

# SolarWinds® Orion

IP Address Manager

Quick Start Guide

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## Conventions

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

<b>Convention</b>	<b>Specifying</b>
<b>Bold</b>	Window items, including buttons and fields.
<i>Italics</i>	Book and CD titles, variable names, new terms
Fixed font	File and directory names, commands and code examples, text typed by you
Straight brackets, as in [value]	Optional command parameters
Curly braces, as in {value}	Required command parameters
Logical OR, as in value1 value2	Exclusive command parameters where only one of the options can be specified

## SolarWinds Orion Network Performance Monitor Documentation Library

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

<b>Document</b>	<b>Purpose</b>
Administrator Guide	Provides detailed setup, configuration, and conceptual information.
Evaluation Guide	Provides an introduction to Orion Network Performance Monitor features and instructions for installation and initial configuration.
Page Help	Provides help for every window in the Orion Network Performance Monitor user interface
Quick Start Guide	Provides installation, setup, and common scenarios for which Orion Network Performance Monitor provides a simple, yet powerful, solution.
Release Notes	Provides late-breaking information, known issues, and updates. The latest Release Notes can be found at <a href="http://www.solarwinds.com">www.solarwinds.com</a> .

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## Chapter 1

# Introduction

IP Address Manager (Orion IPAM) leverages an intuitive point-and-click web interface to allow you to easily investigate IP address space issues. By periodically scanning the network for IP address changes, Orion IPAM maintains a dynamic list of IP addresses and allows engineers to plan for network growth, ensure IP space usage meets corporate standards, and reduce IP conflicts. Using Orion IPAM, network engineers can discover non-responsive IP addresses and coordinate team access to address IP space and track changes.

## ***Why Install SolarWinds Orion IPAM***

Orion IPAM allows network engineers to:

- Manage your entire IP infrastructure from an intuitive Web-Console
- Consolidate your IP addresses into a single repository
- Monitor DHCP Server and Scope capacity
- Keep better records by periodically scanning your network for IP address changes
- Create, schedule and share reports on the IP address space percent utilization
- Keep network devices up by identifying and eliminating IP address conflicts
- Coordinate team access to your address space with role-based access control and track changes
- Identify non-responsive IP addresses to optimize your IP space

## ***Key Features of Orion IPAM***

Orion IPAM provides the following features to help manage IP addresses.

### **Cisco IOS DHCP and Microsoft DHCP support**

DHCP Server and Scope capacity monitoring

### **Alerting capabilities**

Alert on high Subnet and DHCP Scope utilizations.

### **Scheduled Scanning**

Schedule and automatically scan your network on a regular basis to ensure your IP space is correctly configured

### **Scan Segmentation**

Allows to manage some IP addresses manually and others with automatic scanning to ensure your network is running smoothly

### **Subnet Allocation Wizard**

Specify a supernet and subnet sizes and Orion IPAM automatically allocates the correct sized subnet for your network

### **Change Auditing**

Enables you to investigate IP address issues by knowing who made what changes when

### **User-defined Grouping**

Create your own unique groups to categorize IP addresses by department, geography, device vendor, or your own custom fields

### **Global Search**

Track down any specific IP address on your entire network in seconds by performing a global search directly from the Orion IPAM web console. Search results can include historical details of specific IP addresses by displaying MAC Address, Hostname and IP Address Histories

### **Historical Tracking**

Offers the historical tracking of IP addresses to see how certain properties have changed over time.

### **Engineer's Toolset Integration**

Integrate with SolarWinds Engineer's Toolset for right-click access to your favorite network management troubleshooting tools

## **Multi Editing Capabilities**

Mass edit properties of multiple Subnets from a centralized location.

## **Bulk Add Subnets**

Add multiple subnets from your environment via the Bulk Add Subnet interface.

## **Custom Property URLs**

Create custom property URLs that directs users to web based data.

## **Flexible Reporting**

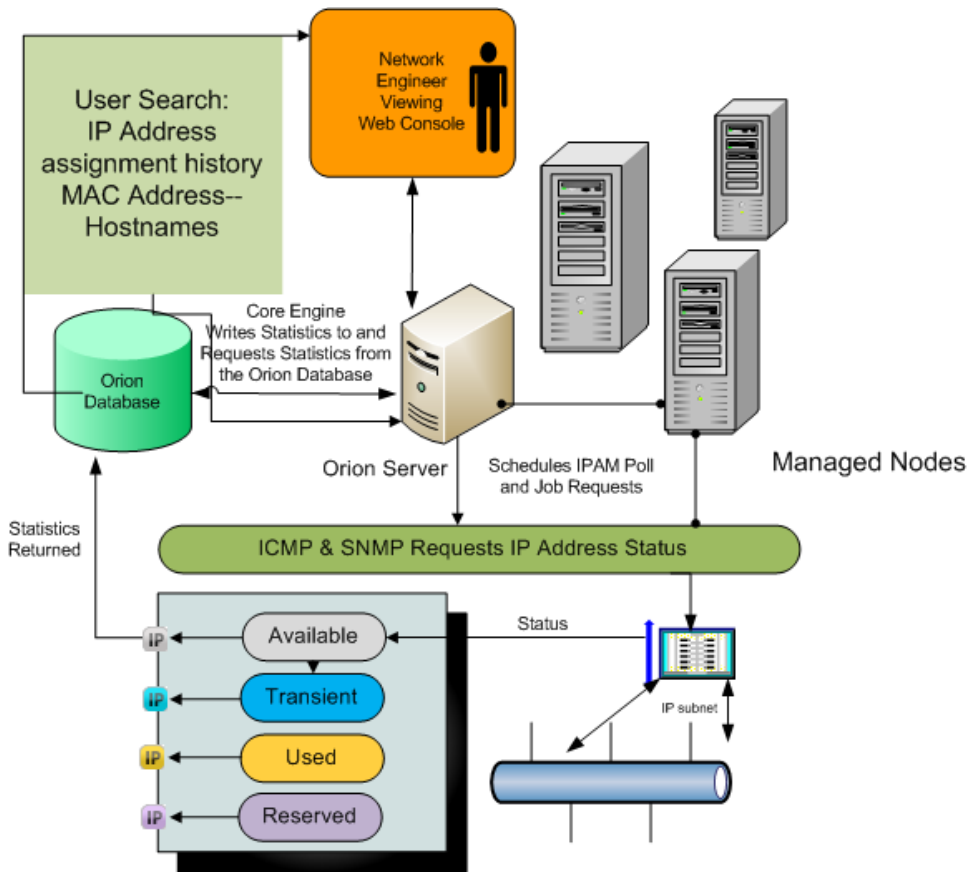
Generate IP address reports using out-of-the-box templates that can be easily customized with a few mouse clicks; automate report creation and distribution

## **IPv6 Planning**

View and track dual-stacked IPv4 and IPv6 enabled devices. Organize address spaces to assist with planning and space allocation.

## ***How Orion IPAM Works***

Orion IP Address Manager extends SolarWinds products into the realm of IP address management. Using ICMP and SNMP calls to collect details from devices on your network, IPAM tracks and displays IP address usage, in addition to automatically marking IP addresses that are no longer in use. Additionally, calls to DHCP servers are made to retrieve lease and scope details. Data is stored for tracking and auditing purposes in the database. All statistics are accessible using the Orion web interface.



## Chapter 1

# Installing and Configuring Orion IPAM

Orion IPAM employs a simple, wizard-driven install process allowing you to quickly start managing your network. Refer to the following sections for more information about licensing, system requirements and configuration procedures.

## *Orion IPAM Requirements*

Orion IPAM is now a standalone product that does not require Orion Network Performance Monitor (Orion NPM). You can also install it as module with Orion NPM, however in this scenario you must have Orion NPM 10.1.2.

## Requirements for Orion Common Components

SolarWinds recommends installing your Orion product on its own server, with the Orion database hosted separately, on its own SQL Server. Installations of multiple Orion servers using the same database are not supported.

### Orion Server Software Requirements

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

Software	Requirements
Operating System	Windows Server 2003 or 2008, including R2, with IIS in 32-bit mode. IIS 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. <b>Notes:</b> SolarWinds does not support production installations of Orion products on Windows XP, Windows Vista, or Windows 7 systems.
Web Server	Microsoft IIS, version 6.0 and 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 <i>RFC 952</i> . <b>Note:</b> 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. .NET Framework 3.5 SP1 is recommended.
SNMP Trap Services	Windows operating system management and monitoring tools component
Web Console Browser	Microsoft Internet Explorer version 6 or higher with Active scripting Firefox 3.0 or higher (Toolset Integration is not supported on Firefox)

### **Orion Server Hardware Requirements**

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

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

<b>Hardware</b>	<b>IP1000, or IP4000</b>	<b>IP16000</b>	<b>IPLX</b>
CPU Speed	2.0 GHz	2.4 GHz	3.0 GHz
	<b>Note:</b> Dual processor, dual core is recommended.		
Hard Drive Space	2 GB	5 GB	20 GB
	<b>Note:</b> A RAID 1 drive for server operating system, Orion installation, and tempdb files is recommended. 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.		
Memory	3 GB	4 GB	4 GB
Application Ports	161/SNMP and 443/SNMP. VMware ESX/ESXi Servers are polled on 443. 17777/TCP open for Orion module traffic 17778/ HTTPS open to access the SolarWinds Information Service API		

### **Requirements for Virtual Machines and Servers**

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

**Note:** SolarWinds strongly recommends that you maintain your SQL Server database on a separate physical server.

<b>Virtual Machine Configuration</b>	<b>Orion Requirements by License Level</b>		
	<b>IP1000, or IP4000</b>	<b>IP16000</b>	<b>IPLX</b>
CPU Speed	2.0 GHz	2.4 GHz	3.0 GHz
Allocated Hard Drive Space	2GB	5GB	20GB
	<b>Note:</b> 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.		
Memory	3 GB	4 GB	4 GB
Network Interface	Each virtual machine on which Orion is installed should have its own, dedicated network interface card. <b>Note:</b> 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.		

**Requirements for the Orion Database Server (SQL Server)**

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

Requirements	IP1000, or IP4000	IP16000	IPLX
SQL Server	SQL Server 2005 SP1 Express, Standard, or Enterprise SQL Server 2008 Express, Standard, or Enterprise <b>Notes:</b> 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, "Can I install my Orion server or Additional Polling Engine and my Orion database (SQL Server) in different locations across a WAN?" 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. If your Orion product installs SQL Server System CLR Types, a manual restart of the SQL Server service for your Orion database is required. Use the following database select statement to check your SQL Server version, service pack or release level, and edition: <pre>select SERVERPROPERTY ('productversion'), SERVERPROPERTY ('productlevel'), SERVERPROPERTY ('edition')</pre>		
CPU Speed	2.0 GHz	2.4 GHz	3.0 GHz
Hard Drive Space	2 GB	5 GB	20 GB
	<b>Note:</b> Due to intense I/O requirements, a RAID 1+0 drive is strongly recommended the SQL Server database and Orion data and log files. RAID 5 is not recommended for the SQL Server hard drive. The Orion installer needs at least 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 drive as your server operating system.		
Memory	2 GB	3 GB	4 GB
	<b>Note:</b> SolarWinds recommends additional RAM, up to 8 GB, for Orion IPAM installations including more than 1000 monitors.		

The Configuration 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

## ***Preparing a SolarWinds Orion Installation***

Orion products use a simple wizard to direct the installation process.

**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* document located in the SolarWinds Customer Portal. <http://www.solarwinds.com/customerportal/>.

## **Upgrade Paths**

SolarWinds Orion modules and standalone products are compatible with the specific versions of SolarWinds Orion Network Performance Monitor (NPM). Reference this KB article for the latest.

<http://knowledgebase.solarwinds.com/kb/questions/1888/Upgrade+paths+for+SolarWinds+Orion+product+modules+and+standalone+products>

Standalone products do not require any other SolarWinds products to be installed. To upgrade from earlier versions of Orion IPAM, follow the given upgrade path.

### **Suggested Upgrade Paths:**

- Orion IPAM 1.0.1 ⇒ Orion NPM 9.5 ⇒ 10.0.1 SP1 ⇒ IPAM 1.5 ⇒ 1.7 ⇒ Orion NPM 10.1.2
- Orion IPAM 1.5 ⇒ 1.7.1 ⇒ 2.0
- Orion 1.6 ⇒ 2.0
- Orion 1.7.1 ⇒ 2.0

## Installing Orion IPAM

The following procedure guides you through the installation of Orion IPAM. Ensure that the server on which you install Orion IPAM meets or exceeds the stated requirements. Complete the following procedure to install Orion IPAM.

**Note:** If you have additional Orion pollers or Web Consoles, upgrade them at the same time as your Orion server.

### To install Orion IP Address Manager:

1. Log on to the Orion server that you want to use for IP address management.

**Note:** Consider backing up your Orion database before performing any upgrade.

2. Navigate to your download location and launch the executable.
3. Review the Welcome text, and then click **Next**.
4. Accept the terms in the license agreement, and then click **Next**.
5. Click **Install**, and then click **Finish**.
6. Click **Enter Licensing Information**.
7. **If the computer on which you installed IPAM is connected to the Internet**, complete the following procedure.
  - a. Click **I want to activate my license over the Internet**.
  - b. Browse to <http://www.solarwinds.com/customerportal/>.
  - c. Login to the customer portal using your CustomerID and Password.
  - d. Copy your IPAM Activation Key to the clipboard, and then paste it into the Activation Key field on the Activate IPAM window.
  - e. Click **Next**.
  - f. Enter your contact information.
  - g. **If you use a proxy server to access the Internet**, check the Proxy Server checkbox, and then type the proxy address and port number.
  - h. Click **Next**.
8. When the Orion IP Address Manager Setup Wizard completes, click **Finish**.
9. **If the Configuration Wizard does not start automatically**, click **Start > All Programs > SolarWinds Orion > Configuration Wizard**.
10. Review the Orion Configuration Wizard welcome text, and then click **Next**.
11. Confirm that all services that you want to install are checked in the Service Settings window, and then click **Next**.

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

## ***Activating Your License***

After installing the software through the setup wizard, you are prompted to enter the license activation key for your product. If you do not have an activation key, the product runs in a time-limited evaluation mode.

### **To evaluate the software without a license:**

Click **Continue Evaluation**.

### **To license the software on a server *with* Internet access:**

1. Click **Enter Licensing Information**.
2. Select **I have internet access and an activation key**.
3. Click the <http://www.solarwinds.com/customerportal> link to access the customer portal on the SolarWinds web site.
4. Log on to the portal using your SolarWinds customer ID and password.
5. Click **License Management** on the left navigation bar.
6. Navigate to your product, choose an activation key from the **Unregistered Licenses** section, and then copy the activation key.
7. ***If you cannot find an activation key in the Unregistered Licenses section***, contact SolarWinds customer support.
8. Return to the Activate window, and then enter the activation key in the **Activation Key** field.
9. ***If you access Internet web sites through a proxy server***, click **I access the internet through a proxy server**, and enter the proxy address and port.
10. Click **Next**.
11. Enter your email address and other registration information, and then click **Next**.

### **To license the software on a server *without* Internet access:**

1. Click **Enter Licensing Information**
2. Select **This server does not have internet access**, and then click **Next**.
3. Click **Copy Unique Machine ID**.
4. Paste the copied data into a text editor document.
5. Transfer the document to a computer with Internet access.
6. On the computer with Internet access, complete the following steps:

7. Browse to <http://www.solarwinds.com/customerportal/licensemanagement.aspx> and then log on to the portal with your SolarWinds customer ID and password.
8. Navigate to your product, and then click **Manually Register License**.
9. If the **Manually Register License** option is not available for your product, contact SolarWinds customer support.
10. Provide the Machine ID from Step 5, and then download your license key file.
11. Transfer the license key file to the server.
12. Return to the Activate IPAM window, browse to the license key file, and then click **Next**.

## Configuring Orion IPAM

Orion IPAM provides an easily configurable, custom user interface. The following sections detail available options for configuring the customizable aspects of your Orion IPAM installation.

### IPAM Getting Started Resource

The **Getting Started with IP Address Manager** resource allows you to quickly begin using Orion IP Address Manager.

After installing the product, you will need to enter the credentials required for IPAM to communicate with your devices. You can quickly add subnets and IP Addresses by bulk or uploading from a file. You can also import an existing Toolset database to use in IPAM and add DHCP servers. Once completing these steps, you can click **Remove This Resource** to remove this resource from appearing on the summary page.



## Excluding Orion Data Directories from Anti-Virus Scanning

Anti-virus programs may lock files used by the SolarWinds Job Engine v2 during scanning. This can cause the SolarWinds Job Engine v2 services to stop and restart, causing delayed polling and gaps in data for a poll cycle.

Therefore SolarWinds recommends that you exclude the following Orion data directory (depending on your Windows platform) from your anti-virus scanning to improve performance and stability:

- For Windows XP/Server 2003: c:\Documents and Settings\All Users\Application Data\SolarWinds\
- For Windows Vista/7/Server 2008: c:\ProgramData\SolarWinds\

## Configuring Subnet Scan Settings

Orion IPAM is capable of using both SNMP and ICMP scanning to continuously determine the status of your monitored network. The Subnet Scan Settings view allows you to select how Orion IPAM automatically scans your network for changes.

**To configure Orion IPAM subnet scan settings:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **IPAM Settings**.
3. Click **Subnet Scans**.
4. Provide an appropriate value for the **Transient Period**. The Transient period must be a value from .2 to 340 days.

**Note:** Orion IPAM continuously scans all managed IP addresses on your network. If a device fails to respond to any SNMP or ICMP requests for the period of time designated as the **Transient Period**, Orion IPAM changes the status of the unresponsive IP address from *Used* to *Available*. Any associated custom attribute will be overwritten.

**Note:** Transient scan intervals can be configured on a per subnet basis from the Edit Subnet window.

### Transient Period

- Default duration ... inherit value from [Subnet Scan Settings](#)
- Unlimited duration
- Duration (days):

5. Enter the maximum number of simultaneous scans you want IPAM to attempt.
6. **ICMP is used by default to scan your network subnets for changes**, complete the following steps to configure ICMP:

- a. Provide an appropriate number of **Pings per address**.
  - b. Designate both the **Delay between Pings** and the **Ping Timeout**, in ms, for ICMP requests on your network.
7. ***If you want to collect device details using SNMP to scan your network subnets***, complete the following steps:
- a. Check **Enable SNMP Scanning** in the SNMP Scanning section.
  - b. Provide an appropriate number of **SNMP Retries**.
  - c. Designate the **SNMP Timeout** for SNMP requests on your network. The timeout value is measured in milliseconds.
  - d. Enable SNMP neighbor scanning. For more information see "**Indirect Discovery**" on page "14".
8. Click **Save**.
- Note:** You can disable scanning on a per subnet basis. For more information about editing subnet properties, see "Editing Subnets" on page 51.

## Indirect Discovery

IPAM utilizes a feature called Neighbor Scanning as an additional method of retrieving information. Neighbor Scanning pulls information from the ARP table of neighboring devices when ICMP and SNMP is blocked or disabled.

**Note:** Neighbor Scanning is disabled by default.

### To enable Neighbor Scanning:

1. From the **Manage Subnets & IP Addresses** tab select a subnet
2. Click Properties
3. Scroll to the bottom of the Subnet Properties window.
4. You should see an option that says "Disable Neighbor Scanning". This is checked (disabled) by default.
5. When you un-check it, additional options will appear where you can add the IP of the neighbor device.

## **Managing CLI Credentials for Cisco DHCP Scope Scans**

IPAM gathers data from CISCO devices using CLI commands and telnet or ssh protocols. Verify that your CISCO DHCP servers have configurable connection types (ssh or telnet), ports (default depends on type), and a user name and password.

**The section details the how to provide the CLI Credentials IPAM will use to connect to your devices.**

- The username and password used is the same user account you would use to log into the device via CLI to perform system configurations.
- The enable level you select must have privileges to execute `configure terminal` commands as well as be able to configure IP SLA operations. For information on configuring network devices, please see your manufacturer's documentation.

**Note:** As you change passwords on managed devices, ensure that you also change them in the IPAM credentials list.

### **To add a Cisco CLI credential**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **IPAM Settings**.
3. Click **Manage Credentials for Scope scans**.
4. Click **Add New** in the tool bar and select **Cisco**.
5. Provide an appropriate **Display Name** for your new credential.

6. Enter the **User Name** of your new credential.
7. Enter the **Password** of your new credential.
8. Select the **Enable Level**.
9. Enter the **Enable Password**.
10. Select the correct **protocol**.
11. Select the associated **port**.
12. Click **Save**.

## ***Managing Windows Credentials***

The Windows Credentials view allows you to configure and save Windows credentials for use when scanning Windows DHCP devices on your network. The following sections provide instructions for managing Windows credentials for your devices.

### **Adding Windows Credentials**

The following procedure helps you store Windows credentials for Orion IPAM. Orion IPAM attempts to communicate with your DHCP network devices using these credentials.

#### **To add a Windows Credential to Orion IPAM:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **IPAM Settings**.
3. Click **Manage Windows Credentials for Scope scans**.
4. Click **Add** in the tool bar.
5. Provide an appropriate **Display Name** for your new credential.

**Note:** The Windows Credentials view uses the Display Name to reference the different Windows credentials you have saved.

6. Enter the **Password** of your new credential.
7. Click **Save**.

**Note:** All Windows credentials are sent in clear text during configuration only. Consider updating credentials while locally logged into the IPAM server or over an HTTPS connection. The Windows account specified within IPAM must be on the DHCP server and of the three following groups: DHCP Users, DHCP Administrators and or local Administrators. IPAM impersonates the specified account on the local computer in order gain access. If the IPAM computer is not within the same windows domain as the DHCP server, the IPAM computer must have the identical account and password.

## Managing SNMP Credentials

The SNMP Credentials view allows you to configure and save SNMP credentials for use when scanning SNMP devices on your network. The following sections provide instructions for managing SNMP credentials for your devices.

### Adding SNMP Credentials

The following procedure helps you store SNMP credentials for Orion IPAM. Orion IPAM attempts to communicate with your network devices using the credentials in the order they are entered. To change the SNMP credential order see [Ordering SNMP Credentials](#) page 10.

#### To add an SNMP credential to Orion IPAM:

1. Click **IP Addresses** in the Modules menu bar.
2. Click **IPAM Settings**.
3. Click **SNMP Credentials**.
4. Click **Add** in the tool bar.
5. Provide an appropriate **Display Name** for your new credential.

**Note:** The SNMP Credentials view uses the Display Name to reference the different SNMP credentials you have saved.

6. Select the **SNMP Version** of your new credential.

#### Notes:

- Orion IPAM uses SNMPv2c by default. If the credential you are adding is required to scan devices using the enhanced security features of SNMPv3, select **SNMPv3**
  - If you select SNMPv2c and you do not want Orion IPAM to use SNMP v1 if an SNMPv2c request fails, confirm that **Use SNMP v2 only** is checked.
7. **If the default SNMP port for the devices requiring your new credential is not 161**, provide the actual **SNMP Port** number for these devices.

- 8. If you want to use either SNMPv1 or SNMPv2c for subnet scanning with your new SNMP credential,** provide at least one valid read-only **Community String** for the devices you want to scan with your new credential.

**Note:** Orion IPAM requires the `public` **Community String**, at minimum, for subnet scanning.

- 9. If you want to use SNMPv3 for subnet scanning with your new SNMP credential,** you will need the following information:
  - SNMPv3 User Name and Context
  - SNMPv3 Authentication Method and Password/Key
  - SNMPv3 Privacy/Encryption Method and Password/Key
- 10. Click Save.**

### **Ordering SNMP Credentials**

The following procedure provides the steps required to reorder stored SNMP credentials. Orion IPAM attempts SNMP communication using the stored credentials in the order provided.

#### **To order SNMP credentials in Orion IPAM:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **IPAM Settings**.
3. Click **SNMP Credentials**.
4. Check the credentials you want to reorder, and then click **Up** or **Down** in the tool bar, as appropriate, to move selected credentials up or down, respectively, in the list of stored credentials.

### **Editing SNMP Credentials**

The following procedure guides you through editing stored SNMP credentials Orion IPAM uses to monitor your network.

#### **To edit an SNMP credential in Orion IPAM:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **IPAM Settings**.
3. Click **SNMP Credentials**.
4. Check the Display Name of the credential you want to edit, and then click **Edit** in the tool bar.

5. **If you want to edit the credential Display Name**, provide the new **Display Name** for the selected credential in the designated field.

**Note:** The SNMP Credentials view uses the Display Name to reference the different SNMP credentials you have saved.

6. **If you want to edit the SNMP version of the selected credential**, select a different **SNMP Version** for the selected credential.

**Notes:**

- Orion IPAM uses **SNMPv2c** by default.
- **If you select SNMPv2c and you do not want Orion IPAM to use SNMP v1**, confirm that **Do not drop down to SNMP v1** is checked.
- **If the credential you are editing is required to scan devices that require the enhanced security features of SNMPv3**, confirm that **SNMPv3** is selected.

7. **If you want to provide a different SNMP port number for the selected credential**, provide the new **SNMP Port** number.
8. **If you want Orion IPAM to use either SNMPv1 or SNMPv2c for subnet scanning with the selected credential**, provide at least one valid read-only **Community String** for the devices to scan with the selected credential.

**Note:** Orion IPAM requires the `public` Community String, at minimum, for subnet scanning.

9. **If you want Orion IPAM to use SNMPv3 for subnet scanning with the selected credential**, provide the following settings:
  - SNMPv3 User Name and Context
  - SNMPv3 Authentication Method and Password/Key
  - SNMPv3 Privacy/Encryption Method and Password/Key

10. Click **Save**.

### Deleting SNMP Credentials

Complete the following procedure to delete an SNMP credential from the credential library.

#### **To delete an SNMP credential from Orion IPAM:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **IPAM Settings**.
3. Click **SNMP Credentials**.

4. Check the Display Name of the credential you want to delete, and then click **Delete** in the tool bar.
5. Click **Yes** to confirm that you want to delete the selected credential.

## Creating and Configuring Custom Fields

Depending on the type of component selected, Orion IPAM provides a number of predefined text properties to help organize your network, in addition to the ability to create URL custom links. Users have the ability to add descriptive text fields to addresses, subnets, supernets, and groups or link to external URLs.

**Note:** The Orion Network Performance Monitor Custom Property Editor capabilities are not integrated with the Orion IPAM module at this time.

### To create or edit an Orion IPAM custom field:

1. Click **IP Addresses** in the Modules menu bar.
2. Click **IPAM Settings**.
3. Click **IPAM Custom Fields > Manage IPAM Custom Fields**.
4. *If you want to add a custom field*, click **Add**.
5. *If you want to edit an existing custom field*, check the field to edit, and then click **Edit**.
6. Provide a **Database Column** for your custom field. The Database Column is the label used wherever Orion IPAM references the custom field you are defining in the Orion Web Console.
7. Edit the **Database Column** entry, as appropriate. The value is the alphanumeric label used in the Orion IPAM table of your Orion database for the custom field you are defining. By default, Orion IPAM generates this value sequentially.
8. Edit the **Description** of this field as necessary. The Description text is displayed if the custom field you are defining may be edited.
9. Select the appropriate **Field Type** for the custom property. Text based or a URL linked property.
10. Provide a **Link Title** for your URL link custom property. For example: a link to your IP SLA module web interface.
11. Provide a **Max String Length** for your custom field. The Max String Length sets a limit to the number of characters you may use for any value of the custom field you are defining.

12. **If you want to make this custom field available to all network components defined in Orion IPAM**, check **Add to Groups, Supernets, and Subnets, DHCP scopes, and DHCP servers**. Making this custom field available to all network components defined within Orion IPAM gives you the option to edit this field whenever you edit any network component.
13. **If you want to make this custom field available to all IP addresses monitored by Orion IPAM**, check **Add to IP addresses**. Making this custom field available to all IP addresses monitored by Orion IPAM gives you the option to edit this field whenever you edit any IP address.
14. When you have completed configuration of your custom field, click **Save**.

## Customizing the IPAM Summary View


The IP Address Manager view provides a highly customizable display of the current status of managed IP addresses on your monitored network. By default, the IP Address Manager view provides the following resources:

- Top 10 Subnets by % IP Address Space Usage
- Top 10 DHCP Scopes by % IP Address Space Usage
- Search for IP Address
- Custom List of Reports
- Getting Started with IPAM Resource
- thwack Recent IPAM Posts

You can customize your IP Address Manager view by adding, deleting, or reordering any available Orion resources.

### To customize the IP Address Manager view:

1. Click **IP Addresses** in the Modules toolbar.
2. Click **Customize Page** in the upper right corner.
3. **If you want to change the column layout of your IPAM Summary view**, click **Edit** and then configure the column layout of your view as follows:
  - a. Select the number of columns under Layout.
  - b. Provide the width, in pixels, of each column in the appropriate fields.
  - c. **If you have finished setting the column layout for your view**, click **Submit**.

4. **If you want to add a resource**, repeat the following steps for each resource that you want to add:
  - a. Click **+** next to the column in which you want to add a resource.
  - b. Click **+** next to a resource group on the Add Resources page to expand the resource group tree displaying all available resources for the group.
  - c. Check the resources you want to add.
  - d. **If you have completed the addition of resources to the selected view**, click **Submit**.
5. **If you want to delete a resource from a column**, select the resource, and then click **X** next to the resource column.
6. **If you want to copy a resource in a column**, select the resource, and then click  next to the resource column to copy the selected resource.
7. **If you want to change the order in which resources appear in your view**, select resources, and then use the arrow keys to arrange them.
8. **If you have finished configuring your view**, click **Preview**.

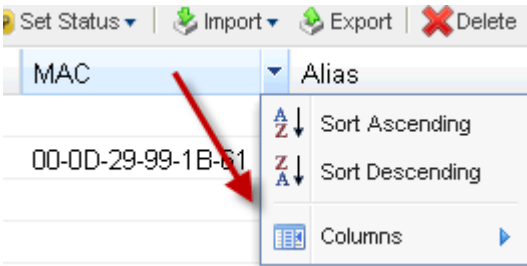
A preview of your custom view displays in a new window. A message acting as a placeholder may display in some assigned resource locations, and resources will display as empty if resource information has not been polled yet.
9. Close the preview window.
10. **If you still want to change aspects of your view**, repeat the preceding steps as needed.

11. If you are satisfied with the configuration of your view, click **Done**.

## Customize Manage Subnets and IP Addresses Tab Views

Both the Network View and the IP Address View may be personalized by reordering their respective default column arrangements.

To customize either the Network View or the IP Address View, simply click a column header and drag it to your preferred location. Your view personalization is saved immediately, and it is retained for the next time you use Orion IPAM. From the dropdown arrow you can select which resources to add and resize the columns to fit your needs.

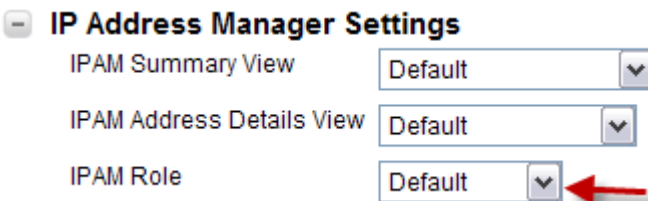


## Managing Orion IPAM Users

As a site administrator, you can use role definitions to adaptively restrict user access, as necessary, to maintain security without limiting your ability to delegate required network management activities. The following sections describe how to use role definitions to manage Orion IPAM users.

### User Role Definitions

Orion IPAM allows site administrators to securely grant varying privilege levels to different types of Orion IPAM users. You may define users' roles from the web console menu via the **Settings > Manage Accounts > Add New Account** and when you get to the define settings page you need to click **> IP Address Manager Settings**.



The following user roles are available:

## Read-Only

Granted the basic level of access to Orion IPAM, Read-Only users are given read-only access to the following Orion IPAM views and features:

- All Orion IPAM web console resources, including search and Top XX resources not previously limited by Orion account limitations. For more information, see “Understanding the IP Address Manager Summary View” on page 27.
- All IP address and network component properties and custom fields on the Manage Subnets and IP Addresses page. For more information, see “Manage Subnets and IP Addresses Page” on page 29.
- The Chart View on the Manage Subnets and IP Addresses page. For more information, see “For more information, see “Manage Subnets and IP Addresses Page” on page 29.

## Operator

Operators maintain the same rights granted to Read-Only users with the addition of the following abilities:

- IP address property and custom field management, including the ability to edit IP address properties on portions of the network made available by the site administrator. For more information, see “Manage Subnets and IP Addresses Page” on page 29.
- Addition and deletion of IP address ranges from portions of the network made available by the site administrator. For more information, see “Manage Subnets and IP Addresses Page” on page 29.
- Subnet status selection on the Manage Subnets and IP Addresses page. For more information, see “Manage Subnets and IP Addresses Page” on page 29.

## Power User

Power Users maintain the same rights granted to Operators with the addition of the following abilities:

- Drag-and-drop reorganization of network components in the left pane of the Manage Subnets and IP Addresses view. For more information, see “Manage Subnets and IP Addresses Page” on page 29.
- Supernet and group properties management, including the ability to edit supernet and group properties and custom fields on portions of the network made available by the site administrator. For more information, see “Manage Subnets and IP Addresses Page” on page 29.

## Administrator

Administrators are granted the same access to Orion IPAM that is granted to Power Users with the following added privileges:

- SNMP credentials management. For more information see "Managing SNMP Credentials" on page 17.
- Custom fields management. For more information see "Creating and Configuring Custom Fields" on page 20.
- Subnet scan settings configuration. For more information see "Managing Subnet Scans" on page 52.

## Default

The Default role will have full, unlimited access to the Orion IPAM application, if the user is an Orion administrator. This role will act as read only for non-Orion administrators.

## Editing User Roles

The following procedure edits existing Orion IPAM user roles. This is also where you change account passwords.

### To edit Orion IPAM user roles:










1. Click **Settings > Accounts > Manage Accounts >** in the Views menu bar.
2. Check the Account you wish to edit and click **Edit**.
3. Select the Orion Web Console account corresponding to which Orion IPAM user role you are defining, and then click **Edit**.
4. Edit as needed and then click **Submit**.








## Viewing Networks with Orion IPAM

Orion IPAM provides direct insight into the organization and availability of IP addresses on your network. This information is displayed using the resources of the IP Address Manager view and the three views of the Manage Subnets and IP Addresses page. The following sections describe the information available on these views.

### Orion IPAM Status Icons

In Orion IPAM, network components are represented by colored icons indicating the extent to which each component is used, as shown in the following table.

Icon	Component	Status	Status Description
	Group	Used (Closed)	The group is closed, but it contains at least one other component (group, subnet, or supernet).
	Group	Used (Opened)	The group is open, and it contains at least one other component (group, subnet, or supernet).
 Grey	IP Address	Available	All addresses in defined groups, subnets, and supernets are, by default, considered <b>Available</b> unless they are typically reserved, as in the case of the network and broadcast addresses, or until they are otherwise assigned.
 Purple	IP Address	Reserved	Typically, in subnets defined to contain more than 2 IP addresses, the smallest address—the network address—identifies the subnet to the rest of the network and the largest address—the broadcast address—is used to communicate to all addresses within the subnet. Both addresses are considered to be <b>Reserved</b> for a defined subnet.
 Cyan	IP Address	Transient	Addresses that are dynamically assigned to devices that may power on and off regularly or that may enter and exit the network frequently are designated as <b>Transient</b> .
 Yellow	IP Address	Used	Any address currently assigned to a monitored device is considered <b>Used</b> .
 Red	Subnet	Critical	At least 80 percent of all possible addresses in the subnet are designated as <b>Used</b> .
 Yellow	Subnet	Warning	60 to 80 percent of all possible addresses in the subnet are designated as <b>Used</b> .
 Green	Subnet	Good	Less than 60 percent of all possible subnet addresses are designated as <b>Used</b> .

Icon	Component	Status	Status Description
Green			
 Red	Supernet	Critical	At least 80 percent of all possible addresses in the supernet are designated as <b>Used</b> .
 Yellow	Supernet	Warning	60 to 80 percent of all possible addresses in the supernet are designated as <b>Used</b> .
 Green	Supernet	Good	Less than 60 percent of all possible addresses in the supernet are designated as <b>Used</b> .
 Red	DHCP Scope	Critical	At least 80 percent of all possible addresses in the Scope are designated as Used.
 Yellow	DHCP Scope	Warning	60 to 80 percent of all possible addresses in the Scope are designated as Used.
 Green	DHCP Scope	Good	Less than 60 percent of all possible addresses in the Scope are designated as Used.
 Disabled	DHCP Scope	Disabled	DHCP scope is currently disabled.

## Understanding the IP Address Manager Summary View

The IP Address Manager view is the interactive center of your managed IP network. The following sections describe the default resources available on this view for managing your network.

### Top 10 Subnets by % IP Address Space Usage

The Top 10 Subnets by % IP Address Space Usage resource provides an easily accessible report of IP address availability by defined subnet. Defined subnets are listed in decreasing order of IP address space percentage used (**% IP Address Space Used**). For each defined subnet, this resource provides a colored bar graph indicating the percentage of the total IP address space of your network that is currently in use or reserved. To provide further detail, this resource displays both the number of IP addresses designated for a selected subnet (**IPs Used**) and the number of IP addresses currently available for assignment (**IPs Available**) such that the **% IP Address Space Used** value is calculated as follows:

$$\% \text{ IP Address Space Used} = \frac{\text{All IPs in Subnet} - \text{IPs Available}}{\text{All IPs in Subnet}}$$

### Top 10 DHCP Scopes by % IP Address Space Usage

This view displays the Top XX DHCP Scope availability. Defined Scopes are listed in decreasing order of IP address space percentage used (**% IP Address Space Used**). For each defined Scope, this resource provides a colored bar graph representing the percentage of IP address space available. To provide further detail, this resource displays both the number of IP addresses designated for a selected subnet (**IPs Used**) and the number of IP addresses currently available for assignment (**IPs Available**).

### **Search for IP Address**

The Search for IP Address resource allows you to search multiple fields within the Orion IPAM table of your Orion database for IP addresses you are managing with Orion IPAM. For more information about searching the Orion IPAM table of your Orion database, see “Searching for IP Addresses” on page 39.

### **Custom List of Reports**

The Custom List of Reports resource provides a list of selected Orion reports. Any report that is either predefined or subsequently created using Orion Report Writer may be listed in this resource. For more information about creating your own custom Orion IPAM reports, see "Creating Reports with Orion IPAM" on page **Error! Bookmark not defined.**

To edit the displayed list of reports, click **Edit** in the resource title bar. The Edit Custom List of Reports page opens, and then you can select from available network reports to list in this resource and edit the resource Title and Subtitle.

### **Getting Started with IP Address Manager**

This resource provides a quick method to get your environment configured to work with IPAM by providing quick links to set up credentials, import devices from the Engineer's Toolset, bulk add subnets and add DHCP servers to be monitored. Once completed, you can click **Remove This Resource** to remove this resource from appearing on the summary page.

### **Manage Subnets and IP Addresses Tab**

Clicking anywhere in the Manage Subnets and IP Addresses resource provides direct access to the Manage Subnets and IP Addresses page. For more information about the Manage Subnets and IP Addresses page, see “Manage Subnets and IP Addresses Page” on page 29.

### **DHCP Scope Management Tab**

Clicking anywhere in the DHCP Scope Monitoring tab provides direct access to the DHCP Scope Monitoring page. For more information about the DHCP Scope Monitoring page, see “DHCP Monitoring DHCP Servers” on page **Error! Bookmark not defined.**

### **thwack Recent IPAM Posts**

thwack.com is the online SolarWinds community for network engineers. The thwack Recent IPAM Posts resource shows the most recent Orion IPAM-related posts submitted by users to the Orion IPAM forum.

Clicking the title of any listed post opens the corresponding thwack.com post in a new browser.

Clicking **Edit** gives you the option to set the **Maximum Number of Posts to Display** in the resource. Type the number of post titles you want to display in the resource, and then click **Submit**.

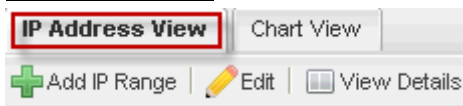
Clicking **View All** opens the thwack.com Orion IPAM forum, where you can read all posts related to Orion IPAM.

## Manage Subnets and IP Addresses Page

The Manage Subnets and IP Addresses page is the primary management interface for Orion IPAM. The page is divided into two panes. The left pane displays your entire managed network as it is organized into subnets, supernets and groups. For more information about organizing your network with subnets, see “Managing Subnets in Orion IPAM” on page 49. For more information about organizing your network with supernets, see “Managing Supernets in Orion IPAM” on page **Error! Bookmark not defined.** For more information about organizing your network with groups, see “Managing Groups” on page 47.

Depending on the current selection in the left pane, the right pane contains two tabs, each of which provides one of the following views: IP Address, Network, and Chart. The following sections describe the information that is available on each these Manage Subnets and IP Addresses views.

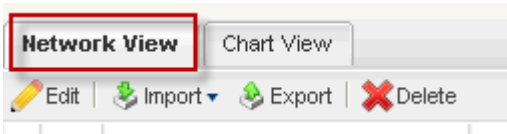
### IP Address View



The IP Address View displays whenever a subnet is selected, either in the Network View on the right or in the network organization pane on the left of the Manage Subnets and IP Addresses page. This view provides a list of all IP addresses that are within the selected subnet. This view can be filtered by selecting the DHCP Managed dropdown menu.

Each IP address is listed with a selection of IP address properties. With the exception of **Last Update**, which is reported by Orion IPAM as the result of a network scan, values for displayed IP address properties are set using the Edit IP Address window. For more information about editing IP address properties, see “Adding IPv4 Address” on page 39.

## **Network View**



The Network View displays whenever a group or supernet is selected in the network organization pane on the left of the Manage Subnets and IP Addresses page. If a group is selected, this view provides a list of all other groups, supernets, and subnets that are defined within the selected group. If a supernet is selected, this view provides a list of all subnets that are defined within the selected supernet. The Network Tab also provides the ability to edit a single IP Address, delete and import subnets by bulk.

The status of displayed network components is designated using colored icons. For more information about network component icons, see “Orion IPAM Status Icons” on page 26.

Each network component (group, subnet, and supernet) is listed with a selection of component properties. With the exception of **Last Discovery**, which is reported by Orion IPAM as the result of a network scan, values for displayed network component properties are set using the appropriate *Edit Network Component Properties* window. For more information about editing group properties, see “Editing Groups” on page 48. For more information about editing subnet properties, see “Editing Subnets” on page 51. For more information about editing supernet properties, see “Editing Supernets” on page **Error! Bookmark not defined.**

## **Chart View**

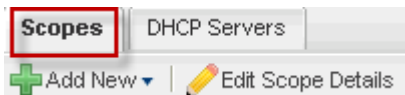
The Chart View is always available in the right pane of the Manage Subnets and IP Addresses page, and it provides a concise, visual report of your IP address allocation for any network component selected in the network organization pane to the left. A pie chart displays the designated statuses of your monitored IP addresses and an availability report displays both the percentage of all possible IP addresses in the selected group, subnet, or supernet that are present for monitoring and the percentage of present IP addresses that are available for assignment. For more information about IP address states in Orion IPAM, see "Orion IPAM Status Icons" on page 26.

## DHCP Scope Monitoring Page

The DHCP Scope Monitoring page is divided into two panes. The left pane displays your entire managed network as it is organized into Scopes or Servers. You can filter how these are grouped by using the drop down arrow.

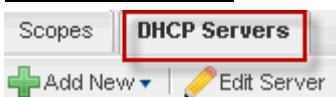
The right pane contains two tabs, each of which provides one of the following views: Scopes tab and the DHCP Servers tab. The following sections describe the information that is available on each these views.

### Scopes tab



The Scopes View displays a list of all DHCP Scopes that are monitored with IPAM. Selecting a Scope switches the view to the Manage Subnets & IP Addresses view where all the IP Addresses within that scope are displayed. Information such as Type, Status, MAC address, DNS, Lease Expiration and Lease Remaining time frames are displayed. This selection of properties is reported by Orion IPAM as the result of a network scan. For more information about editing DHCP Scope properties, see "DHCP Scope Monitoring Page" on page "**Error! Bookmark not defined.**".

### DHCP Servers tab



The DHCP Servers View displays a list of all DHCP Scopes that are monitored with IPAM. Selecting a Server switches the view to the Manage Subnets & IP Addresses view where all the IP Addresses within that server are displayed. Information such as Type, Status, MAC address, DNS, Lease Expiration and Lease Remaining time frames are displayed. This selection of properties is reported by Orion IPAM as the result of a network scan. For more information about editing DHCP Server properties, see “Monitoring DHCP Servers on page **Error! Bookmark not defined.**..

## ***Importing IP Addresses and Settings from a File***

Orion IPAM supports the import of IP addresses and settings from a spreadsheets, such as Microsoft Excel `.xls` and `.csv` files. The following columns list the types of network information that Orion IPAM can import directly. Users can choose which columns to import.

**Spreadsheet Column****Database Column**

IP Address	IP Address
MAC Address	MAC Address
Hostname	Hostname
System Name	System Name
Description	Description
Contact	Contact
System Location	System Location
Vendor	Vendor
Machine Type	Machine Type
Comments	Comments
Response Time	Response Time
Last Boot Time	Last Boot Time
Last Synchronization	Last Synchronization
Status	Status
System Object ID	System Object ID
Type	Type
Skip Scan	Skip Scan
Alias	Alias
Lease Expiration	[Do not import]
Dual Stack IPv6 Address	Dual Stack IPv6 Address

The following procedure imports IP addresses and settings into the Orion IPAM table of your Orion database.

**To import IP addresses and settings into Orion IPAM using a file:**

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **IPAM Settings** in the right corner.
3. Click **IP Address & Subnet Import**.
4. Next to the **File to Upload** field, click **Browse**.

5. Locate the file containing the IP addresses, subnets, or settings you want to import, and then click **Open**.
6. Select the **File Type** for the file you want to upload, and then click **Next**.
7. For each **Spreadsheet Column** value from the import file select a corresponding **Database Column** name to use in the Orion IPAM table of your Orion database.
8. Click **Next**.
9. ***If the spreadsheet column values from the import file do not match the column types you have selected for the Orion IPAM table of your Orion database, complete the following steps to correct the indicated mismatches, repeating as necessary:***
  - a. Hover over an incorrect value, as indicated by a red icon or underline, to determine the cause of the mismatch.
  - b. Click **Back** to correct your column selections.
  - c. Click **Next**.
10. ***If the spreadsheet column values match the column types you have selected, click Next to complete the import.***
11. ***If a subnet does not exist for any of your imported IP addresses, click Next to create subnets for these orphaned IP addresses. For more information about creating and assigning subnets to orphaned IP addresses, see “Viewing and Managing Orphaned IP Addresses” on page 37.***

**Notes:**

- An **IPv4 Address** column is required for all imports. Confirm that at least one spreadsheet column maps to an **IPv4 Address** column in the Orion IPAM table of your Orion database.
- Only rows appearing to have a valid IPv4 address are imported.
- Orion IPAM uses the data in the first non-empty row of the imported file to suggest appropriate labels for the columns in the Orion IPAM table of your Orion database.
- Attempt to map all unlabeled Spreadsheet Columns to a provided Database Column name. Orion IPAM provides a preview before any changes are made permanent.

## Updating IP Address properties from a File into an Existing Subnet

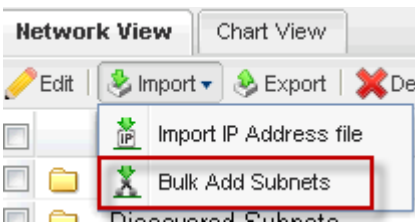
The following procedure gives you the ability to add and edit IP addresses and properties of existing subnets monitored within Orion IPAM

**To import IP addresses and settings into Orion IPAM using a file:**

1. Click **Manage Subnets & IP Addresses** tab
2. Select the subnet you wish to insert IP Addresses.
3. Select **Import**
4. **Browse** to select a file.
5. Select File type.
6. **If you do not want to overwrite existing addresses** ensure the **Restrict to subnet** is checked.
7. Click **Next**
8. Match the spreadsheet column header on the left with the IPAM database column on the right, depending on which properties you want to change.
9. Click **Next**
10. View any import validation errors.
11. Click **Next** to complete the import.
12. Click **Done**.


## Importing by Bulk Adding Subnets

From the ManageSubnets & IP Addresses page users can easily bulk import subnets by typing or copying IP Addresses in the page.



**To import subnets with the bulk feature:**

1. Click **Manage Subnets & IP Addresses** tab
2. Click **Import**

3. Select **Bulk Add Subnets**
4. Insert Subnet/CIDR Prefixes in the box
5. Click **Parse and Show Results Below**
6. Click **Next**
7. Click  to view the selected subnets.
8. ***If you want to move the new subnets into the smallest appropriate supernet*** check **Move new subnets into the smallest appropriate supernet**.
9. **Enter appropriate subnet properties.**
10. ***If you do not want system scans to overwrite system information*** check **Disable Automatic Scanning**.
11. Enter the desired scanning interval in minutes.
12. Click **Done**.

## ***Importing IPs and Subnets Using the SolarWinds Engineer's Toolset***

### **To import subnets and IP Addresses from the Engineer's Toolset:**

1. Locate the Toolset IP Address Manager database on your Toolset server.

**Note:** The Toolset IP Address Manager database has an .ipdb extension.

2. Copy the Toolset IP Address Manager database to an appropriate location on your Orion server.
3. Open a Command Prompt on the Orion server.
4. Enter `CD "\Program Files\SolarWinds\Orion\IPAM"`
5. Enter `NET STOP "SolarWinds IPAM Information Service"`
6. Enter `SolarWinds.IPAM.Init.exe -import <Fullpath to your Toolset IP Address Manager database>`
7. Enter `NET START "SolarWinds IPAM Information Service"`

## Viewing and Managing Orphaned IP Addresses

After the importing of IP addresses from a spreadsheet it is possible that one or more IP addresses may have been imported without being assigned to a managed subnet. In order to properly manage your network, Orion IPAM requires that all IP addresses are assigned to a managed subnet, even if the managed subnet contains only a single IP address. If Orion IPAM is unable to locate a configured subnet for each imported IP address, the following warning banner displays above the Manage Subnets and IP Addresses view:

**X imported IP addresses do not have a parent subnet.** These orphaned IP addresses will not appear in Orion until parent subnets are assigned.

The following procedure assigns parent subnets to orphaned IP addresses to enable their management by *Orion IPAM*.

### Notes:

- If you try to manage more IP addresses than your current license allows, *Orion IPAM* will add as many IP addresses as allowed. The remaining addresses will be added as orphaned IP addresses.

### To assign a parent subnet to an orphaned IP address:

1. Click **Assign parent subnets to orphaned IPs** in the warning banner.
2. Check a single orphaned IP address.
3. Click **Assign Subnet**.
4. **If you do not want to use the default Subnet Name provided by Orion IPAM**, provide a new **Subnet Name** for the new parent subnet. Orion IPAM suggests both a Subnet Address and a CIDR prefix length based on the actual orphaned IP address. The default Subnet Name provided by Orion IPAM is a concatenation of the Subnet Address and the CIDR prefix length.
5. **If you do not want to use the default Subnet Address and CIDR prefix length provided by Orion IPAM**, provide a new **Subnet Address** and an appropriate **CIDR** prefix length for the new parent subnet.

### Notes:

- Orion IPAM suggests both a **Subnet Address** and a **CIDR** prefix length based on the actual orphaned IP address. For more information about CIDR and subnet addressing, see “Networking Concepts and Terminology” on page **Error! Bookmark not defined.**

- Orion IPAM instantly confirms the validity of provided **Subnet Address** and **CIDR** prefix length combinations. For more information about CIDR and subnet addressing, see “Networking Concepts and Terminology” on page **Error! Bookmark not defined.**
6. These fields are optional; provide a **Description**, **VLAN ID**, and **Location** for the new parent subnet.
  7. Use the slider to set the **Scan Interval**.
  8. **If you do not want Orion IPAM to automatically scan your new parent subnet for changes**, check **Disable Automatic Scanning**.
  9. Click **Save** when you have completed configuring your new parent subnet.

## **Exporting IP Addresses and Settings**

Orion IPAM also allows you to export IP addresses and settings, including any custom fields you have defined, as Microsoft Excel (.xls and .csv) files.

The following procedure exports IP addresses and settings from the Orion IPAM table of your Orion database as columns in a new spreadsheet.

### **To export IP addresses and settings from Orion IPAM:**

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. **If you want to export an entire group**, click the parent group of the group you want to export in the network organization pane on the left, and then check the group in the Network View on the right.
4. **If you want to export an entire supernet**, click a parent group or supernet of the supernet you want to export in the network organization pane on the left, and then check the supernets in the Network View on the right.

**Note:** Before **Orion IPAM** can export any supernet, the supernet must be populated with at least one defined subnet.

5. **If you want to export an entire subnet**, click a parent group or supernet of the subnet you want to export in the network organization pane on the left, and then check the subnets in the Network View on the right.

**Note:** **Orion IPAM** can only export subnets that have been properly defined and populated with IP addresses.

6. **If you want to export IP addresses**, click the parent subnet of the IP address you want to export in the network organization pane on the left, and then check the IP addresses to export in the Network View on the right.
7. Click **Export** in the toolbar.

8. Check the columns you want to export.

**Note:** The IPv4 Address column is selected automatically, and it becomes the first column in the generated spreadsheet. Each additional setting or property you check becomes an additional column in the generated spreadsheet.

9. Click **Export**.

10. When you are prompted to open or save the file, click **Save**.

11. Provide an appropriate file name and location for the generated spreadsheet, and then click **Save**.

## Managing IP Addresses with Orion IPAM

Orion IPAM automatically monitors all IP addresses in subnets defined with 4096 IP addresses ( $/21$  or  $255.255.248.0$  mask) or fewer. IP address ranges allow you to manage IP addresses in larger subnets. The following sections provide details with respect to managing IP addresses on your network.

### *Adding IPv4 Addresses*

To help you maintain an organized network, Orion IPAM does not allow for the addition of an individual IP address unless it exists within a subnet previously designated for monitoring. The following options are available for adding IP addresses to Orion IPAM:

- A range of IP addresses can be added to any defined subnet. This is usually done when you want to monitor specific addresses within a large subnet. For smaller subnets containing 4096 or fewer IP addresses ( $/21$  or  $255.255.248.0$  and higher mask), Orion IPAM automatically monitors all included IP addresses. For more information, see “Adding a Range of IP Addresses” on page 40.
- IP addresses may be added for monitoring by adding a parent subnet into any existing group, supernet, or subnet that Orion IPAM is already monitoring. Adding such a subnet is a straightforward process. For more information about adding subnets, see “Creating Subnets” on page 49.
- The Subnet Allocation Wizard allows you to directly define subnets and allocate included IP addresses. For more information about the Subnet Allocation Wizard, see “Using the Subnet Allocation Wizard” on page 52.

## Adding IPv6 Addresses

IPAM provides the ability to add IPv6 Sites and Addresses for planning purposes. These addresses can then be grouped and organized to have their statuses monitored. See "Adding IPv6 Addresses" on page "**Error! Bookmark not defined.**" for more information.

## Adding a Range of IP Addresses

Particularly in the case of larger subnets, it can be useful to deal with IP addresses in terms of defined IP address ranges, such as 6.6.16.1–6.6.16.15 in a 6.6.16.0 / 20 subnet. The following procedure provides the steps required to add a range of IP addresses within a defined subnet.

**Note:** By default, Orion IPAM displays all IP addresses in a subnet if the selected subnet contains 4096 or fewer IP addresses (/21 or 255.255.248.0 and higher mask). For these smaller subnets, it is not necessary to add IP address ranges for monitoring unless you have previously deleted the addresses in the range you want to add.

**To add a range of IP addresses within a defined subnet:**

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**
3. In the network tree pane on the left, click the subnet into which you want to add your new range of IP address range.

**Note:** For subnets with more than 4096 IP addresses (lower than /21 or 255.255.248.0 mask), the right pane displays **No IP addresses have previously been added** unless you have already added a range of IP addresses within the selected subnet.

4. Click **IP Range > Add** in the IP Address view in the right pane.
5. Provide both the **Starting IP Address** and the **Ending IP Address** of your new IP address range. Orion IPAM will not allow IP address ranges defined outside the subnet indicated in the Parent Address field.
6. Click **Save**.

## Deleting IP Addresses from Monitoring

Complete the following procedure provides the steps required to delete monitored IP addresses from within a defined subnet. If a defined subnet contains more than 4096 IP addresses (lower than /21 or 255.255.248.0 mask), Orion IPAM only displays IP addresses in previously added ranges. For these larger subnets, you must add IP address ranges for monitoring before Orion IPAM can display addresses that may be deleted.

### To delete IP addresses from within a defined subnet:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Click the subnet from which you want to delete a range in the left tree pane of IP addresses.

**Note:** For subnets with more than 4096 IP addresses (lower than /21 or 255.255.248.0 mask), the right pane displays **No IP addresses have previously been added** unless you have already added a range of IP addresses within the selected subnet.

4. Check the IP addresses to delete in the right pane IP Address view.
5. Click **IP Range > Remove**.
6. Click **Yes** to confirm the deletion, and then click **Save**.

## Setting IP Address Status

The status of any monitored IP address within a defined subnet may be set from the IP Address View on the Manage Subnets and IP Addresses page, as shown in the following procedure.

**Note:** If a subnet contains more than 4096 IP addresses (lower than /21 or 255.255.248.0 mask), Orion IPAM only displays IP addresses in previously added ranges. For these larger subnets, you must add IP address ranges for monitoring before Orion IPAM can display addresses that may be managed.

### To set the status of an IP address within a defined subnet:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**, and then click the subnet containing the IP address for which you want to set the status in the left tree pane.

**Note:** For subnets with more than 4096 IP addresses (lower than /21 or 255.255.248.0 mask), the right pane displays **No IP addresses have previously been added** unless you have already added a range of IP addresses within the selected subnet.

3. Check the IP addresses to modify in the right pane IP Address view.
4. Click **Set Status**, and then select the appropriate status. For more information about the definition of available status icons, see “Orion IPAM Status Icons” on page 26.

## Editing IP Address Properties

Orion IPAM can store a wide array of information about the devices to which IP addresses are assigned. The following table lists the properties Orion IPAM can record in the Orion IPAM table of your Orion database.

IP Address Properties		
Comment	DNS	IPv6 Address
Last Credential	Last Response Time	Last Synchronization
MAC Address	Machine Type	Node Alias
Status	System Contact	System Description
System Location	System Name	Type
Vendor	Device Status	Dynamic
Lease Expiration	Scanning Status	Node Alias

You can edit IP address properties directly from the IP Address View, including custom properties, on the Manage Subnets and IP Addresses page. The following procedure provides the steps required to edit the properties of an IP address within a defined subnet.

**Note:** If a defined subnet contains more than 4096 IP addresses (lower than /21 or 255.255.248.0 mask), Orion IPAM only displays IP addresses in previously added ranges. For these larger subnets, you must add IP address ranges for monitoring before Orion IPAM can display addresses that may be managed.

### To edit an IP address within a defined subnet:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses** tab.
3. Click the subnet containing the IP address you want to edit in the left tree pane.

**Note:** For subnets with more than 4096 IP addresses (lower than /21 or 255.255.248.0 mask), the right pane will display **No IP addresses have previously been added** unless you have already added a range of IP addresses within the selected subnet.

4. Check the IP address to edit in the in the right IP Address view pane.
5. Click **Edit** and then select or provide appropriate values for each listed IP address property.

**Note:** If you have defined custom fields for IP addresses, they are available for editing. For more information about configuring custom fields in Orion IPAM, see “Creating and Configuring Custom Fields” on page 20.

6. Click **Save** when you have completed configuration of IP address properties.

**Note:** Selecting the Scanning option to **Off** will not modify values normally overwritten by network scanning.

## Multiple Edit IP Address Properties

Orion IPAM allows you to mass edit properties of selected IP Address ranges. Mass editing allows you to change the Status, Type and Scanning statuses for selected ranges, along with additional user fields and system information.

### To edit multiple IP ranges:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click the **Manage Subnets & IP Addresses** tab.
3. Select the subnet you want to edit from the left pane.
4. Click **Select IP Range** from the right menu pane.
5. Enter the starting and ending IP Addresses.
6. Click **Select + Edit** to edit the properties.
7. Check the necessary boxes to edit and select from the dropdown choices.
8. Click **Save**

**Note:** System Information will be overwritten if scanning is enabled. You can turn off automatic scanning by selecting **Off** from the **Scanning** dropdown menu.

### To remove multiple IP ranges:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click the **Manage Subnets & IP Addresses** tab.
3. Select the subnet you want to edit from the left pane.
4. Click **Select IP Range**.

5. Enter the starting and ending IP Addresses.
6. Click **Select + Remove** to remove the selected range from IPAM.
7. Click **Yes**

## Searching for IP Addresses

The Orion IPAM Search feature provides the ability to search for all of the IP Address resources existing within the IPAM database. The following table provides the available search criteria.

Search Criteria	Description
All Fields	This field will search all search criteria fields
Alias	Search by the address alias
Comments	Search for a specific comment
Contact	Search for a contact name
DNS	Search using the DNS
Group Description	Search by a group/subnet+ description
Group Name	Search by a group name
Hostname	Search by Hostname
IPv4 Address	Search for a IPv4-formatted addresses
IPv6 Address	Search for a Dual Stack IPv6-addresses
MAC Address	Search by a specific MAC address
Machine Type	Search by the machine type
Scope Name	Search by scope name
Status	Search by status; Used, Available, Reserved, Transient
System Description	Search by system description
System Location	Search by a physical location
System Name	Search by system name
Vendor	Search by vendor
VLAN ID	Search by VLAN ID
Custom Property	Search by an existing custom property

The following procedure details how to use the IPAM search resource.

### To search the Orion IPAM table of your Orion database:

1. Click **IP Address Manager** in the Modules menu bar.
2. Under the **Search for IP Address** dropdown you can check the criteria relevant to your search.

**3. Type a string or IP address and then click **Search**.**

**Note:** Wildcards (\*,?) are permitted, as shown in the following examples:

Cisco\*, 10.15.\*.\*, W?ndows, Server-\*, \*.SolarWinds.com

Orion IPAM queries the Orion IPAM table of your Orion database and displays a list of IP addresses matching the provided criteria. Each IP address is listed, in numerical order, with the following user selected information, if available:

<input type="checkbox"/>	All Fields
<input type="checkbox"/>	Alias
<input type="checkbox"/>	Comments
<input type="checkbox"/>	Contact
<input type="checkbox"/>	Hostname
<input type="checkbox"/>	Group Description
<input type="checkbox"/>	Group Name
<input type="checkbox"/>	IP Address
<input type="checkbox"/>	Dual Stack IPv6 Address
<input type="checkbox"/>	MAC Address
<input type="checkbox"/>	Machine Type
<input type="checkbox"/>	Scope Name
<input type="checkbox"/>	Status
<input type="checkbox"/>	System Description
<input type="checkbox"/>	System Location
<input type="checkbox"/>	System Name
<input type="checkbox"/>	Vendor
<input type="checkbox"/>	VLAN ID

Clicking any listed IP address opens the IP Address View for that IP address. From the IP Address View you can edit properties and set the status of the selected IP address. For more information about the IP Address View, see “Understanding the IP Address View” on page 29.

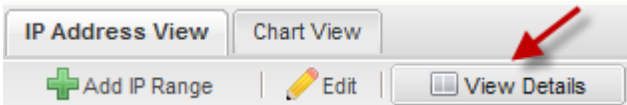
## Historical Tracking

IPAM offers the historical tracking of addresses to see how certain properties have changed over time. For example, you can track MAC addresses and hostnames previously assigned to an IP Address.

This feature is available from the IP Address view page by clicking **View Details** and the Search Results page, where you can select the option to include historical results previously assigned to an IP Address.

**To view Historical Tracking options from the IP Address view:**

1. Select the IP Address you want to view.
2. Click **View Details**.



**To view Historical Tracking options using the Search feature:**

1. Enter a Search term and proceed to the Search Results page
2. Click **View Assignment History**
3. Select one of the following: **IP Address Assignment History, MAC Assignment History, DNS Assignment History**

**Note:** The displayed DateTime format depends on browser settings, not on regional system settings.

## Managing Groups in Orion IPAM

Orion IPAM provides groups as a general aid to network organization. The drag-and-drop user interface makes it easy to create groups that contain any number of other groups, supernets, subnets or individual IP addresses. For example, in the case of a large network spread over multiple offices, each with its own sales, marketing and development, departments, Orion IPAM allows you to create groups to organize your entire network:

BranchOffice1	BranchOffice2	BranchOffice3	BranchOffice4
Sales1	Sales2	Sales3	Sales4
Marketing1	Marketing2	Marketing3	Marketing4
Development1	Development2	Development3	Development4

Each branch office unit may have its own assigned IP addresses or subnet of your entire network. Using Orion IPAM, you can group all the various network components related to each department of each branch office into its own group. The following sections provide general instructions for creating and editing IP network groups in Orion IPAM.

## Creating Groups

The following procedure creates a group for organizing your network components.

### To create a network group:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Click the network or group into which you want to add your new group in the left network tree pane.
4. Click **Add > Group**.
5. Provide an appropriate **Group Name** and **Description** for your new group.
6. ***If you have defined custom fields for groups***, provide appropriate values in the available custom fields. For more information about configuring custom fields in Orion IPAM, see “Creating and Configuring Custom Fields” on page 20.
7. Click **Save**.
8. Drag-and-drop other groups, subnets, and supernets into your new group to organize your network.

## Editing Groups

The following procedure edits the properties of an existing group.

### To edit an existing network group:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Click the group you want to edit in the left tree pane.
4. Click **Properties**.
5. Edit the existing **Group Name** and **Description** as appropriate.

6. **If you have defined custom fields for groups**, edit the values in the available custom fields, as necessary. For more information about configuring custom fields in Orion IPAM, see “Creating and Configuring Custom Fields” on page 20.
7. Click **Save**.

## **Managing Subnets in Orion IPAM**

Subnet creation and editing are primary functions Orion IPAM provides for network managers. The following sections detail the creation and editing of subnets with Orion IPAM.

### **Creating Subnets**

Orion IPAM provides two methods for creating subnets. The Orion IPAM Subnet Allocation Wizard creates subnets within a designated supernet based on a desired subnet size. For more information about the Subnet Allocation Wizard, see “Using the Subnet Allocation Wizard” on page 52. The second method creates individual subnets within selected subnets, supernets, and groups, directly from the Manage Subnets and IP Addresses page, as shown in the following procedure.

#### **To create a new network subnet:**

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. In the network tree pane on the left, click the network, group, or supernet into which you want to add your new subnet.
4. Click **Add > Subnet**.
5. Provide an appropriate **Subnet Name** for your new subnet. If you leave this field empty, Orion IPAM automatically generates a name based on the **Subnet Address** and **CIDR** prefix length you provide.
6. Provide a new **Subnet Address** and an appropriate **CIDR** prefix length for the new subnet.  
**Note:** Orion IPAM instantly confirms the validity of provided **Subnet Address** and **CIDR** prefix length combinations. For more information about CIDR and subnet addressing, see “Networking Concepts and Terminology” on page **Error! Bookmark not defined.**
7. **If you want to further identify your new subnet**, provide a **Description**, **VLAN ID**, or **Location** for the new subnet.

8. **If you have defined custom fields for subnets**, provide appropriate values. For more information about configuring custom fields in Orion IPAM, see “Creating and Configuring Custom Fields” on page 20.
9. Use the slider to set the **Scan Interval**.
10. **If you do not want Orion IPAM to automatically scan your new subnet for changes**, check **Disable Automatic Scanning**.
11. Click **Save** when you have completed configuring your new subnet.

You can now drag-and-drop your new subnet into other groups and supernets, to organize your network.

## Allowing Duplicate Subnets

The ability to add duplicate subnets is disabled by default. You can enable this in the IPAM Settings page.

There are some specific use cases where duplicate subnets are desirable. Most of those involve using IPAM as a passive address management system. For example, if an MSP has customers on duplicate internal addresses, IPAM would allow you to create the duplicate space and give the subnet a different name. Obviously in this scenario, they are not scanning because the scan would return the same results. If you find the need to have duplicate subnets, the following steps detail how to enable this setting.

### To enable duplicate subnets:

1. Click **IPAM System Settings**.



## Settings

Set global IP Address Manager settings such as retention times, maintenance.

» Maintenance Settings

» System Settings

2. Check **Enable Duplicated Subnets**.

Admin > IPAM Settings >

### System Settings

General Settings

Enable Duplicated Subnets

SAVE CANCEL

3. Click **Save**.

## Editing Subnets

The edit subnet properties box allows you to edit the properties of an existing subnet, as well as add additional custom information and custom URLs. You can disable the Automatic Scanning or change the scan interval.

### To edit an existing network subnet:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Click the subnet you want to edit in the left tree pane.
4. Click **Properties**.
5. Edit the existing **Subnet Name** and the **CIDR** prefix length for your subnet.
6. Edit the **Description**, **VLAN ID**, or **Location** for your subnet, as necessary.
7. Click **Save** when you have completed configuring your subnet.

## Managing Subnet Scans

Orion IPAM is capable of conducting both automatic and manual scans of monitored subnets, and the Subnet Scan Status view displays all subnet scans that are either currently in progress or scheduled for completion. Subnet scans are listed according to the Database Column property for each scanned subnet. For more information about subnet properties, see “Editing Subnets” on page 51. For each subnet scan listed, the Subnet Scan Status view displays the following:

- **Status** provides the time when the next scan of the corresponding subnet will begin. If the scan is in progress, Status displays the time elapsed since the scan started.
- The **Scan Type** is either `Automated` or
- **Last Discovery** indicates the date and time when the corresponding subnet was last scanned.

The following procedure provides the steps required to manage subnet scans from the Subnet Scan Status view.

### To manage subnet scans:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **IPAM Settings**.
3. Click **View subnet scan status** in the Subnet Scans grouping.
4. *If you want to change the settings of any listed subnet scan*, click **Edit** at the end of the corresponding row.

Clicking **Edit** at the end of a listed subnet scan row opens the Edit Subnet Properties window wherein you can enable or disable automatic scanning and set an appropriate scan interval for the selected subnet. For more information about editing subnet properties, see “Editing Subnets” on page 51.

## Using the Subnet Allocation Wizard

Orion IPAM provides the Subnet Allocation Wizard to help you efficiently organize your managed IP address space into subnets that are sized appropriately for the extent and traffic of your network. With its realtime subnet calculator, the Orion IPAM Subnet Allocation Wizard allows you to quickly determine the most efficient way to subdivide any supernet, as shown in the following procedure.

### To create subnets from supernets using the Subnet Allocation Wizard:

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.

3. In the network tree pane on the left, click **Add > Subnet Allocation Wizard**.
4. Type the address of the supernet to divide in the **Supernet Address** field.
5. Select an appropriate **CIDR** prefix length.

**Note:** Orion IPAM instantly confirms the validity of provided the **Supernet Address** and **CIDR** prefix length combinations. For more information about CIDR, see “Networking Concepts and Terminology” on page **Error!**  
**Bookmark not defined.**

6. Select the **Desired Subnet Size**.

**Note:** Typically, in subnets defined to contain more than 2 IP addresses, the first and last addresses are reserved as the network address, for identifying the subnet to the rest of the network, and the broadcast address, for communicating with all addresses within the subnet, respectively. As a result, the number of available IP addresses is always two fewer than the number actually contained within a given subnet.

7. **If you only want to see subnets that have already been allocated**, clear **Show subnets not already allocated**.
8. Click **Refresh** to display a list of all possible subnets that may be allocated, based on your provided criteria.
9. Check the subnets you want to manage in Orion IPAM, and then click **Next**.
10. **If you want to view the subnets you are currently adding**, click + next to the **XX Selected Subnets** header.
11. **If you do not want to keep the supernet you used on the previous view to define the subnets you are adding**, clear **Add Supernet ‘X.X.X.X / X’**.

**Note:** By default, *Orion IPAM* adds the supernet you used to define your subnets to make it easier to organize your network. Although it is optional, SolarWinds recommends that you check this option and use the supernet unless you are only adding a few subnets.

12. **If you do not want to organize your added subnets into the smallest available supernet**, clear **Move newly added subnets into smallest appropriate supernet**.

**Note:** Adding subnets either to an existing supernet or to a newly defined supernet can make it easier to organize your network. Although it is optional, SolarWinds recommends that you check this option and keep the supernet unless you are only adding a few subnets.

13. **If you want to further identify your new subnets**, provide a **Description**, **VLAN ID**, or **Location** for the new subnets.
14. **If you do not want Orion IPAM to automatically scan your new subnets for changes**, check **Disable Automatic Scanning**.

15. **If you want Orion IPAM to automatically scan your new subnets for changes**, use the slider to set the **Scan Interval**.

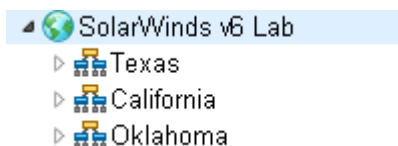
16. Click **Done** when you have completed configuring your new subnets.

## IPv6 Monitoring








IPAM provides the ability to add IPv6 Sites and Subnets for planning purposes. IPv6 addresses can then be grouped to assist with network organization. To leverage the amount of addresses available, as well as the organizational features inherent with the implementation, you should create a logical address plan.

For example, you could designate two nibbles (a nibble is 4 bits or 1 hex character) for your country code. This will give you  $2^8$ , or 256, possibilities for unique countries. Next, you would want to designate another nibble for state or location. Finally, you would designate bits for site, building, and floor.










1. Create an IPv6 Global site called SolarWinds v6 Lab.



2. Then add you IPv6 Sites,

Network View		Chart View	
 Edit	 Import	 Export	 Delete
<input type="checkbox"/>	Display Name	Address	CIDR
<input type="checkbox"/>	 <u>Texas</u>	2001:DB80:A000:0000::	36
<input type="checkbox"/>	 <u>California</u>	2001:DB80:B000:0000::	36
<input type="checkbox"/>	 <u>Oklahoma</u>	2001:DB80:C000::	36

3. Then add a building and floors.

Network View		Chart View	
 Edit	 Import	 Export	 Delete
<input type="checkbox"/>	Display Name	Address	CIDR
<input type="checkbox"/>	 <u>Floor 1 - Support</u>	2001:DB80:AAAA:0001::	64
<input type="checkbox"/>	 <u>Floor 2 - Marketing</u>	2001:DB80:AAAA:0002::	64
<input type="checkbox"/>	 <u>Floor 3 - Sales</u>	2001:DB80:AAAA:0003::	64
<input type="checkbox"/>	 <u>Floor 4 - Development</u>	2001:DB80:AAAA:0004::	64
<input type="checkbox"/>	 <u>Floor 5 - Maintenance</u>	2001:DB80:AAAA:5::	64

## Adding IPv6 Addresses

The following steps detail the process of adding an IPv6 Addresses. The process entails three parts: Creating a IPv6 Global Prefix, creating an IPv6 Site, and then assigning IPv6 Addresses to the site.

### To add an IPv6 Global Prefix:

1. Click **IP Addresses** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Select a directory folder from the left menu tree and then Click **Add > IPv6 Global Prefix**.\*
4. Provide an appropriate **Name** and **Description**.
5. Enter the **Global Prefix address**.
6. Click **Save**.

**\*Note:** An IPv6 address global prefix is a combination of an IPv6 prefix (address) and a prefix length. The prefix takes the form ipv6-prefix/prefix-length and represents a block of address space (or a network). The ipv6-prefix variable follows general IPv6 addressing rules (see RFC 2373 for details). The /prefix-length variable is a decimal value that indicates the number of contiguous, higher-order bits of the address that make up the network portion of the address. For example, 10FA:6604:8136:6502::/64 is a possible IPv6 prefix.

## ***Editing an IPv6 Prefix***

Once an IPv6 Global Prefix has been created and addresses have been assigned, you cannot edit the prefix. To change an IPv6 Global Prefix you must delete the prefix and create a new one. If you have only created a Prefix, then you can click **Edit** to edit the prefix before adding addresses.

## ***Adding IPv6 Subnets***

**To add IPv6 subnets:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. From the left tree menu select the IPv6 Site you want to add the subnet under.
4. Click **Add IPv6 Subnet**.
5. Enter **Name** and **Description** and click **Save**.

## ***Editing IPv6 Subnets***

**To Edit IPv6 subnets:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Expand the IPv6 Site in the left tree and select the subnet.
4. Click **Edit IPv6 Subnet**.
5. Edit as needed and click **Save**.

## ***Adding IPv6 Addresses***

**To Add IPv6 addresses:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Expand the IPv6 Site in the left tree and select the subnet for which you want to assign addresses to..
4. Click **Add IP Address**.
5. Enter address and select the status as needed and then click **Save**.

## ***Edit an IPv6 Address***

**To edit an IPv6 address:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Place a check in front of the address you want to edit
4. Click **Edit**.
5. Edit as desired and then click **Save**.

## ***Edit Multiple IPv6 Addresses***

**To edit multiple IPv6 addresses:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Select from the left tree parent IPv6 Subnet.
4. Under the **IP Address View tab**, place checks in front of the addresses you want to edit. You can select all by checking the top box. Hold down *ctrl* and click to select various addresses.
5. Click **Edit**.
6. Click **Save**.

## ***Deleting IPv6 Subnets***

**To delete multiple IPv6 subnets:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Select from the left tree the IPv6 Subnet you want to delete.
4. Click **Delete**.
5. Verify the subnet in the popup window as the one you want to delete and then click **Delete Listed Items**.

## ***Deleting IPv6 Addresses***

**To delete multiple IPv6 addresses:**

1. Click **IP Addresses** in the Modules menu bar.
2. Click **Manage Subnets & IP Addresses**.
3. Select from the left tree the parent IPv6 Subnet
4. Under the **IP Address View tab**, place checks in front of the addresses you want to delete. You can select all by checking the top box. Hold down *ctrl* and click to select various addresses.
5. Click **Delete**.
6. Verify the addresses in the popup window as the ones you want to delete and then click **Delete Listed Items**.

## Monitoring DHCP Scopes in Orion IPAM

This section details how to configure IPAM to monitor Cisco IOS and Microsoft DHCP servers.

**Note:** Before adding Cisco DHCP devices in IPAM, the devices being added must support the following:

1. Cisco Commands that need to be supported:
  - **'show running-config'**
  - **'show ip dhcp pool'**
  - **'show ip dhcp binding'**
2. The device needs to be a Layer 3 Switch or Router.
3. The IOS must be version 12.2(8)T or later.

Enable level 15 is required to view the complete configuration. This is due to how IOS manages permission levels and configuration information. For more information see

[http://www.cisco.com/en/US/tech/tk59/technologies\\_tech\\_note09186a00800949d5.shtml](http://www.cisco.com/en/US/tech/tk59/technologies_tech_note09186a00800949d5.shtml).

### Creating DHCP Scopes

The following procedure creates a new DHCP Scope for organizing your network components.

**To create a new DHCP Scope:**

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **DHCP Scope Monitoring**.
3. Click **Scopes**.
4. Click **Add New > Found DHCP Scope**.
5. Select the DHCP node to be added from the list of nodes.
6. Choose or create the necessary credentials from the drop down list. Then click **TEST** to verify the credential.

For more details on CLI credentials see "Managing CLI Credentials for Cisco DHCP Scope Scans" on page "15".

7. Select the **Server Scan Settings**. Default is set to 4 hours.

**8.** *If you want to automatically add new scopes and subnets after scanning*, check the box.

**9.** *If you want to IPAM to scan using ICMP and SNMP to obtain additional IP Address details*, check the **Enable subnet scanning box** and select the scanning interval.

**10.** To finish, click **ADD DHCP Scope**

**Note:** DHCP Servers must already be defined as Nodes. All Windows credentials are sent in clear text during configuration only. The Windows account specified within IPAM must be on the DHCP server and one of the three following groups: DHCP Users, DHCP Administrators and or local Administrators. IPAM impersonates the specified account on the local computer to gain access. If the IPAM computer is not within the same windows domain as the DHCP server, the IPAM computer must have the identical account and password.

## Editing DHCP Scopes

The following procedure edits the scope detail properties of an existing IPAM DHCP Scope.

**To edit an existing DHCP Scope:**

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **DHCP Scope Monitoring**.
3. Click **Scopes**.
4. Select the Scope Name that you want to edit by using the check box.
5. Click **Edit Scope Details** in the menu bar.
6. Edit as necessary and then click **Save**.

**Note:** The edited properties are fields specific to IPAM and not related to any data in the DHCP server.

## Removing Scopes

The following procedure will remove an existing DHCP Scope.

**To remove an existing DHCP Scope:**

1. Click **IP Address Manager** in the Modules menu bar.
2. Click **DHCP Scope Monitoring**.
3. Click **Scopes** tab.

4. Select the DHCP Servers that you want to remove by checking the boxes.
5. Click **Remove Servers**.
6. Click **Delete Listed Items**

## Monitoring DHCP Servers

DHCP Scope Monitoring allows you to add/edit DHCP Servers or Scopes and configure the scan settings.

### To configure DHCP scan settings

1. Click on the **DHCP Scope Monitoring** tab.
2. Click **Add New DHCP Server**.
3. Select the DHCP node to be added from the list of nodes.
4. Choose or create the necessary Windows Credentials or CLI Credentials from the drop down list. Then click **Test** to verify the credential.
5. Select the **DHCP Server Scan Settings**. Default is set to 4 hours.
6. *If you want to automatically add new scopes and subnets after scanning*, check the box.
7. **New Scope and Subnet Settings: If you want IPAM to scan for additional IP Address details using ICMP and SNMP**, check the **Enable subnet scanning to pick up additional IP Address details** box and select the scanning interval.
8. To finish, click **Add DHCP Server**

**Note:** Only Cisco DHCP and Microsoft DHCP Servers on Windows 2003 and 2008 are supported. DHCP Servers must already be defined as Nodes.

**Note:** All Windows credentials are sent in clear text during configuration only. Consider updating credentials while locally logged into the IPAM server or over an HTTPS connection. The Windows account specified within IPAM must exist on the DHCP server and be a member of one of the three following groups: DHCP Users, DHCP Administrators and or local Administrators. IPAM impersonates the specified account on the local computer in order gain access. If the IPAM computer is not within the same windows domain as the DHCP server, the IPAM computer must have the identical account and password.

## Editing DHCP Servers

The following procedure edits the properties of an existing DHCP Server.

### To edit an existing DHCP Server:

1. Click on the **DHCP Scope Monitoring** tab.
2. Select the DHCP Server that you want to edit by checking the box.
3. Click **Edit Server**.
4. Edit as necessary and then click **Save**.

**Note:** The edited properties are fields specific to IPAM and not related to any data in the DHCP server.

## Removing Servers

The following procedure will remove an existing DHCP Server.

### To remove an existing DHCP Server:

1. Click on the **DHCP Servers** tab.
2. Select the DHCP Servers that you want to remove by checking the boxes.
3. Click **Remove Servers**.
4. Click **Delete Listed Items**

## DHCP Graph View

The Graph View tab presents a graphical representation of the selected DHCP Servers IP Address percentage use. Unless certain Scopes/Servers are selected, the DHCP graph view will collect statistics for what is visible in the current tab.

### To view a DHCP Server Graph View:

1. Click on the **DHCP Servers** tab.
2. Select the DHCP Servers that you want to graph by checking the boxes.
3. Click **Graph View**.



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## Appendix A

# Software License Key

During installation, you may be prompted with the Install Software License Key window requesting that you supply your name, e-mail address, phone number, customer ID, and password. If this is the case, follow the instructions below to enable a software license key.

### To enable a software license key:

1. ***If the computer on which you are installing Orion Network Performance Monitor is connected to the Internet***, enter the requested information on the Install Software License Key window, and then click **Continue**.

**Note:** The SolarWinds license registration server will immediately issue a license key that will allow Orion Network Performance Monitor to operate.

2. ***If the computer on which you are installing Orion Network Performance Monitor is not connected to the Internet***, your server cannot authenticate to the SolarWinds license registration server, so you must complete the following procedure:
  - a. Click **Skip This and Enter Software License Key Now** on the Install Software License Key window.
  - b. Using another computer that is connected to the Internet, log in to the customer area of the SolarWinds website at [www.solarwinds.com/keys](http://www.solarwinds.com/keys).
  - c. Click **Software Keys** from the Customer Area menu.
  - d. Click the product for which you need a key.
  - e. Provide the requested information, including the Computer Name and Program Serial Number.
  - f. Click **Generate Key**.
  - g. Copy the generated key.
  - h. Enter the key in the **Enter Software License Key** text box.
3. Click **Continue** to complete your Software License Key installation.

