Orion Platform

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# Table of Contents

**Network Atlas** ............................................................................................................................... 7

What can you see on maps? .................................................................................................................. 7

What customization options are there? .................................................................................................. 7

Install Network Atlas .......................................................................................................................... 7

**Network Atlas Requirements** .......................................................................................................... 7

Install Network Atlas on a remote computer ....................................................................................... 8

Start Network Atlas ............................................................................................................................... 9

Create network maps ........................................................................................................................... 9

Add objects on a map ............................................................................................................................ 10

Connect objects on maps automatically with ConnectNow ................................................................. 10

Connect objects on maps automatically using ConnectNow .............................................................. 11

Update the Topology ........................................................................................................................... 11

Connect objects on maps manually ..................................................................................................... 11

Reshape map links ............................................................................................................................... 12

Configure display of connections on maps ......................................................................................... 12

Determine interface status in connections ......................................................................................... 12

Specify interfaces that determine the status of connections on maps ............................................. 13

Display interface performance in map links ....................................................................................... 13

Add a background ................................................................................................................................ 14

Select a background color .................................................................................................................... 14

Select a background texture ................................................................................................................ 14

Select a background image .................................................................................................................. 14

Save maps ........................................................................................................................................... 16

Open maps ......................................................................................................................................... 16

Create wireless heat maps .................................................................................................................... 16
Disable the wireless heat map poller .............................................................. 17
Set a floor plan as the background .................................................................. 17
Set the wireless heat map scale ........................................................................ 18
Add wireless access points ................................................................................ 19
Improve the accuracy of wireless heat maps by taking samples of the signal strength on real devices ...................................................................................... 19
  Take simple signal samples ............................................................................ 20
  Take multiple signal samples at the same time .............................................. 20
Troubleshoot wireless heat maps ...................................................................... 21
Display Network Atlas maps in the Orion Web Console .................................. 21
Display maps in the Orion EOC Web Console .................................................. 22
Display wireless heat maps in the Orion Web Console ..................................... 22
  Change the time and frequency for regenerating the map .................................. 22
View the location of clients connected to access points in maps ....................... 23
  Limit the number of clients displayed on the map ........................................... 23
Advanced mapping techniques .......................................................................... 24
Zoom in and out of a map .................................................................................. 24
Create nested maps .......................................................................................... 24
Display the status of child objects on maps, and change metric thresholds .......... 25
Add independent map objects and floating labels ............................................. 26
Change the appearance of map objects ............................................................. 26
  Set the default representations of map objects ............................................... 26
  Change the representation of single map objects ............................................ 27
Paste custom icons from the Windows clipboard ............................................. 27
Add custom icons from graphics files ............................................................. 28
Customize the width, color, and line styles of network links in maps .................. 29
Customize labels ............................................................................................... 29
Edit a label text ................................................................................................. 30
Customize text attributes, borders, and background colors ........................................30
Customize the page that opens when you click on a map object ........................................30
Link or embed maps in web pages using the map URL .......................................................30
Customize map tooltips ........................................................................................................31
   Add additional information to map object tooltips ...........................................................31
Import Network Atlas maps into Orion EOC .......................................................................31
   Map import requirements and configuration ..................................................................31
Import maps into Orion EOC ...............................................................................................31
Troubleshoot importing maps into Orion EOC ....................................................................33
Set when a map is displayed as Up on parent maps using the Up status threshold ..............33
Display restricted nodes for users with account limitations ...............................................33
   Hide nodes from users who have account limitations ....................................................33
   Reveal nodes to all users ..................................................................................................33
Advanced map layouts ..........................................................................................................34
   Position map objects .......................................................................................................34
   Display grid ......................................................................................................................34
      Customize grid .............................................................................................................34
Align map objects ...............................................................................................................35
Distribute map objects .........................................................................................................35
Arrange map objects according to a layout style ..................................................................36

Network Atlas tooltip variables ............................................................................................37
   Application variables for Network Atlas tooltips ..........................................................37
   Application component monitor variables for Network Atlas tooltips ................................37
Date and Time Variables for Network Atlas tooltips ............................................................38
General variables for Network Atlas tooltips .......................................................................39
Group variables for Network Atlas tooltips ........................................................................40
Interface variables for Network Atlas tooltips .....................................................................41
IP SLA variables for Network Atlas tooltips ........................................................................44
Network Atlas

Network Atlas is an application for creating custom maps and network diagrams. It is preinstalled with your Orion Platform product.

Maps provide a graphical depiction of the network. You can export or print maps, and use them to document your network. You can also view Network Atlas maps in the Orion Web Console.

What can you see on maps?

- Monitored SolarWinds NPM nodes, interfaces, and volumes, SAM applications and components, nested maps, and network links
- The coverage provided by your wireless access points and wireless clients connected to the access points

What customization options are there?

- Customize the map background with default colors, textures, or images. Add custom background graphics, such as floor plans.
- Link dynamic real-time weather or natural disaster maps to your network maps as the background.
- Customize the shape, size, color, and style of map links to illustrate the status of the relative bandwidth of associated objects.
- Select a graphical style for objects to reflect the network status on maps.
- Nest maps, so that you can drill down to reveal increasing levels of detail, and the status of nested map child objects may be bubbled up to the parent map. You can for example nest floor maps into a map of a building, and be notified if devices on the floor map are down.

Install Network Atlas

Network Atlas is pre-installed on Orion EOC and SolarWinds NPM, and it can be run as a local application on those Orion servers.

Users can also run Network Atlas as a standalone application on a remote computer.

Network Atlas Requirements

Network Atlas users must have the Map Management rights in SolarWinds NPM or in Orion EOC.

⚠️ The user logged in to Network Atlas must be able to access the Network Atlas synchronization folder to ensure synchronization with the SolarWinds Orion database.
### HARDWARE/SOFTWARE

<table>
<thead>
<tr>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating System</strong></td>
</tr>
<tr>
<td>- Windows Server 2012 and 2012 R2</td>
</tr>
<tr>
<td>- Windows Server 2016</td>
</tr>
<tr>
<td>- Windows 8 or 8.1 (64-bit, Standard Edition is not supported)</td>
</tr>
<tr>
<td>- Windows 10 (64-bit)</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
</tr>
<tr>
<td><strong>Hard Drive Space</strong></td>
</tr>
<tr>
<td><strong>Ports</strong></td>
</tr>
<tr>
<td><strong>.NET Framework</strong></td>
</tr>
</tbody>
</table>

### Install Network Atlas on a remote computer

1. Log in to your SolarWinds NPM or Orion EOC server.
2. Start the Orion Web Console in the SolarWinds Orion program folder.
3. In the Map resource, click Download Network Atlas.
   - If you do not see the download link in the Map resource, click Edit, select Show Network Atlas Download Link, and click Submit.
4. Save the installer (NetworkAtlas.exe) on the remote computer.
   - You can also locate the installer on your local server in the location: 
     \(\text{\textbackslash}\text{inetpub\SolarWinds\NetworkAtlas\NetworkAtlas.exe}\)
5. Run the installer on the remote computer, and click Next on the Welcome window.
   - If you have previously installed Network Atlas, you may be prompted to change, repair or remove your installation. Click Repair, click Repair again on the Ready to repair window, and complete the Setup Wizard.
6. Accept the terms in the license agreement, and click Next.
7. Provide a destination folder for the installation, and click Next.
8. Click Install on the Ready to Install window.
9. Click Finish when the Setup Wizard completes.
See Create network maps.
Start Network Atlas

Users must have the Map Management right in SolarWinds NPM or in Orion EOC.

1. Log in to the computer hosting your Network Atlas installation.
3. Connect to your primary Orion server:
   a. Provide your Orion Web Console user name and password.
   b. Provide the IP address or hostname of your primary Orion server in the Address field.
   c. If you are connecting to an SolarWinds NPM server, select Orion as the Connect To target.
   d. If you are connecting to an Orion EOC server, select EOC as the Connect To target.
   e. Click Connect.
4. Now on the Network Atlas Welcome screen, select what map you want to open:
   - To open a recent map, select it in the Open Recent section.
   - To open a map available in a certain location, click Browse and navigate to the map.
   - To create a new network map, click Network Map in the Create New section. See Create network maps.
   - To create a wireless heat map, click Wireless Heat Map in the Create New section. See Create wireless heat maps.

Create network maps

Before you start creating maps, prepare a map management strategy. Consider the following recommendations:

- Map only static objects. If objects move, you need to adjust their location on maps, and it is difficult to keep maps up-to-date.
- Build maps to match the column width of your Orion Web Console views. Rescaling maps in views results in distorting of icons and texts.

To create a network map:

1. Start the Network Atlas in the SolarWinds program folder.
2. Provide your Orion Web Console credentials.
3. If you are launching Network Atlas on the local computer, type localhost into Address. If you are starting Network Atlas on a remote computer, provide the IP address of the main polling engine.
4. Click Connect.
5. Click Network Map in the Create New section.

A new empty network map will open in the Network Atlas.
Add objects on a map

Any objects monitored by SolarWinds NPM or SAM may be added to a Network Atlas map, such as:

- SolarWinds NPM nodes, interfaces, volumes, and Universal Device Pollers (UnDPs)
- SAM applications and components
- VoIP & Network Quality Manager operations
- Network Atlas maps
- Network links

To add objects on a map:

1. If you are creating a new map, click the Network Atlas button ( ), and click New Map.
2. If you are adding objects to an existing map:
   a. Click the Network Atlas button ( ).
   b. Click Open Map.
   c. Navigate to your existing map, and click Open.
3. Expand and navigate the node tree in the left pane to locate the network nodes and monitored objects you want to add to your map.
4. Drag selected objects onto the drawing area.
   a. To add all the objects of a type on a node to your map, click + next to the node name to reveal all its associated monitored network objects, and drag all objects in the object group onto the drawing area.
   b. A check mark ( ) next to a node or network resource indicates you have already added it to your map.
   c. To view details about a map object, hover over it with the mouse pointer.
   d. To locate a specific map object in your map, click its network resource in the left pane. This selects the map object.

Connect objects on maps automatically with ConnectNow

Using the ConnectNow tool, Network Atlas can automatically draw lines between directly connected nodes on your network.

ConnectNow displays connections based on data polled for nodes with enabled L2 and L3 topology pollers, and for unidentified nodes.

An unidentified node is a node that was found on the network but which is not managed by Orion. These devices might be switches, hubs, routers, or other devices without names or addresses. Unidentified nodes can be virtual, generated to signify an indirect connection in your map. For example, when a topology calculation cannot find any direct connections between two nodes, an unidentified node is generated between the two known nodes.
The ConnectNow tool cannot draw indirect connections between nodes. For example, if nodes A and C are connected indirectly through node B, you must manually add node B to the map to create the connections.

Orion Enterprise Operations Console (EOC) does not support ConnectNow.

Connect objects on maps automatically using ConnectNow

1. Add the nodes to an open network map. See Add objects on a map.
2. Click ConnectNow ( ) in the Home ribbon.

Update the Topology

ConnectNow displays data stored in the TopologyConnections database table. By default, the data are re-calculated every 30 minutes. You can update the data manually.

1. Log in to the Orion Web Console as an administrator.
2. Click Settings > All Settings in the menu bar.
3. In the Node & Group Management grouping, click Manage Nodes.
4. In the More Actions drop-down list, select Update Topology.

The values in the TopologyConnections table will be re-calculated and your topologies will be updated.

Connect objects on maps manually

You can represent network links in your map by drawing lines between map objects. If a connected object is down, any connected links change color to red.

1. Make sure the Home ribbon is selected.
2. Click Straight ( ) or Curved Line ( ) in the Lines group, as appropriate.
3. Click an object with the line drawing tool to begin drawing the link.
4. Click and drag as needed to set optional anchor points along the link path.
5. Click a second object to finish drawing the link.
6. If you want the links connecting your mapped objects to communicate the status of connected interfaces:
   a. Right-click a link, and select Properties.
   b. Select Status in the left pane of the Link Properties page.
   c. Drag the appropriate interface objects from the left pane of the Network Atlas window to the link status assignment areas.
Reshape map links

You can use anchor points to change the shape of object links on your map. Use multiple anchor points to create more complex shapes and curves.

1. Select in the Tools group, or click the middle mouse button.
2. Click and drag the link you want to reshape.

Configure display of connections on maps

Links created on Network Atlas maps are not merely connectors between network objects. They can display status of the connection, the link speed, or utilization.

1. Right-click a link, and select Properties.
2. Click Status and review the objects from which the link gets its status. To change the objects, drag objects from the Network Atlas navigation tree to the appropriate endpoint box.
3. Click Appearance and set the default width and style for the link. Select the color for links that are UP. Down links are always red.
4. Click Hyperlink to specify what should open when you click the link in the Orion Web Console.
5. To add a label, right-click a link, and select Add Label. A default label appears. Edit the label text or move the link label.
6. To specify what should be displayed for connections:
   a. Expand Connection Display Options.
   b. To display the link speed, select Show Link Speed.
   c. To show the link utilization in percent, select Link Utilization.

   To hide all labels for the connections, clear the Include Link Labels, and click Don't Show Additional Info.

You can set interfaces through which linked objects are connected. Links can then display the status, speed or link utilization of the connection. Interface states and performance data are determined from SolarWinds NPM polling data.

Interface performance information in maps can be communicated using the interface status or performance:

- Determine interface status in connections
- Specify interfaces that determine the status of connections on maps
- Display interface performance in map links

Determine interface status in connections

Connections are shown as either solid or dotted lines. A solid line indicates that the connection is UP. A dotted line indicates that the connection is DOWN.
The connection status depends on the status of interfaces at both ends of the connection.

The connection status is only shown as either UP or DOWN. To emphasize potential problems, DOWN status is granted a higher priority.

The following table shows how interface states are reflected in the status of a connection between NodeA, with InterfaceA, and NodeB, with InterfaceB.

<table>
<thead>
<tr>
<th>InterfaceA Status</th>
<th>InterfaceB Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP</td>
<td>UP</td>
</tr>
<tr>
<td></td>
<td>DOWN</td>
</tr>
<tr>
<td>DOWN</td>
<td>DOWN</td>
</tr>
<tr>
<td>UNKNOWN</td>
<td>DOWN</td>
</tr>
</tbody>
</table>

Specify interfaces that determine the status of connections on maps

1. Right-click a link in a map, and select Properties.
2. Select Status in the left pane of the Link Properties page.
3. Drag the interface objects from the left pane of the Network Atlas window to the link status assignment areas.

Display interface performance in map links

Map links can show either interface utilization or interface connection speed. A legend is available to interpret colors representing interface performance data.

1. Expand Connection Display Options in the bottom left pane.
2. Select display options:
   - Show Link Speed provides interface connection speed information in colored links.
   - Show Link Utilization provides interface utilization information in colored links. This option is default on new maps.
   - Don't Show Additional Info provides only interface UP/DOWN status information on device links. This is the default option for previously created maps.
   - Include Link Labels enables or disables displaying connection labels.

   Utilization data is not shown for manually created links.
Add a background

You can select colors, textures, and locally-hosted or Internet-hosted images to serve as your map backgrounds.

- Select a background color
- Select a background texture
- Select a background image

To clear the current map background, click Home, and click Background > Clear Background (x).

Select a background color

Network Atlas supports 24-bit color backgrounds.

1. Click Home > Background > Background Color.
2. Select a color from the palette, or click More Colors to select a custom color.

The color is used as the background.

Select a background texture

1. Click Home > Background > Background Texture.
2. Enter the Width and Height of your map in the Map Size in Pixels area.
   - The default values are the smallest area bounding the existing map objects and labels.
3. Select a texture, and click OK.

The texture is used as the background.

Select a background image

Add images accessible on the hard drive or on the Internet as the background for your maps.

Requirements and recommendations

- Files used for linked backgrounds must be continuously accessible by URL reference.
- Files used for static backgrounds must be available within the local file system.
- To ensure optimal quality of images, plan graphics to display at full size in the Orion Web Console.
- When determining map size and resolution, consider web page layouts and display screen resolutions.

Example backgrounds are in the NetworkAtlas Backgrounds folder located in your default shared documents folder.
**Supported formats**

- Graphics Interchange Format (.gif, non-animated)
- Tagged Image File Format (.tiff)
- Joint Photographic Experts Group (.jpg)
- Microsoft Windows Bitmap (.bmp)
- Portable Network Graphics (.png)

Linked backgrounds are updated when you access the map, or refresh the browser page.

**Add an image as the background**

1. Open the map in the Network Atlas, and click Home.
2. To use a background image the disk, click Background > Background Image, and navigate to the image.
3. To use a background image from the Internet:
   a. Click Background > Linked Background.
   b. Type the URL of the image.
   c. Click Validate.
   d. Click OK.

The image displays as the map background.

> In the web console, map background images linked from the Internet are refreshed with the Orion Web Console refresh.

If the Orion server is behind a web proxy which requires authentication, you cannot link directly to the background image.

A workaround is to write a script that periodically downloads the image and saves it to a folder on the web server. You can specify the saved image as the linked background image.

**Add a dynamic background for a map**

Weather conditions can affect availability of a certain location. You can add weather maps displaying the current weather as a background for maps.

1. Navigate to the page which you want to link as the background, and copy the static link.
2. Open the map in the Network Atlas.
3. Click Linked Background, and paste the URL.
4. Validate the URL, and click OK.

The dynamic map will now display as the map background.

When you add the map to the Orion Web Console, the map will refresh every time the Orion Web Console refreshes.
Save maps

Network Atlas saves your maps directly to the server to which you are connected.

1. Click the Network Atlas button ( ), and click Save.
2. If you are saving the map for the first time, name the map, and click OK.
3. If you want to save your map to your hard drive:
   a. Click > Export > Export Map.
   b. Navigate to a location on your hard drive.
   c. Provide a File name, and click Save.

Open maps

Maps are loaded from the Orion server to which you are connected. They appear in the left pane of the Network Atlas window.

1. Click + to expand the Maps group in the left pane of the Network Atlas window.
2. Double-click the map you want to open.

Create wireless heat maps

Wireless heat maps help you visualize wireless signal coverage on a building floor plan.

Wireless heat maps are only supported for Cisco wireless controllers. The wireless controllers you want to see on wireless heat maps must be managed in SolarWinds NPM.

Before you begin

- Obtain an image of the wireless coverage area, such as a floor plan.
- Find at least one measurement of the distance between two points on the image, such as the length of a conference room.
- Choose the physical location of access points to accurately place them on the map.

To create wireless heat maps:

2. On the Welcome to Orion Network Atlas page, click Wireless Heat Map in the Create New section.
3. Enter a name for the new map.
4. Set a floor plan as the background.
5. Set the wireless heat map scale.
6. Add wireless access points.
7. Optional: Improve the accuracy of wireless heat maps by taking samples of the signal strength on
real devices.

8. Click Generate to display wireless signal coverage.

See also Display wireless heat maps in the Orion Web Console.

Disable the wireless heat map poller

The wireless heat map poller collects information about the signal strength on monitored access points. By default, this poller is disabled on your devices because of performance issues.

Network Atlas enables the wireless heat map poller on wireless controllers used in wireless maps because the information collected by the poller is required for including access points into wireless heat maps.

**When do I need to disable the wireless heat map poller?**

If you experience performance issues when working with wireless heat maps, disable the wireless heat map poller on the devices.

**Disabling the poller resolves performance issues, but your wireless heat maps will no longer be updated. The Orion Web Console resources and the Network Atlas will both display the last status generated before you disabled the wireless heat map poller.**

1. Log in to the Orion Web Console as an administrator.
2. Click Settings > All Settings in the menu bar.
3. In the Node & Group Management grouping, click Manage Pollers.
4. Locate the wireless heat map poller in the pollers table, and click the item in the Assignments column, such as 1 Node. Clicking the assignments link opens the Assign Wireless Heat Map to Nodes view.
5. Select all nodes for which you want to disable the poller, and then click Off: Disable Poller in the table title.

   ![Grey Off icon](image)

   **Clicking the grey Off icon for the nodes in the Poller Status column disables the poller for the nodes. The icon will turn to green On, and the poller will be disabled.**

Set a floor plan as the background

The floor plan should reflect the real dispositions of the office or buildings on the map, so that you can correctly position the wireless access points and reflect the wireless signal coverage on your map.
**Requirements:**

The floor plan must be a graphic file in one of the following graphics formats:

- Graphics Interchange Format (.gif, non-animated)
- Tagged Image File Format (.tiff)
- Joint Photographic Experts Group (.jpg)
- Microsoft Windows Bitmap (.bmp)
- Portable Network Graphics (.png)

To ensure the readability of wireless heat maps, use black and white images.

To set a background for wireless heat maps:

1. Create the wireless heat map in the Network Atlas.
2. Click Background Image on the Home ribbon.
3. Navigate to the floor plan image, select the image, and click Open.
   The floor plan will appear as the background for your heat map.

**Set the wireless heat map scale**

The correct scale is necessary for an accurate display of the wireless coverage provided by your wireless access point.

You can use online maps, such as the full version of Google Maps, to measure your office building. Locate the building on Google Maps, right-click one wall, and measure the distance to the other wall of the building.

**Requirements**

- You have already inserted a background image for your wireless heat map (a floor plan).
- You know the distance of two objects displayed on the background image.

To minimize error, set the scale for the longest distance possible, such as the building or floor length.

To set the map scale:

1. Create the wireless heat map in the Network Atlas.
2. Click Set Scale in the Home ribbon. A blue line segment with squares as end points will appear in the plan.
3. Drag endpoints of the segment to the objects on the map whose distance you know.
4. Fill in the distance between the endpoints into the appropriate field, and select the units (feet or meters).
   Example: In floor plans, you usually know the dimensions of individual rooms. Drag and drop the line segment endpoints so that the endpoints are located on the opposite walls, and fill in the width of the room.

5. Click Set Scale to apply the scale to the wireless heat map.

Add wireless access points

To generate a wireless heat map, add wireless access points used by client devices into the map.

Requirements

- The wireless LAN controllers must already be managed in your Orion Platform product.
- Only Cisco controllers are supported.
- The wireless heat map poller must be enabled on the wireless LAN controllers that you use in the map.

To add wireless access points:

1. Create a wireless heat map in the Network Atlas.
2. Go to the navigation tree on the left of the Network Atlas main screen.
3. Locate the wireless access points that you want to add to the map.
   To find access points on a node, navigate to Orion Objects > vendor name, such as Cisco > appropriate node > Wireless Access Points.
4. Drag the access points to their location on the map.
The selected access points will appear on the map. You can now generate the map.

   To make the map more accurate, take signal samples.

Improve the accuracy of wireless heat maps by taking samples of the signal strength on real devices

Wireless heat maps display the ideal wireless signal coverage, they do not count with physical obstacles, such as office walls. To make wireless heat maps more real, measure the signal strength on real devices, such as cell phones, laptops, or tablets connected to your wireless network. The measured values are stored as signal samples and used for calculating the signal coverage on wireless heat maps.

Signal samples represent the signal strength measured in a specified location.

   Take signal samples in places where you expect the signal to be blocked by walls or other obstacles, or in places where the signal strength does not correspond with your heat map.

   Take signal samples with cell phones, because polling the signal is usually faster for them.
Simple signal samples

Take a wireless device, walk it to a certain location, and take a signal sample there. Then, walk the device to another location, and take another signal sample. This procedure is called "walking edition" because it requires you to walk through the office.

Multiple signal samples

If you have multiple devices connected to your wireless access points, take multiple signal samples at once (called "sitting edition" because you can do it sitting at your desk).

Signal samples stay in the map and influence the calculation of wireless heat maps even after the client moves from its position.

When you move access points in a map, the signal samples might not be accurate any more. Delete obsolete signal samples, and add new ones.

Requirements

- You need to have a [wireless heat map created](#) and open in the Network Atlas.
- You need to have [wireless access points added](#) into the map.
- You need to have clients, such as cellular phones, tablets, laptops, connected to the access points positioned in your wireless heat maps.

Take simple signal samples

1. Click Take Signal Sample in the Home ribbon. The Signal Sample wizard will display on the right side of the Network Atlas screen as a tab.
2. Walk your device to the location where you want to measure the wireless signal strength and click Next.
3. Select the wireless client (cellular phone, laptop, or tablet) in the drop-down list, and click Next.
4. Drag the client into its current location on the map, and click Next. Network Atlas will start measuring the wireless signal strength in the spot. It can take a few minutes, depending on the device.
5. To add another signal sample, click Repeat, walk the device to a new location, and repeat steps 3 - 4.
6. To apply the measured signal strength to the heat map, click Generate Map.
7. Network Atlas will regenerate the map. Click Close to hide the Signal Sample wizard tab.

Take multiple signal samples at the same time

1. Click Take Signal Sample in the Home ribbon. The Signal Sample wizard will display on the right side of the Network Atlas screen as a tab.
2. Click Use Multiple Devices to Take Signal Samples.
3. Drag the clients to their positions on the wireless heat map, and click Next.

   - If there are too many devices, use the search box to find the devices you want to use for creating signal samples.
   - Measuring the wireless signal strength can take a few minutes.
   - If the signal measuring fails, you can either repeat the measurement for the device, or restart the wizard.

4. Network Atlas will automatically regenerate the map according to the defined signal samples. Click Close to hide the Signal Sample wizard tab.

Troubleshoot wireless heat maps

If your wireless signal coverage on your wireless heat maps is not as expected, you can take the following troubleshooting measures.

   - Make sure that the map scale you have entered is precise.
   - Make sure that your access points are located correctly.
   - Verify that signal samples are up-to-date.
   - The signal samples stay in the map even after the device you measured the signal strength on moves away. If you change the position of your access points, or the dispositions of your office, the signal samples might not be accurate and could affect the calculated wireless heat map.
   - Delete obsolete signal samples.
     To delete a signal sample, open the wireless heat map in the Network Atlas, select the signal sample, and press the Delete key.
   - Add new signal samples. See Improve the accuracy of wireless heat maps by taking samples of the signal strength on real devices.

Display Network Atlas maps in the Orion Web Console

To see a graphical overview of devices on your network, create a Network Atlas map, add the Map resource on the view, and specify the map you want to see in the resource.

1. Log in to the Orion Web Console as an administrator.
2. Click Edit in the Map resource.
3. Select your map from the Select Map list.
4. Click Submit.

The selected map will now appear in the Map resource.
Display maps in the Orion EOC Web Console

Network Atlas maps must be converted to display in an Orion EOC Web Console. See Import maps into Orion EOC.

1. Log on to the Orion EOC web console with an administrator account.
2. Click Settings.
3. Click Manage Views.
4. Select Home, and click Edit View.
5. Click Resource.
6. Click Network Map in the Added list.
7. Select the map from the Select Network Map list, and click Save.
8. Click OK, Save Changes.
9. If prompted to confirm your changes, click OK.
10. Click the Home view to see the map.

Display wireless heat maps in the Orion Web Console

1. Create the wireless heat map in the Network Atlas.
2. Log in to the Orion Web Console.
3. To open a wireless heat map, use one of the following options:
   - Go to the All Wireless Heat Maps resource, and click the thumbnail for the map. The map will open in the Wireless Heat Map view that includes all resources specific for wireless heat maps.

   By default, the All Wireless Heat Maps resource is available on the NPM Summary view.
   - Add the Map resource on the view, click Edit, select the map in the list, and click Submit.

Change the time and frequency for regenerating the map

By default, the wireless heat map is regenerated once a day, and the information about clients connected to wireless access points is collected every 5 minutes.

1. Click Settings > All Settings.
2. In the Thresholds & Polling grouping, click Polling Settings.
4. Adjust the time when wireless heat maps should be regenerated in Map Generation Start Time.
5. Specify how often the information about clients connected to wireless access points should be collected in Default Client Signal Strength Poll Interval.
6. Click Submit.
View the location of clients connected to access points in maps

To be able to view clients in a wireless heat map, you must add at least three access points and one signal sample, or four access points into the map.

Viewing the location of connected clients is supported only for Cisco access points with CleanAir technology.

2. Log in to the Orion Web Console, and open the wireless heat map in the Wireless Heat Map resource. See Display wireless heat maps in the Orion Web Console.
3. Make sure the Show Connected Wireless Clients option is selected. You should now be able to see clients connected to access points available on the map.

   If you cannot see a client on the map, its position might be calculated outside of the selected map. To verify this, consult the Displaying item in the legend. If the map shows less clients than are actually connected, such as one out of three, it means that the remaining clients are either outside of the map, or filtered out.

Limit the number of clients displayed on the map

Too many clients on the map might make the map crowded, and could also cause performance issues. A wireless heat map can show a maximum of 100 clients.

1. Go to the Map resource.
2. Click Select Which Clients to Show
3. Click + next to Select Wireless Clients To Be Specified.
4. Define how the displayed clients should be selected:

   **Random selection of all clients**
   
   1. Select Show Every Client Connected to Any AP on the Map.
   2. To limit the number of clients, select the Limit the Number of Clients To box, and enter the number of clients to be shown on the map (1 - 100).

   **Clients connected to an AP**
   
   a. Select Only Show Clients Connected to a Specific AP.
   b. Select a Wireless AP.
   c. To limit the number of clients, select the Limit the Number of Clients To box, and enter the number of clients to be shown on the map (1 - 100).
Select which clients to show

a. Select Let Me Pick Specific Clients to Show.
b. Use the Group and Search by filters, and select the clients to be displayed on the map.

5. Click Submit to apply your settings.

Advanced mapping techniques

- **Zoom in and out of a map**
- **Create nested maps**
- **Display the status of child objects on maps, and change metric thresholds**
- **Add independent map objects and floating labels**
- **Change the appearance of map objects**
- **Customize the width, color, and line styles of network links in maps**
- **Customize labels**
- **Customize the page that opens when you click on a map object**
- **Link or embed maps in web pages using the map URL**

**Zoom in and out of a map**

Zoom into a map to enlarge details or to zoom out to reduce its size. Zoom level is a visual aid, and it is not saved with the map.

Use any of the following methods:

- Press and hold CTRL while rotating the mouse wheel button.
- Click the Zoom slider on the status bar, and then slide the zoom control to the zoom level you want.
- Click View, and select the type of zoom you want to use from the Zoom group.

**Create nested maps**

Nested maps allow you to navigate through a map to see multiple levels of detail.

For example, a map of the United States can include an icon for a child map of Oklahoma. You can then click the Oklahoma object to open the child map.
The map of Oklahoma can become a parent map to a network diagram.

Each child map can include a view of the objects, either devices or other maps, deployed on it.

Click any nested object to view the next level of map detail, until you reach the final network device and see all available network information.

The total number of objects on a map, including objects on child maps, affects how fast the map loads in the Orion Web Console. If your maps load slowly, decrease the number of map objects.

1. Create all maps to be nested in the Network Atlas.
2. Open the parent map, and drag a map from the Maps group onto the parent map.
3. Position the new map object on the parent map, and save the map.
4. If you want the status of a child map to also indicate the status of its child objects, complete the following steps:
   a. Right-click the child map icon on the map, and select Properties.
   b. Select Include Child Status on the Status properties page, and click OK.
      The object status icon now includes the secondary status indicator.

Display the status of child objects on maps, and change metric thresholds

The status of a map object icon reflects its current state, such as up or down. You can add a secondary status indicator to a map object to reflect metrics such as response time, CPU load, or the state of any child objects. This secondary status indicator appears at the bottom right corner of the status icon.

To add the secondary status indicator:

1. Right-click the map object, and select Properties.
2. Select Include Child Status on the Status properties page, and click OK.
To change the thresholds of the metrics:

1. Right-click the map object, and select Properties.
2. Click Metrics to view the Metrics properties page.
3. To change the warning or critical threshold for a metric, click the threshold value, and type a new value.
4. To ignore a metric, clear the metric.
5. Click OK.

- The secondary status indicator respects the Orion Web Console Status Rollup Mode setting for displaying status.
- All child objects and selected metric thresholds are taken into account to determine secondary status.

Add independent map objects and floating labels

Independent objects and floating labels do not have associations to network nodes or resources.

To add an independent object:

1. Click Home.
2. Click Add Object in the Objects group to add a gray map object to the map.

To add an independent label:

1. Click Home.
2. Click Add Label in the Labels group. A label is added to the map.

Change the appearance of map objects

Changing the graphics that represent map objects allows you to increase the information density of your map without increasing the map complexity.

Set the default representations of map objects

1. Click the Orion Network Atlas button, and click Network Atlas Settings.
2. Click Graphic Styles in the left column.
3. Select an appropriate default style for each available map object.

For example, you can set an object icon to visually designate the type of the monitored device. You can then select a status style, such as 3D Pad Underneath, to illustrate the object status.
Change the representation of single map objects

1. Right-click a map object, and select Properties.
2. Click Appearance in the left column of the Properties page.
3. If you want the map object to appear as a fixed-size, LED-type graphic, complete these steps:
   a. Select Orion LED Status Icon.
   b. Select a style from the Orion LED Status Icon Style list, and click OK.
4. If you want the map object to appear as a scalable shape, complete these steps:
   a. Select Shape.
   b. Select a style from the Shape Style list, and click OK.
   c. Drag a corner handle on the map object to resize the shape.
5. If you want the map object to appear as a scalable graphic, complete these steps.
   a. Select Graphic.
   b. Click Select Graphic, select an appropriate graphic, and click OK.
   c. Select a status style from the Graphic Style list, and click OK.
   d. Drag a corner handle on the map object to resize the graphic.

Paste custom icons from the Windows clipboard

You can paste graphics from the Windows clipboard into Network Atlas maps, and display an overlay behind them to depict their status.

Icons that you paste into Network Atlas are saved to the SolarWinds Orion database, and made available for reuse in other maps under the "Imported" icon grouping. Pasted icons saved to the SolarWinds Orion database can be used by remote instances of Network Atlas.

1. Open the icon image in a graphics program, such as Visio or Photoshop.
2. Copy the image to the Windows clipboard with the Copy command.
3. Open the appropriate map in Network Atlas.
4. Paste the image as a new object following these steps:
   a. Right-click on the map and then click Paste.
   b. Select Paste the Image From the Clipboard as a New Object.
   c. Enter a name for the image.
   d. Click OK.

The added icons are also saved on the Orion server in the path
%APPDATA%\SolarWinds\NetworkAtlas\Maps\Orion\<orion server address>\NetObjects\Imported.
%APPDATA% is typically located in C:\Users\<logged on user>\AppData\Roaming
Delete a custom icon

1. Determine which file on the Orion server contains the icon (for example, mypicture.wmf), and delete the file.
2. Start the Database Manager, and add the default server.
3. Right-click the SolarWinds database, select New query, and execute the following query:
   ```sql
   delete FROM [dbo].[MapStudioFiles] where FileName = 'NetObjects\Imported\mypicture.wmf'
   ```
   Replace mypicture.wmf with the name of your icon file.
4. Start the Network Atlas on the Orion server to delete the icons from the database. The icon is deleted.

Add custom icons from graphics files

The custom graphic files must meet the following requirements:

- Supported image formats: Windows Media File (.wmf) or Graphics Interchange Format (.gif).
- Name the graphic files according to their roles.
- The file name must not contain any dash (-) characters.

If you have used dash characters in your file names and are upgrading to a SolarWinds Orion product released during 2016, the file names are no longer recognized.

Add custom icons from graphics files

1. Prepare the icons and save them as .gif or .wmi files.
2. On your SolarWinds server, paste the icons into the following folder:
   ```
   %APPDATA%\SolarWinds\NetworkAtlas\Maps\Orion\<orion server address>\NetObjects\User Graphics.
   ```
   %APPDATA% is typically located in C:\Users\<logged on user>\AppData\Roaming.

Assign a custom icon to an object

1. Right-click the object on the map, and then click Select Graphic.
2. Select User Graphics in the left pane.
3. Select the graphic image, and click OK.

The custom icon displays on the map.
Customize status icons on Network Atlas maps

1. Prepare the icons and save them as .gif or .wmi files.
   - The recommended status icon size is 16 x 16 pixels.

2. To specify the status an image is used for, add a suffix to the image file name:

<table>
<thead>
<tr>
<th>ROLE</th>
<th>FILE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical status</td>
<td>iconNamecritical.gif</td>
</tr>
<tr>
<td>Down status</td>
<td>iconNamedown.gif</td>
</tr>
<tr>
<td>External status</td>
<td>'iconNameexternal.gif</td>
</tr>
<tr>
<td>Unknown status</td>
<td>iconNameunknown.gif</td>
</tr>
<tr>
<td>Unmanaged status</td>
<td>iconNameunmanaged.gif</td>
</tr>
<tr>
<td>Unplugged status</td>
<td>iconNameunplugged.gif</td>
</tr>
<tr>
<td>Unreachable status</td>
<td>iconNameunreachable.gif</td>
</tr>
<tr>
<td>Up status</td>
<td>iconNameup.gif</td>
</tr>
<tr>
<td>Warning status</td>
<td>iconNamewarning.gif</td>
</tr>
</tbody>
</table>

3. On your SolarWinds server, paste the icons into the following folder:
   - `%APPDATA%\SolarWinds\NetworkAtlas\Maps\Orion\<orion server address>\NetObjects\User Graphics`.

   - Customized icons are used for the status defined by the file name suffix on maps in the Network Atlas and in the Orion Web Console map resources.

Customize the width, color, and line styles of network links in maps

1. Right-click a link, and select Properties.
2. Select Appearance in the left column of the Properties page.
3. Select a line width in pixels from the Width list.
4. Select a line color from the Color list.
5. Select a line style from the Style> list.
6. Click OK.

- The color setting only changes the color of links that have the Up status.

Customize labels

- To move a label, drag it to the new location.
Edit a label text

1. Double-click the label.
2. Press `<SHIFT>+<ENTER>` to separate multiple lines within the same label.

Customize text attributes, borders, and background colors

1. Right-click the label, and select Properties.
2. Select Appearance in the left column of the Properties page.
3. Make your changes:
   - To change the font attributes, click the ... button, select the font attributes, and click OK.
   - To change the text alignment, select an alignment from the Text Alignment list.
   - To change the text color, click the Text Color box, and select a color.
   - To add a label border, select the border width in pixels from the Border Width list.
   - To change the label border color, select a color.
   - To remove label borders, select 0 from the Border Width list.
   - To add a label background, clear Transparent Background.
   - To change the label background color, select a color.
   - To remove a label background, select Transparent Background.
4. Click OK.

Customize the page that opens when you click on a map object

By default, map objects are linked to the most relevant details page for the object. Customize the URL hyperlink to link to external web sites and pages.

1. Right-click the map object, and select Edit Hyperlink.
2. To link to the relevant Orion page for the map object, select Logical Page in Orion.
3. To link to a custom URL, select Manually Set Address, and type the URL.
4. Click OK.

Link or embed maps in web pages using the map URL

The map URL is in the form:

```
http://orionServer/Orion/NetPerfMon/MapView.aspx?Map=mapName
```

**orionServer**

This is the IP address or host name of your SolarWinds NPM server.
**mapName**

This is the display name of the map. If the name contains space characters, substitute `%20` for the spaces when specifying the name.

**Customize map tooltips**

When you hover over map objects in the Orion Web Console, a tooltip with the current identification and status of the object appears.

Customize tooltips for all map object types in the Orion Web Console to display additional information using alert variables, custom properties, and other text.

- Tooltip customizations are global, and affect all maps.
- Orion EOC does not support custom web console tooltips.
- To enter a carriage return, use `${CR}`.

**Add additional information to map object tooltips**

1. Log in to the Orion Web Console as an administrator.
2. Locate the Map resource, and click Edit.
3. Click Customize Map Tooltips.
4. Type the variables and any text in the text field for the map object type.
5. Click Submit.

**Import Network Atlas maps into Orion EOC**

Maps created for use in SolarWinds NPM must be converted before they may be used in Orion EOC.

**Map import requirements and configuration**

The [Orion to EOC Map Converter](https://www.solarwinds.com) utility imports maps into Orion EOC v1.5 from other SolarWinds Orion products.

**Environment requirements**

- Orion EOC must currently be managing at least one SolarWinds Orion server.
- If Orion EOC is configured to use Active Directory accounts to access Orion servers, confirm that you have entered the password for the AD account in the Orion Logins section of EOC. Additionally, only AD accounts that were individually added to the Orion Server may be used to import a map. Active Directory group accounts are not compatible with Map Converter.
User requirements

To run the Orion to EOC Map Converter utility, the user must also meet the following specifications:

- The user must run the Map Converter using a Windows Administrator account that also has Orion EOC Administrator role permissions.
- The user must log into the Map Converter using an Orion EOC account that was individually added to Orion EOC. Active Directory group accounts are not compatible with Map Converter.
- The user must have Orion EOC access to at least one Orion server.
- The user must have Node Management rights on the remote Orion server.

Configure environment for the map import

1. Copy SolarWinds-OrionToEOCMapConverter-1.5.exe to your Orion EOC server.

2. Execute SolarWinds-OrionToEOCMapConverter-1.5.exe, and complete the installer.

3. Provide members of the Users group Full Control of files in the folder
   `<volume>:\Windows\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files`. See Microsoft TechNet Library for more information.

4. Allow the Everyone group Full Control to the folder
   `<volume>:\Windows\Temp\SolarWinds\NetworkAtlas\EOC\SolarWinds\NetworkAtlas\MapsWeb\EOC\localhost` and all of its child objects. See Microsoft TechNet Library for more information.

Import maps into Orion EOC

1. Log in to the Orion EOC server with a Windows Administrator account that has Orion EOC Administrator role permissions.

2. Start the converter utility by running Convert Orion Maps to EOC in your SolarWinds program folder.

3. Select the Orion server hosting your maps from the Orion list.

4. Select the maps you want to import into Orion EOC.
   - To edit the name of an Orion EOC map you are importing, click the map name in the New Name column, and edit the name.

5. Click Import.
Troubleshoot importing maps into Orion EOC

Map name conflict

Maps you import from different Orion servers may share the same name.

Resolution: Rename the maps so that each has a unique name in Orion EOC.

Any pre-existing child/parent relationships for any renamed map will break. You must manually reconfigure parent/child relationships after importing.

Windows 2008 issues

Windows 2008 customers may encounter problems either after manually clicking the Refresh button or after selecting a different Orion server. If the utility crashes, restart it and resume importing.

User Access Control (UAC)

If using an operating system that has UAC, you must run the program using Run as Administrator.

Set when a map is displayed as Up on parent maps using the Up status threshold

The UP status threshold is the percentage of map objects that must be in an up state on a given map for the map to be represented as up on the parent map.

1. Right-click any empty portion of the map, and select Map Properties.
2. Slide the Map Status Will Be UP slider to configure the up state threshold on the Map Properties page.

Display restricted nodes for users with account limitations

If Orion Web Console users have account limitations that prevent them from seeing network nodes, set whether the users should see the restricted nodes on maps.

Users with restricted access to the nodes will only see the restricted nodes, but cannot retrieve any additional information about the nodes.

Hide nodes from users who have account limitations

1. Right-click any empty portion of the map, and select Map Properties.
2. Select Remove Nodes That Users Do Not Have Permission to View.

Reveal nodes to all users

1. Right-click any empty portion of the map, and select Map Properties.
2. Select Allow All Users to View All Nodes On This Map.
Users with account limitations, but with the permission to run and use the Network Atlas can change this setting in the map. To prevent this, do not give node management permissions to users who have account limitations.

Advanced map layouts

- **Position map objects**
- **Display grid**
- **Align map objects**
- **Distribute map objects**
- **Arrange map objects according to a layout style**

Position map objects

Drag objects from the tree on the left to the appropriate position on the map.

To nudge a map object, select the object, and press <Ctrl> + <arrow>.

To reposition a map object:

1. Click the map object.
2. Click the Edit ribbon.
3. In the Size & Position area, enter the X and Y coordinates.

```
1 Map center is designated as (X,Y) = (0,0).
```

Display grid

A grid guide helps you maintain structural and spatial relationships as you arrange your map objects.

Grids are neither saved with a map, nor displayed in the Orion Web Console.

1. Click the View ribbon.
2. Click Show Grid in the Grid group.

Customize grid

1. Click View.
2. To display grid lines, click Grid Option > Grid Lines.
3. To display grid points, click Grid Options > Grid Points.
4. To change the grid size, click Grid Options > Grid Size, and select a grid size.
Align map objects

1. Click the Edit ribbon.
2. Select the map objects you want to align.
3. Click the button in the Align group to arrange the object.

<table>
<thead>
<tr>
<th>BUTTON</th>
<th>FUNCTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Align Left</td>
<td>Aligns all selected objects on the left edge of the group</td>
</tr>
<tr>
<td></td>
<td>Align Right</td>
<td>Aligns all selected objects on the right edge of the group</td>
</tr>
<tr>
<td></td>
<td>Align Bottom</td>
<td>Aligns all selected objects on the bottom edge of the group</td>
</tr>
<tr>
<td></td>
<td>Align Top</td>
<td>Aligns all selected objects on the top edge of the group</td>
</tr>
<tr>
<td></td>
<td>Center Vertically</td>
<td>Centers all selected objects vertically</td>
</tr>
<tr>
<td></td>
<td>Center Horizontally</td>
<td>Centers all selected objects horizontally</td>
</tr>
</tbody>
</table>

Distribute map objects

1. Click Edit.
2. Select the map objects you want to distribute.
3. Click a button in the Distribute group to arrange the selected objects.

<table>
<thead>
<tr>
<th>BUTTON</th>
<th>FUNCTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Distribute Horizontally</td>
<td>Distributes all objects so that they are equidistant from the left edge of the leftmost object to the right edge of the rightmost object</td>
</tr>
<tr>
<td></td>
<td>Distribute Vertically</td>
<td>Distributes all objects so that they are equidistant from the top edge of the topmost object to the bottom edge of the bottommost object</td>
</tr>
</tbody>
</table>
### Arrange map objects according to a layout style

1. Click Edit.
2. Click a layout style from the AutoArrange group.

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="button_icon" alt="Circular" /></td>
<td>Circular</td>
<td>Emphasizes the clusters inherent in the topology of a map. It emphasizes prominent links between main objects and its peripherals. Object groups have radial placements. Use circular layouts for maps containing ring and star network topologies.</td>
</tr>
<tr>
<td><img src="button_icon" alt="Symmetrical" /></td>
<td>Symmetrical</td>
<td>Emphasizes the symmetrical patterns inherent in the map topology. It emphasizes an even distribution of objects, and minimizes edge crossings. Object groups have star spiral placements. Use symmetrical layouts for maps that have fairly homogenous or uniform clusters.</td>
</tr>
<tr>
<td><img src="button_icon" alt="Hierarchical" /></td>
<td>Hierarchical</td>
<td>Emphasizes mapped dependency relationships by placing objects at different levels. Use hierarchical layouts to depict data dependencies.</td>
</tr>
<tr>
<td><img src="button_icon" alt="Orthogonal" /></td>
<td>Orthogonal</td>
<td>Emphasizes compact drawings, and uses only horizontal and vertical edges. Objects are enlarged if necessary to provide enough space for edge connections. Use orthogonal layouts for maps that need to depict multiple clusters in a space-efficient manner.</td>
</tr>
<tr>
<td><img src="button_icon" alt="Tree" /></td>
<td>Tree</td>
<td>Emphasizes parent and child relationships. Child objects are arranged farther from the root object than their parent objects. Use tree layouts for maps that have a central control object.</td>
</tr>
<tr>
<td><img src="button_icon" alt="Reorganize" /></td>
<td>Reorganize</td>
<td>Moves all mapped objects back to the center of the map view.</td>
</tr>
<tr>
<td><img src="button_icon" alt="Arrange Labels" /></td>
<td>Arrange Labels</td>
<td>Restores the default relative position of all object labels.</td>
</tr>
</tbody>
</table>
Network Atlas tooltip variables

Many variables used in SolarWinds NPM alerts can also be used in Network Atlas tooltips. These variables are dynamic, and they parse when the tooltip is opened.

For example, the variable ${CPULoad} will parse with the current processor utilization of the node you are viewing.

- See Customize map tooltips.
- In some cases, the table name may be required for alert variables, as in ${Nodes.Description}. The following tables provide the table name in listed variables when it is required.
- In earlier versions of Network Atlas, variables were referred to as macros.

Application variables for Network Atlas tooltips

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>${ApplicationID}</td>
<td>Internal unique identifier of the application.</td>
</tr>
<tr>
<td>${ApplicationTemplateID}</td>
<td>Internal unique identifier of the parent template.</td>
</tr>
<tr>
<td>${Name}</td>
<td>Application name.</td>
</tr>
<tr>
<td>${NodeID}</td>
<td>Internal unique identifier of assigned node.</td>
</tr>
<tr>
<td>${Status}</td>
<td>Numerical application status code.</td>
</tr>
<tr>
<td>${StatusDescription}</td>
<td>User friendly application status.</td>
</tr>
<tr>
<td>${UnManaged}</td>
<td>States if application is currently unmanaged.</td>
</tr>
</tbody>
</table>

Application component monitor variables for Network Atlas tooltips

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>${ApplicationId}</td>
<td>Internal unique identifier of the associated application.</td>
</tr>
<tr>
<td>${ComponentId}</td>
<td>Internal unique identifier of the component.</td>
</tr>
<tr>
<td>VARIABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>${ComponentType}</td>
<td>Numerical component monitor type code. For more information, see &quot;SolarWinds SAM Alerts&quot; in the SolarWinds Server &amp; Application Monitor Administrator Guide.</td>
</tr>
<tr>
<td>${Name}</td>
<td>Component monitor name.</td>
</tr>
<tr>
<td>${Status}</td>
<td>Numerical application status code.</td>
</tr>
<tr>
<td>${StatusDescription}</td>
<td>User friendly application status.</td>
</tr>
<tr>
<td>${TemplateID}</td>
<td>Internal unique identifier of the parent template.</td>
</tr>
</tbody>
</table>

**Date and Time Variables for Network Atlas tooltips**

<table>
<thead>
<tr>
<th>DATE/TIME VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>${AMPM}</td>
<td>AM/PM indicator.</td>
</tr>
<tr>
<td>${AbreviatedDOW}</td>
<td>Current day of the week. Three character abbreviation.</td>
</tr>
<tr>
<td>${D}</td>
<td>Current day of the month.</td>
</tr>
<tr>
<td>${DD}</td>
<td>Current day of the month (two digit number, zero padded).</td>
</tr>
<tr>
<td>${Date}</td>
<td>Current date. (Short Date format).</td>
</tr>
<tr>
<td>${DateTime}</td>
<td>Current date and time. (Windows control panel defined “Long Date” and “Long Time” format).</td>
</tr>
<tr>
<td>${DayOfWeek}</td>
<td>Current day of the week.</td>
</tr>
<tr>
<td>${DayOfYear}</td>
<td>Numeric day of the year.</td>
</tr>
<tr>
<td>${H}</td>
<td>Current hour.</td>
</tr>
<tr>
<td>${HH}</td>
<td>Current hour. Two digit format, zero padded.</td>
</tr>
<tr>
<td>${Last2Hours}</td>
<td>Last two hours.</td>
</tr>
<tr>
<td>${Last24Hours}</td>
<td>Last 24 hours.</td>
</tr>
<tr>
<td>${Last7Days}</td>
<td>Last seven days (Short Date format).</td>
</tr>
<tr>
<td>${LastHour}</td>
<td>Last hour.</td>
</tr>
<tr>
<td>${LocalDOW}</td>
<td>Current day of the week. Localized language format.</td>
</tr>
<tr>
<td>${LocalMonthName}</td>
<td>Current month name in the local language.</td>
</tr>
<tr>
<td>DATE/TIME VARIABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>${LongDate}</td>
<td>Current date. (Long Date format).</td>
</tr>
<tr>
<td>${M}</td>
<td>Current numeric month.</td>
</tr>
<tr>
<td>${MM}</td>
<td>Current month. Two digit number, zero padded.</td>
</tr>
<tr>
<td>${MMM}</td>
<td>Current month. Three character abbreviation.</td>
</tr>
<tr>
<td>${MMMM}</td>
<td>Full name of the current month.</td>
</tr>
<tr>
<td>${MediumDate}</td>
<td>Current date. (Medium Date format).</td>
</tr>
<tr>
<td>${Minute}</td>
<td>Current minute. Two digit format, zero padded.</td>
</tr>
<tr>
<td>${S}</td>
<td>Current second.</td>
</tr>
<tr>
<td>${Second}</td>
<td>Current second. Two digit format, zero padded.</td>
</tr>
<tr>
<td>${Time}</td>
<td>Current Time. (Short Time format).</td>
</tr>
<tr>
<td>${Today}</td>
<td>Today (Short Date format).</td>
</tr>
<tr>
<td>${Year}</td>
<td>Four digit year.</td>
</tr>
<tr>
<td>${Year2}</td>
<td>Two digit year.</td>
</tr>
<tr>
<td>${Yesterday}</td>
<td>Yesterday (Short Date format).</td>
</tr>
</tbody>
</table>

### General variables for Network Atlas tooltips

<table>
<thead>
<tr>
<th>GENERAL VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>${Acknowledged}</td>
<td>Acknowledged status.</td>
</tr>
<tr>
<td>${AcknowledgedBy}</td>
<td>Who the alert was acknowledged by.</td>
</tr>
<tr>
<td>${AcknowledgedTime}</td>
<td>Time the alert was acknowledged.</td>
</tr>
<tr>
<td>${AlertTriggerCount}</td>
<td>Count of triggers.</td>
</tr>
<tr>
<td>${AlertTriggerTime}</td>
<td>Date and time of the last event for this Alert. (Windows control panel defined “Short Date” and “Short Time”).</td>
</tr>
<tr>
<td>${Application}</td>
<td>SolarWinds application information.</td>
</tr>
<tr>
<td>${CR}</td>
<td>Line Feed – Carriage Return.</td>
</tr>
<tr>
<td>GENERAL VARIABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>${Copyright}</td>
<td>Copyright information.</td>
</tr>
<tr>
<td>${ObjectName}</td>
<td>Description/Name of the object in the alert.</td>
</tr>
<tr>
<td>${Release}</td>
<td>Release information.</td>
</tr>
<tr>
<td>${Version}</td>
<td>Version of the SolarWinds software package.</td>
</tr>
</tbody>
</table>

**Group variables for Network Atlas tooltips**

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>${ContainerID}</td>
<td>Designated identifier for a mapped group.</td>
</tr>
<tr>
<td>${DetailsURL}</td>
<td>URL of the Group Details view for a mapped group.</td>
</tr>
<tr>
<td>${Frequency}</td>
<td>Interval on which group membership is evaluated and group snapshots are taken.</td>
</tr>
<tr>
<td>${IsDeleted}</td>
<td>When a group is marked for deletion, it is not deleted immediately. If a group is marked for deletion but not yet deleted, ${IsDeleted} returns 1.</td>
</tr>
<tr>
<td>${LastChanged}</td>
<td>The date and time of the last change made to the definition of a group. This does not include changes made to group members resulting from dynamic queries.</td>
</tr>
<tr>
<td>${Name}</td>
<td>The name assigned to the mapped group.</td>
</tr>
<tr>
<td>${Owner}</td>
<td>Orion product appropriate to the mapped group type.</td>
</tr>
<tr>
<td>${RollupType}</td>
<td>Name of roll-up logic calculator that evaluates status of the mapped group based on member statuses. 0 = Mixed, 1 = Worst, 2 = Best. The &quot;Worst&quot; method reports group status as the worst status of any of its members. The &quot;Mixed&quot; method reports group status as &quot;Warning&quot; when members are of multiple different statuses. The &quot;Best&quot; method reports group status as the best status of any of its members.</td>
</tr>
<tr>
<td>${Status}</td>
<td>Status of the mapped group. For more information, see “Managing the Display of Group Status” in the SolarWinds Orion Common Components Administrator Guide.</td>
</tr>
<tr>
<td>${StatusCalculator}</td>
<td>Name of roll-up logic calculator that evaluates status of the mapped group based on member statuses. 0 = Mixed, 1 = Worst, 2 = Best. The Worst method reports group status as the worst status of any of its members. The Mixed method reports group status as “Warning” when members are of multiple different statuses. The “Best” method reports group status as the best status of any of its members.</td>
</tr>
<tr>
<td>${Uri}</td>
<td>Uri used by SolarWinds Information Service (SWIS) to refer to the selected group member within the web console.</td>
</tr>
<tr>
<td>VARIABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>${WebUri}</td>
<td>URL of the Group Details view for a mapped group.</td>
</tr>
</tbody>
</table>

## Interface variables for Network Atlas tooltips

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>${AdminStatus}</td>
<td>Numeric administrative status of interface.</td>
</tr>
<tr>
<td>${AdminStatusLED}</td>
<td>Filename of current interface administrative status icon.</td>
</tr>
<tr>
<td>${Caption}</td>
<td>User friendly description of interface combining name with other identifying information.</td>
</tr>
<tr>
<td>${Counter64}</td>
<td>States if interface supports IF-MIB high capacity counters.</td>
</tr>
<tr>
<td>${CustomBandwidth}</td>
<td>Indicates if transmit and receive bandwidth fields are user-controlled (1) or controlled by automated detection via ifSpeed MIB (0).</td>
</tr>
<tr>
<td>${CustomPollerLastStatisticsPoll}</td>
<td>Day, date, and time that this interface was last polled by the current poller.</td>
</tr>
<tr>
<td>${InBandwidth}</td>
<td>Incoming bandwidth of interface.</td>
</tr>
<tr>
<td>${Inbps}</td>
<td>Current incoming traffic, in bps, to interface.</td>
</tr>
<tr>
<td>${InDiscardsThisHour}</td>
<td>Number of incoming packets discarded by interface in last hour.</td>
</tr>
<tr>
<td>${InDiscardsToday}</td>
<td>Number of incoming packets discarded by interface in current day.</td>
</tr>
<tr>
<td>${InErrorsThisHour}</td>
<td>Number of interface receive errors in last hour.</td>
</tr>
<tr>
<td>${InErrorsToday}</td>
<td>Number of interface receive errors in current day.</td>
</tr>
<tr>
<td>${InMcastPps}</td>
<td>Current incoming multicast traffic, in packets per second, to interface.</td>
</tr>
<tr>
<td>${InPercentUtil}</td>
<td>Current percent utilization of interface receive.</td>
</tr>
<tr>
<td>${InPktSize}</td>
<td>Average size of incoming packets to interface.</td>
</tr>
<tr>
<td>${InPps}</td>
<td>Current incoming traffic, in packets per second, to interface.</td>
</tr>
<tr>
<td>VARIABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>${InterfaceIcon}</td>
<td>File name of the icon represent the interface type.</td>
</tr>
<tr>
<td>${InterfaceID}</td>
<td>Internal unique identifier of selected interface.</td>
</tr>
<tr>
<td>${InterfaceIndex}</td>
<td>Index of selected interface on parent node.</td>
</tr>
<tr>
<td>${InterfaceLastChange}</td>
<td>sysUpTime value when the interface entered current operational state.</td>
</tr>
<tr>
<td>${InterfaceMTU}</td>
<td>Interface Maximum Transfer Unit: the largest packet the interface can handle.</td>
</tr>
<tr>
<td>${InterfaceName}</td>
<td>User-friendly name.</td>
</tr>
<tr>
<td>${InterfaceSpeed}</td>
<td>Interface bandwidth.</td>
</tr>
<tr>
<td>${InterfaceType}</td>
<td>IANA type of selected interface.</td>
</tr>
<tr>
<td>${InterfaceTypeDescription}</td>
<td>User-friendly description of interface type.</td>
</tr>
<tr>
<td>${InterfaceTypeName}</td>
<td>User-friendly name of interface IANA type.</td>
</tr>
<tr>
<td>${InUcastPps}</td>
<td>Current incoming unicast traffic, in packets per second, to interface.</td>
</tr>
<tr>
<td>${LastSync}</td>
<td>Time and date of last interface database and memory synchronization.</td>
</tr>
<tr>
<td>${MaxInBpsTime}</td>
<td>Time when ${MaxInBpsToday} was measured.</td>
</tr>
<tr>
<td>${MaxInBpsToday}</td>
<td>Maximum measured traffic, in bps, into interface.</td>
</tr>
<tr>
<td>${MaxOutBpsTime}</td>
<td>Time when ${MaxOutBpsToday} was measured.</td>
</tr>
<tr>
<td>${MaxOutBpsToday}</td>
<td>Maximum measured traffic, in bps, out from interface.</td>
</tr>
<tr>
<td>${NextPoll}</td>
<td>Day, date and time of next scheduled interface polling.</td>
</tr>
<tr>
<td>${NextRediscovery}</td>
<td>Next interface rediscovery time.</td>
</tr>
<tr>
<td>${NodeID}</td>
<td>Internal unique identifier of node that is parent to the selected interface.</td>
</tr>
<tr>
<td>${ObjectSubType}</td>
<td>States if parent node supports SNMP or is ICMP only.</td>
</tr>
<tr>
<td>${OperStatus}</td>
<td>Numeric operational status of interface.</td>
</tr>
<tr>
<td>${OperStatusLED}</td>
<td>File name of current interface operational status icon.</td>
</tr>
<tr>
<td>VARIABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>${OutBandwidth}</td>
<td>Outgoing bandwidth of interface.</td>
</tr>
<tr>
<td>${Outbps}</td>
<td>Current outgoing traffic, in bps, from interface.</td>
</tr>
<tr>
<td>${OutDiscardsThisHour}</td>
<td>Number of outgoing packets discarded by interface in last hour.</td>
</tr>
<tr>
<td>${OutDiscardsToday}</td>
<td>Number of outgoing packets discarded by interface in current day.</td>
</tr>
<tr>
<td>${OutErrorsThisHour}</td>
<td>Number of interface transmit errors in last hour.</td>
</tr>
<tr>
<td>${OutErrorsToday}</td>
<td>Number of interface transmit errors in current day.</td>
</tr>
<tr>
<td>${OutMcastPps}</td>
<td>Current outgoing multicast traffic, in packets per second, from interface.</td>
</tr>
<tr>
<td>${OutPercentUtil}</td>
<td>Current percent utilization of interface transmit.</td>
</tr>
<tr>
<td>${OutPktSize}</td>
<td>Average size of outgoing packets from interface.</td>
</tr>
<tr>
<td>${OutPps}</td>
<td>Current outgoing traffic, from interface, in pps.</td>
</tr>
<tr>
<td>${OutUcastPps}</td>
<td>Current outgoing unicast traffic, in packets per second, from interface.</td>
</tr>
<tr>
<td>${PhysicalAddress}</td>
<td>Physical address of interface.</td>
</tr>
<tr>
<td>${PollInterval}</td>
<td>Interval, in seconds, between polling attempts for interface.</td>
</tr>
<tr>
<td>${RediscoveryInterval}</td>
<td>Interval, in minutes, between rediscovery attempts for interface.</td>
</tr>
<tr>
<td>${Severity}</td>
<td>A network health score providing 1 point for an interface in a warning state, 1000 points for a down interface, and 1 million points for a down node.</td>
</tr>
<tr>
<td>${StatCollection}</td>
<td>Interface statistics collection frequency, in minutes.</td>
</tr>
<tr>
<td>${Status}</td>
<td>Numeric interface status.</td>
</tr>
<tr>
<td>${StatusLED}</td>
<td>Filename of current interface status icon.</td>
</tr>
<tr>
<td>${UnManaged}</td>
<td>States if interface is currently unmanaged.</td>
</tr>
<tr>
<td>${UnPluggable}</td>
<td>States if interface is designated as unpluggable.</td>
</tr>
</tbody>
</table>
### IP SLA variables for Network Atlas tooltips

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>${DateChangedUtc}</td>
<td>The last time operation information was updated.</td>
</tr>
<tr>
<td>${Description}</td>
<td>A user defined explanation of the operation.</td>
</tr>
<tr>
<td>${Frequency}</td>
<td>How often the operation is performed.</td>
</tr>
<tr>
<td>${IpSlaOperationNumber}</td>
<td>The time between operation executions.</td>
</tr>
<tr>
<td>${IsAutoConfigured}</td>
<td>This value is True if it was created by VoIP &amp; Network Quality Manager, False if it was created by the user.</td>
</tr>
<tr>
<td>${OperationInstanceID}</td>
<td>The internal ID of the operation.</td>
</tr>
<tr>
<td>${OperationName}</td>
<td>The name of the operation as it appears in Orion.</td>
</tr>
<tr>
<td>${OperationTypeID}</td>
<td>Numerical operation status code. 1=DHCP, 2=DNS, 3=FTP, 4=HTTP, 5=ICMP Echo, 8=TCP Connect, 9=UDP Echo, 10=UDP Jitter, 11=VoIP UDP Jitter.</td>
</tr>
<tr>
<td>${SourceNodeID}</td>
<td>The Orion node ID of the source node.</td>
</tr>
<tr>
<td>${Status}</td>
<td>Numerical operation status code.</td>
</tr>
<tr>
<td>${StatusMessage}</td>
<td>A message that describing the ${Status} value.</td>
</tr>
<tr>
<td>${TargetNodeID}</td>
<td>The Orion node ID of the node the operation is targeting.</td>
</tr>
</tbody>
</table>

### Node variables for Network Atlas tooltips

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>${AgentPort}</td>
<td>Node SNMP port number.</td>
</tr>
<tr>
<td>${Allow64BitCounters}</td>
<td>Node allows 64-bit counters (1), or not (0).</td>
</tr>
<tr>
<td>${AvgResponseTime}</td>
<td>Average node response time , in msec, to ICMP requests.</td>
</tr>
<tr>
<td>${BlockUntil}</td>
<td>Day, date, and time until which node polling is blocked.</td>
</tr>
<tr>
<td>${Caption}</td>
<td>User-friendly node name.</td>
</tr>
<tr>
<td>${Community}</td>
<td>Node community string.</td>
</tr>
<tr>
<td>${CPULoad}</td>
<td>Node CPU utilization rate at last poll.</td>
</tr>
<tr>
<td>${CustomPollerLastStatisticsPoll}</td>
<td>Day, date, and time of last poll attempt on node.</td>
</tr>
<tr>
<td>VARIABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><code>{CustomPollerLastStatisticsPollSuccess}</code></td>
<td>Day, date, and time that node was last successfully polled.</td>
</tr>
<tr>
<td><code>{DateTime}</code></td>
<td>Current date and time. (Windows control panel defined “Long Date” and “Long Time” format).</td>
</tr>
<tr>
<td><code>{Description}</code></td>
<td>Node hardware and software.</td>
</tr>
<tr>
<td><code>{DNS}</code></td>
<td>Fully qualified node name.</td>
</tr>
<tr>
<td><code>{DynamicIP}</code></td>
<td>If node supports dynamic IP address assignment via BOOTP or DHCP (1); static IP address return (0).</td>
</tr>
<tr>
<td><code>{EngineID}</code></td>
<td>Internal unique identifier of the polling engine to which node is assigned.</td>
</tr>
<tr>
<td><code>{External}</code></td>
<td>States if node is currently designated as external.</td>
</tr>
<tr>
<td><code>{GroupStatus}</code></td>
<td>File name of status icon for node and its interfaces.</td>
</tr>
<tr>
<td><code>{IOSImage}</code></td>
<td>Family name of Cisco IOS on node.</td>
</tr>
<tr>
<td><code>{IOSVersion}</code></td>
<td>Cisco IOS version on node.</td>
</tr>
<tr>
<td><code>{IP_Address}</code></td>
<td>Node IP address.</td>
</tr>
<tr>
<td><code>{LastBoot}</code></td>
<td>Day, date and time of last node boot.</td>
</tr>
<tr>
<td><code>{LastSync}</code></td>
<td>Time and date of last node database and memory synchronization.</td>
</tr>
<tr>
<td><code>{MachineType}</code></td>
<td>Node manufacturer or distributor and family or version information.</td>
</tr>
<tr>
<td><code>{MaxResponseTime}</code></td>
<td>Maximum node response time, in msec, to ICMP requests.</td>
</tr>
<tr>
<td><code>{MemoryUsed}</code></td>
<td>Total node memory used over polling interval.</td>
</tr>
<tr>
<td><code>{MinResponseTime}</code></td>
<td>Minimum node response time, in msec, to ICMP requests.</td>
</tr>
<tr>
<td><code>{NextPoll}</code></td>
<td>Day, date and time of next scheduled node polling.</td>
</tr>
<tr>
<td><code>{NextRediscovery}</code></td>
<td>Time of next node rediscovery.</td>
</tr>
<tr>
<td><code>{NodeID}</code></td>
<td>Internal unique identifier of node.</td>
</tr>
<tr>
<td><code>{NodeId}</code></td>
<td>Internal unique identifier of node.</td>
</tr>
<tr>
<td><code>{NodeName}</code></td>
<td>Node host name. Defaults to node IP address <code>{IP_Address}</code> if host name does not resolve.</td>
</tr>
<tr>
<td>VARIABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>${ObjectSubType}</td>
<td>States if node supports SNMP or is ICMP-only.</td>
</tr>
<tr>
<td>${PercentLoss}</td>
<td>ICMP packet loss percentage when node last polled.</td>
</tr>
<tr>
<td>${PercentMemoryUsed}</td>
<td>Percentage of total node memory used over polling interval.</td>
</tr>
<tr>
<td>${PollInterval}</td>
<td>Node polling interval, in seconds.</td>
</tr>
<tr>
<td>${RediscoveryInterval}</td>
<td>Node rediscovery interval, in minutes.</td>
</tr>
<tr>
<td>${ResponseTime}</td>
<td>Node response time, in milliseconds, to last ICMP request.</td>
</tr>
<tr>
<td>${RWCommunity}</td>
<td>Node read/write community string; acts as security code for read/write SNMP access.</td>
</tr>
<tr>
<td>${Severity}</td>
<td>A network health score providing 1 point for an interface in a warning state, 1000 points for a down interface, and 1 million points for a down node.</td>
</tr>
<tr>
<td>${SNMPVersion}</td>
<td>States the version of SNMP used by the node</td>
</tr>
<tr>
<td>${StatCollection}</td>
<td>Statistics collection frequency, in minutes.</td>
</tr>
<tr>
<td>${Status}</td>
<td>Numerical node status.</td>
</tr>
<tr>
<td>${StatusDescription}</td>
<td>User-friendly node status</td>
</tr>
<tr>
<td>${StatusLED}</td>
<td>File name of node status icon.</td>
</tr>
<tr>
<td>${SysName}</td>
<td>String reply to SNMP SYS_NAME OID request.</td>
</tr>
<tr>
<td>${SysObjectID}</td>
<td>Vendor ID of the network management subsystem in OID form. Clearly determines the type of node.</td>
</tr>
<tr>
<td>${SystemUpTime}</td>
<td>Time, in hundredths of a second, since monitoring started.</td>
</tr>
<tr>
<td>${TotalMemory}</td>
<td>Total node memory available.</td>
</tr>
<tr>
<td>${UnManaged}</td>
<td>States if node is currently unmanaged.</td>
</tr>
<tr>
<td>${UnManageFrom}</td>
<td>Day, date, and time when node is set to “Unmanaged”.</td>
</tr>
<tr>
<td>${UnManageUntil}</td>
<td>Day, date, and time when node is scheduled to be managed.</td>
</tr>
<tr>
<td>${Vendor}</td>
<td>Node manufacturer or distributor.</td>
</tr>
<tr>
<td>${VendorIcon}</td>
<td>File name of node vendor logo icon.</td>
</tr>
</tbody>
</table>
## Volume variables for Network Atlas tooltips

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>${Caption}</code></td>
<td>User-friendly volume name.</td>
</tr>
<tr>
<td><code>${FullName}</code></td>
<td>User-friendly volume name including captions of parent node and interface.</td>
</tr>
<tr>
<td><code>${LastSync}</code></td>
<td>Time and date volume last synchronized in database and memory models.</td>
</tr>
<tr>
<td><code>${NodeID}</code></td>
<td>Internal unique identifier of parent node.</td>
</tr>
<tr>
<td><code>${Status}</code></td>
<td>Numerical volume status: 0=&quot;Unknown&quot;, 1=&quot;Up&quot;, 2=&quot;Shutdown&quot;, 3=&quot;Testing&quot;</td>
</tr>
<tr>
<td><code>${StatusLED}</code></td>
<td>Filename of volume status icon.</td>
</tr>
<tr>
<td><code>${VolumeAllocationFailuresThisHour}</code></td>
<td>Number of volume allocation errors for this volume in last hour.</td>
</tr>
<tr>
<td><code>${VolumeAllocationFailuresToday}</code></td>
<td>Number of volume allocation errors for this volume in current day.</td>
</tr>
<tr>
<td><code>${VolumeDescription}</code></td>
<td>User-friendly volume description.</td>
</tr>
<tr>
<td><code>${VolumeID}</code></td>
<td>Internal unique identifier of volume.</td>
</tr>
<tr>
<td><code>${VolumeIndex}</code></td>
<td>Unique index of volume within the parent node.</td>
</tr>
<tr>
<td><code>${VolumePercentUsed}</code></td>
<td>Percentage of volume currently in use.</td>
</tr>
<tr>
<td><code>${VolumeResponding}</code></td>
<td>(Y) = volume is currently responding to SNMP queries.</td>
</tr>
<tr>
<td><code>${VolumeSize}</code></td>
<td>Size of volume, in bytes.</td>
</tr>
<tr>
<td><code>${VolumeSpaceAvailable}</code></td>
<td>Total space available on volume, in bytes.</td>
</tr>
<tr>
<td><code>${VolumeSpaceUsed}</code></td>
<td>Total space used on volume, in bytes.</td>
</tr>
<tr>
<td><code>${VolumeType}</code></td>
<td>Volume type, as reported by hrStorageType OID (Removable Disk/Fixed Disk/Compact Disc/Virtual Memory/RAM/etc).</td>
</tr>
<tr>
<td><code>${VolumeTypeIcon}</code></td>
<td>Filename of icon for volume type.</td>
</tr>
</tbody>
</table>
## Wireless variables for Network Atlas tooltips

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>${WirelessAP}</td>
<td>States if node is being polled by the wireless poller (1) or not (0).</td>
</tr>
<tr>
<td>${WirelessLastStatPoll}</td>
<td>Date and time when the node was last polled by the wireless poller.</td>
</tr>
<tr>
<td>${WirelessPollInterval}</td>
<td>Interval, in minutes, between wireless polling attempts on node.</td>
</tr>
<tr>
<td>${WirelessStatBlockUntil}</td>
<td>Date and time node may be polled again by wireless poller.</td>
</tr>
</tbody>
</table>