LEVERAGING BEST PRACTICES FOR SOLARWINDS IP ADDRESS MANAGER

Leveraging Best Practices for SolarWinds IPAM

_SolarWinds IP Address Manager_ (IPAM) is a comprehensive IP address management solution that offers centralized management and monitoring of all your IP addresses, subnets, and DHCP/DNS services from a single, simple-to-use web console.

SolarWinds IPAM provides many great features to automate your IP address management, simplify your network management tasks, and improve overall operational efficiency—saving you valuable time and money!

In this document, we’ll be looking into the key functionality of SolarWinds IPAM software and how to leverage some product best practices that best suit your IP address management needs. These practices will help simplify your IP address management efforts and enable you to perform tasks more effectively.

**IPAM Operational Best Practices:**

1. **Adding IP Addresses & Subnets**
   - a. Adding New Subnets & Supernets
   - b. Adding Range of IP Addresses

2. **IP Address & Subnet Management**
   - a. Configuring Automatic IPv4 Subnet Discovery
   - b. Configuring Automatic Subnet Scan
   - c. Importing IP Addresses & Subnets from Spreadsheets
   - d. IPv6 Address Management
   - e. Historical IP Address Tracking
   - f. IP Address Details View

3. **Adding DHCP & DNS servers**
   - a. Adding DHCP Servers
   - b. Adding DNS Servers

4. **DHCP & DNS Management**
   - a. Managing DHCP Scopes on DHCP Server
   - b. Managing DNS Zones
   - c. Managing DNS Records

5. **DHCP Split Scope**
   - a. Defining the DHCP Servers to Perform the Split Scope Operation
   - b. Range Distribution for Splitting the Scope Between the DHCP Servers

6. **Team and Role-based Permissioned Access**

7. **Top 10 Views**
#1 Adding IP Addresses & Subnets

SolarWinds IPAM allows you to add IP addresses to existing subnets, as well as add additional subnets for automated monitoring and management.

What you can add and monitor:

- New subnet or supernet
- New IP addresses to existing subnet
- Import subnet and add IP addresses
- A range of IP addresses to any defined and existing subnet
- Import IP addresses and allocate them to new/existing subnets
- IPv6 sites, addresses, and subnets for IPv6 migration and planning purposes

NOTE: In order to help you maintain an organized network, IPAM doesn’t allow adding individual IP addresses, unless they exist within a subnet previously designated for monitoring.

a.) Adding New Subnets & Supernets

To add a new subnet or supernet, click IP Addresses tab >> Manage Subnets & IP Addresses tab >> Add button >> Choose Subnet or Supernet.

In the Add Subnet or Add Supernet window, you can fill in the applicable details.
**b.) Adding Range of IP Addresses**

To add a range of IP addresses, click **IP Addresses** tab >> **Manage Subnets & IP Addresses** tab >> Choose a subnet from the left-hand column >> Click **Add IP Range** button.

This will open up a window to add your IP address ranges within the selected subnet. You can enter the starting and ending IP addresses, and IPAM will add the range of IP addresses to the subnet.

![Adding a Range of IP Addresses to IPAM](image)

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**#2 IP Address & Subnet Management**

SolarWinds IPAM allows you to perform automated IP address scans on all your subnets with custom intervals and makes it easy to create your own scan job from scratch. Each job performs a scan of network devices based on the subnet. You can automate IP address scanning for all your subnets, a group of subnets, or for an individual subnet.

There are three scanning modes used to scan IP addresses:

- ICMP scan (ping sweep)
- SNMP scan
- Neighbor scan (using ARP tables)

**a.) Configuring Automatic IPv4 Subnet Discovery**

Create an up-to-date “IP address map” of the network, by directly pulling data from router configurations and connected machines.
b.) Configuring Automatic Subnet Scan

SolarWinds 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 IPAM automatically scans your network for changes.
You can configure the scan while adding a new subnet or by editing the properties for any existing subnet.

On the Manage Subnets & IP Addresses tab, select the subnet(s) that you want to run on an automated scan.

On the right pane, click Edit to open the Edit Subnet Properties window.

![Subnet & IP Address Management Screen in SolarWinds IPAM](image)

You can enter the Scan Interval field to set the automated scan frequency (in minutes, hours, or days) between 10 minutes to 7 days.

![Automatic Subnet Scanning in SolarWinds IPAM](image)

c.) Importing IP Addresses & Subnets from Spreadsheets

SolarWinds IPAM software simplifies the process of importing all your IP addresses and subnets. Using a simple-to-use Import Wizard, you can now upload all your IP addresses and subnets from Excel® or .csv spreadsheets. The wizard will walk you through a series of simple steps and provide the functionality to manage the spreadsheet data that gets uploaded.

**Step 1: Preparing to Import a Spreadsheet**

IPAM offers Excel spreadsheet templates to have your IP addresses and subnets formatted to a standard pattern that makes the importing process easier. You can download these templates, and convert your existing spreadsheets with IP addresses and subnets into this form for the import.

**Step 2: Selecting the Spreadsheet (.xls or .xlsx, or .csv) for Import**

IPAM allows you to import spreadsheets with multiple worksheets—each of which can denote a specific subnet and contain the IP address allocation for that subnet.

You can import IP addresses and subnets into IPAM for:

- Adding more IP addresses to an existing subnet
- Replacing/overwriting the existing subnet with new IP address data
- Creating new subnets by just importing subnet and IP address data into IPAM
Step 3: IP Address & Subnet Column Matching

SolarWinds IPAM tool allows you to choose the appropriate column from your spreadsheet for each IPAM option.

You may have different column header names in your spreadsheet if you’re not using the IPAM-recommended template. IPAM enables you to map those fields from your spreadsheet with default data fields that are required for the import.

SolarWinds IPAM gives you two options to choose from:

- Automatically create subnet hierarchy based on information provided
- Place new subnets in Imported Subnet/Supernet/Group folder so you can organize them after import

Step 4: Selecting Custom Fields to be Imported with the Spreadsheet

With Select Custom Fields, IPAM allows you to choose and customize what you want to import from your spreadsheet.

Step 5: Importing the Spreadsheet on IPAM

Once you have all the details locked and loaded, you can just hit the Import button.

All the IP addresses and subnets will now be available in the Manage Subnets & IP Addresses tab, and you can immediately start managing them using IPAM’s centralized web console.

IPAM also provides you with the functionality of importing bulk IP addresses and subnets just by typing or copying them in a text field.
d.) IPv6 Address Management

IPAM routinely discovers IPv6 addresses by examining router tables. Once an IPv6 address is found, IPAM will assess ongoing operational status using ICMPv6. Specify the neighbor routers and IPv6 addresses for existing subnets in IPAM and start managing your IPv6 address blocks with automated discovery. You can now view data in the same interface as your IPv4 addresses.

Step 1: To discover IPv6 subnets, click on the “Discover IPs” button

Step 2: Specify the neighbor routers and fill-in IP addresses for existing subnets.

IPAM provides a consolidated view for IPv6 addresses with status, device details, and vendor details.
e.) Historical IP Address 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.

From the IP Addresses tab >> Manage Subnets & IP Addresses page >> Select a specific IP address from any existing subnet >> Click View Details.

![](image)

Selecting an IP Address to View History using SolarWinds IPAM

f.) IP Address Details View

Similarly, select an individual IP address from the IP Address View, and click the View Details button. This will display all the details associated with the selected IPv4 or IPv6 address, including MAC and Hostname assignment history.

![](image)

Historical IP Address Tracking & IP Address Detail View in SolarWinds IPAM
#3 Adding & Configuring DHCP & DNS Servers

SolarWinds IPAM can manage all of your Microsoft®, ISC, and Cisco® DHCP services, and Microsoft BIND DNS servers from a single, consolidated interface.

Using the Network Sonar Discovery wizard, DHCP and DNS servers can automatically be discovered and added as nodes in so they can be managed by IPAM. You also have the option of manually adding nodes.

a.) Adding DHCP Servers

Once the DHCP server is added as a node (as indicated above), you can add it to the IPAM web console by clicking IP Addresses tab >> DHCP & DNS Management >> DHCP Servers tab >> Add New >> DHCP Server button.

This will open up the Add DHCP Server page. Now, you can choose the required DHCP server from the list of nodes (already discovered by Network Sonar Discovery or manually added) and create or choose credentials.

Click Test, and once the test is successful, click Add DHCP Server to IPAM web console.
You can also edit and configure the DHCP server settings from the IPAM web console. Just click on the **Edit Server** button on the **DHCP Servers** tab, and you can modify settings on the selected DHCP server.

SolarWinds IPAM solution also provides support for ISC (Internet Systems Consortium) DHCP. It simplifies the creation and addition of ISC subnets to a few clicks. This means you’ll no longer need to log on to CLI every time you need to make a change. Click here to learn more on [ISC DHCP - Quick Install with IPAM](#).

### b.) Adding DNS Servers

Once the DNS server is added as a node, you can add it to the IPAM web console.

When you add a DNS server in IPAM, it changes the **Transfer Zone Configurations** on the DNS server. For example, if you have **Allow zone transfers** selected for servers listed on the **Name Servers** tab, IPAM will set this configuration to, **Only to the Following Servers**.

To add a new DNS server, click **IP Addresses** tab >> **DHCP & DNS Management** >> **DNS Servers** tab >> **Add New** >> **DNS Server** button.

![Adding DNS Server in SolarWinds IPAM (Step 1)](image)

This will open up the **Add DNS Server** page. Now, you can choose the required DNS server from the list of nodes (already discovered by Network Discovery Wizard or manually added) and create or choose credentials.

Click **Test**, and once the test is successful, click Add Server to IPAM web console.
TECH TIPS

For modifying DNS server settings, click on the **Edit DNS Server** button on the **DNS Servers** tab. This will allow you to edit and configure the properties and settings of the selected DNS server.

SolarWinds IPAM also helps simplify the management of your BIND DNS servers by leveraging the user-friendly GUI of IPAM to—Add/Edit/Delete DNS servers, Add/Edit/Delete DNS Zones, Assign Views, and Records to these Zones. Learn more about [BIND with IPAM](#).

**#4 DHCP & DNS Management**

SolarWinds IP Address Manager provides consolidated, "single-pane-of-glass" management of Microsoft DHCP/DNS, ISC DHCP/BIND DNS, as well as Cisco DHCP and ASA devices.

You can add new or edit existing Microsoft, ISC, and Cisco DHCP servers and scopes; set, update, or delete reservations, reservation status and DHCP properties. You can also add, modify, or delete Microsoft and BIND DNS servers, zones and records—all directly from the IPAM console.

**a.) Managing DHCP Scopes on DHCP Server**

SolarWinds IPAM software enables you to make changes in your DHCP server directly from the IPAM web console with just a few clicks. From the **DHCP & DNS Management** tab, select **DHCP Scopes** tab, select the DHCP scopes as required, and click **Edit Scope Details**. This will open up the **Edit DHCP Scope** page.
On the **Edit DHCP Scope** page, you can:

- Define DHCP scope by specifying the DHCP server details
- Specify IP address range by providing a set of consecutive IP addresses
- Define how long the scope lease should last

Once finished, click the **Update Scope** button to have these updates reflected in the DHCP server.

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**Editing Scope Details from SolarWinds IPAM**

Best practices dictate the following:

- Networks that utilize many mobile devices should have a shorter duration
- Networks with computers at fixed locations can have a longer duration

b.) Managing DNS Zones

In addition to DHCP management, SolarWinds IPAM provides comprehensive DNS management. With IPAM, you can:

- Manage Microsoft DNS servers right alongside DHCP servers
- Create, modify, or delete DNS zones and records directly from the IPAM web console
- View all DNS information, including outdated/obsolete DNS records from one central spot

From the **DHCP & DNS Management** tab, select **DNS Zones** tab, select a single DNS Zone as required, and click **Edit Zone Details** which will open up the **Edit DNS Zone** page.
The edit DNS zone page has a simple wizard to help you edit the following:

- **Zone Name**

- **Zone Type**
  - **Primary Zone**: Choose this option if the DNS server is the authoritative source for all the domains in the zone.
  - **Secondary Zone**: Choose this option if the DNS server is the secondary source for information about this zone. Secondary zones are read-only and can only be updated through zone transfer. Specifically used to help load balance and provide fault tolerance.
  - **Stub Zone**: Choose this option to provide name resolution in domains, if the local DNS server is not authoritative. The stub zone contains the resource records needed to identify the authoritative DNS servers, including Name Server (NS), Start of Authority (SOA), and glue address (A) records.

- **Lookup Type**
  - **Forward Lookup**: Resolves the fully qualified domain name to IP address.
  - **Reverse Lookup**: Resolves the IP address to the fully-qualified domain name. Can be a primary or secondary zone.

- **Zone File Name**

- **Zone Transfers**: Allows you to set Zone Transfer interval
Once finished, click the **Update Zone** button to have these updates reflected in the DNS server.

Additionally, you can use the **Scan** option to schedule periodic syncs with the DNS server.

- The Scan button on the **DNS Servers** tab will sync all DNS Zone updates from the DNS Server with the IPAM web console.
- The Scan button on the **DNS Zones** tab will sync all DNS Record updates from the selected DNS Zone on the DNS Server with the IPAM web console.

c.) Managing DNS Records

SolarWinds IPAM allows you to add, edit, and remove DNS records for all your DNS zones.

From the **DNS Zones** tab, select a single DNS Zone and click **DNS Records**. This will display all the DNS records for the selected DNS zone. Using the **Add New**, **Edit**, and **Delete** buttons, you can manage DNS records on your Microsoft DNS servers from the centralized IPAM web console.

**DNS Records for DNS zone ‘15.199.10.in-addr.arpa’**

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Data</th>
<th>Server Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.199.10.in-addr.arpa</td>
<td>NS</td>
<td>lab-tnx-dc-01.lab.tlx</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>15.199.10.in-addr.arpa</td>
<td>NS</td>
<td>lab-tnx-dc-02.lab.tlx</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>15.199.10.in-addr.arpa</td>
<td>NS</td>
<td>lab-wm01-tevdc.lab.tlx</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>testing.zone.15.199.10.in-addr.arpa</td>
<td>Alias (CNAME)</td>
<td>testing6.example.microsoft.com</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>15.199.10.in-addr.arpa</td>
<td>SOA</td>
<td>lab-tnx-dc-01.lab.tlx</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>105.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>cai-aus-sql-03.lab.tlx</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>194.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>se-pod-dm0309.scmpdemo.com</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>250.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>se-aus-gpr04.absible.global</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>31.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>se-aus-mba-01.lab.tlx</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>33.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>se-aus-mdm-01.lab.tlx</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>46.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>pm-003-wm030005.lab.exch</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>49.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>se-aus-rjen-01.lab.tlx</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>50.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>lab-cai-dc-01.lab.ca</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>57.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>lab-cai-wm01-01.lab.ca</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>58.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>lab-cai-scm01-01.lab.ca</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
<tr>
<td>59.15.199.10.in-addr.arpa</td>
<td>Pointer record (PTR)</td>
<td>lab-cai-snl01-01.lab.ca</td>
<td>LAB-TEX-DC-01.lab.tlx</td>
</tr>
</tbody>
</table>

**Consolidated DNS Records Management**

Clicking on the **Edit** button will open up the **Edit Record** window where you can modify the Record Name, Record type, and Record data. Once finished, click **Save** which will update the DNS server.

**Consolidated DNS Records Management**
DNS Record Types Supported by SolarWinds IPAM

- **A Record type**: An FQDN is the primary record type for resolving DNS queries. In IPv4, the host is denoted by an “A” and in IPv6 by “AAAA”.
- **“CNAME” (canonical name)** records are aliases and points towards their real name.
- **“MX” (mail transfer)** records indicate the mail server(s) accepting messages on that DNS server.
- **“NS” (name server)** records indicate the authoritative domain name servers.
- **“PTR” (pointer)** records are simply data that’s mainly used to record host names for reverse DNS lookups.
- **“SOA” start of [a zone of] authority record**—specifies authoritative information about a DNS zone, including the primary name server, the email of the domain administrator, the domain serial number, and several timers relating to refreshing the zone.

#5 DHCP Split Scope

IPAM simplifies the process of creating and managing split scopes to help ensure high availability and provide load balancing for your DHCP services. SolarWinds IPAM supports both Microsoft and Cisco DHCP split scope functionality.

Using SolarWinds IPAM, you can quickly and easily configure your DHCP split scope with a simple two-step wizard. Additionally, you can view related scopes and scope distribution across your subnets, all from IPAM’s centralized web console.

IPAM helps you to:

- Manage and monitor Microsoft and Cisco DHCP services and scopes directly from the IPAM console.
- Quickly and easily configure DHCP split scope scenarios utilizing a simple two-step wizard.
- View related DHCP scopes and scope distribution across your DHCP servers.

**a.) Defining the DHCP Servers to Perform the Split Scope Operation**

- The split scope wizard shows you the source DHCP server selected for the split scope operation, and allows you to select the target DHCP server to where the scope and its IP addresses need to be split.

**Note:**

- Only the DHCP servers added to IPAM will be displayed for selection in the split scope operation.
- To perform the DHCP split scope operation, you need to have at least two DHCP servers added to IPAM.

**b.) Range Distribution for Splitting the Scope Between the DHCP Servers**

SolarWinds IPAM software allows you to specify the percentage of IP addresses to allocate to the source and target DHCP scope servers.

You can just drag the percentage scale to set the split percentage as required. The IP addresses within the DHCP scopes will be changed accordingly to reflect the percentage split.

Or, if you have specific IP address ranges decided for both servers, you can just enter them in the Include IP Addresses & Exclude IP Addresses text fields, and the percentage scale will be adjusted accordingly.

**Recommendations:**

- An 80/20 split is recommended for high availability scenarios (80 for the server that needs to be available at all times and 20 for the other DHCP server). In this case, you also have to specify the delay time in the Offer Delay text field. This will ensure that your backup server starts with IP address provisioning only when the primary DHCP server doesn’t respond in a given time.
- A 50/50 split is recommended for load-balancing purposes.
ISC DHCP & BIND DNS with SolarWinds IPAM

Learn more on [BIND DNS Management](#) and [ISC DHCP Management](#) with SolarWinds IPAM.

#6 Team & Role-Based Permissioned Access

SolarWinds IPAM allows you to easily define and use role definitions to restrict user access and maintain security without limiting your ability to delegate required network management activities. You can define access roles per subnet, group, supernet, DHCP scope, or even individual IP addresses. User delegation defines the visibility of subnets and supernets and the choice of actions that can be performed. Further, IPAM provides you with the option to select from various IPAM Roles & Permissions for the selected user login.

You can select a subnet and choose from any of the four options below to limit the subnet or DHCP scope to be accessible and controllable by only the required users.

- **Power User** – Read/Write and Initiate Scans
- **Operator** – Read/Write Access
- **Read Only** – Read Only Access
- **Hide Access** – Restrict All Access
#7 Top 10 Views

You can also leverage intuitive dashboards and the Top 10 Views from SolarWinds IPAM to quickly view IP address utilization, including DHCP scope and subnet utilization. All these views are entirely customizable so you can create your own Top 10 View based on what monitoring metrics you want displayed on the dashboard.
Why SolarWinds IP Address Manager?

Eliminate Complexity, Improve Reliability, Save Time and Money!

- Manage and monitor Microsoft DHCP/DNS, ISC DHCP/DNS, and Cisco DHCP servers
- Automatic subnet discovery and [IP address scanning](#) for the most accurate real-time discovery and verification
- Easily search an address for history, op status, MAC, device type, DHCP, DNS properties, and more
- Optional UDT integration shows where an end-point device is connected to the network and who is using the device
- Delegate tasks to network and system administrators based on role
- Supports IPv4 and IPv6 networks
- Alert notifications help prevent your subnets & DHCP scopes from filling up
- Historical IP address tracking for trend analysis and [IP capacity planning](#)
- Automatically discovers used and unused addresses and typically deploys in less than an hour
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For additional information, please contact SolarWinds at 866.530.8100 or email sales@solarwinds.com.

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