in the left pane of the main window.

2. Select the display **Orientation** of your report.

3. **If you do not want to make this report available on your Orion Web Console**, clear **Make this Report available from the Orion website**.
   - **Note:** By default, most reports are made available for display in the Orion Web Console. For more information, see “Customizing Views” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

**Select Fields Options**
The Select Fields tab allows you to select the data fields either to include in a new report or to modify in an existing report as follows.

**To select and configure fields:**

1. Click Select Fields. In the Select Fields tab, fields are chosen, sort orders are established, and functions are specified.

2. **If you are creating a new report or adding fields to an existing report**, click **Browse (…)**, select **Add a new field**, and then dynamically define each new report field as follows:
   a. Click the asterisk after **Field:**, and then select the type of information you want to include in the current report field.
   b. **If you want to sort the data in the current field**, click the **sort** asterisk, and then select a sort order.
   c. **If you want to perform an operation on the data in the current field**, click the **function** asterisk and select an operation.
3. **If you are modifying an existing report**, click the **Field**, **sort**, or **function** that you want to change and select a new value as follows.
   a. Click the asterisk after **Field**: and select the type of information that you want to include in the current report field.
   b. **If you want to sort the data in the current field**, click the **sort** asterisk and select a sort order.
   c. **If you want to perform an operation on the data in the current field**, click the **function** asterisk and select an operation.

4. **If you want to test your selections as you assemble your report**, click **Execute SQL Query** to view the current query results.

5. **If you want to preview your report**, click **Preview** to run the query and display the results in Preview mode. Click **Design** in the toolbar to return to the Design Mode window.

6. **If you want to delete a field or rearrange the order of the fields that are listed in your report**, select a field, click **Browse (…)**, and then select the appropriate action.

   **Note:** Unchecked fields are not displayed in your report, but their sort and function configurations are retained.

**Filter Results Options**

The Filter Results tab allows you to generate filter conditions for field data by selecting appropriate descriptors from the linked context menus. Results filters are configured as follows.

**To configure results filters:**

1. Click **Browse (…)**, and then select from the following options:
   - Select **Add a new elementary condition** to generate a condition that is based on a direct comparison of network object data fields.
   - Select **Add a new advanced elementary condition** to generate a condition based on a comparison of device data fields and values.
   - Select **Add a new complex condition** to define a condition that filters other defined conditions.
   - Select **Delete current condition** to remove a selected condition.
   - Select **Move current condition forward** or **Move current condition backward** to change the order of your conditions accordingly.

   **Note:** The lists of available linked descriptors are dynamically generated in consideration of all other variables within the same condition. For more
information, see “Understanding Condition Groups” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

2. Check or clear individual filter conditions to enable or disable their application, respectively, to your report.

**Top XX Records Options**

The Top XX tab allows you to limit the number of records that are shown in your report to either a top number or a top percentage of all results. Top XX options are configured as follows.

To configure Top XX records:

1. *If you want to show all records in your report,* select **Show All Records**.
2. *If you want to specify a truncated list of eligible items for your report,* either select **Show only the Top number Records** or select **Show the Top percentage % of Records**, and then provide number or percentage values.

**Time Frame Options**

The Time Frame tab allows you to limit the scope of your report to a specific period of time. Time Frame options are configured as follows.

To configure Time Frame options:

1. Select a **Named**, **Relative**, or **Specific Time Frame** for your report:
2. Select or provide required values.

Notes:

- If you receive a SQL Timeout error message, you may edit the timeout setting in the SWNetPerfMon.db file. By default, this file is located in the C:\Program Files\SolarWinds\Orion directory
- The **Relative Time Frame** is continuously variable. Reports run using it may show different results, even if they are run close together in time.

**Summarization Options**

The Summarization tab allows you to generate summaries of your results over specific periods of time. Summarization options are configured as follows.

To configure results summarization:

1. *If you do not want to summarize your results,* confirm that **Do not Summarize the Results** is selected.
2. *If you want to summarize your results over specific periods of time,* select **Summarize the Results by Hour, Date, Month, etc** and then select
the summarization period, specifying the location of the summary field for your report, and select a location for the **Summary Date/Time** field.

**Report Grouping Options**
The Report Grouping tab allows you to group results by field descriptor within your report. Add, edit and delete report groups to organize the data in your report. Establish and edit report groups as follows.

**To add and edit report groups:**

1. **If you want to add a new report group,** select a field from the list to define your group, and then click **Add Report Group** to add your selected field to the **Report Groups** list.
   
   **Note:** Use up and down arrows to change the grouping order accordingly.

2. **If you want to edit an existing report group,** select the field from the Report Groups list, and then click **Edit Report Group**.

3. The following options may be changed as needed:
   - The **Group Header** is the text that designates groups on your report.
   - The **Web URL** is the dynamic location of your published report with respect to your Orion Web Console.
   - **Font** size, face, color, and background may all be modified by clicking associated ellipses.
   - **Alignment** may be left, center, or right.
   - Check **Transparent Background** for better results with web reports.
   - Use the up and down arrows to change the grouping order accordingly.

**Field Formatting Options**
The Field Formatting tab allows you to customize the format of report fields.

**To format results fields:**

1. Select the field that you want to format, and then edit labels and select options as appropriate.
   
   **Note:** Formatting options for each field may differ according to field data type. Check **Hidden Field** to hide any field in your report.

2. **If you want to view your changes at any time,** click **Preview**.
Customizing the Header and Footer Image

The image that is displayed at the top and bottom of each report can be changed. To add your company logo or any other image as the header and footer image in your reports, rename your logo or custom image file as ReportHeader.jpg, and then copy it to the SolarWinds\Orion folder.

Note: The image must be in JPEG format with a height of 150 pixels or less.

Example of Report Creation

The following procedure generates an example report of network device availability information over the previous week. The final report is sorted so that the worst errors are viewed first. Down nodes that are still down are at the top with all devices listed in order of increasing availability.

Note: At any point during the creation of a report (or perhaps at many points), you may save what you have done by clicking File > Save. The first time you save you must give your report a filename or accept the default, which will be the report title that you assign in the following procedure.

To generate an example report of network device availability information:

2. The example calls for a report on availability over the past week, so select Historical Availability Details, and then click OK.
3. Type My Reports in the Report Group field.
4. Enter Last Week’s Availability as the Report Title.
5. Select Portrait for the paper orientation.
6. Click Select Fields.
7. Click Browse (...), and then select Add a new field.
8. Click the Field asterisk, and then select Network Nodes > Node Details > Node Name.
9. Click Browse (...), and then select Add a new field.
10. Click the Field asterisk, and then select Network Nodes > Node Status > Status.
11. Click Browse (...), and then select Add a new field.
12. Click the Field asterisk, and then select Network Nodes > Node Status > Status Icon.

Note: While this field makes a distinct visual difference for a report viewed in color, it will make little or no difference if printed in black and white.
13. Click **Execute SQL Query** to view the report data in the preview window.

14. **If you want to see the status icon before the status description**, click **Status Icon** to move **Browse (...)** to the Status Icon line, and select **Move Current Field Backward**.

15. Click **Execute SQL Query**.

   **Note:** The report should show information about both current and historical status. Current status entries must be relabeled to avoid confusion.

16. Click **Field Formatting**.

17. Select **Status** from the field list.

18. Change the **Column Header** entry to **Current Status**.

19. Select **Status ICON** from the field list.

20. Change the **Column Header** entry to **Current Status**.

21. Click **Execute SQL Query**.

   **Note:** Column widths are adjustable. To change a column width, place your cursor on the column divider and drag it to a different position.

22. Click Select Fields.

23. Click the sort asterisk on the Status field line, and then select **descending**.

24. Click **Execute SQL Query** to confirm your choice.

25. Click **Browse (...)**, and then select **Add a new field**.

26. Click the **Field** asterisk, and then select **Historical Response Time and Availability > Availability**.

27. Click the sort asterisk on the new line, and then select **ascending**.

28. Click **Execute SQL Query** to view the report.

29. Click **Time Frame**.

30. Select **Relative Time Frame**, type 7 in the text field, and then select **Days from the list**.

31. **If you want to break down the report day-by-day**, click **Summarization and specify your choices**.

32. **If you want to filter your report**, click **Filter Results and specify filter rules**.

33. Click **File > Save** to save your work.
Using Orion NPM Alerts

An alert is a configurable response to the behavior of a monitored object. One of the many powerful features of Orion Network Performance Monitor is its ability to alert on almost every aspect of your network. You can trigger responses when an alert is generated and when it is resolved; you can create simple or complex conditions under which an alert is triggered or reset; you can suppress alerts when a set of simple or complex conditions exist; and you can create an escalation path that triggers when an alert remains unresolved.

When monitoring your network, you can take advantage of Orion NPM alerts to draw attention to a number of issues, including the following:

- Unexpected one-time or sustained high CPU load
- Loss of available memory or insufficient hard drive space
- Slow response time
- Disproportionate interface utilization or excessive interface errors

Both the triggering of an alert and the resetting of an alert can trigger a number of actions, including the actions listed in the following table.

**Note:** Windows Server 2008 does not support Windows Net Messaging, so the Send a Windows Net message alert action is not available to Orion NPM installations on Windows Server 2008.

<table>
<thead>
<tr>
<th>Orion NPM Alert Actions</th>
<th>Log alerts to the Windows Event Log</th>
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</tr>
<tr>
<td>Send SNMP traps</td>
<td></td>
<td>Paging or SMS</td>
<td></td>
</tr>
</tbody>
</table>

Configuring Orion NPM Alerts

The following sections provide steps required to configure a few example alerts.

**High CPU Load Alert Example**

The following procedure creates a high CPU load alert.

To configure a high CPU load alert:

1. Click Start > All Programs > SolarWinds Orion > Advanced Alert Manager.
2. Click View > Configure Alerts, and then click New on the Manage Alerts window.
3. Type **CPU Load High** in the **Name of Alert** field on the General tab.

4. Provide an alert description in the **Enter a description for this Alert** field.

5. Check **Enable this Alert**.

6. Click the Trigger Condition tab, and then select **Node** from the **Type of Property to Monitor** list.

7. Click **Add**, and then select **Simple Condition**.

8. Click **is equal to**, and then select **greater or equal**.

9. Click the first *, and then click **Network Nodes > Current CPU Memory > CPU Load**.

10. Click 0 after **is greater than or equal to**, and then type 80.

11. Click the Reset Condition tab, and then select **Reset this alert when the following conditions are met**.

   **Note:** Configuring a reset condition ensures that stale alerts do not remain prominent in your alert log.

12. Click **Add**, and then select **Simple Condition**.

13. Click **is equal to**, and then select **less or equal**.

14. Click the first *, and then click **Network Nodes > Current CPU and Memory > CPU Load**.

15. Click 0 after **is less than or equal to**, and then type 70.

16. Click the Trigger Actions tab, and then click **Add New Action**.

17. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.

   **Note:** As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information, see “Available Advanced Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

18. After completing the configuration of your selected alert action, click **OK**.

19. **If you want to specify an action to execute when this alert is reset**, complete the following steps:

   **Note:** For more information about alert actions, see “Available Advanced Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

   a. Click the Reset Actions tab.

   b. Click **Add New Action**.
c. Select an action to execute when the alert is reset, and then click OK.

d. Complete the displayed tabs as appropriate, and then click OK.

20. Click OK when you are satisfied with the configuration of your alert.

Sustained High CPU Load Alert Example
The following procedure creates a sustained high CPU load alert.

Note: This alert differs from the High CPU Load Alert created in the previous procedure in that the alert in this example procedure allows the triggering condition to persist for an hour before the trigger action fires.

To configure a sustained high CPU load alert:

1. Click Start > All Programs > SolarWinds Orion > Advanced Alert Manager.

2. Click View > Configure Alerts.

3. Click New on the Manage Alerts window.

4. Type CPU Load Sustained High in the Name of Alert field on the General tab.

5. Provide an alert description in the Enter a description for this Alert field.

6. Check Enable this Alert.

7. Click the Trigger Condition tab, and then select Node from the Type of Property to Monitor list.

8. Click Add, and then select Simple Condition.

9. Click is equal to, and then select greater or equal.

10. Click the first *, and then click Network Nodes > Current CPU and Memory > CPU Load.

11. Click 0 after is greater than or equal to, and then type 80.

12. At the bottom of the window, next to Do not trigger this action until condition exists for more than, type 1, and then select Hours.

13. Click the Trigger Actions tab, and then click Add New Action.

14. Select your preferred means of notification, click OK, and then complete the displayed tabs as appropriate.

Note: As an example, select Send an Email/Page, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Advanced Alert
15. After completing the configuration of your selected alert action, click OK.
16. If you want to specify an action to execute when this alert is reset, complete the following steps:
   a. Click the Reset Actions tab, and then click Add New Action.
   b. Select an action to execute when the alert is reset, and then click OK.
   c. Complete the displayed tabs as appropriate, and then click OK.
   Note: For more information, see “Available Advanced Alert Actions” in the SolarWinds Orion Network Performance Monitor Administrator Guide.
17. Click OK when you are satisfied with the configuration of your alert.

Sustained Loss of Available Memory Alert Example
The following procedure creates a sustained loss of available memory alert.

Note: This alert allows the low memory triggering condition to persist for 30 minutes before the configured trigger action fires.

To configure a loss of available memory alert:
1. Click Start > All Programs > SolarWinds Orion > Advanced Alert Manager.
2. Click View > Configure Alerts, and then click New on the Manage Alerts window.
3. Type Memory Low in the Name of Alert field on the General tab.
4. Check Enable this Alert.
5. Click the Trigger Condition tab, and then select Node from the Type of Property to Monitor list.
6. Click Add, and then select Simple Condition.
7. Click is equal to, and then select less or equal.
8. Click the first *, and then click Network Nodes > Current CPU and Memory > Percent Memory Available.
9. Click 0 after is less than or equal to, and then type 10.
10. At the bottom of the window, next to Do not trigger this action until condition exists for more than, type 30, and then select Minutes.
11. Click the Trigger Actions tab, and then click Add New Action.
12. Select your preferred means of notification, click OK, and then complete the displayed tabs as appropriate.

**Note:** As an example, select *Send an Email/Page*, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Advanced Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

13. After completing the configuration of your selected alert action, click OK.

14. **If you want to specify an action to execute when this alert is reset,** complete the following steps:

   **Note:** For more information about available alert actions, see “Available Advanced Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

   a. Click the Reset Actions tab, and then click *Add New Action*.
   b. Select an action to execute when the alert is reset, and then click OK.
   c. Complete the displayed tabs as appropriate, and then click OK.

15. Click OK when you are satisfied with the configuration of your alert.

**Insufficient Hard Drive Space Alert Example**

The following procedure creates a low hard drive space alert.

**To configure an insufficient hard drive space alert:**

1. Click *Start > All Programs > SolarWinds Orion > Advanced Alert Manager*.
2. Click *View > Configure Alerts*.
3. Click *New* on the Manage Alerts window.
4. Type *Disk Space Low* in the **Name of Alert** field on the General tab.
5. Check *Enable this Alert*.
6. Click the Trigger Condition tab, and then select *Volume* from the **Type of Property to Monitor** list.
7. Click *Add*.
8. Select *Simple Condition*.
9. Click *is equal to*, and then select *less or equal*.
10. Click the first *, and then click *Volumes > Volume Status > Volume Percent Available*. 
11. Click 0 after **is less than or equal to**, and then type 5.

12. Click the Trigger Actions tab, and then click **Add New Action**.

13. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.

   **Note:** As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Advanced Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

14. After completing the configuration of your selected alert action, click **OK**.

15. **If you want to specify an action to execute when this alert is reset,** complete the following steps:

   **Note:** For more information about available alert actions, see “Available Advanced Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

   a. Click the Reset Actions tab.
   b. Click **Add New Action**.
   c. Select an action to execute when the alert is reset, and then click **OK**.
   d. Complete the displayed tabs as appropriate.
   e. Click **OK**.

16. Click **OK** when you are satisfied with the configuration of your alert.

**Sustained Slow Response Time Alert Example**

The following procedure creates a sustained slow response time alert.

**Note:** This alert allows the slow response time triggering condition to persist for 10 minutes before the configured trigger action fires.

**To configure a sustained slow response time alert:**

1. Click **Start > All Programs > SolarWinds Orion > Advanced Alert Manager**.

2. Click **View > Configure Alerts**.

3. Click **New** on the Manage Alerts window.

4. Type **Response Time Slow** in the **Name of Alert** field on the General tab.

5. Check **Enable this Alert**.
6. Click the Trigger Condition tab.
7. Select **Node** from the **Type of Property to Monitor** list.
8. Click **Add**.
9. Select **Simple Condition**.
10. Click **is equal to**, and then select **greater or equal**.
11. Click the first *`, and then click **Network Nodes > Current Response Time > Response Time.**
12. Click **0 after is greater than or equal to**, and then type **150**.
   **Note:** Response time is measured in milliseconds.
13. At the bottom of the window, next to **Do not trigger this action until condition exists for more than**, type **10**, and then select **Minutes**.
14. Click the Trigger Actions tab.
15. Click **Add New Action**.
16. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.
   **Note:** As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Advanced Alert Actions” in the **SolarWinds Orion Network Performance Monitor Administrator Guide**.
17. After completing the configuration of your selected alert action, click **OK**.
18. **If you want to specify an action to execute when this alert is reset,** complete the following steps:
   **Note:** For more information about available alert actions, see “Available Advanced Alert Actions” in the **SolarWinds Orion Network Performance Monitor Administrator Guide**.
   a. Click the Reset Actions tab, and then click **Add New Action**.
   b. Select an action to execute when the alert is reset, and then click **OK**.
   c. Complete the displayed tabs as appropriate, and then click **OK**.
19. Click **OK** when you are satisfied with the configuration of your alert.
Sustained Excessive Interface Utilization Alert Example
The following procedure creates a sustained excessive interface utilization alert.

Note: This alert allows the excessive interface utilization triggering condition to persist for 10 minutes before the configured trigger action fires.

To configure an excessive interface utilization alert:
1. Click Start > All Programs > SolarWinds Orion > Advanced Alert Manager.
2. Click View > Configure Alerts.
3. Click New on the Manage Alerts window.
4. Type Interface Utilization (Excessive) in the Name of Alert field on the General tab.
5. Check Enable this Alert.
6. Click the Trigger Condition tab.
7. Select Interface from the Type of Property to Monitor list.
8. Click Add, and then select Simple Condition.
9. Click is equal to, and then select greater or equal.
10. Click the first *, and then click Interfaces > Current Traffic > Average Xmit+Recv Percent Utilization.
11. Click 0 after is greater than or equal to, and then type 80.
12. At the bottom of the window, next to Do not trigger this action until condition exists for more than, type 10, and then select Minutes.
13. Click the Trigger Actions tab.
15. Select your preferred means of notification, click OK, and then complete the displayed tabs as appropriate.

Note: As an example, select Send an Email/Page, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Advanced Alert Actions” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

16. After completing the configuration of your selected alert action, click OK.
17. **If you want to specify an action to execute when this alert is reset,**
    complete the following steps:

    Note: For more information about available alert actions, see see “Available
    Advanced Alert Actions” in the *SolarWinds Orion Network Performance
    Monitor Administrator Guide*.

    a. Click the Reset Actions tab, and then click **Add New Action**.
    b. Select an action to execute when the alert is reset, and then click **OK**.
    c. Complete the displayed tabs as appropriate, and then click **OK**.

18. Click **OK** when you are satisfied with the configuration of your alert.

**Interface Error Alert Example**

The following procedure creates an interface error alert.

**To configure an interface error alert:**

1. Click **Start > All Programs > SolarWinds Orion > Advanced Alert Manager**.
2. Click **View > Configure Alerts**.
3. Click **New** on the Manage Alerts window.
4. Type **Interface Receive Errors (Excessive)** in the **Name of Alert** field
    on the General tab.
5. Check **Enable this Alert**.
6. Click the Trigger Condition tab, and then select **Interface** from the **Type of
    Property to Monitor** list.
7. Click **Add**, and then select **Simple Condition**.
8. Click **is equal to**, and then select **greater or equal**.
9. Click the first *, and then click **Interfaces > Errors and Discards > Recv
    Errors – This Hour**.
10. Click 0 after **is greater than or equal to**, and then type 50.
11. Click the Trigger Actions tab, and then click **Add New Action**.
12. Select your preferred means of notification, click **OK**, and then complete the
    displayed tabs as appropriate.

    Note: As an example, select **Send an Email/Page**, and then specify the
    appropriate information on tabs of the Edit Email/Page Action window to
    receive an email whenever the High CPU Load alert is triggered. For more
    information, see “Available Advanced Alert Actions” in the *SolarWinds Orion
    Network Performance Monitor Administrator Guide*.
13. After completing the configuration of your selected alert action, click OK.

14. **If you want to specify an action to execute when this alert is reset**, complete the following steps:

   Note: For more information about available alert actions, see “Available Advanced Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

   a. Click the Reset Actions tab, and then click **Add New Action**.
   b. Select an action to execute when the alert is reset, and then click **OK**.
   c. Complete the displayed tabs as appropriate, and then click **OK**.

15. Click **OK** when you are satisfied with the configuration of your alert.

**Viewing Alerts in the Orion Web Console**

Once you have configured alerts in Orion NPM, the Orion Web Console provides both an Alerts view and alerts resources that you can use to continuously monitor the status of your network and its devices. The following sections provide steps to use alerts for immediate notification of potential problems on your network.

**Using the Alerts View**

Orion provides the Alerts view on the Views toolbar, allowing you to quickly review all triggered alerts on your network. The following procedure configures the Alerts view to display the specific alerts you need to see at any time.

**To use the Alerts view to review network alerts:**

1. Click **Start > All Programs > SolarWinds Orion > Orion Web Console**.
2. Log in to the web console as an administrator, and then click **Home > Alerts**.
3. Select **Advanced** from the **Select an Alert Engine** list.
   
   Note: The example alerts created in the “Using Orion NPM Alerts” section on page 69 are all advanced alerts. For more information about alerts in Orion NPM, see “Using Orion Advanced Alerts” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

4. **If you want to limit the list of alerts to only those dealing with a single device**, select the specific device from the **Select a Network Device** list.
   
   Note: This option is only available if alerts fire on multiple network devices.

5. **If you want to limit the list of alerts to only those dealing with a single type of device**, select the type from the **Select a Type of Device** list.
   
   Note: This option is only available if Orion NPM is monitoring multiple types of network devices.
6. **If you want to limit the list of alerts to only those of a single type,** select the specific alert type from the **Type of Alert** list.

**Note:** This option is only available if Orion NPM has fired multiple types of alerts.

7. **If you want to group the list of alerts by type or by device,** select the appropriate grouping criterion (**Type of Alert** or **Network Node**) from the **Group By** list.

8. Click **Refresh** to update the alerts list with your new settings.

The Alerts view shows all alerts matching your provided criteria. For each alert, the Alerts view provides the time the alert was triggered, the network device and object that triggered the selected alert, the measure value that triggered the alert, and any message associated with the triggered alert.

**Adding the Active Alerts Resource to Orion Web Console Views**

Orion provides the Active Alerts resource for use in Orion Web Console views, allowing you to tailor your views of alerts to specific devices on your network. The following steps add the Active Alerts resource to Orion Web Console views.

**To add the Active Alerts resource to an Orion Web Console view:**

1. Log in to the Web Console as an administrator, and then click **Settings** in the top right of the web console.

2. Click **Manage Views** in the Views grouping.

3. Click the view to which you want to add the Active Alerts resource, and then click **Edit**.

   **Note:** The scope of an Active Alerts resource is limited by the scope of the view in which the Active Alerts resource displays. For example, if you add an Active Alerts resource to a Node Details view, the added Active Alerts resource only displays alerts relevant to the viewed node. In the same way, the Active Alerts resource in the Orion Summary Home view displays all active alerts on your entire network.

4. Click + next to the view column in which you want to display the Active Alerts resource.

5. Click + next to Alerts to expand the list of available alerts resources.

6. Check **All Triggered Alerts**, and then click **Submit**.
Additional Orion NPM Features

Orion NPM provides a number of additional tools and features that can enhance your ability to fully monitor the performance of your network. The following sections provide brief descriptions of these additional tools and features.

Monitoring IPv4 and IPv6 Devices

SolarWinds NPM can monitor devices configured with IPv4/IPv6 dual stacks. For more information about IPv4 and IPv6, see “RFC 4213 - Basic Transition Mechanisms for IPv6 Hosts and Routers”.

Note: CIDR notation is not currently supported for IPv6 addresses.

Monitoring Fibre Channel Devices and VSANs

Orion NPM specifically recognizes VSANs and Fibre Channel devices on your network when they are added to the Orion database as network objects for monitoring. For more information about the views and resources available in the Orion Web Console, see “Monitoring Fibre Channel Devices and VSANs” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Monitoring EnergyWise Devices

SolarWinds has partnered with Cisco to present EnergyWise to optimize energy usage on your network. EnergyWise is a Cisco technology developed to help you cut enterprise energy costs, address environmental concerns, and adhere to government directives around green technologies. By deploying EnergyWise capable devices and by enabling their energy-saving features, you can run business-critical systems in a fully powered state while allowing less critical devices on Power over Ethernet (PoE) ports to power down or drop into standby during off-peak hours. Orion NPM provides the EnergyWise Summary view and related EnergyWise resources to help you monitor the energy expended on your network and the energy savings provided by EnergyWise-enabled devices. For more information about monitoring EnergyWise-enabled devices, see “Monitoring EnergyWise Devices” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Using Maps in Orion NPM

Orion Network Atlas is a powerful tool for creating custom maps and network diagrams. The maps created in Orion Network Atlas enable users to view a graphical depiction of their network in the Orion Web Console. You can also use the maps to create network documentation, which can then be printed and exported as needed. Creating a map can be as simple as selecting a background image, dragging nodes to the image, and connecting them with a few lines. However, Network Atlas presents options enabling you to be as creative as you
like. For more information about creating network maps for use with Orion NPM, see the SolarWinds Orion Network Atlas Administrator Guide.

Monitoring Wireless Networks

Orion NPM can monitor any 802.11 IEEE-compliant autonomous access point (AP) or wireless controller. Details about your access points (AP), wireless clients, wireless controllers, thin APs, and rogue APs can all be monitored using Orion NPM. Wireless device monitoring is configured, customized, and managed using the Orion Web Console. For more information about monitoring wireless networks, see “Monitoring Wireless Networks” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Monitoring VMware ESX Servers

Orion NPM gives you the ability to monitor the performance of VMware ESX servers, including VMware ESXi servers, and the multiple virtual machines (VMs) hosted by ESX servers on your network. Available resources include lists of VMs on selected ESX servers, performance details for ESX servers and hosted VMs, and relevant alerts, charts and reports. For more information about monitoring VMware ESX Servers, see “Virtualization” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Using Custom Properties in Orion NPM

Orion NPM provides the Custom Property Editor, allowing you to add custom properties to any interface, node, or volume. Custom properties are additional fields, such as country, asset tag, or serial number that you can define and store in your Orion Network Performance Monitor database. Once properties are added, they are available for display and filtering within the Orion Web Console and other Orion applications. For more information about custom properties, see “Creating Custom Properties” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Using Groups and Dependencies in Orion NPM

Groups and dependencies enable you to more effectively manage your network. Groups give you the ability to logically organize monitored objects, regardless of device type or location, and dependencies allow you to more faithfully represent what can actually be known about your network, eliminating “false positive” alert triggers and providing more accurate insight into the status of your monitored network objects. For more information about groups and dependencies, see “Managing Groups and Dependencies” in the SolarWinds Orion Network Performance Monitor Administrator Guide.
Using SNMP Traps in Orion NPM

The Orion NPM Trap Viewer application is used in Orion NPM to configure alerts, view and search trap messages, and to apply rules to filter out certain types of messages. Because the SolarWinds Trap service has the ability to open multiple connections to the SQL server database, it can handle large quantities of incoming trap messages. For more information about using SNMP traps in Orion NPM, see “Monitoring SNMP Traps” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Using Syslog Messaging in Orion NPM

The Orion Syslog Server allows the Network Performance Monitor to receive and process Syslog messages from any type of device. Syslog messages are realtime messages that network devices generate to notify about a specific event within the device. The Syslog Viewer is used to configure alerts, to view and search Syslog messages, and to apply rules to filter out certain types of messages. Because the Syslog service has the ability to open multiple connections to your SQL server, it can handle large numbers of simultaneously incoming Syslog messages. For more information about using Syslog messaging in Orion NPM, see “Monitoring Syslog Messages” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Using Universal Device Pollers in Orion NPM

Using Universal Device Pollers, Orion NPM has the ability to monitor more than just network status, availability, bandwidth, and errors. With Orion Universal Device Pollers, you can monitor virtually any statistic that your network devices can record. Orion Universal Device Pollers can both collect realtime statistics and record historical statistics. Additionally, with Universal Device Poller transforms, you can mathematically manipulate the results of multiple pollers to create your own network performance metrics. All network information collected from Universal Device Pollers is easily accessible within the Orion Web Console. For more information about using Universal Device Pollers in Orion NPM, see “Monitoring MIBs with Universal Device Pollers” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Viewing External Websites

With the external website view feature, any Orion NPM administrator can make any website accessible as an Orion Web Console view. Designated external websites display as items in the Orion Web Console Views tool bar. For more information, see “Creating and Editing External Website Views” in the SolarWinds Orion Network Performance Monitor Administrator Guide.
Windows Management Instrumentation (WMI)

Windows Management Instrumentation (WMI) is a proprietary technology used to poll performance and management information from Windows-based network devices, applications, and components. When used as an alternative to SNMP, WMI can provide much of the same monitoring and management data currently available with SNMP-based polling with the addition of Windows-specific communications and security features.

**Note:** Due to specific characteristics of WMI polling requests, polling a single WMI-enabled object uses approximately five times the resources required to poll the same or similar object with SNMP on the same polling frequency.

For more information about WMI, see the Microsoft article, “About WMI”.

You can begin seeing meaningful network monitoring and management benefits from your installation of Orion NPM in an hour or less. The following sections introduce some of the network monitoring abilities that come standard with an installation of Orion NPM. After completing these quick introductions, you will be able to take advantage of the following core capabilities of Orion NPM:

- Realtime performance charts and gauges.
- Node response and availability monitoring.
- Real bandwidth usage measurement.
- Powerful status and performance reporting.

The following cases are explored in the order of run time, that is, the amount of time you need to have Orion NPM running to see representative results.

1. Network performance monitoring is covered in the section “Monitoring Network Performance”, on page 85, with results available in approximately 1 hour.

2. Server management is detailed in the section “Managing Your Servers”, on page 88, with results available in approximately 1 hour.

3. Network availability monitoring is described in the section “Diagnosing Network Availability”, on page 90, with meaningful results generally available in approximately 1 week.

4. Long-term trend analysis is covered in the section “Analyzing Usage Trends”, on page 92, with meaningful results viewable in approximately 3 months.

**Note:** After installing Orion NPM, the polling engines create a baseline by collecting status and statistics immediately, and then collecting them again 30 seconds later. You may notice an increase in your CPU usage during this time. After this initial collection, Orion NPM collects network data every 10 minutes for nodes, every 9 minutes for interfaces, and every 15 minutes for volumes.

**Monitoring Network Performance**

Once Orion NPM is properly configured to show network performance data, a primary use case is the generation of charts and reports to confirm compliance with current service level agreements (SLAs). The following sections provide procedures showing steps to start monitoring your network with Orion NPM.
Viewing Node and Interface Charts and Gauges

The following procedure guides you through locating and viewing the charts and gauges that are immediately helpful when monitoring network performance.

Notes:

- For more information about viewing Orion NPM resources in addition to the defaults described in the following procedure, see “Customizing Views” in the SolarWinds Orion Network Performance Monitor Administrator Guide.
- Clicking a gauge allows you to view a customizable chart of the collected data over time. Clicking a chart allows you to customize the time period, sample interval, and chart size, among other options.
- If a resource displays No Data for Selected Time Period, Orion NPM has not had sufficient time under the current settings to collect meaningful data for the viewed resource. Click Edit in the resource header, and then select smaller values for both the Time Period for Chart and Sample Interval options.

To view node and interface charts and gauges:

1. Click Start > All Programs > SolarWinds Orion > Orion Web Console.
2. Log in to the Web Console as an administrator.
3. Expand a node grouping in the All Nodes resource of the Orion Summary Home page, and then click the node you want to explore.
4. Review the resulting Node Details page, ensuring you pay close attention to the following ICMP-based near-realtime gauges, statistical gauges, and statistical charts:
   - Average Response Time & Packet Loss gauge
   - Average Response Time & Packet Loss statistical chart
   - CPU Load & Memory Utilization gauge showing the last polled values
   - Min/Max Average CPU Load statistical chart
5. If you navigated away from your Node Details page, click Home in the Views toolbar to return to the Orion Summary Home page, and then expand and select a node in the All Nodes resource on the Orion Summary Home page.
6. Locate the Current Percent Utilization of Each Interface resource of the Node Details page, and then click any interface.
7. Review the resulting Interface Details page, ensuring that you pay close attention to the following statistical gauges and charts:
   - Percent Utilization gauges
   - Percent Utilization - Line Chart
   - Min/Max/Average bps In/Out chart
   - Min/Max/Average packets In/Out chart
   - In/Out Errors and Discards chart
   - Total Bytes Transferred chart

8. Click Reports in the Views toolbar.


10. Click Available Space on each Volume.

11. Locate the volumes you are managing and review the Volume Size, Space Available, and Percent Available statistics.

12. If you want a hard copy of the currently viewed report, complete the following steps:
    a. Click Printable Version in the upper right corner of the web console view.
    b. Click File > Print.
    c. Configure print options.
    d. Click Print.

**Viewing Network Performance Reports**

The following procedure guides you through locating and viewing the Orion NPM reports that are immediately helpful when monitoring network performance.

**Note:** For more information about viewing and creating reports, see “Creating and Modifying Reports” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

**To view Orion NPM reports:**

1. Click Start > All Programs > SolarWinds Orion > Orion Web Console.
2. Log in to the Orion Web Console using an account with administrative privileges.
3. Click Reports in the Views toolbar.
4. Click + next to the type of report you want to view.
5. Click the title of any report that you want to view.

   **Note:** Depending on the length of time that Orion NPM has been monitoring your network, some reports may not return useful results. For example, if you have just installed Orion NPM and added nodes today, reports covering time periods prior to today may not return useful information. SolarWinds recommends you tailor Orion NPM reports to match desired monitoring periods as closely as possible. For more information, see “Creating and Modifying Reports” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

6. **If you want a hard copy of the currently viewed report**, click **Printable Version** in the upper right corner of the web console view, click **File > Print**, configure print options, and then click **Print**.

Orion NPM reports viewed in the web console are interactive. Clicking any report heading toggles column values into ascending or descending order, and clicking any device opens the corresponding Device Details view in the web console.

**Managing Your Servers**

You can see the benefits of using Orion NPM to monitor network servers in as little as an hour of network monitoring. Before continuing, confirm that your Orion NPM database includes any and all of the following objects on your network:

- Windows servers and workstations
- VMware ESX servers
- Linux, Solaris, HPUX, AIX, and AIS servers
- Microsoft Exchange and SQL Servers

For more information about adding network devices to your Orion NPM database, see “Managing Devices in the Orion Web Console” on page 49.

**Viewing Server Management Charts and Reports**

The following procedure guides you through locating and reviewing the charts and gauges that are immediately helpful when managing mission-critical servers.

**To review server management charts and reports:**

1. Click **Start > All Programs > SolarWinds Orion Network Performance Monitor > Orion Web Console**.
2. Log in to the Web Console. The default user is **admin** with a blank password.
3. Expand a node grouping in the All Nodes section of the Orion Summary Home view, and then click a server you want to explore.
4. Review the resulting Node Details page, ensuring you pay close attention to the following resources:
   - Average Response Time & Packet Loss gauge
   - Average Response Time & Packet Loss chart
   - CPU Load & Memory Utilization gauge
   - Min/Max Average CPU Load chart

   **Notes:**
   - Consider using this data to ensure you comply with your current service level agreements (SLAs).
   - Clicking a gauge allows you to view customizable chart of the collected data over time. Clicking a chart allows you to customize the time period, sample intervals, among other data points.

5. **If you navigated away from your Node Details page**, click the Network Performance Monitor tab to return to the Orion Summary Home view, and then expand and select a node in the All Nodes section of the Orion Summary Home page.

6. Locate the Current Percent Utilization of Each Interface section of the Node Details page, and then click an interface.

7. Review the traffic and error charts and reports.

8. Click **Reports** on the menu bar.

9. Expand **Current Volume Status**.

10. Click **Available Space on each Volume**.

11. Locate the volumes you are managing and review their available and percent available space statistics.

12. Complete the following procedure to add the Network Trends view to the Admin menu bar:
   a. Click **Admin** on the menu bar.
   b. Click **Customize Menu Bars** in the left navigation pane.
   c. Click **Edit** under the Admin menu bar.
   d. Drag **Network Trends** from the Available items menu to the Selected items menu, and then click **Submit**.

13. Click **Network Trends** on the menu bar.

   **Note:** Due to the amount of data queried from the database, the Network Trends resources may take a significant time to load. You can also edit the
number of resources included in the view to reduce the time to load. For more information about customizing views, see “Customizing Views” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

14. Review the resulting Network Trends page, ensuring that you pay close attention to the following reports:

- Network Wide Average Response Time
- Network Wide Min/Max/Average Response Time
- Network Wide Average Utilization
- Network Wide Availability

### Configuring Key Server Management Alerts

Using the alert configuration procedures detailed in the “Using Orion NPM Alerts” section on page 69 as guides, consider configuring the following alerts with a trigger action that pages the appropriate operator:

- Node status is equal to down
- CPU load is greater than 90% for over 5 minutes
- Percent memory available is less than 5
- Volume space available is less than 100MB
- Average transmit and receive percent utilization is greater than 50

For more information about configuring alerts in Orion NPM, see “Using Orion Advanced Alerts” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

### Diagnosing Network Availability

The benefits of diagnosing network availability with Orion Network Performance Monitor become apparent in approximately one week. Before continuing, confirm that your Orion NPM database includes any and all of the following objects on your network:

- All network devices, including routers, switches, firewall, VPN devices, and servers (Unix and Windows).
- All network interfaces and connections, including physical, virtual, and subinterfaces.
- All device resources, including CPU, memory, volumes, and buffers.
For more information about adding network devices to your Orion NPM database, see “Managing Devices in the Orion Web Console” on page 49.

Viewing Network Availability Charts and Reports

The following procedure guides you through locating and reviewing the charts and reports that deal with network availability analysis and trends.

To view network availability charts and reports:

2. Log in to the Orion Web Console.
3. Expand a node grouping in the All Nodes section of the Orion Summary Home view, and then click a server you want to explore.
4. Review the resulting Node Details page, ensuring that you pay close attention to the following resources:
   - Average Response Time & Packet Loss chart showing the last 7 days of data
   - Availability Statistics table
5. Click Reports on the menu bar.
7. Click Availability – This Month.
8. Review the report.
9. Click Reports on the menu bar.
10. Expand Availability.
11. Click Availability – Last Year.
12. Review the report.
13. Click Network Trends on the menu bar.

   Note: Due to the amount of data queried from the database, the Network Trends resources may take a significant time to load. To reduce the load time, you can edit the number of resources included in the view. For more information, see “Customizing Views” in the SolarWinds Orion Network Performance Monitor Administrator Guide.
14. Review the Network Trends page, paying attention to the following reports:
   - Network Wide Average Response Time
   - Network Wide Availability
Configuring Key Network Availability Alerts

Using the alert configuration procedures detailed in the “Using Orion NPM Alerts” section on page 69 as guides, consider configuring the following alerts with a trigger action that pages the appropriate operator:

- Node status, interface status, or volume status is equal to down
- Alert based on the receipt of a specific SNMP trap. Use the Trap Viewer to configure these alerts. For more information about receiving traps with Orion NPM, see “Monitoring SNMP Traps” in the SolarWinds Orion Network Performance Monitor Administrator Guide.
- Alert based on the receipt of a specific Syslog message. Use the Syslog Viewer to configure these alerts. For more information about receiving traps with Orion NPM, see “Monitoring Syslog Messages” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

For more information about alerts, see “Using Orion Advanced Alerts” in the SolarWinds Orion Network Performance Monitor Administrator Guide.

Analyzing Usage Trends

Using Orion NPM to analyze trends on your network requires an extended period of time to collect enough data to generate useful charts and reports. In 3 months, the amount of data collected by Orion NPM should be sufficient to see real trends and predict possible capacity shortfalls. Before continuing, confirm that your Orion NPM database includes the following objects on your network:

- All network devices, including routers, switches, firewall, VPN devices, and servers (Unix and Windows).
- All network interfaces and connections, including physical, virtual, and subinterfaces.
- All device resources, including CPU, memory, volumes, and buffers.

For more information about adding network devices to your Orion NPM database, see “Managing Devices in the Orion Web Console” on page 49.

Viewing Useful Node Trend Resources

The Orion Web Console provides many useful resources that can help you recognize trends and bottlenecks at the node level. The following charts and gauges are available as resources within Orion Web Console views:

- Average Response Time & Packet Loss chart
- Min/Max/Average CPU Load chart
- CPU Load & Memory Utilization gauges
- Overall Historical Power Consumption (EnergyWise) charts

**Note:** Optimize the ability of charts to display longer time periods by clicking **Edit** in the resource header to customize each chart as you require.

Orion NPM also provides reports that can help you recognize trends and bottlenecks at the node level on your network. The following node-level reports, available by clicking **Reports** in the Views toolbar, track node trends:

- Availability reports
- Historical Response Time reports
- Historical CPU and Memory reports
- Historical Traffic reports

**Viewing Useful Interface Trend Resources**

The Orion Web Console provides many useful resources that can help you recognize trends and bottlenecks at the interface level. The following charts are available as resources within Orion Web Console views:

- Min/Max Average bps In/Out chart
- Percent Utilization chart
- Total Bytes Transferred chart

**Note:** Optimize the ability of charts to display longer time periods by clicking **Edit** in the resource header to customize each chart as you require.

Orion NPM also provides reports that can help you recognize trends and bottlenecks at the interface level on your network. The following interface-level, Historical Traffic reports, available by clicking **Reports** in the Views toolbar, track interface trends:

- Average and Peak Traffic Rates – Last 7 Day
- Average and Peak Traffic Rates – Last Month
- Average and Peak Traffic Rates – This Month
- Average and Peak Traffic Rates – Wan Interfaces Last 7 Days
- Total Bytes Transferred by Interface – Last Month
- Total Bytes Transferred by Interface – This Month
Viewing Useful Volume Capacity Resources

The Orion Web Console provides many useful resources that can help you recognize trends and problems at the volume level. The following volume-level charts are available as resources within Orion Web Console views:

- Average Disk Space Used chart – customized to display longer time periods
- Percent Disk Space Used chart – customized to display longer time periods

Orion NPM also provides Historical Volume Usage reports that can help you recognize trends and problems at the volume level on your network. Historical Volume Usage reports are available by clicking Reports in the Views toolbar.