



User Guide  
Version 5.7  
August 2013

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# Chapter 1

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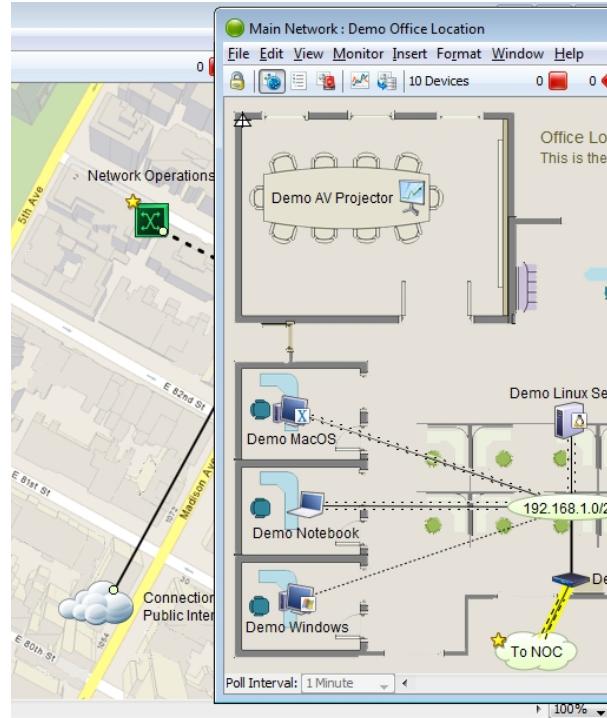
## Welcome to InterMapper

### InterMapper Server and Network Monitoring

InterMapper is a network monitoring and alerting program. It continually tests routers, servers, hubs, and other computer devices that are attached to your network. If InterMapper detects a failure, it sends notifications to one or more individuals via sounds, e-mail, pagers, SMS text, or by running a program to correct the problem.

Use this manual to learn about how to get InterMapper up and running quickly, and to get detailed information about specific features of the program.

InterMapper has several components that work together to help you understand what's happening on your network:



#### InterMapper (Pg 37)

The core functionality of the product that gathers data about your network, and provides polling, alerting, notifications about its operation.

#### InterMapper Flows (Pg 285)

Uses NetFlow, sFlow and J-Flow data to provide detailed information about the kinds of data flowing through the network.

#### InterMapper DataCenter (Pg 577)

Several additional components that enhance InterMapper. Includes access to external authentication servers and a PostgreSQL database.

#### InterMapper RemoteAccess (Pg 343)

A GUI application that allows you to view and configure your InterMapper system from any location.

In addition, you can customize InterMapper's operation in a number of ways. The [Developer Guide/Software Development Kit](#) is described separately.

Please give us comments at the address listed below. Thanks!

[Help/Systems LLC](#)

[InterMapper Feedback](#)

## About InterMapper

### What's New in InterMapper®5.7?

InterMapper 5.7 includes many new features and enhancements. Here's a summary...

#### *Installer Integration of InterMapper Flows*

InterMapper Flows has been integrated into the installer for InterMapper, so it no longer requires a separate installer.

#### *InterMapper Flows Evaluation*

If you are evaluating InterMapper, InterMapper Flows is active and available for evaluation when you install InterMapper. Once the trial period is past, you will need a license for InterMapper Flows in order to use it.

#### *Java for Windows*

When you install InterMapper, it installs its own Java Runtime package. This ensures that the version of Java is always compatible with the current version of InterMapper.

#### *Minor Features*

- The [Log Files \(Pg 230\)](#) preferences window has redesigned so you can create and edit all Log File settings from the Server Settings window.
- All probe descriptions now come directly from the probes themselves. This assures that all descriptions are accurate and up-to-date. You can see the complete list of descriptions in the [Probe Reference Index \(Pg 407\)](#).

Documents versions:

- InterMapper (including Flows) & InterMapper RemoteAccess: 5.7
- Document Built: 8/23/2013 4:54 PM

## A Brief History of InterMapper

InterMapper® is a network monitoring and alerting tool. It was initially developed at Dartmouth College where Bill Fisher and Rich Brown worked to create a tool that would monitor the College's locally-developed New England Digital (NED) AppleTalk and IP routers. These minicomputer-based routers had extremely limited memory, and thus couldn't ever be programmed to speak SNMP. With more than one hundred of these routers in the basements of buildings on campus, the College decided to write its own tool for monitoring the network. As more SNMP-speaking commercial equipment was brought on campus, InterMapper was extended to support SNMP, and later other probe types.

The program was good enough that Rich and Bill were encouraged to market InterMapper commercially beginning in July 1996. (They had some practice marketing software from their experience selling the MacPing software from 1992.) Dartmouth also began selling their SNMP Watcher MIB console in March 1999.

In April, 2000, Dartmouth College transferred title to InterMapper, MacPing, and SNMP Watcher to a newly-formed company, Dartware, LLC. The founders were Rich Brown, Bill Fisher, and Stuart Pompian, an area businessman. Dartmouth College retains a share of the ownership of Dartware which will continue development and marketing of those software products. New to the InterMapper team are Tex Clayton, programmer, and John Sutton, Customer Service.

In July 2000, Dartware released InterMapper 3.0. In July 2001, we introduced version 3.5.

January 2002 introduced InterMapper 3.6, which was the first version to support InterMapper Remote. Version 3.6.1 shipped in April 2002.

In January 2003, InterMapper 4.0 shipped on MacOS Classic, MacOS X, and Windows NT/2000/XP. In March 2003, we added several Linux and Unix distributions.

We shipped cross-platform charts, and Nagios and Big Brother probes in version 4.1 in August 2003. InterMapper 4.2 brought Maintenance Mode, arithmetic in probes, helper applications, and a number of miscellaneous changes in March 2004.

InterMapper 4.3 was released in March 2005, bringing the ability to monitor NT services, importing and exporting of data, geographic importing, improved icon display, and the Interfaces window.

InterMapper 4.4 was released in October 2005. Its main features include the ability to test devices using SNMPv3, a Device List window, syslog notifications, WINS naming, a System Tray and menu bar application for Windows and OSX, respectively, double-click actions, a universal binary version for MacOS X, and a number of new probes.

InterMapper 4.5 was released in October 2006. It provides significant improvements to the GUI to make the product easier to use and configure;

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autosave; writing events to a syslog server, enhanced trap processing; a new "critical" status that is more severe than the Alarm status; alarms on packet loss and round-trip time; new import/export facilities; ignore outages/allow periodic reprobe behaviors; and a number of new probes and minor features.

InterMapper 4.6. was released in July 2007. It introduces the InterMapper DataCenter, which includes in its first release the new InterMapper Authentication Server, allowing authentication of InterMapper users via Radius, Active Directory, LDAP, and Open Directory. It also includes shared polling; autolayout; an improved interfaces window; periodic check for updates; and a number of new probes and minor features.

InterMapper 5.0 was released in May 2008. The major features were the ability to monitor and test IPv6 devices and the ability to write data directly into an SQL database. Among the minor features was the ability to organize maps into folders, and enhanced support for Nagios plugins and the PERFDATA results.

InterMapper 5.1 was released in April 2009, introducing Probe Groups, SMS Notifiers, and integration with Google Earth. Minor features included the ability arrange icons in a m by n grid, and to import and export a map via command-line."

InterMapper Flows 1.0 brought an integrated NetFlow analyzer to InterMapper in October 2008. This allowed customers to see top talkers, top ports, and top sessions. It required InterMapper 5.0.5.

InterMapper Flows 1.1 shipped in May 2009, bringing support for sFlow v2, 4, and 5, the ability to view data by bits or bytes per second, increased robustness on several platforms, and significant performance enhancements. This requires InterMapper 5.1 or newer.

October 2009 saw the release of InterMapper Flows 1.2, which added Netflow v7 support, as well as JFlow support for Juniper equipment. It also provided a handy Whois lookup feature and the ability to copy graphs to a clipboard.

InterMapper 5.2 shipped in January 2010, bringing the HTTP-based API, through which you can acknowledge down devices, and import and export files and tables. It also added a number of WMI probes, providing access to Windows machine status through the Windows Management Instrumentation interface. The new Companion Script feature allowed the embedding of a script in a command-line probe file.

InterMapper 5.3 shipped in June 2010, and brought Localization into Spanish, Chinese, and Japanese, improvements to database export performance and to handling maps with thousands of interfaces, and a number of minor features.

In January 2013, Help/Systems, LLC announced the acquisition of Dartware. Help/Systems, LLC is a world leader in systems management, security, and business intelligence software.

## Software License Agreement

BY INSTALLING, COPYING OR OTHERWISE USING THE SOFTWARE PRODUCT ("Product"), YOU ACKNOWLEDGE THAT YOU HAVE READ THIS LICENSE AGREEMENT ("Agreement"), UNDERSTAND IT, AND AGREE TO BE BOUND BY IT.\*

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- (ii) permit any third party access to the Product, including, but not limited to, external hosting or third party IT outsourcing vendors, without obtaining prior written consent to such an arrangement from the Company;
- (iii) reverse engineer, translate, disassemble, decompile, sell, rent, assign, lease, manufacture, adapt, create derivative works from, or otherwise modify or distribute the Product or any part thereof;
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## **MAINTENANCE**

The Customer may purchase maintenance for the Product by payment of a maintenance fee as set forth by the then current software product price list. Maintenance includes the following benefits:

- Refinements and corrections of the Product as they become available provided these improvements are not separately priced and marketed by the Company.
- Enhancements to interface the Product with new versions.
- The right to temporarily copy and use the Product on a different system located at a hot site.
- Unlimited technical phone support.

Training services must be used within 6 months of being invoiced and all fees are nonrefundable.

## InterMapper and Section 508

### Voluntary Product Accessibility Template

The table below outlines InterMapper and InterMapper RemoteAccess (collectively called "InterMapper" below, unless otherwise specified) accessibility features in the context of the Section 508 standards. This document is not intended to be a certification of compliance.

The document contains subsets of the Electronic and Information Technology Accessibility Standards as published in 36 CFR Part 1194 and provides an analysis of InterMapper as compared to these standards.

#### Section 1194.21 Software Applications and Operating Systems - Detail

Criteria	Supporting Features	InterMapper & RemoteAccess
<b>Keyboard Access</b>	Supports with exceptions.	Some functions, including arranging devices on the map and displaying status windows are not accessible via keyboard commands.
<b>Accessibility Features</b>	Supports. InterMapper does not disable accessibility features.	X
(c) A well-defined on-screen indication of the current focus shall be provided that moves among interactive interface elements as the input focus changes. The focus shall be programmatically exposed so that Assistive Technology can track focus and focus changes.	Supports with exceptions. InterMapper provides on-screen indication of current focus that moves among	Focus is not programmatically exposed in InterMapper

		interactive interface elements as the input focus changes.	
<b>Information about user interface elements</b>		Supports with Exceptions. InterMapper provides "status windows" that describe the state of items on a map, however these status windows are not available to Assistive Technology.	X
(d) Sufficient information about a user interface element including the identity, operation and state of the element shall be available to Assistive Technology. When an image represents a program element, the information conveyed by the image must also be available in text.			
<b>Consistent meaning of images</b>		Supports. The InterMapper user interface uses bitmap images to display device status.	X
(e) When bitmap images are used to identify controls, status indicators, or other programmatic elements, the meaning assigned consistently to those images shall be consistent throughout an application's performance.			
<b>Availability of textual information</b>		Supports.	X
(f) Textual information shall be provided through operating system functions for displaying text. The minimum information that shall be made available is text content, text input caret location, and text attributes.			
<b>Contrast and color settings</b>		Supports.	X
(g) Applications shall not override user selected contrast and color selections and other individual display attributes.		InterMapper does not override user selected contrast and color settings when they are available in the operating system.	
<b>Animation</b>		Does not support.	InterMapper has animated traffic flows that have no presentation mode that is
(h) When animation is displayed, the information shall be displayable in at least one non-animated presentation mode at the option of the user.			

		available to Assistive Technology.
	Supports.	X
<b>Color Coding</b>		
(i) Color coding shall not be used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.		
<b>Variety of color selections</b>	Supports. InterMapper allows users to customize the contrast and color settings of the text and background of their document to a wide range of colors supported by their system.	X
(j) When a product permits a user to adjust color and contrast settings, a variety of color selections capable of producing a range of contrast levels shall be provided.		
<b>Flash or blink frequency</b>	Supports.	InterMapper uses a 1 Hz (or slower) blinking icon to indicate an outage.
(k) Software shall not use flashing or blinking text, objects, or other elements having a flash or blink frequency greater than 2 Hz and lower than 55 Hz.		
<b>Interaction with electronic forms</b>	Not Applicable. InterMapper does not have electronic forms capabilities.	N/A
(l) When electronic forms are used, the form shall allow people using Assistive Technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.		

# Chapter 2

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## Getting Started

### Installing and Launching InterMapper

Get a copy of InterMapper from the [Download Page](#), then install it as described below.

When you install InterMapper, the installer also includes [InterMapper DataCenter \(Pg 564\)](#) and [InterMapper Flows \(Pg 285\)](#). During the trial period, all three are available. Once the trial license expires, you need a license to run InterMapper Flows, and the correct InterMapper license to run InterMapper DataCenter.

When you launch InterMapper the first time, a Welcome page appears. Use the shortcuts on the Welcome page to get you quickly to area of InterMapper that will best get you started.



*InterMapper Welcome page*

- **Create a new map** - opens the New Map window. After naming your map, you can start the Autodiscovery process to scan your network for devices. All discovered devices get placed on your new map. Find out more about this process in [Using Auto-discover. \(Pg 57\)](#)
- **Try out the Demo maps** - opens a Demo map as described below.
- **Get help** - opens the Getting Started page on the InterMapper website.

#### To prevent the Welcome window from appearing:

- Click ***Do not show this window again*** and click ***Continue to Map List***.

### **Using the Demo Maps**

No matter which platform you're using, a set of demo maps becomes available when installation is complete and the program is launched. Watch them operate, and experiment with them to see how InterMapper operates. For additional information, see [With Try Out the Demo Maps \(Pg 40\)](#).

## Installing on Different Platforms



**Note:** although many of the features described in this manual are similar between the MacOS, Windows, and Unix/Linux platforms, there are a few differences. We recommend you read the Readme file on the [Downloads page](#) for information specific to your version.

### MacOS X

1. Double-click the *.dmg* file to mount it.
2. Double-click the *InterMapper.pkg* icon for the installer and follow the instructions. The *InterMapper* application starts running when installation is complete.

### Windows

- Double-click the InstallShield icon for the installer and follow the instructions. The *InterMapper* application starts running when installation is complete.

### Unix or Linux

- If you're using **Unix** or **Linux**, then read the accompanying **ReadMe** (also found on the download page) to get instructions for installing on your particular platform.

## About the Trial Version

The downloadable version of InterMapper requires a serial number to operate. You can [request a free evaluation serial number](#) to get the full functionality for 30 days, including printing and opening saved maps.

If you already have a serial number (because you purchased the software or you

received the evaluation serial number), click **Enter your serial number now** or the **Register** button in the Serial Number Required window. You can then enter your name and serial number. For details about entering your evaluation (or any other) serial number, you can read the [Registering your software \(Pg 22\)](#) page.

If you don't have a serial number, click the **Request an Evaluation Serial Number** link in the window shown above. It will open a web form through which you can request a serial number. We will e-mail you a serial number that allows



you to use InterMapper to monitor a limited number of devices for 30 days. When you receive the serial number, enter it as described above.

Once you've seen the demo, see [Using InterMapper \(Pg 37\)](#) to guide you as you try out InterMapper's features.

### **About Serial Numbers**

When you purchase InterMapper, we will send you a full serial number that unlocks the software permanently.

InterMapper supports a number of different serial number formats. A full serial number - sent to those who purchase the software - will never time out. Once entered, that version of the application will run forever.

InterMapper also supports evaluation serial numbers which allow you to run InterMapper for a certain number of days before it ceases to operate. This gives you an opportunity to try the program without obligation. When a serial number times out, InterMapper simply ceases to operate. It *never* deletes or alters files on your hard drive.

## Registering Your Software

The downloadable version of InterMapper [request a free 30-day evaluation serial number](#). When you buy InterMapper, you get a non-expiring license.

We will e-mail a license you can use to unlock the software as described below.

### About Serial Numbers and Licenses

InterMapper can use either a serial number or license certificate to unlock the software that you have downloaded.

A **Serial Number** is composed of two parts, a *Registered Name* and *Serial Number*.

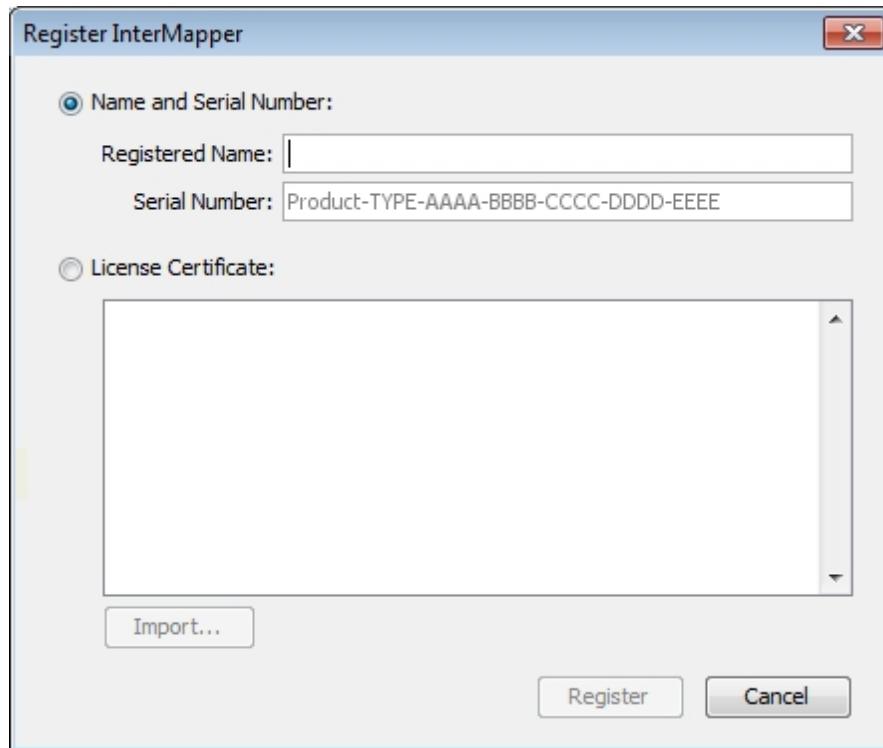
The **License Certificate** is a digitally-signed block of text, delimited by lines of the following form:

```
----- BEGIN DARTWARE SOFTWARE CERTIFICATE -----  
... lines of text ...  
----- END DARTWARE SOFTWARE CERTIFICATE -----
```

There are several ways to enter the serial number or license certificate:

- Click the **Enter your serial number now** link in the yellow window.
- From the **Registration** panel of the Server Settings window, click **Add...**
- Click the **Register** button in the window that appears when you connect to a test or evaluation copy of InterMapper.

In any of these cases, you will see a window like the one below.



### Entering a Serial Number

To enter a serial number, paste in the supplied Registered Name and the Serial Number into the appropriate fields of this window.

### Entering a License Certificate

To enter a License Certificate, paste the text—including the "BEGIN" and "END" lines— into the License Certificate field of this window.

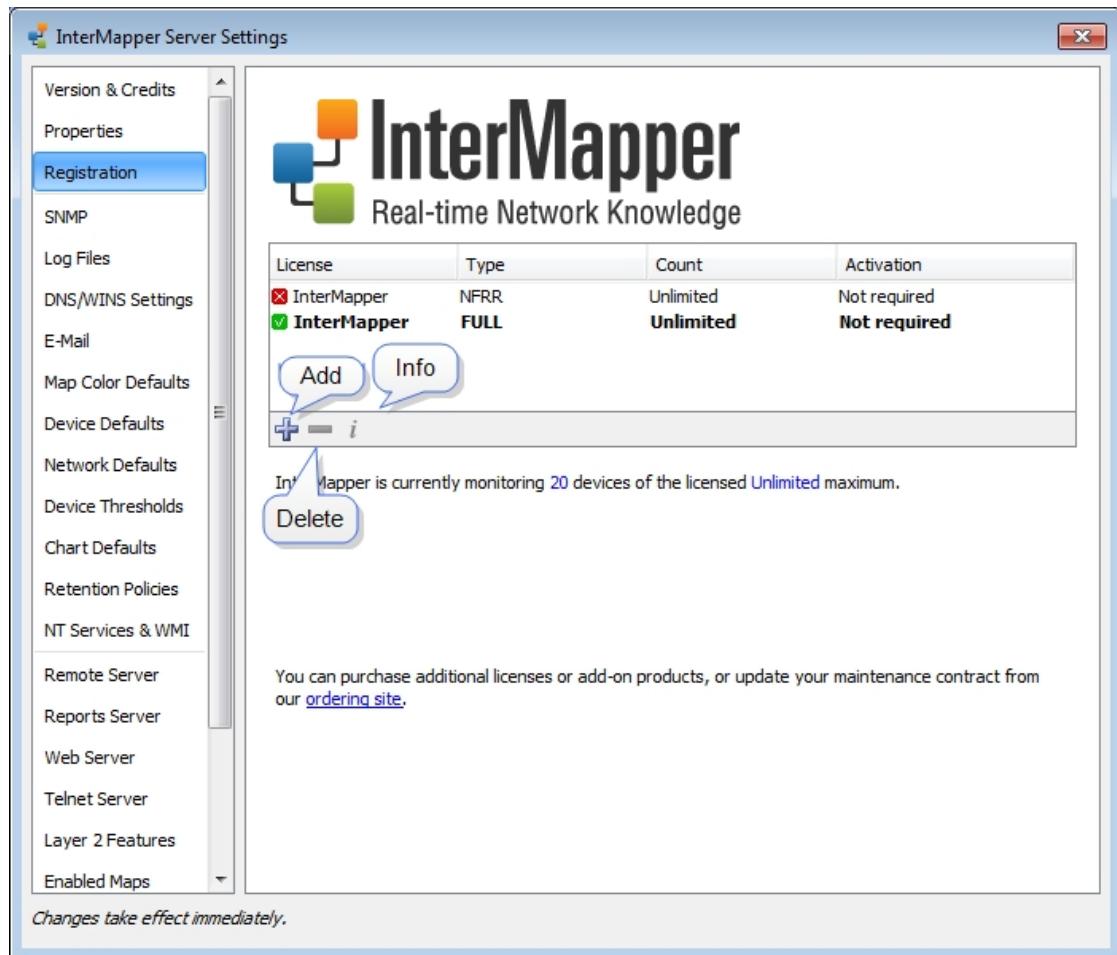
If you don't run InterMapper on the same machine as your InterMapper server, here are a few ways to install the license certificate without retyping.

1. Run an E-mail client on the InterMapper machine temporarily, and forward the E-mail to that machine. Copy the license text from the e-mail message, and paste it into the **Enter License Certificate** text box. If you don't normally use an E-mail client on the InterMapper computer, this may be an easy workaround.
2. If you have InterMapper RemoteAccess, you can use it. Open the email, copy the license text, then use InterMapper RemoteAccess to open the Server Settings window. In the left pane, click **Registration**, then **Add...**. Paste the license text into the **Enter License Certificate** text box.
3. You can also import the license information from a file saved on your computer. To do this, use your e-mail client or a text editor to save the license information to a file. Be sure to include the BEGIN and END lines of the certificate. Then transfer that file to your InterMapper machine (using a file server, FTP, USB drive, CD-R, etc.). Use the **Registration** panel of the Server Settings window, click **Add...**, and then click **License Certificate**, then click **Import**. Navigate to the file and it'll be read in.

**Note:** If you see an error message that says, "there are no valid serial numbers in this license certificate", when you apply the new license, please delete all EVAL and TEST serial numbers from the Registrations table and try again.

## Entering Multiple Licenses

You can enter multiple serial numbers to unlock additional InterMapper functionality. The **Registration** pane in InterMapper Server Settings window shows the licenses that are currently installed.



### Multiple licenses in InterMapper RemoteAccess

Use these options, available from the Registration pane, to add, delete or view information about a license or serial number:

- Click **+** to add a new license or serial number.
- Click **-** to remove the selected license or serial number.
- Click **i** to view detailed information about the selected license or serial number.

### InterMapper Control Center

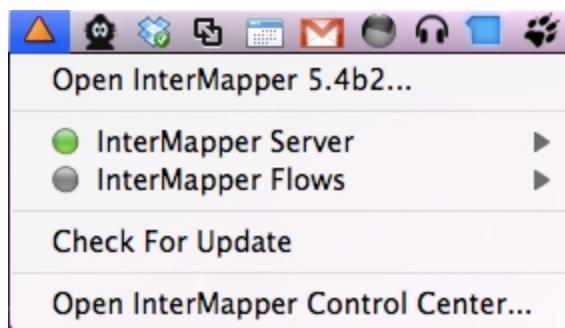
On MacOS X, InterMapper installs a Menu Bar Application that gives a summary of InterMapper's status, and allows you to start and stop the InterMapper daemon.

On Windows, InterMapper installs an icon in System Tray (lower right corner) that does much the same thing. It also uses presents a window to indicate an interesting change in InterMapper's state.

The System Tray Icon and Menu Bar Application are available only on the machine hosting the InterMapper Server.

#### On MacOS X

The menu bar application has an icon that reflects the most serious state of InterMapper. When the server is not running at all, the InterMapper program icon appears. The icon will be green, yellow, orange or red, depending on the severity when the server is running.



The menu bar application can also:

- Open the InterMapper application
- Start or Stop the InterMapper server daemon
- Open the InterMapper Control Center
- Check for software updates

The InterMapper Server Status window shows the server name and version, as well as the current state of the InterMapper server. This window also allows you to start or stop the InterMapper server, or open InterMapper.

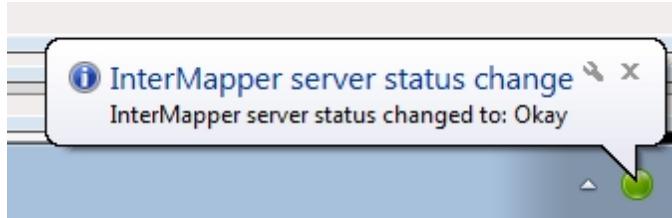
#### On Windows

The InterMapper Control Center application is available on [supported Windows systems](#) (Pg 30).

It has the same function of the MacOS X application, but is called from the Window System Tray (lower right corner of the screen).

You can do the following from the InterMapper Control Center:

- Choose whether the Windows balloons



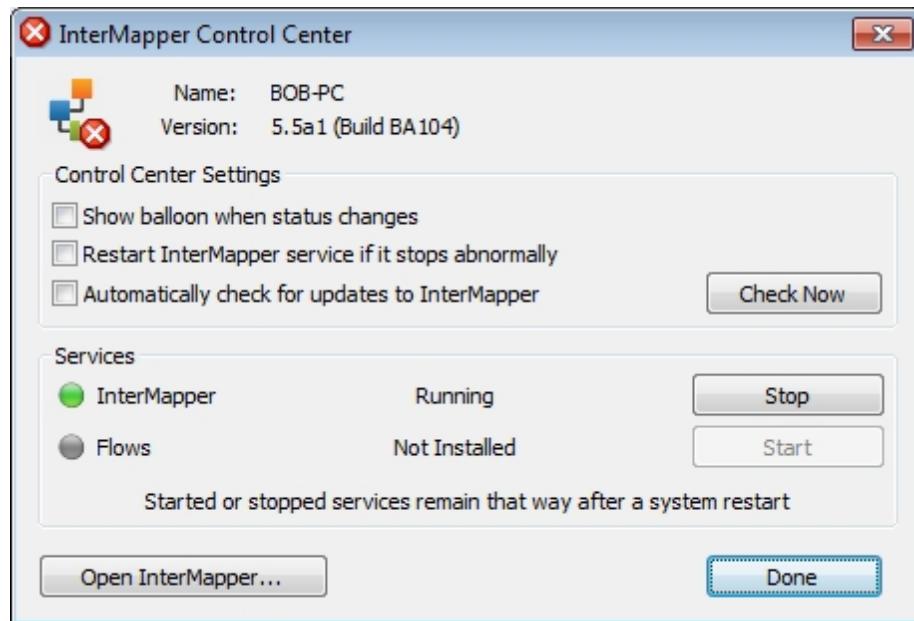
- appear when map status changes.
- Start or stop the InterMapper or Flows services.
- Open the InterMapper application.
- Choose whether to check for software updates automatically.
- Check for software updates manually.

You can do most of these same functions from the context menu that appears when you right-click the InterMapper status icon.

**Note:** When you stop or start a service from the InterMapper Control Center, that states of those services are maintained when you restart the machine.

**To open the InterMapper Control Center:**

- Right-click the InterMapper Control Center icon in the Windows System Tray and choose **Show InterMapper Control Center**.



## Automatic Notifications of Updates

InterMapper can automatically check to see if a new version is available for download. This check is performed at startup and again every 24 hours.

If the check has never been run before, InterMapper presents a dialog you can use to disable the automatic checking before it takes place. At any time, you can disable the feature, either by choosing Preferences from the Edit menu, then choosing the Behavior->Version Updates pane, or by opening the InterMapper Control Center. When a new version is available, a message appears, including a link to the new version

When you first start up a Windows version of InterMapper, a message asks you would like InterMapper to check for new versions. This is the only time it will ask this question. If you answer yes, the check is performed at startup and again every 24 hours.

To enable or disable this feature:

1. Open InterMapper Control Center
2. Select or clear the "Automatically check for updates to InterMapper" check box.

Upon detecting that a newer version of the software is available, a dialog box appears, indicating that a newer version is available, and asking if you would like to download the new version.

- Click "Yes" to launch a browser with the URL to the new version.

## Using Growl for Update Notifications (Macintosh Only)

Growl is a notification system for Mac OS X. It provides a central mechanism for controlling and customizing the delivery of notification messages from Mac OS X applications.

Growl is a free download from: <http://growl.info>

## How Notifications Appear When Growl is Running

When Growl is available, InterMapper Control Center uses it to display notification messages instead of using the default "yellow tooltip window". If Growl is running when InterMapper Control Center starts up, Growl notifications are used automatically. If you install Growl after InterMapper Control Center is already running, you must open the InterMapper Control Center settings window before Growl is detected and used.

Growl provides a number of features not available through InterMapper Control Center's built-in message window.

1. Growl has a plugin system that supports customizable "look-and-feel". As a result, Growl notifications look much better, and feel more natural than InterMapper's yellow window.
2. Most Growl plugins are customizable. You can configure the appearance of the notification, including text size and color.

3. You can choose which InterMapper notification messages you want to see, or alter the appearance of specific messages to match their importance. For example, you can set up DOWN and CRITICAL notifications to display in large red text, and ignore all other notifications.
4. You can specify that any or all InterMapper notifications are "sticky", each remaining on screen until you explicitly click it.
5. There are many more options. For example, you can choose to have Growl speak notification messages or email them to you.

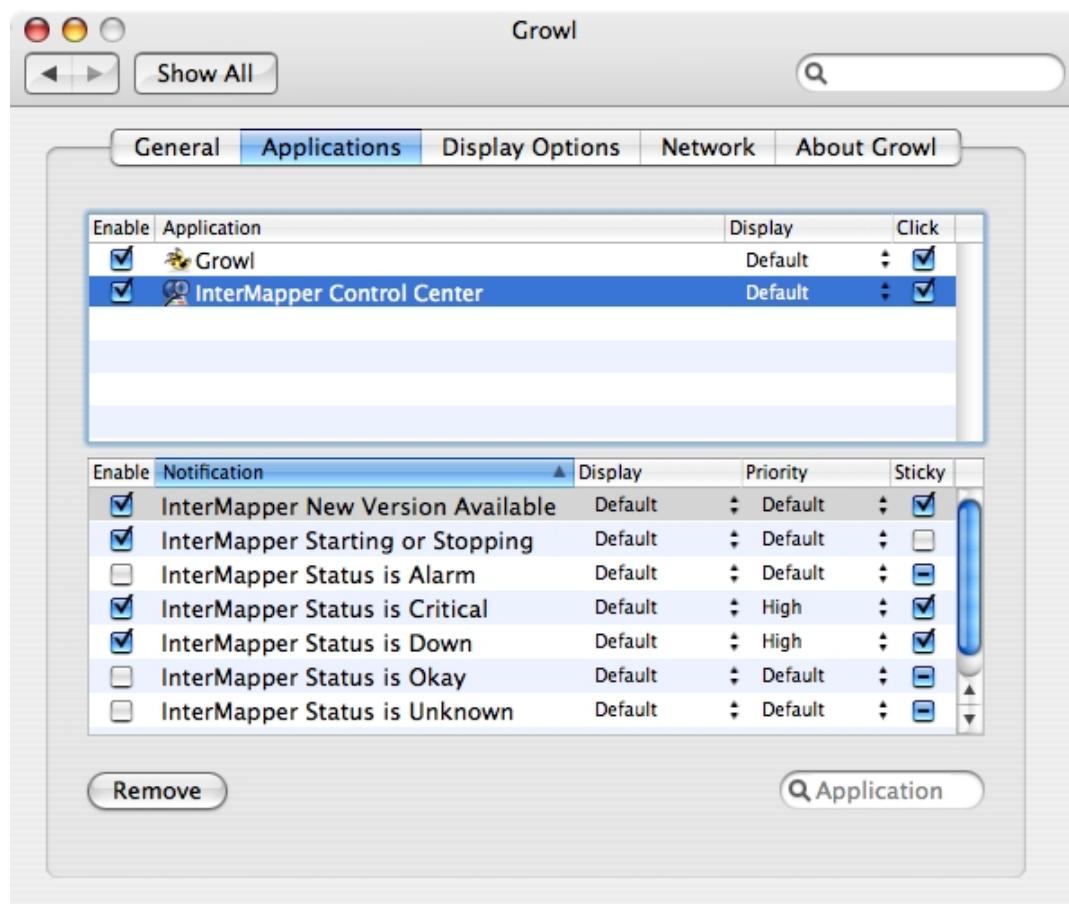
#### To test Growl messages:

1. Open the InterMapper Control Center window.
2. Select the "Show messages when InterMapper Server status changes" checkbox.

**Note:** Neither Growl nor InterMapper's built-in status window is used if this checkbox is not checked.

#### Growl Control

Use Growl's System Preference panel to configure Growl's behavior.



Growl provides control over the following InterMapper notifications:

- InterMapper New Version Available
- InterMapper Starting or Stopping
- InterMapper Status is Down
- InterMapper Status is Critical
- InterMapper Status is Alarm
- InterMapper Status is Warning
- InterMapper Status is Okay
- InterMapper Status is Unknown

You can individually enable or disable any of these messages. You can also specify different plugins for different messages or specify that certain messages require you to click on them to dismiss them (the "sticky" option).

By default, Growl support is automatically enabled in InterMapper Control Center if Growl is available. If you have Growl installed, but you do **not** want InterMapper to use it, disable it using the following command-line:

```
defaults write com.dartware.InterMapperMenu DWGrowlDisabledKey 1
```

After executing the command, you must reopen the InterMapper Control Center Settings window for this change to take effect.

## System Requirements

### Hardware and Software Requirements

**InterMapper** runs on Windows, MacOS X, Solaris SPARC and x86; and various Linux distributions (see below.)

**InterMapper RemoteAccess** runs on MacOS X, Windows, and Unix (including Linux) computers. Java 1.6 or newer required. In general, any computer capable of running MacOS X, or a 1 GHz Pentium or faster Windows or Unix computer with 512 Mb of RAM will serve quite nicely to run InterMapper RemoteAccess.

**InterMapper Flows** requires a fairly powerful computer. Both processor power and the amount of RAM are important considerations. Although you may perform initial testing using a VM (virtual machine) environment, we do not recommend that you use a VM in production because the performance is frequently not good enough.

InterMapper Flows benefits from having a large amount of RAM for its database cache. If you want to allocate more than 1.5Gb of RAM, use a 64-bit Windows, Macintosh, Linux, or Unix system.

This table indicates the recommended system requirements for various flow rates.

Flows/Hr	Recommended Minimum Spec
100 million	Quad core, 3GHz, 65Gb of RAM, RAID storage Requires 64-bit Windows, Linux, Unix, or Macintosh hardware.
10 million	Quad or Dual core, 16Gb of RAM Requires 64-bit Windows, Linux, Unix, or Macintosh hardware.
1 million	Dual core, 4Gb of RAM

### Operating System Requirements



**InterMapper for MacOS X** requires MacOS X or MacOS X Server, 10.5 or newer. Any computer that can run this version of MacOS X will easily handle large maps.

#### InterMapper for Windows XP/2003/Vista/Windows Server

**2008/Windows 7** A Windows computer with at least a 1GHz Pentium and 512Mb of RAM will work well for at least 500 devices. Larger installations will benefit from a faster processor or more RAM. InterMapper support for IPv6 requires Windows Vista with Service Pack 1, Windows Server 2008, or newer.

**InterMapper for Linux** has been tested with the following Linux distributions:



- Debian 5
- Fedora 9 and newer
- OpenSuSE 11.0
- Red Hat Enterprise Linux 5;
- Ubuntu 8.04

InterMapper requires an x86 processor with 512Mb of RAM. Java 1.6 or newer required.



**InterMapper for Solaris** requires Solaris 10, running SPARC or x86. Java 1.6 or newer required.

### InterMapper Connection Policy

- InterMapper allows an unlimited number of clients to connect. However, InterMapper does check the serial numbers of paid, full copies of InterMapper RemoteAccess, and will not allow two copies with the same serial number to connect.

### Section 508 Accessibility

For a statement of InterMapper's 508 Accessibility, see [Section 508 Compatibility \(Pg 15\)](#).

## Installing InterMapper Flows

You must follow several steps before you can begin analyzing your Flows data.

- InterMapper Flows is installed automatically with InterMapper. See [Installing and Launching InterMapper \(Pg 18\)](#) for more information.
- If you are running a trial version, InterMapper Flows is fully operational. Once the trial expires, an InterMapper Flows license is required.
- Be sure to **remove any firewalls** on the selected UDP ports for NetFlow (default is 2055).
- *Note:* The InterMapper Flows service/daemon may not start up if another program is using port 2055 (or whatever port you have designated for netflow packets). You should stop/uninstall any other netflow packages on the system.
- You must also **configure one or more Flows exporters** to send data to the InterMapper Flows server. InterMapper Flows automatically detects the exporters and begins collecting their data. Many switches and routers can be configured to export Flows data. There are also several software-based Flows exporters available, including nProbe, SoftFlowd, and ProQueSys.

## InterMapper Quick Tour

Ten things to try with InterMapper when you're first checking it out. Learn how to create maps, make them attractive, send alerts, make charts, etc.

This page lists ten things you can try with InterMapper to get more familiar with it. You can also refer to the [InterMapper User Guide](#) for more information.

1. **Play with the demo** Open the Example.com National Map, and take a couple minutes to try the steps listed in the text you'll see there.
2. **Building Maps** There are several ways to create maps—autodiscovery, entering addresses manually, and importing a file. Before you proceed, you may want to download the [Hands-on Examples](#) because it has some files for the following steps. Things to try:
  - **Autodiscovery** InterMapper can scan a network to find devices
    - Create a new map by choosing **File > New map...** Give it a name (*Local Network*) and click Next.
    - Check the Autodiscovery button in the window, then click Next. You'll see the Autodiscover window.
    - Enter a starting point address (the default value is fine) and click OK.
    - Autodiscovery will begin. Let it complete, or click Cancel in the top of the map when you've discovered enough.
  - **Manual Entry** You can also add devices manually by typing or pasting a list of DNS names or IP addresses into the window that appears.
    - Create a new map, give it the name "North America". Check the Manual Entry button, then click **Next >**. You'll see the Add Device (s)... window.
    - Type **www.helpsystems.com** and **www.example.com** and click Add. Note that they appear as devices (rectangles) and turn green a few moments afterward. (InterMapper is already testing them.)
    - You can add a background image to make the map look better. Drag the *NorthAmerica.jpg* from the Hands-on Extras folder to map window and it will appear as the map's background.
    - Choose **Window > Zoom window** to resize the map to the image.
    - Drag the rectangles to the desired location on the background map.
  - **Import a file** InterMapper can read a tab-delimited file to populate a map.
    - Choose **File > Import > Map data...** A file-selection window will open.
    - Select the *Unalakleet Import.tab* from the Hands-on Extras folder.

- InterMapper will create a new map named *Unalakleet* (the map name is already specified in the import file), and place the imported devices onto the map.
  - Note that the devices are added to the map, and their icons are aligned in a vertical column.
  - **Geographic positioning** When importing, InterMapper also can place devices on a map according to their latitude and longitude.
    - Add the *Unalakleet.gif* file as a background to the *Unalakleet* map by dragging it into the window.
    - Zoom the window to make it full-size (**Window > Zoom Window** or Ctl/Cmd-/). Remove the devices (Select all; Clear).
    - Set benchmarks on the map by control/right-clicking on a city on the map and choosing Set Benchmark...
    - Enter the latitude/longitude printed at the bottom of the map background for the data. Do this for both points listed on the bottom of the map.
    - Re-import the *Unalakleet Import.tab* file using **File > Import > Map data....** The icons now appear in the proper location.
  - **Create top-level map** InterMapper can have top-level maps that indicate the most serious condition of a sub-map. We'll add icons for the *Local Network* and the *Unalakleet* sub-maps to the North America map.
    - Open the North America map and position it and the Map List so you can see both windows.
    - Drag the icon for *Unalakleet* from the Map List into North America map. You'll see the probe configuration window appear. Click OK.
    - Drag the icon for the *Local Network* map in a similar way.
    - Drill down by double-clicking the *Local Network* icon on the top-level North America map. You'll see the *Local Network* map open up.
3. **Making Attractive Maps** There are a number of techniques for making the maps look more attractive, or to convey more information. Things to try:
- **Drag items around** to match the way you think of your network. Lines between devices "rubberband" to preserve the interconnections.
  - **Add a background image** to position devices as you like. Simply drag a PNG, JPEG, or GIF image into the map window to add it, or choose **Edit > Map Settings...**
  - **Select different icons and shapes for devices** Choose **Format > Icon...** to pick new icons for the devices.
  - **Change labels on devices** The label is the text that appears in/next to the icon on the map. To edit a device's label, choose **Format > Label...** or Ctl/Cmd-L.
  - **Arrange devices on the map** Use different options in the **Format > Arrange...** menu .

- **Align command** The **Format > Align** (Ctl/Cmd-Shift-K) command aligns items vertically and/or horizontally.
  - **Add a link between devices** Select two devices, then **Insert > Add link** (Ctl/Cmd-E)
  - **Connect multiple devices to a point** Select the devices, then choose the context menu **Attach to...** Lines will rubberband, and stick to the object you next click.
4. **Probes for Various Servers** In addition to simply pinging them, InterMapper can monitor dozens of different devices and display their special characteristics. Right/control-click, or **Monitor > Set Probe...** to select the probe for one or multiple selected devices. Things to try:
- **Automatic** This probe uses either Pings or SNMP queries to monitor the device. If the device speaks SNMP, InterMapper will use the SNMP MIB-II probe to query the device. If not, InterMapper will ping the device and report if it ever goes down.
  - **SNMP MIB-II** The SNMP MIB-II probe monitors traffic on routers, switches, etc. It works with nearly all network gear from different vendors.
  - **Network Devices** There are many probes for monitoring various other equipment, such as Cisco, Apple, APC and other UPS vendors, and other equipment.
  - **Servers-Standard** Standards-based servers, such as mail, web, LDAP, Radius, DNS, etc.
  - **Servers-Proprietary** Vendor-specific probes for Apple, Barracuda, Big Brother, FileMaker, Lotus, and many others.
  - **Miscellaneous** Nagios, legacy probes, etc. along with other bundles of probes for wireless and other gear.
5. **Alerts and Notifications** InterMapper can put a device into one of five states: OK, Critical, Warning, Alarm, Down. Each time the device goes into a new state, InterMapper can trigger a notification/alert.
- **Create Notifiers** Notifiers are like a robot that watches a device and performs some action to send an alert when it changes state. Choose **Edit > Server Settings** and scroll to the Notifier List at the bottom. Add an e-mail notifier for yourself.
  - **Examine various notification types** Mail, pager (analog modem and SNPP), command line, trap, group, syslog.
  - **Look at schedule** Alerts will only be triggered during the selected schedule, otherwise they are ignored.
  - Finally, **Attach a notifier to a device** To attach a notifier, choose **Monitor > Notifiers window** and check the boxes for the states that should trigger a notification.
6. **Acknowledgement** After alerts/notifications have been sent, you probably want to set those problems aside so you can detect new ones. Acknowledging a device turns its icon blue (to indicate that it has been acknowledged). The device is still down, but its blue color shows that

someone has taken responsibility for it. Acknowledging also helps you know who's working on the problem. Each time you ack a device, there's an opportunity to enter an ack message, that is written to the Event log. This contains the login name of the person who ack'd it.

- **Monitor > Acknowledge...** (Ctl/Cmd-) This does three things:

1. It stops subsequent repeated notifications.
2. The text of the message is written to the Event Log file, along with the name and IP address of the person who did it.
3. The icon stops blinking, and turns blue, to indicate that it's acknowledged, and someone's working on it.

- **Basic ack** Only for duration of that state

- **Timed** For the next n minutes, hours, or days

- **Indefinite** Until cancelled

7. **Dependencies** InterMapper will suppress notifications if it can tell that a device is unreachable because of another failure. InterMapper supports automatic dependencies—it follows the links from the *vantage point* through the map to the failed device. If there's an outage on that path, InterMapper won't send notifications for the dependent device.
  - **Automatic** InterMapper follows the links from the Vantage Point.
  - **Set the Vantage Point** - only one per map
8. **Charts** View the history of selected variables.
  - **Open a status window for a device.**
  - **Tear off window** by dragging outside.
  - **Click an underlined value** to create new chart.
  - **Drag another underlined link** to add it to an existing chart.
9. **Edit > Server Settings** The server settings shows the preferences for a server.
  - **Per server** Use the **Edit > Server Settings...**
10. **InterMapper RemoteAccess** Allows you to have all this fun, but from anywhere on the Internet
  - **Connects to multiple servers** at remote locations
  - **Works through firewall** at client/remote site. You pick the port.
  - **SSL Encryption** is the default. You can install your own SSL certificate.

# **Chapter 3**

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## **Using InterMapper**

You experience InterMapper through the [Map List Window \(Pg 47\)](#), where you view a list of available maps. When you open a map, it appears in a [Map Window \(Pg 42\)](#).

If you are using [InterMapper RemoteAccess \(Pg 343\)](#), you may be viewing more than one map list in the Map List window; one for each server.

You can customize InterMapper by defining [Helper Applications \(Pg 76\)](#) and by specifying what actions should be taken when you [double-click an object on a map \(Pg 81\)](#). You can also set [user preferences \(Pg 52\)](#) for InterMapper and InterMapper RemoteAccess.

### ***Creating Maps***

Use this section to find out how to [start your map \(Pg 55\)](#), to [use Autodiscovery \(Pg 57\)](#) to find and map each device on your network, and to [add devices \(Pg 63\)](#) and [networks \(Pg 66\)](#) manually. Once you are familiar with what maps are and how you can use them, you can add devices to your map by [importing them \(Pg 588\)](#), and can [export data from maps \(Pg 586\)](#) for use in spreadsheets and databases.

You can even [place a physical map image in the background \(Pg 99\)](#) of your map, and [use geographic coordinates \(Pg 591\)](#) as you import to place devices automatically at specific locations in relation to the background image.

Use InterMapper's [different probe types \(Pg 64\)](#) to query your devices in specialized ways to give you more accurate information about the states of those devices.

As you become more familiar with what InterMapper can do, you can [add networks \(Pg 66\)](#) and [scan them \(Pg 68\)](#). You can [create sub-maps \(Pg 69\)](#), allowing you to view large networks through an overview map, "drilling down" to see more detail as needed.

### ***Arranging Your Map***

Once you have created your map, you may want to [rearrange devices into logical groups \(Pg 94\)](#), [change the appearance of devices \(Pg 96\)](#), change the [device labels \(Pg 101\)](#), or [add text \(Pg 376\)](#) or a [background image \(Pg 99\)](#). For maps with large switches, you may want to [hide some detail \(Pg 121\)](#). For tips on arranging your map, see [Arranging Tips \(Pg 114\)](#).

### **Notifiers and Alerts**

You can [set up devices to alert you to problems \(Pg 122\)](#) in a number of ways.

When a device goes the specified state, a notifier is triggered, and alerts you to the problem.

You can [create your own notifiers \(Pg 124\)](#) and [configure them \(Pg 130\)](#) to send an [E-mail message \(Pg 135\)](#), page (through a modem or [network \(Pg 146\)](#)), [send a text message \(Pg 142\)](#) to a cell phone, or [execute a script or system command \(Pg 150\)](#). You can also [open a WinPopup window \(Pg 154\)](#) on a Windows machine, [send an entry to a Syslog server \(Pg 155\)](#), or [send an SNMP trap \(Pg 156\)](#).

For each map, you can [define a default set \(Pg 84\)](#) of notifiers to be attached to a device. You can also [attach one or more notifiers \(Pg 126\)](#) to one or more specific devices. You can also create [groups of notifiers \(Pg 137\)](#) and assign them to a device all at once.

If a device goes down, and other devices are attached to that device, you can [set a Vantage Point \(Pg 128\)](#). InterMapper can then determine that the attached devices are dependent on the down device, and will not send notifications for those devices.

### **Monitoring Your Network**

InterMapper begins polling devices as soon as you create your map. A great deal of information is immediately available by viewing the [Status window \(Pg 165\)](#) for a device, network, or link. You also view and edit a device or network's information from its [Info window \(Pg 168\)](#). For routers, switches, or other devices with interfaces, you can view status or other information about specific ports through the [Interfaces window \(Pg 175\)](#).

You can set thresholds for [packet loss \(Pg 180\)](#) or [network traffic \(Pg 186\)](#), and InterMapper alerts you when a behavior is out of range. You can [create charts \(Pg 193\)](#) that graph one or more data values associated with a device. You can also [view a detailed Event log \(Pg 208\)](#) and [Outage log \(Pg 219\)](#) to help you troubleshoot problems accurately. You can even [create new log files \(Pg 230\)](#) for logging specific data.

If a device goes down, you can [acknowledge the problem \(Pg 182\)](#), which prevents InterMapper from continuing to send notifications. There are several options for acknowledging problems that allow you to control the resumption of notifications after acknowledgement.

You can [collect data from devices \(Pg 577\)](#) and save it in the [InterMapper Database \(Pg 566\)](#), through the InterMapper DataCenter. The data can then be retrieved for use in reporting and analysis. You can [set policies \(Pg 569\)](#) to specify how much data is retained and how long it is retained.

### **Server Settings**

Use the [Server Settings panel \(Pg 222\)](#) to view [information about InterMapper \(Pg 224\)](#), to [set preferences \(Pg 226\)](#), and to [configure \(Pg 249\)](#) InterMapper's [Remote \(Pg 254\)](#), [Web \(Pg 261\)](#), [Telnet \(Pg 263\)](#), and [Authentication \(Pg 574\)](#) servers. You can also maintain InterMapper's [firewall \(Pg 250\)](#) and [user \(Pg 269\)](#) list, [enable](#)

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[and disable](#) (Pg 267) or [control access to maps](#) (Pg 276), and [create notifiers](#) (Pg 278).

### ***InterMapper Reference***

Use the InterMapper Reference to view comprehensive lists of [menu commands](#) (Pg 344), details about the available [device probes](#) (Pg 404), [file and folder locations](#) (Pg 579), and learn [advanced data import and export techniques](#) (Pg 600). You can also learn how to use and customize the [InterMapper web server](#) (Pg 638), and how to use the [InterMapper Telnet server](#) (Pg 650).

### ***Troubleshooting InterMapper***

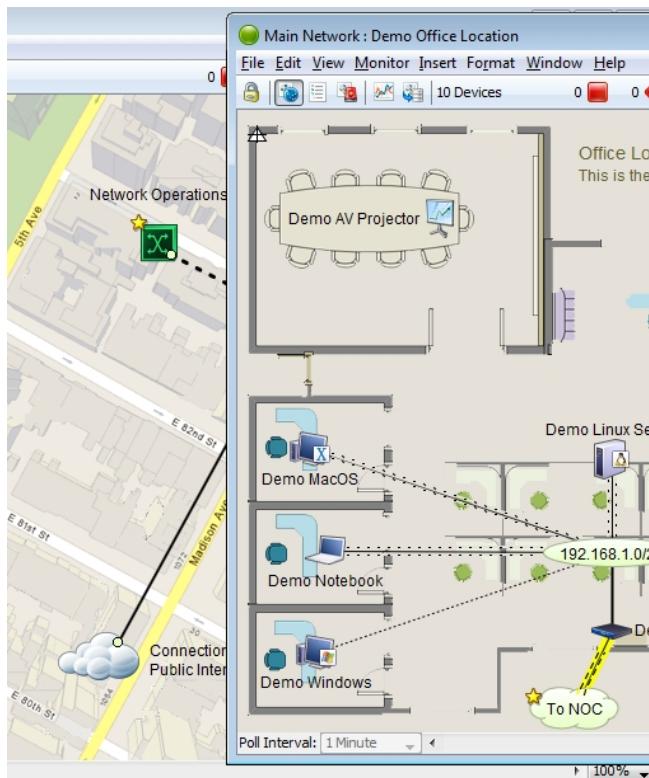
Use the Troubleshooting section to help you learn about [IP addresses](#) (Pg 669), [Domain Name Servers](#) (Pg 673), [SNMP](#) (Pg 674), [WINS Names](#) (Pg 678), and view a number of frequently-asked questions.

### Try out the Demo Maps

The first time InterMapper launches, it will open a Demo Map file that shows simulated network activity: outages, high traffic, and other problems that you'd see in a real network. (Although not as frequently, we hope...)

The image below shows a portion of an example map with a number of devices (rectangles) connected by various kinds of links (lines). Here are some tips to help you understand the various items on the map:

- Devices are displayed in **green** to indicate that the device is up and running.
- Devices that are down **blink red** when InterMapper cannot communicate with them.
- **Click and hold** a device to see a status window of detailed information and outage history, or **Right/Ctrl-click** it and choose **Status Window** from the dropdown menu.
- You can **tear off** these status windows to keep them open by dragging the mouse outside their boundary.
- You'll hear **sounds** to indicate that there have been failures.



(InterMapper can send e-mail or pages, too!) To silence these alarms, choose **Preferences...** from the **Edit** menu, click the **Sounds** subcategory of the **Behavior** category and clear the **Play sound notifications** check box.

- Lines (*links*) show **dotted lines** (*ants*) when traffic exceeds a threshold
- Links get a **yellow or orange background** when traffic exceeds 50% or 90%, respectively.
- **Circles at the ends of links** (they look like raindrops in puddles) indicate errors that have been detected by the interface.
- **Circles close to the device** indicate receive errors.
- **Circles close to the network** indicate transmit errors.
- **Click and hold on a link** to see a status window of port/interface information and traffic statistics, or **Right/Ctrl-click** it and choose **Status Window** from the dropdown menu.

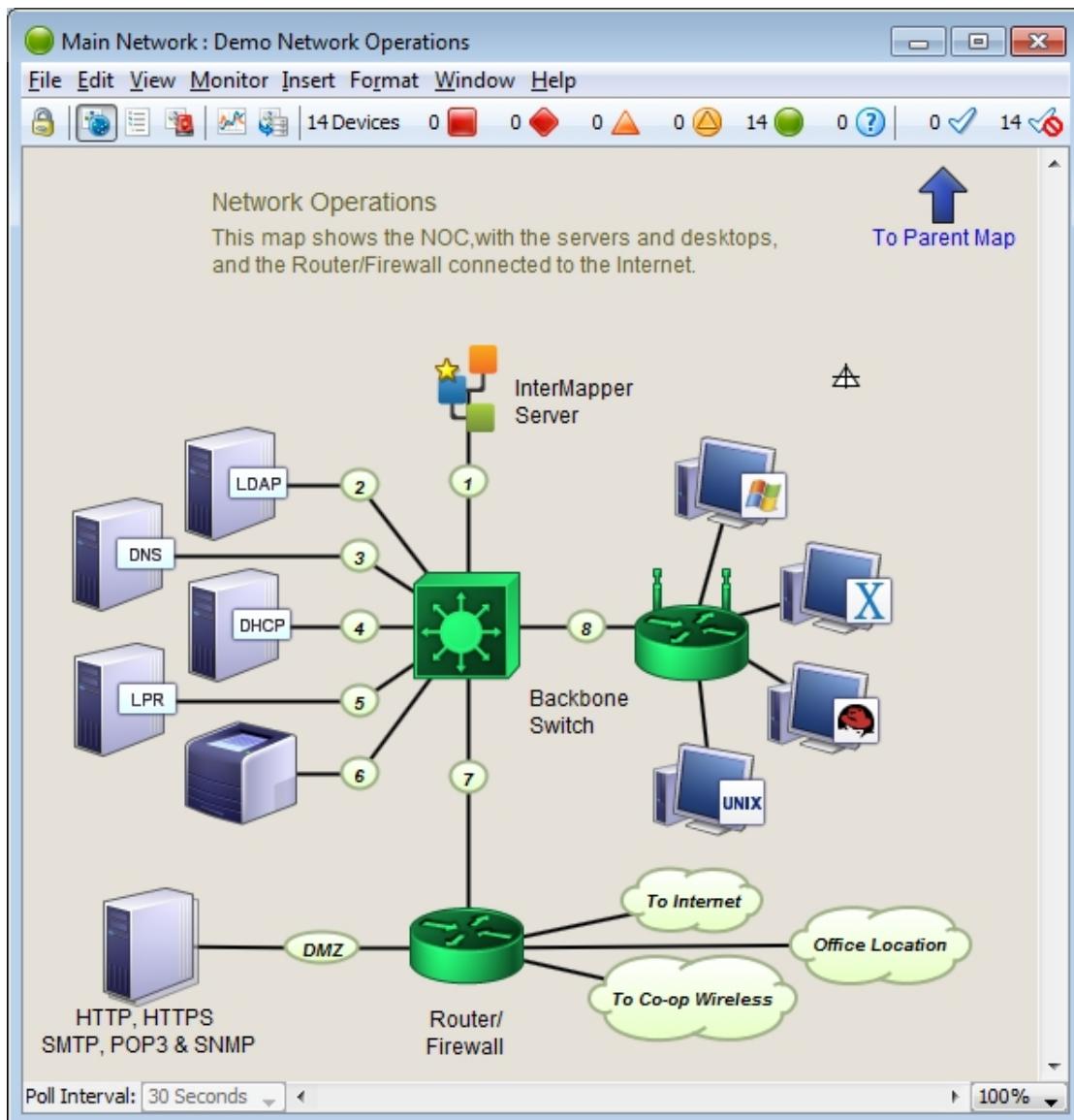
In addition, there are other things you may note on the map as it operates:

- Some devices become dim from time to time. That's because they're being *shadowed* by another failure on the map. We also say that those shadowed devices *depend* on all the devices on the path to it. InterMapper can automatically detect this state and will avoid notifying the network manager about outages if the dependent devices are unreachable because of the other failure.
- On several of the demo maps, a star appears on a device. That means that it's the *Vantage Point* for "shadowing". InterMapper will suppress notifications for a device if it's not possible to reach the device from the Vantage Point without going through a failed device. (It's in the "shadow" of a failed device.)

### The Map Window

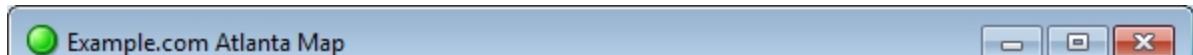
You view any map in a Map window. Below is one of the example maps installed with InterMapper.

For an in-depth explanation of the elements that appear in the map window, what they mean, and how to use them, see [Monitoring Your Network \(Pg 161\)](#).



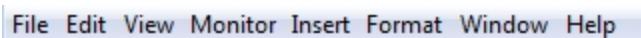
## The Title Bar

The Title bar shows the map's title, its state, and has standard controls for zooming, minimizing, and closing the window.



## The Menu Bar

The Menu bar contains the map's menus.



For a complete reference for each menu, see the [Command/Menu Reference \(Pg 344\)](#).

## The Toolbar

The Toolbar contains buttons to toggle the map's edit mode and to switch from one view to another.



## Switching Between Monitor Mode and Edit Mode

- Click the Lock button at the left end of the tool bar to switch the map between Monitor mode and Edit mode:



**In Monitor mode** - The map is not editable, and status windows appear when you click and hold a device, link, or network.



**In Edit mode** - The map is editable. Status windows can be opened with menu commands.

**Tip:** Press tab to switch between Monitor and Edit modes.

## Switching Views in the Map Window

Click one of these buttons to switch to a different Map Window view.



### Map view

Shows the map graphically, showing devices, networks, and their interconnections.



### List view

Shows the devices on the map as a list, with columns for the device's status, name, address, probe type, and current and previous condition.

- Click a column heading to sort by that column.
- Click again to sort in reverse order.
- Use the **Columns** submenu available from the View menu to choose the columns you want to view.
- Right-click a column heading to choose the columns you want to view, and to choose a column to sort by.

- Drag items from one map to another. The source map must be in List view. The target map must be editable, but can be in another view.

It is convenient to sort by Status so the most serious conditions appear at the top of the list.

Note: You can also view a global list of devices.

### To view a global device list:

- With a server selected in the map list, choose **Device List** from the Map List window's Window menu. A list of all devices on the selected server appears.



### Notifier view

This view lets you see which notifiers are attached to each device on a map. Another way to think of it is as a "responsibilities" view - what devices apply to a certain notifier.

- Select a particular notifier from the dropdown menu; you can see the checkboxes for all its recipients.
- To set a value for all devices, hold **Alt** or **Option**, and set a value. The value you changes to the selected value for the entire column. This works on all check boxes, as well as on the **Delay**, **Repeat**, and **Count** columns.



### Chart view

Shows the list of charts for the map.

- Expand the tree to view a chart's datasets.
- Double-click a chart name to open the chart.
- Right-click the Chart List button to open a particular chart without switching the view.
- Right-click a chart to:
  - Show the chart
  - Rename the chart
  - Delete the chart
- Right-click a dataset to:
  - Show the chart containing that instance of the dataset
  - Show the device generating the dataset
  - Raise the status window for the device generating the dataset
  - Rename the dataset
  - Remove the dataset
  - Export data from the dataset
  - Delete data from the dataset



### Dataset view

This view shows the datasets available for charting and data collection in this map. With the map in edit mode, you can choose a retention policy for any dataset.

Shows the following:

- A list of devices on the current map.

- The dataset name, type, and current retention policy and variable for a selected device whose check box is selected.
- Any available interfaces and the available datasets associated with them.

### The Map Legend

The Map legend to the right of the toolbar shows the different states of the map and the number of devices in each state. It also acts as a filter in list view.



Badge	Color	Meaning
	<b>Red Down</b>	No response has been received from the device within the specified timeout period.
	<b>(Flashing)</b>	
	<b>Red (Solid)</b>	<b>Critical</b> - The specified threshold for critical state has been met
	<b>Orange</b>	<b>Alarm</b> - The specified threshold for alarm state has been met.
	<b>Yellow</b>	<b>Warning</b> - The specified threshold for warning state has been met.
	<b>Green</b>	<b>Up</b> - The device is working below the specified thresholds.
	<b>Gray</b>	<b>Unknown</b> - The device is not being polled, so its state is unknown.
	<b>Purple</b>	<b>Searching</b> - The device is searching for adjacent routers (during auto-discovery) or is tracking down unnumbered interfaces.
		<b>Acknowledge - Timed or Indefinite</b> - The device's problem has been acknowledged and notifications are being suppressed, either indefinitely, or for a specified period of time.
		<b>Acknowledge - Basic</b> - The device's problem has been acknowledged, and notifications are being suppressed until the device comes back up, at which time the checkmark is cleared.
		<b>List Acknowledged Devices</b> - (Filter button) List all devices that have been acknowledged.
		<b>List Un-Acknowledged Devices</b> - (Filter button) List all devices that have not been acknowledged.

- Click a legend icon to view a list of devices that currently in that state.
- Click the icon again to go back to the previous view.
- Shift-click icons to view devices in more than one state.

**Example:** Shift-click the Alarm and Warning icons to see any devices in either of those states.

- Click one of the Acknowledge Filter buttons (to the right of the legend) to list only acknowledged or un-acknowledged devices.

**Note:** The filter buttons work with in concert with the legend icons - clicking a Filter button shows only the devices in the selected state that are acknowledged or un-acknowledged. It is possible to click a filter button and see no devices.

### The Map Area

The Map area is the "canvas" on which you create your map. To get started, take a look at Creating Maps. It is full of information about [starting your map \(Pg 55\)](#). The Creating Maps section is full of information for [creating \(Pg 55\)](#), [arranging \(Pg 94\)](#), and making your map look [just the way you want \(Pg 94\)](#) it to look. You'll also find a quick reference of [editing shortcuts \(Pg 92\)](#).

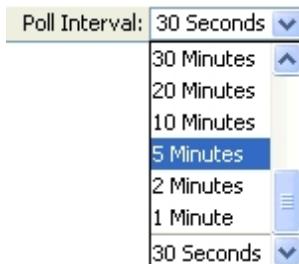
For an in-depth explanation of the elements that appear in the map window, what they mean, and how to use them, see [Monitoring Your Network \(Pg 161\)](#).

### The Status Bar

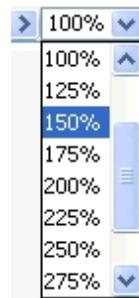
The Status bar contains controls for switching in and out of map edit mode, setting the polling interval, and zooming the map.



The **Poll Interval** drop-down menu sets the polling interval for the map.



The **Map Zoom** drop-down menu sets the zoom factor for the map. If you choose **Auto**, the map zooms automatically when you resize the window.



## The Map List Window

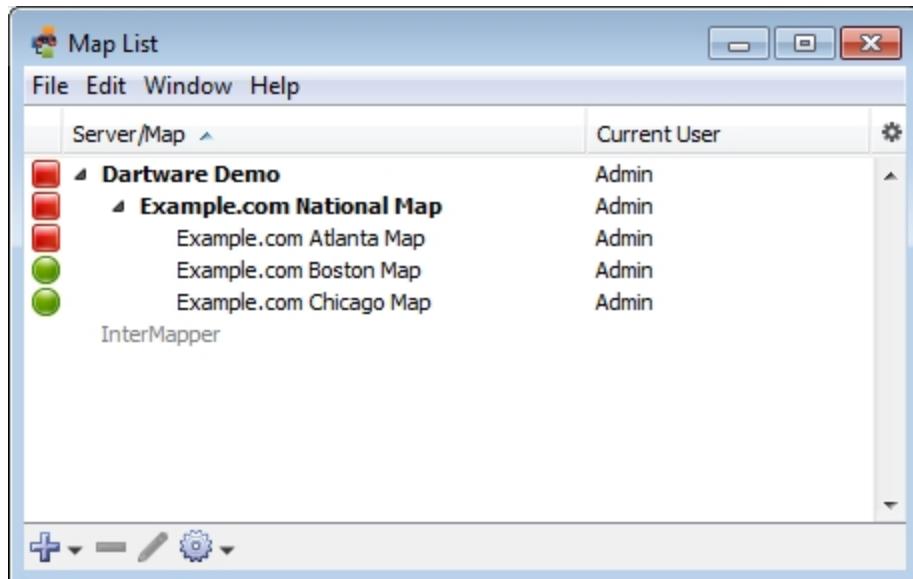
Use the Map List window as the primary interface to InterMapper.

- With InterMapper, you can control all aspects of the InterMapper server running on your local machine. You can also disable a map by right-clicking it and choosing **Disable Map**.
- With InterMapper RemoteAccess, you can access multiple InterMapper Servers from the same machine. If you have administrator access, you can edit all server settings on a remote server. You can also disable a map by right-clicking it and choosing **Disable Map**.

The menu items available in the File menu differ slightly between InterMapper and InterMapper RemoteAccess. For more information, see the [File Menu \(Pg 345\)](#) reference.

### The Map List Window

Use the Map List window to view a list of maps. If you have InterMapper RemoteAccess, you can also view a list of other available InterMapper servers, to log into one or more servers, and to view a list of maps currently running on each server.



*The Map List Window showing the example maps. Position the mouse cursor over a map in the list to view its DNS Name and/or IP address, and the port on which it's listening for InterMapper RemoteAccess connections.*

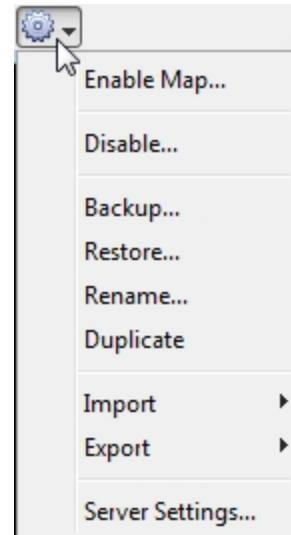
### Quick Menus

Use the quick menus at the bottom of the map list window to access frequently used functions.

- Click the **Add** menu to add a map or server.
- Select a map and click the **Delete** button to delete it.
- Select a server, then click the **Info** button to view or change info about a server.



- Use the **Tools** menu to perform a number of map-related operations. You can enable and disable maps, backup, restore, or duplicate a map. You can also import or export maps and data files, as well as open the Server Settings window...



### Arranging your Maps into Folders

You can arrange your maps into folders as shown above, using the Server Configuration>Enabled Maps pane of the Server Settings window. For more information, see [Enabled Maps \(Pg 268\)](#).

### Viewing the Global Device List

From the Map List window, you can view a list of all devices on a particular server.

#### To view a global device list:

- With a server selected in the map list, choose **Device List** from the Map List window's Window menu. A list of all devices on the selected server appears.

## The Device List Window

Use the device list window to view

- a global list of devices
- a list of notifiers
- a list of Layer 2 devices.

### List View



Use the Device List view to see a global list of devices used in all of the maps on the InterMapper Server.

Devices on Dartware Demo									
	Name	Condition	Condition ...	Previous C...	Previous Ti...	Probe Type	Address	Poll Inter...	Map Name
●	Wired &	OK	8/9/12 9:51 ...	Down	8/9/12 9:50 ...	Demo Probe	10.1.3.2	Inherit ▾	Example.co...
●	Wilbur Trueman	OK	8/9/12 8:09 ...	Down	8/9/12 8:08 ...	Demo Probe	192.168.4.176	Inherit ▾	Example.co...
●	Tranter Garey	OK	8/9/12 9:12 ...	Down	8/9/12 9:12 ...	Demo Probe	192.168.4.172	Inherit ▾	Example.co...
●	Susan	OK	8/9/12 5:10 ...	Down	8/9/12 5:08 ...	Demo Probe	192.168.5.171	Inherit ▾	Example.co...
●	Router/	OK	8/9/12 7:55 ...	Down	8/9/12 7:54 ...	Demo Probe	192.168.1.2	Inherit ▾	Example.co...
●	Philip Briar	OK	8/9/12 8:55 ...	Down	8/9/12 8:54 ...	Demo Probe	192.168.4.178	Inherit ▾	Example.co...
●	Mary	OK	8/9/12 8:56 ...	Down	8/9/12 8:55 ...	Demo Probe	192.168.5.1	Inherit ▾	Example.co...
●	Marti Lashawn	OK	8/9/12 9:17 ...	Down	8/9/12 9:16 ...	Demo Probe	192.168.4.177	Inherit ▾	Example.co...
●	Ken Ambrose	OK	8/9/12 6:55 ...	Down	8/9/12 6:54 ...	Demo Probe	192.168.4.173	Inherit ▾	Example.co...
●	John	OK	8/9/12 7:52 ...	Down	8/9/12 7:51 ...	Demo Probe	192.168.5.171	Inherit ▾	Example.co...
●	Jason Grover	OK	8/9/12 9:11 ...	Down	8/9/12 9:10 ...	Demo Probe	192.168.4.171	Inherit ▾	Example.co...
●	InterMapper	OK	8/9/12 8:17 ...	Down	8/9/12 8:17 ...	Demo Probe	192.168.11.20	Inherit ▾	Example.co...
●	HTTP, HTTPS	OK	8/9/12 9:08 ...	Down	8/9/12 9:07 ...	Probe Group	192.168.10.3	Inherit ▾	Example.co...
●	Fred	OK	8/9/12 8:07 ...	Down	8/9/12 8:06 ...	Demo Probe	192.168.5.172	Inherit ▾	Example.co...
●	Duncan Homer	OK	8/9/12 3:40 ...	Down	8/9/12 3:39 ...	Demo Probe	192.168.4.174	Inherit ▾	Example.co...
●	Connection to	OK	8/9/12 8:13 ...	Down	8/9/12 8:12 ...	Demo Probe	127.0.0.1	Inherit ▾	Example.co...
●	Chicago Router	OK	8/9/12 9:13 ...	Down	8/9/12 9:13 ...	Demo Probe	10.1.2.2	Inherit ▾	Example.co...
●	Chicago	OK	8/9/12 9:17 ...	Down	8/9/12 9:16 ...	Map Status	127.0.0.1	Inherit ▾	Example.co...
●	Cheyenne Brent	OK	8/9/12 8:40 ...	Down	8/9/12 8:39 ...	Demo Probe	192.168.4.175	Inherit ▾	Example.co...
●	Boston	OK	8/9/12 9:51 ...	Down	8/9/12 9:50 ...	Map Status	127.0.0.1	Inherit ▾	Example.co...

The Device list view

### Device List Columns

<b>Status:</b>	The device's state. The icon's color matches its color in the map.
<b>Name:</b>	The first line of the device's name as shown on the map
<b>Condition:</b>	The most severe (i.e. worst) status for the device
<b>Date:</b>	Shows when the device entered its current state
<b>Previous condition:</b>	The device's status before it entered the current state
<b>Date &amp; Time:</b>	Shows when the device entered the previous condition
<b>Probe Type:</b>	Shows the probe type for the device
<b>Address:</b>	Shows the network address of the device
<b>Map Name:</b>	The name of the map in which the device appears

### Manipulating the Device List

There are a number of ways to interact with the Device List:

- Double-click an entry in the Device List to switch to the proper map, and highlights the particular device with zooming rectangles.
- Sort the list by clicking a column heading. Click again to re-sort in the opposite order.
- Resize columns by dragging the separator between the columns to the proper size.
- Re-order the columns by dragging a column to a new position in the Device List window.

### Notifier View



Use the Notifier List view to view a list of devices attached to the selected notifier, and all settings for that notifier/device combination.

The screenshot shows a Windows-style application window titled "Devices on Dartware Demo". The menu bar includes File, Edit, View, Monitor, Window, Help. The toolbar has icons for Device List, Monitor, and Default Sounds, along with status indicators for various alert levels and counts (e.g., 0 red, 0 red diamonds, 0 orange triangles, 38 green circles, 0 blue question marks, 38 red question marks). Below the toolbar is a header row with columns: Name, Probe Type, Down, Up, Critical, Alarm, Warn, OK, Trap, Delay, Repeat, Count. The main table lists 20 entries, each with a green circular icon and a name followed by its probe type and status checkboxes. The entries include: Wired & Wilbur Trueman (Demo Probe), Tranter Garey (Demo Probe), Susan (Demo Probe), Router/ (Demo Probe), Philip Briar (Demo Probe), Mary (Demo Probe), Marti Lashawn (Demo Probe), Ken Ambrose (Demo Probe), John (Demo Probe), Jason Grover (Demo Probe), InterMapper (Demo Probe), HTTP, HTTPS (Probe Group), Fred (Demo Probe), Duncan Homer (Demo Probe), Connection to Chicago Router (Demo Probe), Chicago (Map Status), Cheyenne Brent (Demo Probe), and Boston (Map Status). At the bottom left of the table area, it says "Down: 0".

Name	Probe Type	Down	Up	Critical	Alarm	Warn	OK	Trap	Delay	Repeat	Count
Wired & Wilbur Trueman	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Tranter Garey	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Susan	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Router/	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Philip Briar	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Mary	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Marti Lashawn	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Ken Ambrose	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
John	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Jason Grover	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
InterMapper	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
HTTP, HTTPS	Probe Group	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Fred	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Duncan Homer	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Connection to Chicago Router	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Chicago Router	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Chicago	Map Status	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Cheyenne Brent	Demo Probe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						
Boston	Map Status	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-						

*The Notifier list view*

Using the Notifier List view, you can quickly attach a notifier to a device or check to see which devices are attached to a given notifier. You can set delay and repeat parameters to control escalation of a problem.

- Choose a notifier from the dropdown menu.
- Select or clear the check boxes for the devices states at which you want to trigger an alert.
- Set delay, repeat, and repeat count settings for the device as needed.

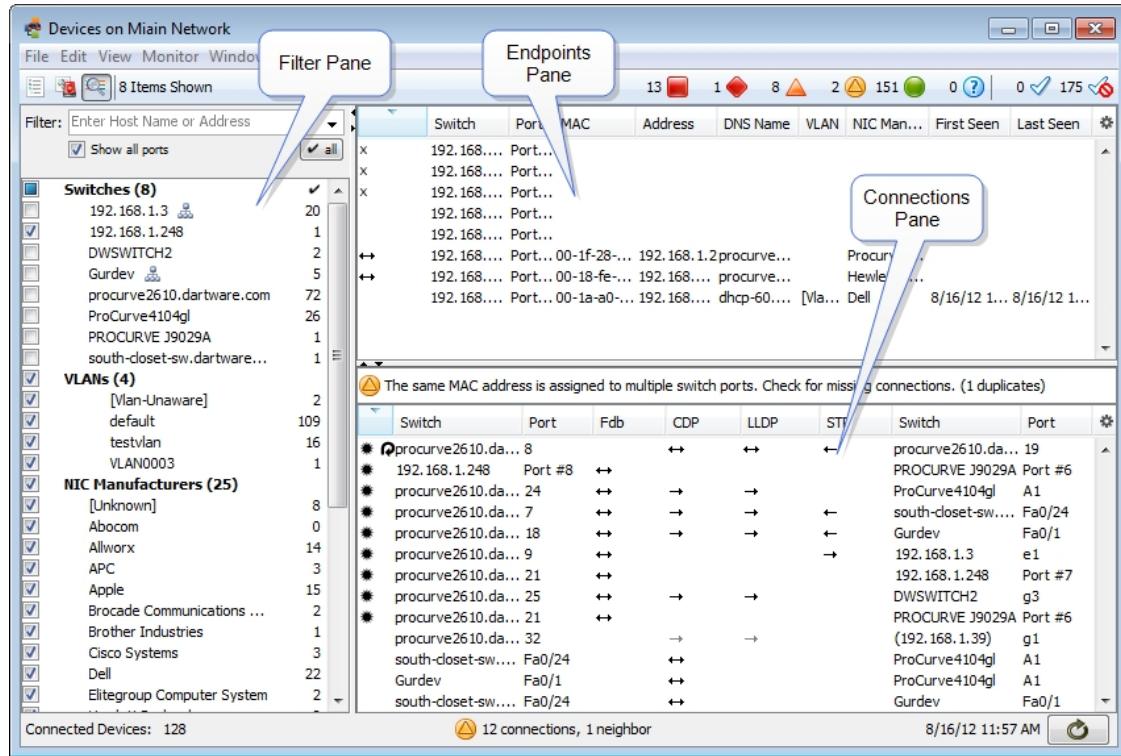
### Layer 2 View



Use the Layer 2 List view to view a list of switches, VLANs and NIC manufacturers, with a list of devices connected to each.

For more detailed information on the Layer 2 view, see [The Layer 2 View](#).

## The Layer 2 View



### Understanding the Layer 2 View

The Layer 2 View contains three main panes:

- The **Endpoints pane (Pg 317)** - the upper right pane lists all switch ports and the devices connected to them. It contains only those ports and devices that match the filter criteria in the Filter pane.
- The **Filter pane (Pg 315)** - the left pane provides criteria for showing or hiding endpoints based on their presence on a particular switch, VLAN, or the endpoint's manufacturer. lists available switches, the VLANs in which they appear, and manufacturers of network interface cards of the devices connected to them. Use the check boxes to select or hide endpoints in the Endpoints pane, and type additional criteria to help select the endpoints you want to view.
- The **Connections pane (Pg 318)** - the lower right pane provides details about switch-to-switch connections.

### InterMapper User Preferences

Use the **Preferences** command, available from the Edit menu, to set user preferences for the InterMapper user interface. These settings affect only the copy of the InterMapper or InterMapper RemoteAccess you are running - it does not affect other users' settings.

#### To view and edit InterMapper's preferences:

1. From the Edit menu, choose **Preferences...** The Preferences window appears.
2. In the left pane, click the name of settings you want to change. If necessary, expand a section to view the more settings. The selected settings panel appears in the right pane.

Map Style	Map Style
Sounds	Sounds
Language	Language
Double-Click	Double-Click
Windows	Windows
Server Discovery	Version Updates
Version Updates	Logs
Logs	Animation
Animation	Graphics
Graphics	Task Bar Menu

*InterMapper      InterMapper  
RemoteAccess*

#### Map Style

Use the Map Style panel to set your preference for the style in which your maps are displayed.

- **Use three-dimensional map style** - (checked by default) Check this box to use the current three-dimensional display style, with gradient colors, rounded rectangles, and status icons.
- **Display the following status badges on devices** - select or clear the checkboxes for the badges you want to appear on devices. By default, the Ok badge is not checked, but all other badges are checked.

#### Sounds

Use this panel to enable or disable sound notifications. Select or clear the **Play sound notifications** check box to turn sounds on or off.

#### Language

Use this panel to specify the language you InterMapper to use in its user interface.

To change the language from the system default, choose your language from the Language Options dropdown menu. All available language options are listed.

**Note:** You must restart InterMapper or InterMapper RemoteAccess after changing this option.

### Double-Click

Use this panel to specify a default action to take for a device or network that doesn't have an action assigned. Use the **Action** dropdown menu to choose from these options:

- **Helper App...** - Choose a helper application to launch.
- **Open URL...** - Enter a URL in the **Action** text box.
- **Built In...** - Choose an InterMapper menu command from the menu tree. By default, the Info window opens.

### Windows

Use this panel to specify whether charts and status windows are hidden when a map becomes inactive. You can also reset the state of "Ignored" windows.

- **Hide charts and status windows when Map is inactive** - Click to select this check box to hide charts and status windows for any map that is not the active window. If the box is not checked, any open charts and status windows remain open.
- **Reset Ignored Windows** - a number of alert messages provide the option not to show the message again. Click this button to reset the state of all Ignored windows.

### Server Discovery (InterMapper RemoteAccess Only)

Use this panel to specify whether or not to search for InterMapper servers on the local LAN.

- **Discover InterMapper Servers on the LAN** - Click to select this check box if you want InterMapper RemoteAccess to search for InterMapper Servers on the local LAN.

### Version Updates

Use this panel to enable or disable the Automatic Update function by selecting or clearing the **Automatically check for updates** box and select **Daily**, **Weekly**, or **Monthly** from the dropdown menu. This function is also available from the [InterMapper Control Center \(Pg 25\)](#). To check for updates immediately, use the **Check Now** button on the InterMapper Control Center.

### Logs

Use this panel to control the amount of information saved in the server log and whether to save it to disk.

- **Log Line Count** - Specify the number of lines of the server log that appear in Debug, Event or Outages Log window. This can reduce the amount of memory required to display a log window.
- **Client Debug Log** - Select the **Store Client Debug Log on disk** check box to save the debug log to your local disk.

### Animation

Use this panel to specify your preference for animation. Faster animation looks better, but may use more CPU power than you would like, if you are running a slower CPU or have some very large maps.

- Select or clear the **Display Animations** check box to turn animations off or on. (They are on by default.) This turns off traffic indicators (ants) and transition effects (scale changes, scrolling to found devices, effects when windows opening or closing, etc.)
- **Animation rate** - Choose an animation rate by moving the slider left for slower rates or right for higher ones. The selected rate appears in the upper right above the slider.

### Graphics

Use this panel to control the way graphics are rendered.

Use the **Anti-aliasing** controls to smooth the jagged look of diagonal and curved lines. Some users find that anti-aliased text or lines are blurry or fuzzy. Select or clear the check boxes to apply anti-aliasing to text or graphics.

**Note:** The Anti-aliasing settings are "hints" to help the graphics system render the graphics. The settings may be ignored by some systems.

Use the **Image Scaling** slider to choose level of quality to use when viewing maps at a zoom level other than 100%. The algorithm you choose may affect application performance.

### Task Bar Menu (InterMapper only)

Use this panel to specify whether to show a task bar icon for the InterMapper Control Center.

- **Show status in task bar** - Select this checkbox to show the status icon in the task bar (Windows) or menu bar (Mac).

# Chapter 4

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## Creating Maps

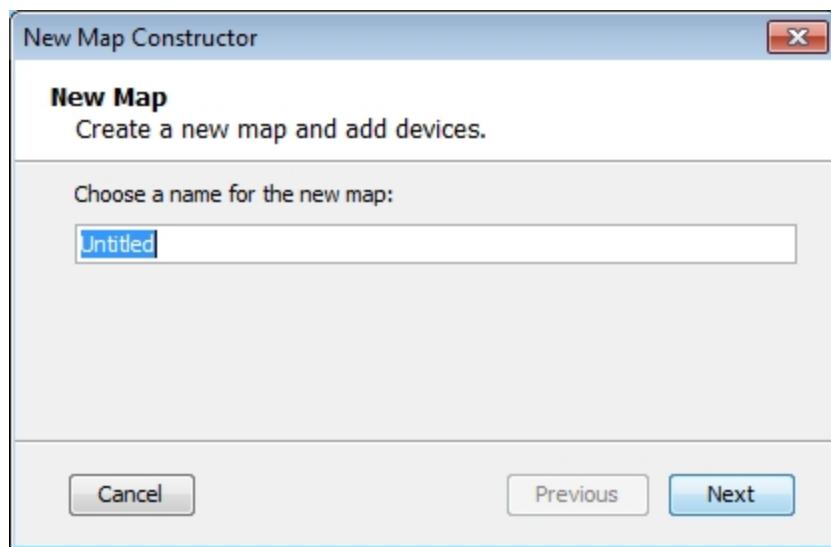
### Starting Your Map

When you launch *InterMapper*, a Map List window appears. It contains several demo maps, which show examples of network maps, and contains brief descriptions of the elements appearing on the maps. Double-click a map to open it.

After you have explored the demo maps, you are ready to use the Auto-discover function to create your first map.

### Creating a New Map

To create a new map, choose **New Map...** from the File Menu. The New Map Constructor window appears:



Enter a map name, and click **Next >**. The second page of the New Map Constructor appears.



- **Autodiscovery** - InterMapper's Auto-discover function automatically scans your network, looking for network devices to add to your map. It uses several heuristic techniques (including SNMP probes, ICMP echo packets, and DNS and NBP queries) to discover all the devices that are present. It then places those devices on a map.
- **Manual Entry** - Type or paste a list of host names or IP addresses for the devices you want to add to the map.
- **Import a file** - Specify a tab-delimited, CSV, or XML import file. For more information, see [Importing Data Into Maps \(Pg 588\)](#).

For information on using the Auto-discover function, see [Using Auto-discover \(Pg 57\)](#).

### Importing Data into a Map

You can also create a map by importing data in a text file. For more information, see [Importing Data Into Maps \(Pg 588\)](#).

### InterMapper Labels

*InterMapper* places a label on each device it finds. By default, it uses the device's full DNS name. Networks are labeled with both an IP address and the number of bits in the subnet mask (indicating the network range). For example, the network labeled 192.168.1.0/24 indicates that the IP devices are in subnet 192.168.1.0, with a subnet mask of 24 bits (255.255.255.0).

**Note:** You can change the label that appears for each device using the **Label...** command, available from the [Format menu \(Pg 378\)](#).

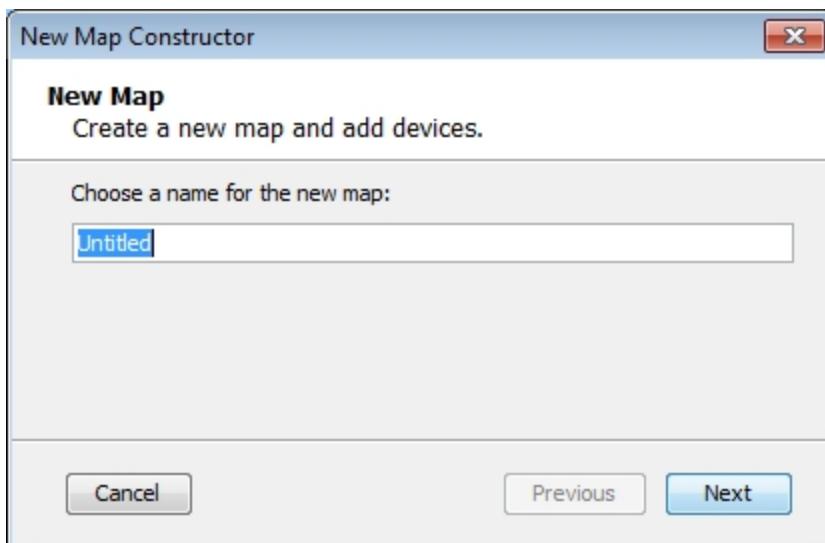
## Using Auto-Discover

You can use Auto-Discover to create a new map. If your network contains Layer 2-enabled switches, you can also use Layer 2 information to increase the accuracy of a map's representation of your network topology. For more information, see [Mapping With Layer 2 \(Pg 323\)](#).

For existing maps, you will need to use the [manual technique \(Pg 323\)](#) for converting the map. For new maps you create with Auto-Discovery, use the [automatic technique \(Pg 323\)](#).

**To Auto-Discover to create an initial network map:**

1. From the File menu, choose **New...** The New Map Constructor window appears.
2. Enter a map name and click **Next**.



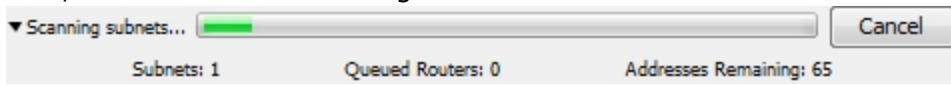
3. Click to choose **Auto-discovery**, then click **Create**. The Automatic Device Discovery window appears, as shown below.



4. Enter a host name or IP address you want to use as the starting point for auto-discovery. A name is suggested for you. It is the DNS name or IP address of a router, or if there's no router, the computer InterMapper is running on. Use the default value, or enter any of the following:
- A DNS name
  - An IP address (if you want to create a map of another part of a network.)
- If you enter the name or address of an SNMP-speaking router, InterMapper draws interconnections to other routers in the network more quickly.



5. If you have SNMP-speaking devices in your network, specify an [SNMP Community \(Pg 674\)](#) string.
6. Select your Discovery Options, as explained in [The Auto-Discovery Window \(Pg 59\)](#) below.
7. Click the **Filter** button to set a filter for the discovery.
8. Click **OK** to start the Auto-discovery process. A Discovery Status bar appears as shown. The status bar shows progress statistics for subnets, queued routers, and addresses remaining to be scanned:



9. As the network is scanned, discovered devices appear in the current map (or in a list if you have cleared the **Automatically Layout** check box.) When InterMapper has found all the devices within the specified subnet, the Discovery Status bar disappears.

 Click the Map View button near the upper left corner of the Map window to view your network as a map, showing devices and networks as icons, with the interconnections between them.

### To stop the Auto-discover process:

- Click the **Cancel** button. The discovery process is stopped, and no new devices or networks are added. All devices added before you stopped the process remain in the list.

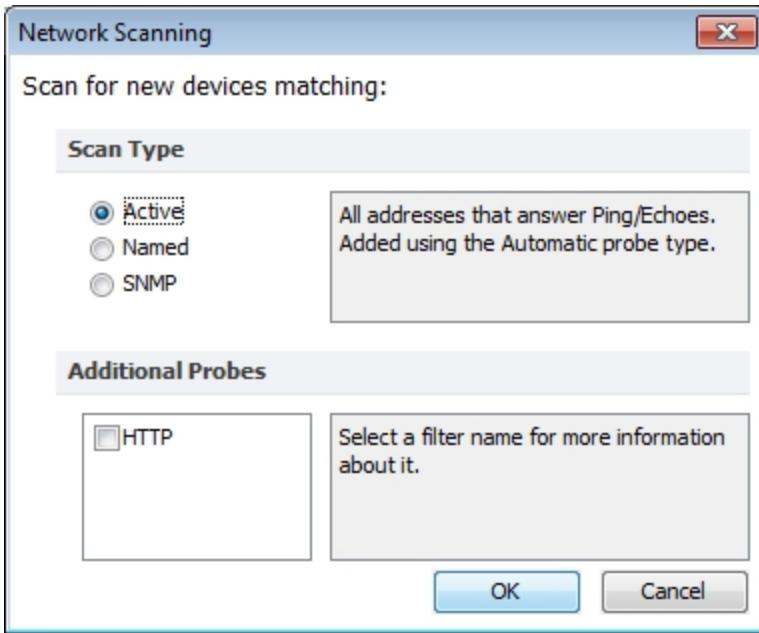
## The Automatic Device Discovery Window

You control the starting point, the [SNMP Community string \(Pg 674\)](#), the breadth of the network search, and the kinds of devices that are automatically added to the map using this window.

- **Starting host name**  
- The [DNS name \(Pg 673\)](#), [IP address \(Pg 669\)](#), or [WINS name \(Pg 678\)](#) of a device to use as a starting point for the auto-discovery.
  - Specify an SNMP community -The SNMP Read-only community string to be used to interrogate all devices. (InterMapper attempts to read SNMP information using the specified community string. It is set to 'public' by default.)
  - **Stay within NN hops of starting device** - Stops autodiscovery after InterMapper has searched the specified number of hops from the starting device.
  - **Scan for devices on all networks** - Specify which kinds of devices should be automatically added to the map. Click to check this box, or click **Edit Filters...** to open the Network Scanning window.
  - Click **Automatically layout** to let InterMapper layout the map automatically.
  - Click **Start Discovery** to initiate a scan of the specified host.
- 

### The Network Filter Dialog

Check the filters you want to use to add devices to the map:

- **Active** - InterMapper performs a complete IP address scan for each network. A device is added for each IP address that responds.
  - **Named** - Each IP address in the subnet is looked up in the DNS. If a corresponding name is present, the device is added to the map.
  - **SNMP** - InterMapper sends an SNMP GetRequest to each address in the range. Any device that responds is added to the map and uses the SNMP Basic Traffic probe. If the device does not respond to SNMP, the probe is set to Ping/Echo.
  - **HTTP** - If the device responds to an HTTP request, an HTTP probe is added to the device (along with SNMP Basic Traffic or Ping/Echo probe), and the device becomes a [probe group](#).
- 

## What Happens During Autodiscovery?

During autodiscovery, InterMapper attempts to discover all devices on a network, based on the IP address and SNMP string provided. It does this by querying the router and ARP tables. Then, using any scan filters specified in the Network Scanning window, it scans all attached subnets, mapping all devices it finds, until it reaches the hop count specified in the **Discovery Options** section of the Automatic Device Discovery window. It then performs the following processes concurrently and iteratively until the specified limits are reached:

- If InterMapper discovers an SNMP-speaking router, it attempts to discover what interfaces the router has, and what other routers are connected to those interfaces. InterMapper then queries each of the discovered routers for their connected networks, and begins autodiscovery on each network.
- For each network or subnet discovered, InterMapper pings every address on that subnet to find more active or named devices.
- When InterMapper finds a device, it uses several techniques to characterize it. For example, it sends SNMP queries (with the specified SNMP community strings) to determine what kind of device is present.

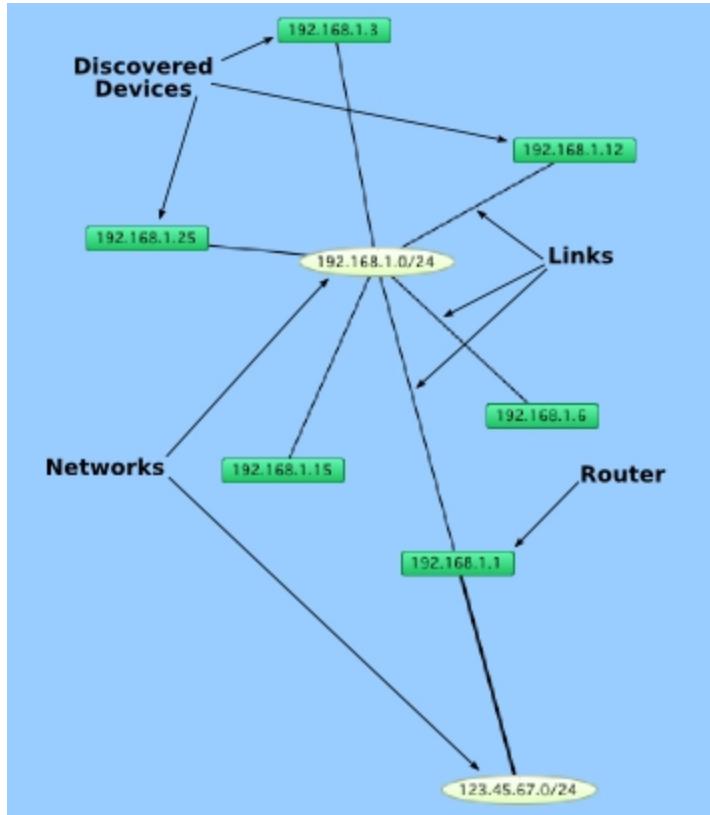
**Warning:** In autodiscovery mode, InterMapper may ping or query every device address on a subnet. If your network has an intrusion detection system, autodiscovery may trigger your intrusion alarms. Be sure to check with the network manager before using this feature.

**Note:** It may take a long time to do autodiscovery on a large subnet (a Class A or B subnet). InterMapper limits its autodiscovery queries to two per second so that it doesn't overload any networks and thus it takes about 32,000 seconds (a shade under 10 hours) to scan that class B subnet (with 65,535 addresses) completely.

To create your maps more quickly, you can type or paste one or more host [DNS names \(Pg 673\)](#), [IP addresses \(Pg 669\)](#), or [WINS names \(Pg 678\)](#) into the Add Devices... window (Insert menu). (WINS names must be preceded by "\\".) InterMapper immediately adds them to the map and connects them to the proper network.

You can also import a list of devices from a text file. For more information, see [Importing Data Into Maps \(Pg 588\)](#).

Below is a typical map after autodiscovery has finished.



*Autodiscovered devices and networks. Routers are interconnected by links to networks.*

## Adding Devices Manually

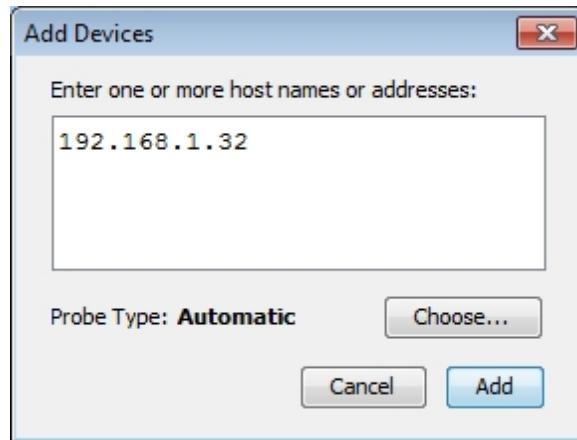
Add devices to your map manually using the **Device...** command, available from the Insert menu or the **Add Device(s)...** command, available from the context menu

### To add devices manually:

1. Make sure the map is in Edit mode.
2. From the Insert menu, choose Device..., or Right/Ctrl-click in the window and choose **Add Device(s)...** from the context menu. The Add Devices window appears, as shown below.
3. Enter the device names and/or addresses as shown below.
4. The device(s) will be monitored with the indicated probe. To select a different probe type, click **Choose...** and select a probe as described in [Select Probe Window \(Pg 64\)](#).
5. Click **Add**. All devices entered are added to the map.

**Note:** If you enter a DNS name, the device is added to your map only if a DNS entry can be found.

- **Enter one or more host names or addresses** - Enter individual host names or addresses or paste a list of DNS names, IP addresses, or WINS names into this window. Entries must be separated by commas or by whitespace characters, such as spaces, tabs, or carriage returns. You can copy a list of host names and addresses from a text file or from a traceroute program. You can also use [WINS names \(Pg 678\)](#) (preceded by "\\"). For each entry that responds, a device is added to the map.



Add Device(s) window.

- **Probe Type** - Shows the type of probe currently assigned to the device. Click **Choose...** to open the Select Probe window and choose a different probe.
- Click **Add** to add the devices to the map.

**Note:** If any of the device names cannot be resolved (if a device name is not configured in your domain name system server) or if a device cannot be tested with the selected probe, don't worry; you'll get a chance to correct the entry.

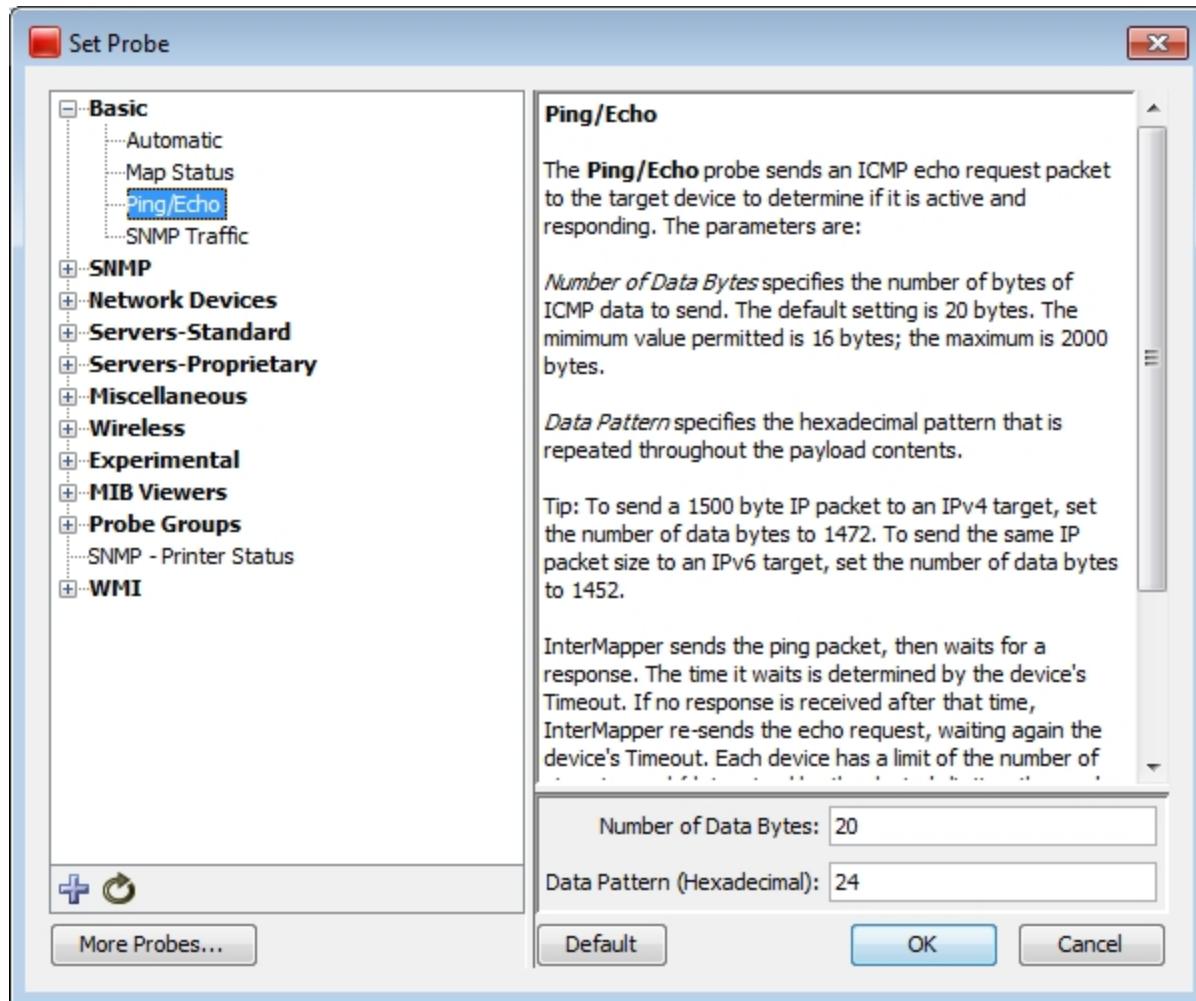
**IPv6 Note:** To ensure that when possible, host names are resolved to IPv6 addresses rather than IPv4 addresses, enclose the host name in square brackets ([]) as shown in the example.

### Set Probe Window

Use the **Set Probe** command, available from the Monitor menu, the device's context menu, or by clicking **Choose...** in the Add Device(s) window, to view the Select Probe window. From this window you can choose and configure the probe for the selected devices.

- The left pane contains a hierarchical list of probes, divided into sections and subsections.
- The right pane shows the description and configuration options for the selected probe.

For a comprehensive list of probes with descriptions, see the [Probe Reference \(Pg 404\)](#).



#### To choose and configure a probe:

1. **Choose a section** - In the left pane, click plus (+) to expand the section and subsections to view the probes. Click minus (-) to collapse an expanded section or subsection.

2. **Choose a probe** - In the left pane, click a probe within a section or subsection to select it. The description and options for the probe appear in the right pane.
3. **Set the probe's options** - In the right pane, enter or select the options you want to use with the selected probe. These options vary, depending on the probe. Click **Default** to reset the probe's options to the default settings.
4. Click **OK** to choose the probe.

**Additional actions available from the Set Probe window:**

-  **Import a probe** - click this button and select from a standard file dialog to import a probe file.
-  **Reload probe list** - click this button to reload the list of probes found in the InterMapper Settings/Probes folder.
- More Probes...** Click this button to launch your browser and view a list of probes contributed by InterMapper users.

## Adding Networks to the Map

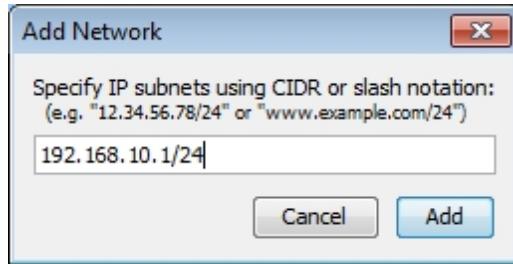
InterMapper uses "network ovals" to represent a "subnet" - a range of IP addresses. It uses these networks as graphical connecting points for all the devices on the subnet. When InterMapper places an SNMP-speaking device on a map, it automatically adds a network for each of its interfaces.

You can also add new networks manually.

### To add a new network:

1. From the Insert menu, choose **Network...** An Add Network window appears, as shown below.
2. Enter the IP subnet information or range and click **OK**. For more information on IP addresses and subnets, see [About IP \(Pg 669\)](#).

The network is added to the map as an oval, labeled with the network information you entered. Any devices that belong to that subnet are automatically connected to the new network.



Add Subnet... window.  
Enter an IP subnet (in the form x.x.x.x/yy).

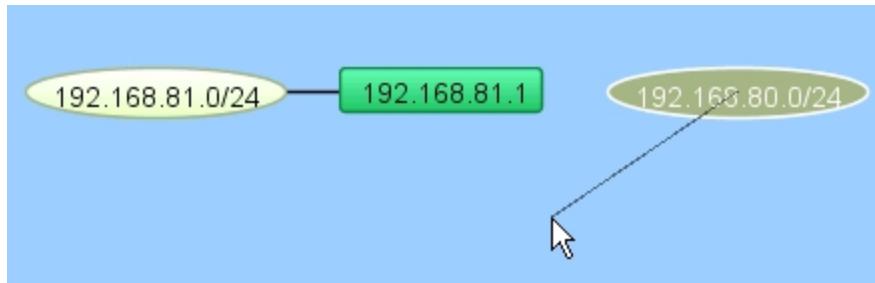
**Note:** Adding a subnet does not automatically initiate the discovery process. To scan the new network, right-click the new network oval and choose Scan Network... For more information, see [Scanning a Network \(Pg 68\)](#).

## Adding and Removing Links

InterMapper may not connect devices to the proper network in every case. In such a case, you can make the connection manually.

### To add a link manually:

1. Make sure the map is in [Edit mode \(Pg 161\)](#).
2. Right/Ctrl-click one of the objects you want to link to another.
3. From the menu that appears, click **Attach To**. A line appears, connecting the selected object to your mouse cursor, as shown:



4. Click the object you want to connect to. A link is created between the two objects:



**Note:** Once a manual connection has been established, InterMapper remembers it. You can drag manually-connected items around the map, and they work just like those links InterMapper has created automatically.

### To remove a manually-connected link:

1. Make sure the map is in [Edit mode \(Pg 161\)](#).
2. Right/Ctrl-click the link and choose **Remove**. The link disappears.

## Scanning A Network

InterMapper can scan an IP address range to discover all the devices on that network. It then adds those discovered devices to the map, and connects them to the proper network.

### To scan a network:

1. Click to select a network oval, then click the Insert menu.

or

Right-click the network oval.

2. Choose **Scan Network...** The Network Scanning window appears, as shown below.
3. Choose a **Scan Type**.
4. In the **Additional Probes** box, choose whether you want an HTTP probe added to the device (converting it to a probe group) when a response to an HTTP request is received.
5. Click **OK**. The network oval turns purple, and remains that way until scanning is complete, at which time the color changes to the default network color.

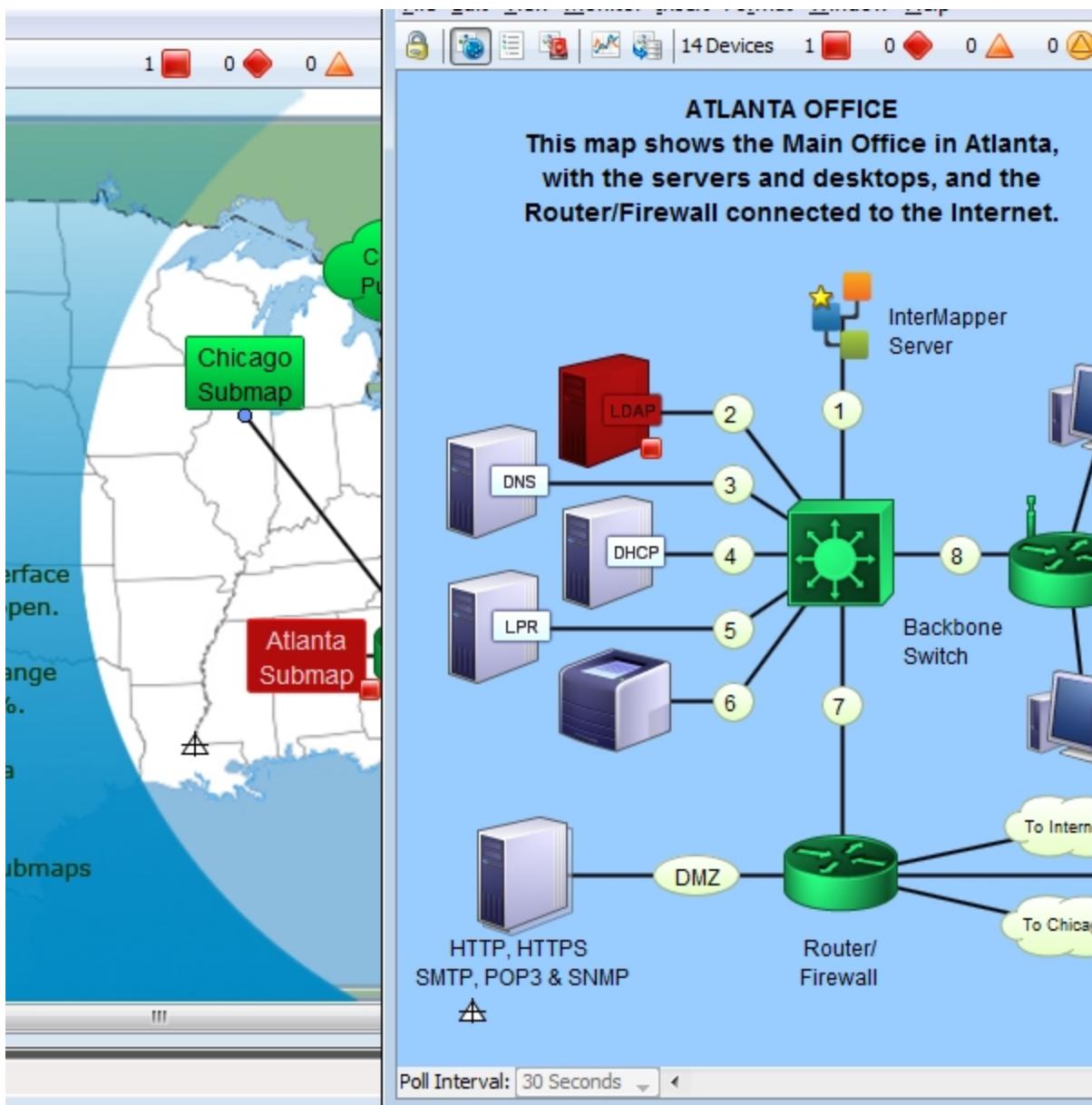


*The Network Scanning window*

## Creating Sub-maps

Another way to hide detail is to create a top-level map that gives an overview of many individual maps. Each icon on the top-level map shows the status of another map (a "sub-map"). The color of the icon indicates the most serious condition (the "worst thing") on its sub-map. These sub-maps can be on the local computer, or could even be on another InterMapper server.

The example below shows the Atlanta map that opens when you double-click the Atlanta icon on the National map. Notice that on the National map, the Atlanta icon is "down". The Atlanta map shows that the LDAP server is the reason.



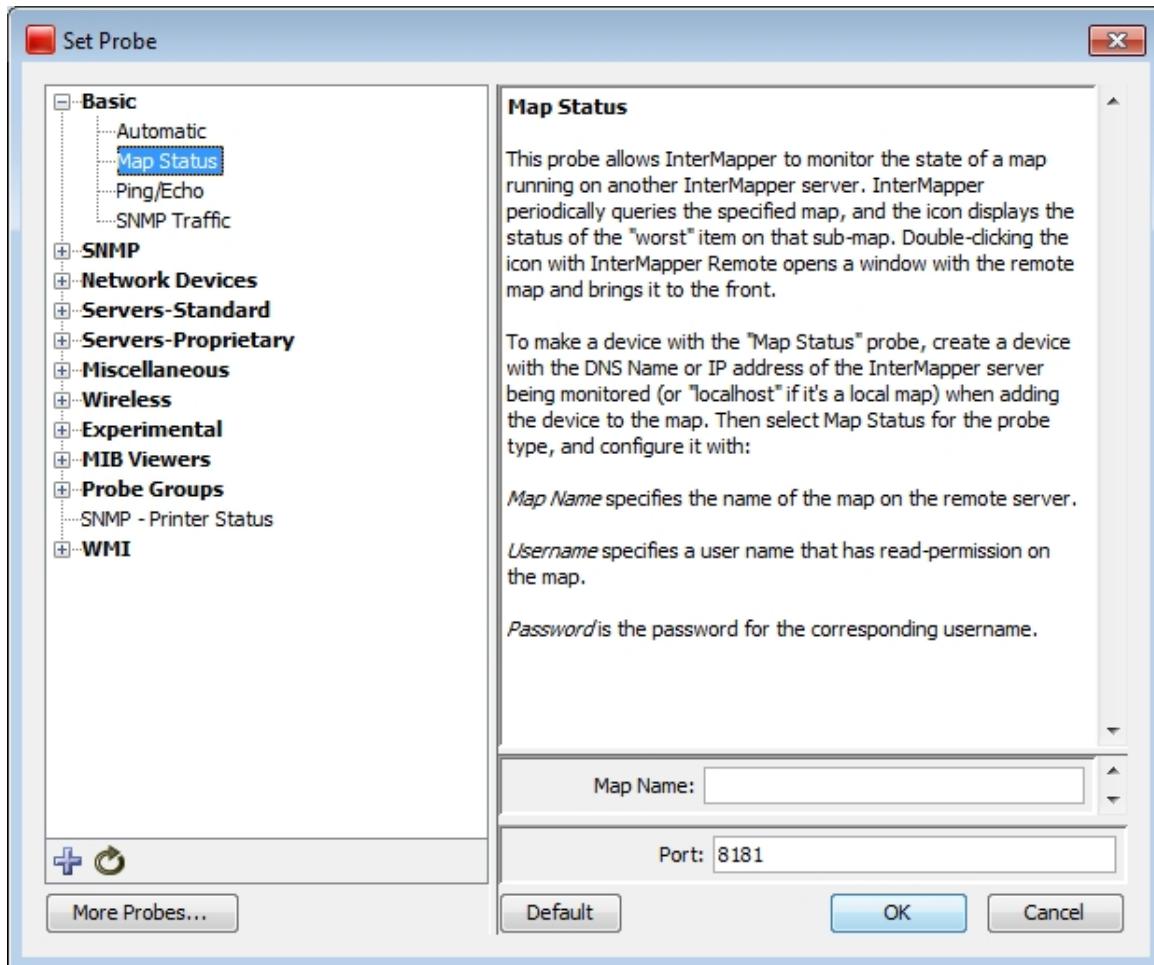
### Creating a Sub-Map

Use the Map Status probe to create an icon that represents a sub-map. To do this, you add a device with the address of the InterMapper server on which the map is running, (127.0.0.1 if it's on the local computer) with a Probe Type of **Map Status**.

The color of the icon for a map item using a Map Status probe indicates the most serious condition (the "worst thing") on sub-map.

#### To add a sub-map item to a map:

1. The easiest way to add a submap is to drag the desired map from the Map List window to the map. In certain special cases, the Set Probe window appears, with the Map Status Probe selected.
2. Click **OK** to accept the default settings. A new device is added, using the current map and user account information.



The Map Status probe configuration window.

**To add a sub-map manually:**

1. From the Insert menu, choose **Device...**
2. Enter the [IP address \(Pg 669\)](#), [DNS name \(Pg 673\)](#), or [WINS name \(Pg 678\)](#) (preceded by "\") of the InterMapper server that contains the sub-map. Sub-maps may be running on the local InterMapper server (use the address 127.0.0.1), or enter the address of InterMapper running at a customer site, at a branch office, or at an international office.
3. Specify the **Port** to connect to (default is 8181).
4. Select **Map Status** from the Basic category.
5. Enter the **Map Name** to be monitored.

**Note:** if your map is nested in a sub-folder, you must enter the full path to the map. For example, "/MySubFolder/MyMap.map". If you add the submap by dragging it into the map from the Map List window, the path is entered automatically.

6. Enter the **User Name** and **Password** of an account on that server. This account must have read-access to the map.
7. Click **OK**. The new icon appears on the map, and its color reflects the state of everything on the sub-map.

**To view the sub-map** (to "drill down" into it)

- Double-click the sub-map's icon. The map opens, and you can see and modify (if you have been granted permission) the settings on the sub-map.

**Best Practices When Using Sub-maps**

Try to follow these best practices when setting up a map status probe:

- Use a username with minimum amount of privilege (read-only). Never set up a map status probe using a username that has administrative privileges.
- Use only one username per server for map status probes. InterMapper has a limit of 2 user logins per connection. If map status probes monitoring maps on a server are configured using more than one username, you may need to explicitly logout from the map status probe login before you can access a map status probe that uses a different username.

For example, let's assume you have access to map status probes on server S, and that we have MapB and MapC on server S that you don't have access to. When you double click a map status probe for MapB, the InterMapper client will log you in as user B (you are logged in twice on server S). You will not be able to open MapC before you log off the connection to MapB. This restriction is only for one server, if you are using map status probes to monitor maps on multiple InterMapper servers, you can use a different username for each server.

## Creating Probe Groups

### Overview

Use a probe group to include multiple probes targeting the same IP address into a single icon on a map. A probe group shows the worst status among the probes in the group. A probe group counts as a single device against your license count.

**Note:** Only those devices that reference the same IP address can be added to a group.

### About the Control Probe

Each probe group can contain a control probe. Setting a control probe affects the probe group as follows:

- When a control probe is defined, no notifications for the other probes in the group are sent if the control probe is down.
- The group's interfaces match those of the control probe.

When you create a group containing an SNMP probe, a "control probe" is automatically determined for the group. This is the first SNMP probe detected, and can be changed. If there are no SNMP probes in the group, no control probe is defined. See [Setting a probe group's control probe \(Pg 75\)](#) below.

### How grouped devices are probed

Here are some important facts about how devices are probed after grouping.

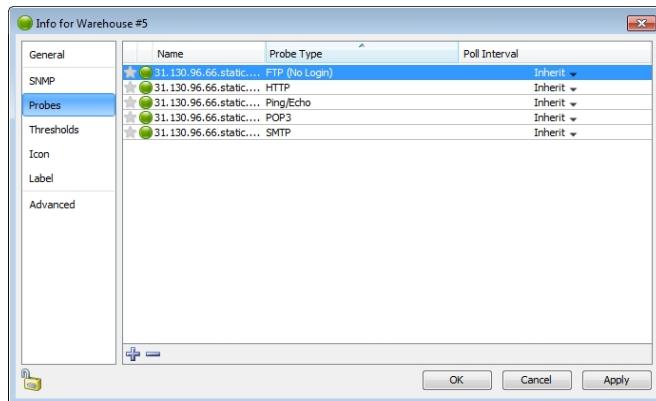
- **Each member probe is polled at its own rate, with its own settings.** The settings in place when the device is added to a probe group are used, including poll rate, attached notifiers, and probe parameters. You can edit the settings for any probe - see [Editing Settings for a Probe Within a Probe Group \(Pg 74\)](#).
- **The device icon's state reflects the most serious condition of its member probes.** When the state of one of the member probes becomes the most serious state, the device icon's state changes to reflect it.
- **By attaching a notifier to the device,** you can get notifications whenever any probe in the group has a problem.
- **By attaching a notifier to a member of the group,** you can get notifications when that member probe has a problem
- **If the control probe is down,** no notifications are sent for any other member of the group.
- **Interface information is shown** based on the selected control probe.

Use the **Group** command to create a probe group from a set of selected devices.

**To create a probe group:**

1. With the map editable, select the devices you want to group. All devices must use the same IP address.
2. From the Insert menu, choose **Group**. The selected devices are replaced by a single device icon.

When you double-click the resulting device icon, the grouped probes appear in a list in the group's Info window.



Warehouse #5  
66.96.130.31  
Ping/Echo

Warehouse #5  
66.96.130.31  
POP3

Warehouse #5  
66.96.130.31  
SMTP

Warehouse #5  
66.96.130.31  
FTP (No Login)

*Before grouping*

Warehouse #5

*After grouping*

**Note:** When you group a selection of probes, the resulting group uses the first line of the first device as its label. You can change the label before or after grouping.

**Creating one or more empty Probe Groups**

You can create an empty probe group, then add probes to the group as needed.

**To create an empty probe group:**

1. From the Insert menu, choose **Empty Probe Group...** The Add Probe Group (s) dialog appears.
2. For each probe group you want to add, enter a host name or IP address.
3. Click **Add**. A probe group icon appears for each host name or address you entered.

**Adding devices to a probe group**

You can add probes to a group in several ways:

- Add an existing device to a group.
- Add a new device to a group
- From the list view, drag and drop a device into a group.

**To add an existing device to a probe group:**

1. Select the group and the devices you want to add to it.
2. Choose **Group** from the Insert menu. If all selected devices use the same IP address or host name, the selected devices are added to the existing probe group.

**To add a new device to a probe group:**

1. From the probe group's Info window, click the **plus (+)** button. The Set Probe window appears.
2. Choose the probe you want to use, set its parameters, then click **OK**. The probe is added to the group.

You can remove one or more probes from a group.

**To remove probes from a group:**

1. Double-click a probe group. The probe group's Info window appears.
2. In the Info window, select the probes you want to remove from the group. Use Shift-click to add contiguous probes to your selection, or Control-click to add or remove discontiguous probes from your selection.
3. Click the **minus (-)** button. The selected probes are removed from the probe group, and appear as separate devices in the map.

From the List view, you can also drag a probe out of a probe group.

**Editing Settings for a Probe Within a Probe Group**

Each probe in a probe group can be polled at its own rate, can have its own settings, and can be edited while part of the group.

**To edit a probe's setting within a group:**

1. Double-click the probe group's device icon. The Info window opens, showing the list of probes in the group.
2. Double-click to open the Info window for the selected probe, or right-click/Ctrl-click the probe, and choose an option from the context menu.

### Setting a probe group's control probe

You can set the control probe for a probe group. If the control probe is down, no notifications are sent for any other member of the group, and the group's interfaces match those of the control probe.

#### To set the control probe for a group:

1. With the map editable, double-click the probe group icon. The Info window appears.
2. Click **Probes** in the left panel. The probes in the group appears.
3. In the left column of the probe list, click the star icon for the probe you want to use as the control probe. The color of the star changes to indicate that the probe is the control probe.

	Name	Probe Type
★	31.130.96.66.static.eigbox.net.	FTP (No Login)
★	31.130.96.66.static.eigbox.net.	HTTP
★	31.130.96.66.static.eigbox.net.	Ping/Echo
★	31.130.96.66.static.eigbox.net.	POP3
★	31.130.96.66.static.eigbox.net.	SMTP

*Setting the control probe*

## Using Helper Applications

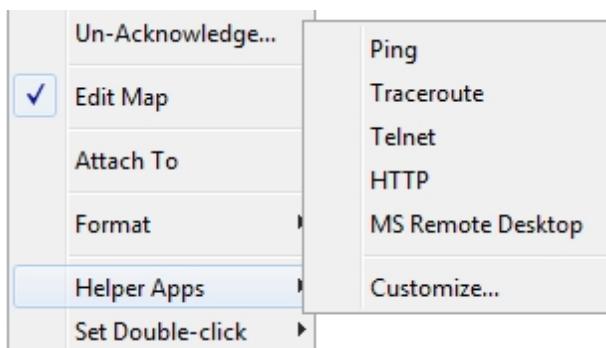
You can use helper applications to get information for creating maps or to troubleshoot problems. These programs are available through a [Context menu \(Pg 401\)](#).

### To invoke a helper program:

1. Control-click or right-click on a device.
2. Select one of the helper applications to launch it using the device as its target.

For example, the 'Ping' helper application invokes the system's ping utility: generally `/sbin/ping` on Unix, Linux or MacOS X, or `ping` on Windows.

Including a URL as the helper application will invoke the system's tool configured to handle the URL.



*The Helper apps context menu*

### Notes:

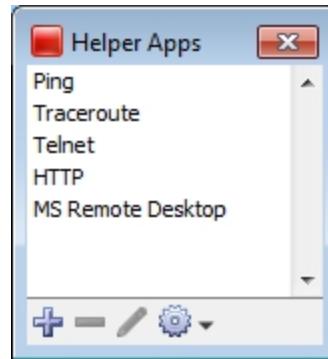
- You can specify the same helper application for several devices at the same time if more than one device is selected. The helper app is invoked for each selected device.
- The helper application that is invoked is platform-dependent: generally, InterMapper will open a terminal program and issue a command to run the helper.
- You can choose to invoke a Helper Application by double-clicking a device. See [Using Double-Click Actions \(Pg 81\)](#) for more information.

## Editing Helper Applications

Use the Helper Applications Customize window to modify the built-in helper applications, and add new ones.

### To view the Helper Applications Customize window:

1. Right/control-click a device. A drop-down menu appears.
2. From the Helper Applications submenu, choose **Customize...**



or

- From the Monitor menu's Helper Apps submenu, choose **Customize...**

The **Helper Apps** window appears.

This window shows the list of built-in helper apps and any user-added helper applications. To add, edit, or remove a helper application, see *Adding or Editing Helper Apps* below. It also describes the *Launcher*, a platform-specific tool used to launch a helper app.

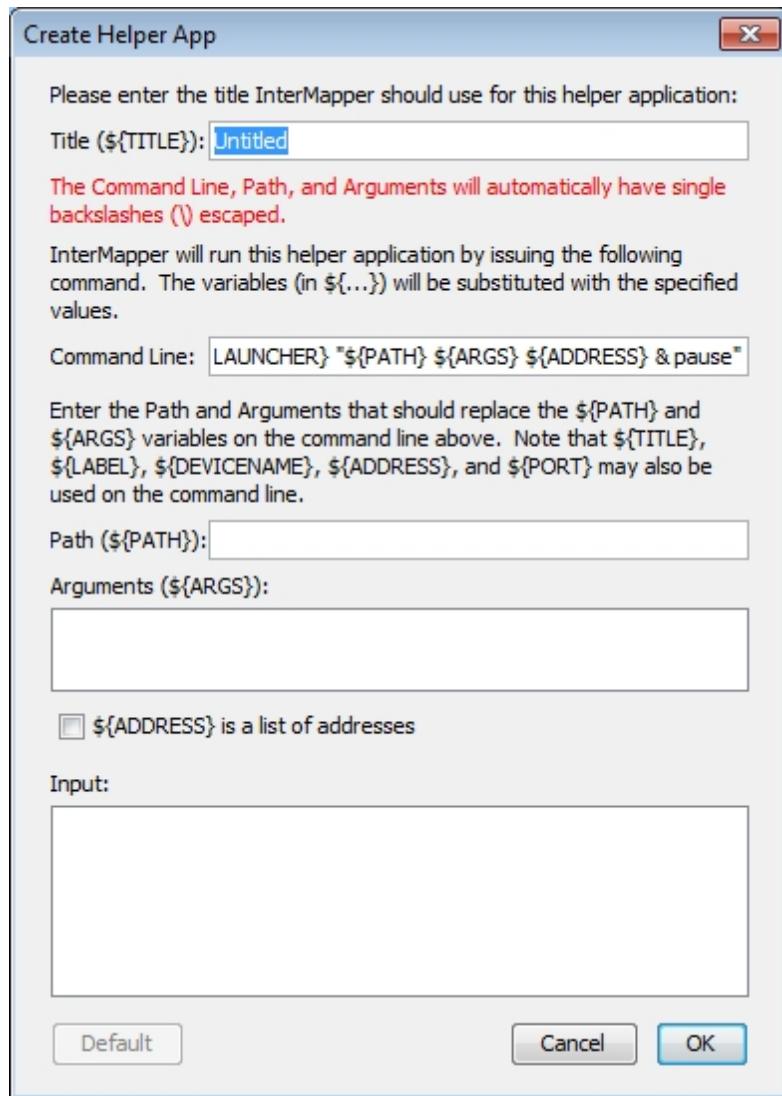
### *Adding or Editing Helper Apps*

#### To add a new helper application:

- In the Helper Apps window, click the Plusbutton (+). The Create Helper App window appears, showing default values for the new helper.

#### To edit an existing helper:

- In the Helper Apps window, click the helper you want to edit.
- Click the Pencil button. The Edit window appears, showing the current values for the selected helper.



Enter values as follows:

- **Title** is the human-readable name that appears on the Helper Applications sub-menu.
- **Path** is the full file path name for the helper application
- **Arguments** that will be passed along to the helper application.

Finally, the **Command Line** is the actual string that will be invoked. You can configure this string using the \${TITLE}, \${PATH}, \${ARGS}, and \${LAUNCHER} macros that will be substituted when the command is invoked. In addition, you may use the \${ADDRESS}, \${PORT}, \${LABEL}, or \${DEVICENAME} macro.

### Removing a Helper Application

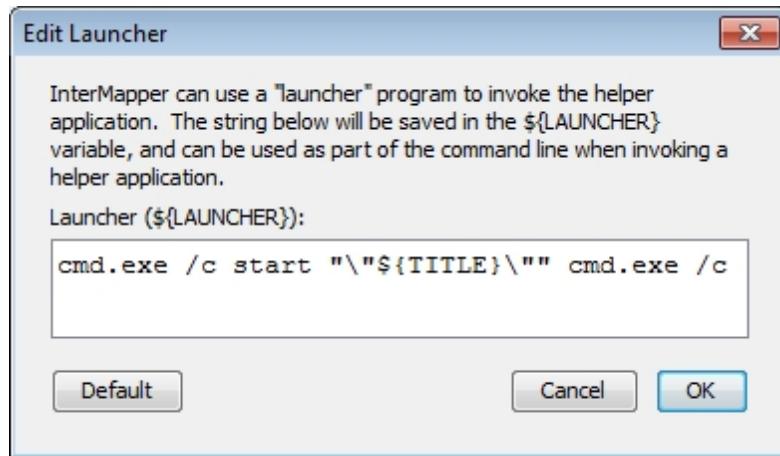
You can remove any helper application definition you have created. Built-in helper apps cannot be removed.

#### To remove a helper app definition:

1. In the Helper Apps window, click the helper you want to remove.
2. Click **Remove...**

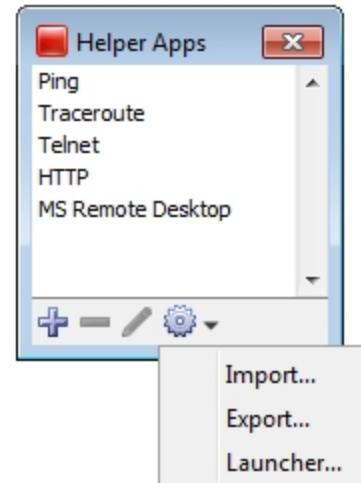
### The Launcher

The *Launcher* is a platform-specific program that allows you to invoke another program from InterMapper.



#### To open the Launcher window:

1. From the Helper Apps window, click the Tools button. The Tools menu appears.
2. Choose Launcher from the Tools menu. The Launcher window appears.



### ***Exporting and Importing Helper Application Definitions***

You can export your current Helper Application settings and import them to another instance of InterMapper.

#### **To export the current Helper Applications definitions:**

1. From the Helper Apps window's Tools menu, choose **Export...** A standard file dialog appears.
2. Specify a file name and location, and click **Save**.

#### **To import Helper Application definitions from a file:**

1. From the Helper Apps window's Tools menu, choose **Import...** A standard file dialog appears.
2. Navigate to the Helper Apps definitions file you want to use, and double-click it or click it and click **Open**. The Helper Apps definitions are replaced with the definitions in the selected file.

### ***How does the Launcher invoke an application?***

The method of launching an application is platform-dependent.

- On Windows, InterMapper uses a command shell.
- On OSX, InterMapper opens a Terminal window.
- On Unix/Linux, InterMapper invokes the shell.

### **Using Default Values**

For each platform, there is a default value for each built-in helper app. You can reset a helper app to its default values.

#### **To reset a helper app to its default values:**

- Click the **Default** button. The launcher string is reset to the default value for that platform.

**Note:** You don't have to use the launcher for any helper, but it's often the easiest way to invoke another program on your computer.

## Using Double-Click Actions

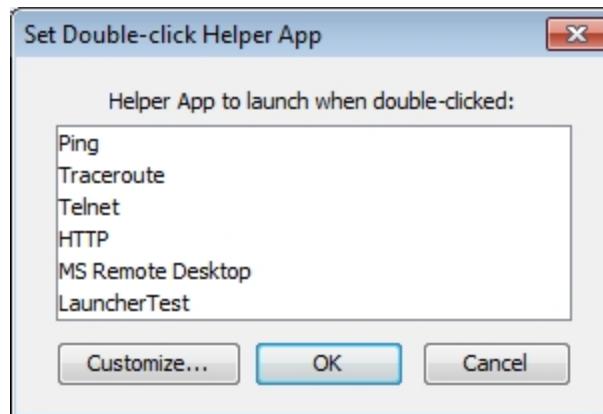
InterMapper defines *Double-click Actions* that it will perform when a device is double-clicked. Many probes have a pre-defined double-click action, but this can be overridden.



To change a double-click action, right-click on the device, and select the proper choice from the sub-menu:

### Helper App

Double-clicking will invoke a specified [helper application \(Pg 76\)](#). This helper application runs on the same machine as the InterMapper client. Select the helper application from the current list of helpers.



### URL

You may supply a URL (http, ftp, telnet, etc.) and InterMapper will invoke it when the device is double-clicked. Enter a URL to be invoked when the device is double-clicked. You may use the following macros: \${address}, \${port}.



Enter a URL you want to use when the icon double-clicked. The default browser is launched with the specified URL.

### **Opening an InterMapper map**

To open another InterMapper map, use this URL format:

```
intermapper://Host:Port/MapName
```

- **Host** is the address or DNS name of the InterMapper server hosting the map . Use \$SAMEHOST\$ to get to a map on the same InterMapper server.
- **Port** is the port for the specified InterMapper server
- **MapName** is the name of the map, URL-escaped (%20 for a space, %3D for a slash,etc)

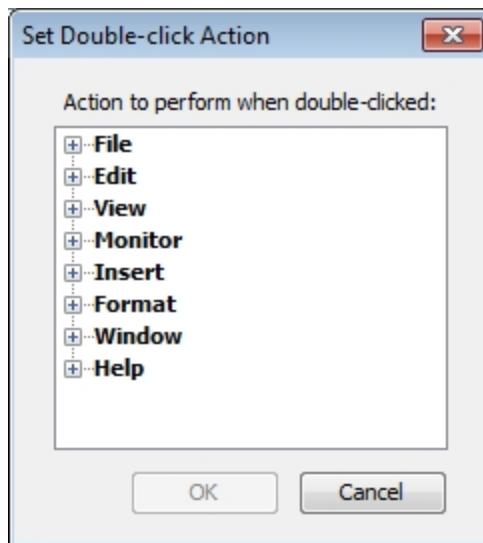
### **Example**

The Example.com demonstration submaps have links back to the Example.com parent map that look like this:

```
intermapper://$SAMEHOST$:8181/Example.com%20National%20Map
```

### **Built In**

InterMapper can invoke nearly any of the menu commands as a result of a double-click. Select the desired item from the hierarchy of menu items.



## Saving Your Map

Each time you make the map editable, a backup of the map is created automatically. You can revert to the backup version by choosing **Revert...** from the Edit menu.

When you make a change to a map, the change is saved immediately, automatically, every minute or so.

### Making a backup of your map

If for some reason you want to make changes to your map, but you want to be able to get back to your original version if necessary, you can make a backup of your map.

When you make a backup file, it stores references to your original chart data. If you decide to restore a previous version, your chart data remains available.

#### To make a backup:

1. From the File menu, choose **Backup...** The Backup Map window appears, showing a list of previous backups of the current map.
2. In the **Backup Name** box, enter the name you want to use for the backup file.
3. Click **OK**. A backup of the current map is created.

**Note:** Backups are stored in the InterMapper Settings/Maps (Backups) folder.

### Restoring a previous version of your map

Use the **Restore...** command, available from the File menu, to restore a previous version of a map.

#### To restore a previous version:

1. From the File Menu, choose **Restore....** The Restore from Backup window appears, showing a list of previous backups of the map.
2. Click the backup you want to use to restore the map.
3. Click **Restore**. The map is restored to the backup version.

### The Map Settings Window

Use the Map Settings window to specify colors for the map, to specify a background image, and to specify default thresholds and notifiers. Any changes you make are saved with the map, and do not affect any other maps.

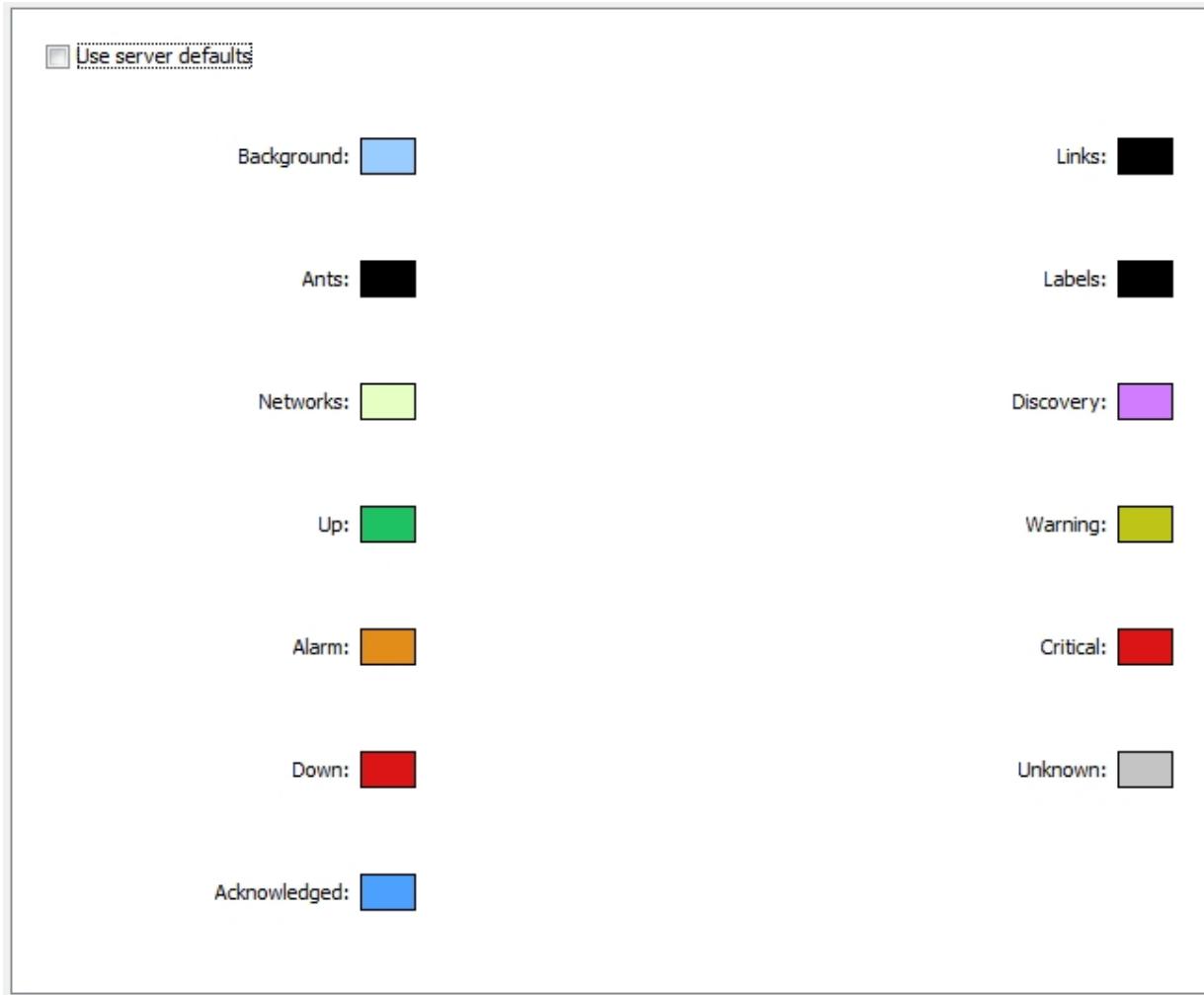
#### To view the Map Settings Window:

1. Make sure the map is in [Edit mode \(Pg 161\)](#).
2. From the Edit menu, choose **Map Settings...**. The Map Settings Window appears. In the left pane is a menu. In the right pane are the settings for the selected section of the menu.

Colors
Background
Device Thresholds
Traffic Thresholds
Default Notifiers
Retention Policy
Layer 2 Features

*Left pane of the Map Settings Window*

### Setting a Map's Colors



*The Colors pane of the Map Settings Window*

**To view and edit the colors for the current map:**

From the Appearance section of the Map Settings window, choose **Colors...** The current colors for the map appear.

InterMapper has a default color scheme that is controlled by the [default map colors \(Pg 238\)](#) window. This color scheme applies to all new maps, and to those maps for which the **Use server defaults** box is checked.

For an explanation of each color you can change, see [Colors you can change \(Pg 239\)](#), which explains the meaning of each default color.

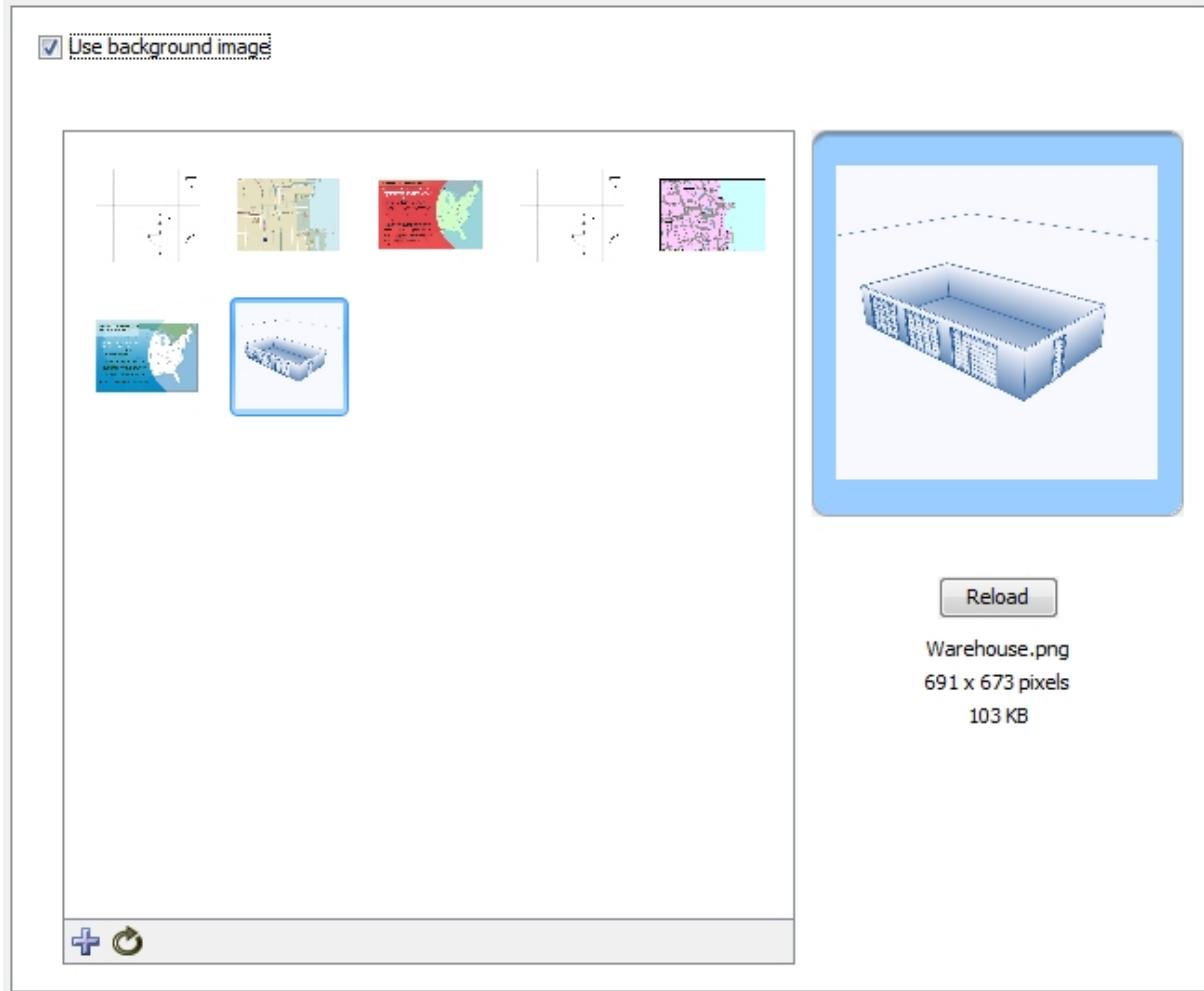
**To use a set of colors different from the global color scheme:**

1. Clear the **Use server defaults** box.
2. Click the color box for the first color you want to change. The Color Picker window appears.
3. Click to choose a color, then click **OK**. The new color appears in the color box you clicked.
4. Repeat steps 2 and 3 for each color you want to change.
5. Click **OK**.

**To restore the current map to the default color settings:**

1. Click to select the **Use server defaults** check box.
2. Click **OK**. The map uses the default colors. The colors you defined are still saved with the map.

### Adding a Background Image



*Background Image pane of the Map Settings Window*

You can define a background image for any map. The background image appears behind the map contents - the devices, icons, and links on the map.

You might use a background image containing a floor plan of an office, and move the items on the map to show the locations of each device in the office. You might use an image containing street map of a city or topographic map of a county or state.

For more information, see [Background Images \(Pg 99\)](#).

## Setting a Map's Default Device Thresholds

Set thresholds to alert you to network problems.

Use Server defaults

**Down Thresholds**

Number of lost packets (1 - 10):

**Other Thresholds**

	Warning	Alarm	Critical	
Interface errors:	<input type="text" value="2"/>	<input type="text" value="10"/>	<input type="text" value="20"/>	per minute
Short-term packet loss:	<input type="text" value="2"/>	<input type="text" value="5"/>	<input type="text" value="20"/>	of last 100
Response Time:	<input type="text" value="1000"/>	<input type="text" value="5000"/>	<input type="text" value="20000"/>	msec

*The Device pane of the Map Settings Window*

InterMapper can provide warnings or alerts when interface errors, packet loss, or round-trip times get too high. You can set default thresholds for all of these metrics from the Map Settings window.

- **Use Server Defaults** - check this box to override the map settings and use the server default settings.
- **Down Thresholds** - Enter the number of lost packets required to generate a Down state.
- **Other Thresholds** - For each metric, in each column enter a value required to generate the a Warning, Alarm, or Critical state.

## Setting a Map's Default Traffic Thresholds

Set traffic thresholds to highlight network activity. Moving ants indicate the direction and magnitude of network traffic.

When the rate goes above these values, alter the display:

Frames Per Second:	<input type="text" value="10"/>	- - - Some traffic
Frames Per Second:	<input type="text" value="100"/>	----- High traffic
Average bytes per frame:	<input type="text" value="200"/>	---- Large frames
Errors per minute:	<input type="text" value="10"/>	<input checked="" type="radio"/> Trouble

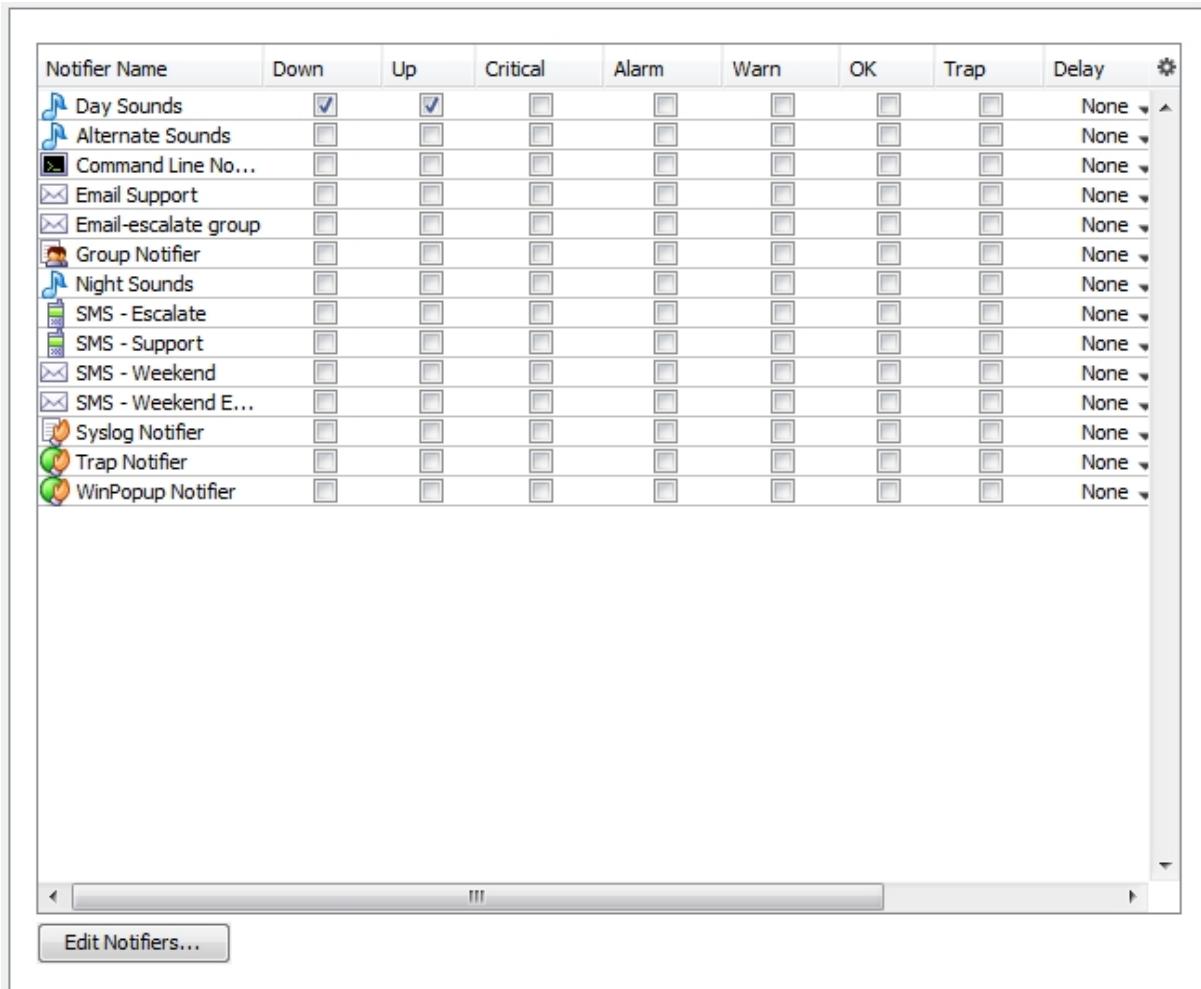
*The Traffic pane of the Map Settings Window*

InterMapper provides indicators for network traffic. You can specify the levels at which the different indicators are shown on links.

For each available metric, enter the value required to display the specified traffic indicator:

- **Some traffic** - Choose **Frames Per Second** or **Bytes Per Second** and enter a value required to indicate some traffic.
- **High traffic** - Enter a value in frames-per-second required to indicate high traffic.
- **Large frames** - Enter a value in bytes-per-frame required to indicate large frames.
- **Trouble** - Enter a value in errors-per-minute required to indicate trouble.

## Specifying a Map's Default Notifiers



*The Default Notifiers pane of the Map Settings Window*

Use the Map Settings window to specify the notifiers you want to attach to new devices in this map by default.

### To specify the default notifiers for the current map:

- For each map state, select the check box for each notifier you want to attach to that state. For more information, see [Working With Notifiers \(Pg 124\)](#).

### To edit the available notifiers:

- Click **Edit Notifiers...**. The Notifier List pane of the Server Settings window appears, showing the available notifiers. For more information, see [Working With Notifiers \(Pg 124\)](#).

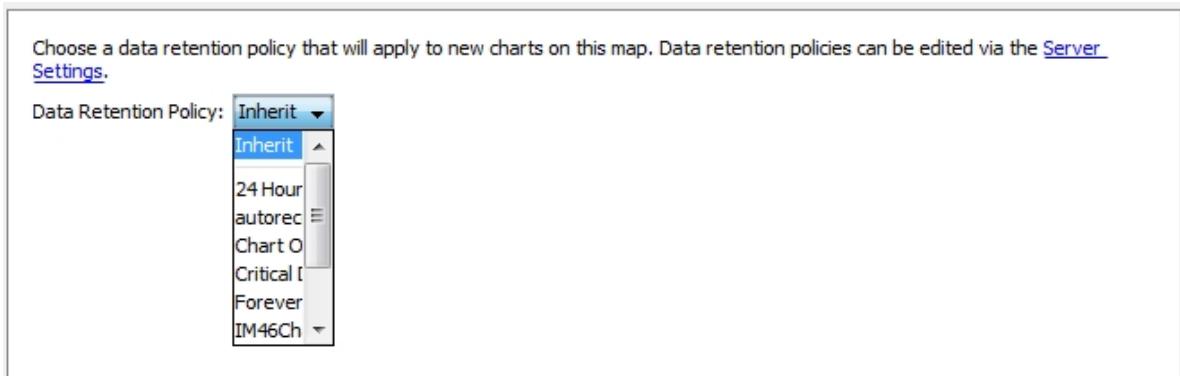
## Specifying a Map's Default Data Retention Policy

If you are using InterMapper Database to collect device and network data, you can specify a default retention policy for a map. This setting overrides any default policy set in the Server Settings window.

Use the Map Settings window to specify the Retention Policy you want to use with new devices in this map. Data Retention Policies are defined from the [Retention Policy pane \(Pg 246\)](#) of the Server Settings window.

### Settings your map's Retention Policies

Use the Retention Policy panel to choose the retention policy to be applied to new devices added to the map.



- **Data Retention Policy** - Choose a retention policy from the dropdown menu.

## Setting your map's Layer 2 features

Use the Layer 2 Settings panel to turn on Layer 2 features for a map and to choose how Layer 2 connections should appear.

### Notes:

- To use the Layer 2 features, you must enable Layer 2 collection in the [Layer 2 Features](#) pane of the Server Settings window.
- One option allows InterMapper to make changes to the map based on Layer 2 data. This can cause significant changes to your map. Help/Systems recommends that you back up the map before activating Layer 2 features.

Layer 2 features can be enabled for any map. You can control the discovery process via the [Server Settings](#).

**Enable Layer 2 features for this map**

The Layer 2 mapping feature can visually arrange the connections on the map to reflect the most recent topology. **This feature is experimental and can cause significant changes to your map. Backup this map before enabling this feature.**

**Automatically change this map to show Layer 2 connections**

You can customize the appearance of your map when the Layer 2 connections are refreshed to show more or fewer details.

Show interfaces when a connection is made

Hide interfaces that have nothing connected

Hide propVirtual interfaces

**Change Now**  
Use data from:  
12/13/11 10:32 AM

- Enable Layer 2 features for this map** - select this check box to turn on Layer 2 mapping for this map.
- Change Now** - click this button to initiate the visual arrangement of connections on the map to reflect the most recent topology using Layer 2 data.
- Automatically change this map to show Layer 2 connections** - select this box to allow InterMapper to edit the map automatically to show Layer 2 connections.
- Show interfaces when a connection is made** - select this box to show Layer 2 interfaces when a connection is made.
- Hide interfaces that have nothing connected** - select this box to limit the interfaces shown to those that have something connected to them.
- Hide propVirtual interfaces** - select this box to hide interfaces whose ifType is propVirtual.

## Quick Reference - Editing Your Map

This is a quick overview of editing the map. Also see [Arranging the Map \(Pg 94\)](#).

### Note:

- Right-click (Windows/Unix) = Command-click (Mac)
- Alt-click (Windows/Unix) = Option-click (Mac)

### To make changes to the map:

- Press **Tab**, or
- Right-click in the map and choose **Edit Map**, or
- Click on the pencil icon in the upper left-hand corner. When the slash disappears, the map is editable.
- With a map editable, drag items from another map's List View window to copy them to the new map.

### To move an object on a map:

- Select and drag it.

### To change the shape or label characteristics of an object:

- Select the node and choose the appropriate command from the Format menu.

### To resize a wire-shaped network:

- Click and drag the end points.

### To select a node and its adjacent nodes:

- Alt-click on an object. Continuing to Alt-click continues to select adjacent items.

### To select the devices at each end of a link:

- Alt-click on the link.

### To re-center the map:

- Control-click the background of the map. The point you click is centered in the map window.

### To scroll the contents of the map:

- Control-drag the background of the map. The window scrolls the map contents within the map window.
- Press Alt+[arrow key] (or Option+[arrow key], Mac) scrolls the map in the direction of the arrow.

### To zoom in or out:

- Ctr+Alt+drag (Ctrl+Option+drag on Mac) to select an area of the map to zoom into.
- Ctrl+scrollwheel (Cmd+scrollwheel on Mac) to zoom in or out.

**Summary of selection tricks:**

- **To select multiple items** - Shift-click.
- **To select adjacent items** - Alt-click. Alt-click again to select the items adjacent to those items.
- **To select all routers, networks or various other groups of items** - From the Edit menu, choose the appropriate command from the **Select Other** sub-menu.

# Chapter 5

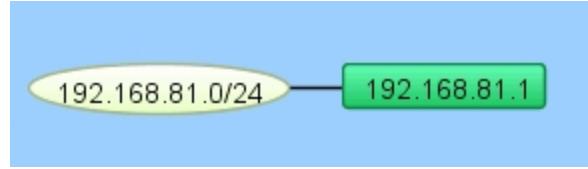
---

## Arranging Your Map

Once you've added all the devices to the map, you can arrange them to suit your ideas about the network.

### Default Appearance of Devices and Networks

By default, *InterMapper* displays devices as rectangles in its map. These devices are connected by links - straight lines of differing thickness to indicate the kind of link - to networks, which are represented as ovals.



### Possible Arrangement Approaches

You can use *InterMapper's* layout tools to arrange your maps in ways that are most useful to you.

One strategy:

1. Find one or more *clusters* of related items and move them close together.
2. Once you have created clusters, you can move them to different parts of the map.  
For example, an Ethernet or FDDI backbone with its attached routers might make a good cluster. Similarly, a central router or switch with its attached networks might serve as a cluster.
3. If networks or ports are not important for a map, hide them from the [Interfaces Window \(Pg 175\)](#).
4. See [Using the Arrange Commands \(Pg 109\)](#) for more information about using the commands from the Format menu.
5. For other information related to arranging your maps, see [Arranging Tips \(Pg 114\)](#).

### Enhancing Your Map's Appearance

*InterMapper* has many tools for enhancing your map's appearance. These include:

- **Setting Custom Icons:** *InterMapper* comes with a set of icons derived from Cisco's Icon Library. Use these industry standard icons, or import your own PNG, GIF, or JPEG images. For more information, see [Custom Icons \(Pg 96\)](#).
- **Setting a Map Background:** You can use a graphic as a "background" to the map. The devices being monitored will appear above this background image. For more information on using background images, see [Background Images \(Pg 99\)](#).
- **Adding text objects:** You can add text objects to your map to label groups of objects, or simply to provide information to the viewer. For more information, see [Text... \(Pg 376\)](#) in the Insert menu reference topic.
- **Importing Device Descriptions:** *InterMapper* allows you to import descriptions of the devices on a map directly from a tab-delimited file. This

simplifies the creation of a new map, and makes it easy to add new devices as your network grows. For more information, see [Importing Data Into Maps \(Pg 588\)](#).

- **Setting the Geographic Coordinates of the Map:** InterMapper allows you to indicate the latitude and longitude for *benchmarks* - known positions on the map. If, for example, you are using an actual geographic map as a background image, you can use geographic coordinates to place a device in the correct location on the map. For more information, see [Using Geographic Coordinates \(Pg 591\)](#).

### Setting a Map Background

Create a new map, and then save it. You can scan your own map, or obtain an image that covers the right area from one of the sites listed in [Using Geographic Coordinates \(Pg 591\)](#). InterMapper can use PNG, GIF, or JPEG image files as backgrounds for maps. You can obtain suitable images by scanning or creating your own maps, or use one of the many map sites listed in [Sources of Maps \(Pg 594\)](#).

To add a background image to a map, simply drag the image file into the map window. It will be added to the map and become visible.

### Setting the Geographic Coordinates of a Map

If you use a geographic map for a background, you can associate specific points on the map with geographic coordinates (latitude and longitude) by adding **benchmarks**. For more information, see [Using Geographic Coordinates \(Pg 591\)](#). Once you have specified the coordinates, you can specify geographic coordinates for devices as you import them to the map, and they are automatically placed at the correct location.

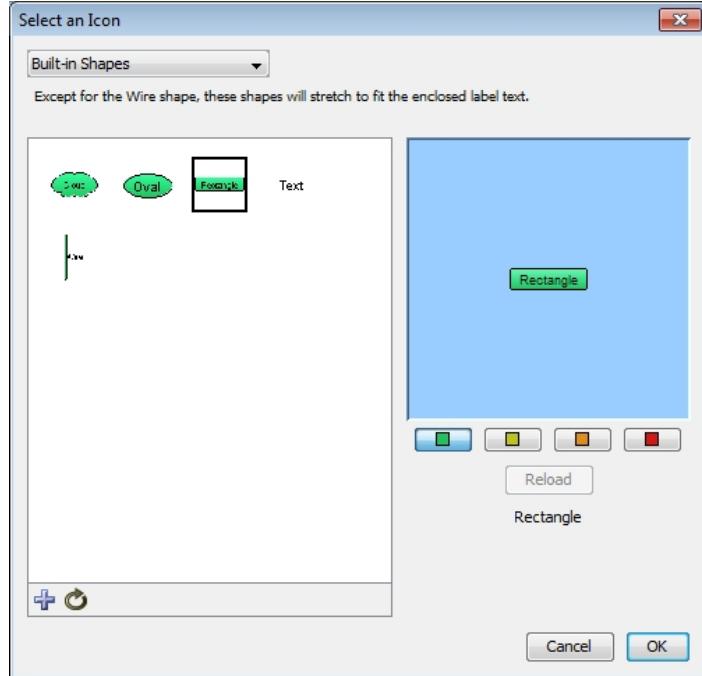
## Icons and Images on Maps

InterMapper can display devices on a map in one of several *shapes*. The default shape is a rectangle, with the device's *Label* inside. InterMapper can also display an oval, a wire (a straight line), a cloud, a text object which can be used as a legend on a map, or as an icon.

A large number of built-in icons are provided with InterMapper. It is also very straightforward to import your own icons.

### Setting an Object's Icon

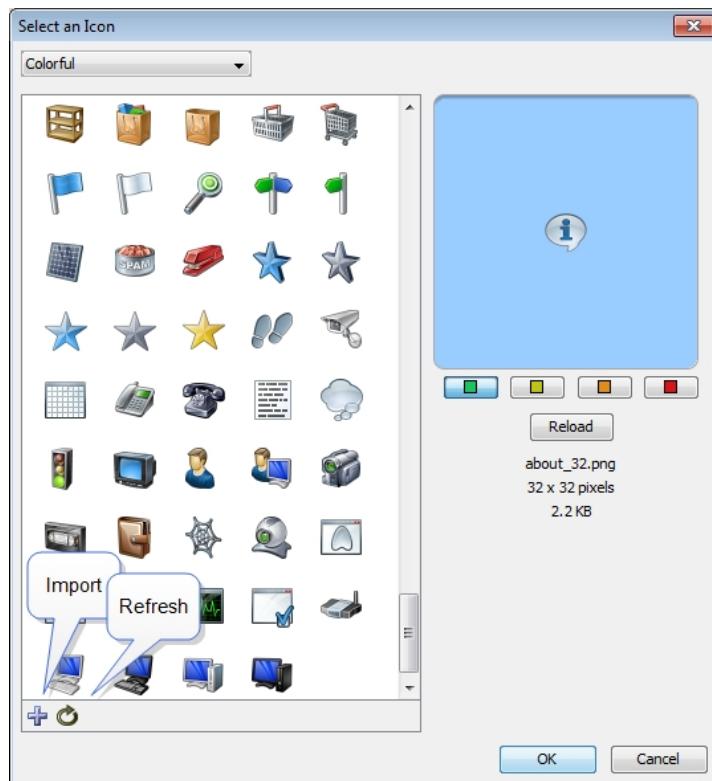
To set an icon, select one or more items on the map, then choose **Format > Icon...** This opens the Select an Icon window. This window has several components:

- A drop-down menu lists collections of icons called *Icon Sets*. There are several built-in icon sets, including *Traditional* and *Default icons* sets, and various Cisco-themed icon sets..
  - A scrolling list on the left shows icons from the selected icon set. These icons appear at a uniform size in the list. Click one of these icons to use it for the selected device(s) on the map.
- 

Select an Icon window - Built-in Shapes

- Note:** Grayscale custom icons appear shaded with the color of a device when it is in the UP state (the default is green.)
- A preview pane of the icon, showing the selected icon in the size it will appear on the map.
  - Color preview buttons. The green, yellow, orange, and red buttons correspond to the different device states. Click a colored button to view the icon's appearance when it is in the indicated state.

- Below the **Reload** button is information about the icon: its filename, dimensions, and file size.
- Click the **Refresh** button (as shown) to force InterMapper to reload the image, perhaps after modification in an image editing program.
- Click the **Import** button (as shown) to import an icon or a folder of icons into InterMapper. These icons are sent to the *InterMapper Settings > Custom Icons* folder on the InterMapper server.



Select an Icon window - Default Icons

- Click the **Refresh** button to refresh the list of icons.
- Drag an image file to the window to import it into the current icon-set.
- Drag a folder of image files to the window to create a new icon-set, importing the image files in the folder to the new icon-set.
- If the Icon Size slider appears, use it to select the icon's size.

## Icon Coloring According to the Device Status

InterMapper colors the icon depending on its status. When in the **Up** status, the icon retains its normal color. (Grayscale icons are tinted green.) If the icon goes to a warning, alarm, or down status (yellow, orange, or red, respectively)

InterMapper shows a grayscale version, tinted to match the device's state.



Clicking the color preview buttons changes the color to show how the icon appears on the map in a given status.

## Creating Custom Icon Files

Icons files can be saved in one of several common graphic formats:

- Portable Network Graphics (PNG) - recommended - works with all operating systems and platforms.
- Joint Photographic Experts Group (JPEG) - works with all operating systems and platforms.
- Graphic Interchange Format (GIF) - works with all operating systems and platforms.

Other graphics file formats may work for you, but aren't guaranteed to appear properly on all platforms.

The recommended file format is a PNG file, saved at 72 pixels per inch, with 256 colors. You should use transparency for the area surrounding the icon, so the background color shows through properly.

If the icon's filename has a suffix of "\_##" where "##" is a number representing the size in pixels, the icons are grouped automatically, and the icon size slider appears.

## Placing arbitrary icons and images in maps

Any icon or image can be placed in a map. Before you can place an image in a map, you must import it as an icon.

### To place an image or icon in a map:

1. If the image has not yet been imported as an icon, import it now.
2. From the Insert menu, choose **Icon...** The Select an Icon window appears.
3. Choose the icon or image you want to insert and click **OK**. The icon or image appears in the map.
4. Move the icon or image to a desired location on the map.

**Note:** When you place an icon on a map, a network oval is added to the map, and the icon assigned to it. You can edit the network as you would any other network, changing the icon or label, or adding a comment or subnet list.

### Adding Background Images To Your Map

You can place a background image on a map so that it appears behind the devices, icons, and links on the map. All image [file formats supported for custom icons \(Pg 98\)](#) can be used.

- You might use a background image containing a floor plan of an office, and move the items on the map to show the locations of each device in the office.
- You might use an image containing a street map of a city or topographic map of a county or state.

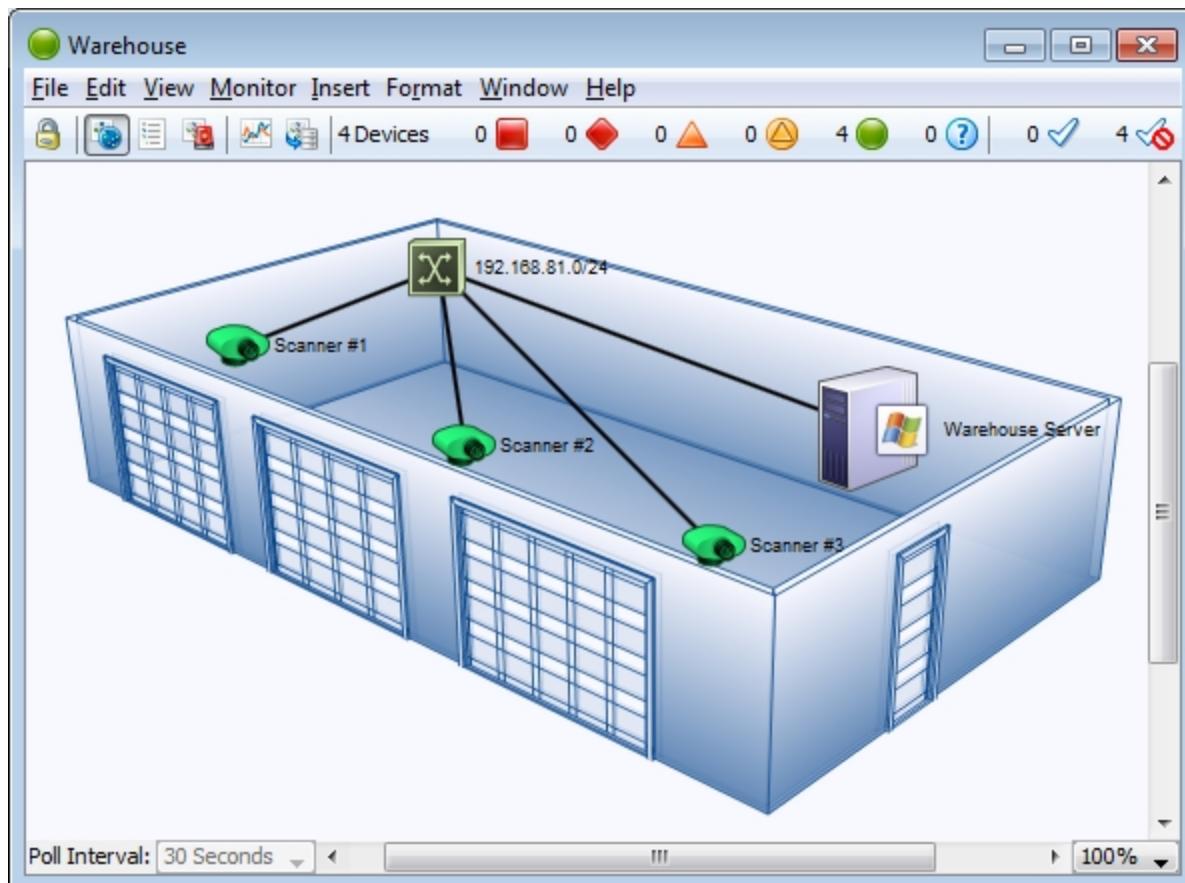
The figure below shows a map after placing an image in the background.

#### To place a background image in your map:

- Drag an image file from a desktop folder to the map window.

or

1. From the Appearance section of the [Map Settings \(Pg 84\)](#) window, available from the Edit menu, choose **Background**. The Background pane appears, showing the current background image, if there is one.
2. Click to select **Use background image**.



Map with background image.

## Tips for Using Background Images

### *Image size*

The background image retains its height and width, and is not scaled (stretched or shrunk) when you resize the window. If the background image is smaller than the current window size, the image will be centered in the map, and the map's background color will show around the edges. If a large image is placed, its dimensions determine the full size of the window.

### *Image contrast and brightness*

Contrasty images may make it difficult to see the devices and links against the background. To make the image more suitable as a background image, you may use a graphics program to increase the brightness and/or decrease its contrast before placing it in a map. We regularly use GraphicConverter, an inexpensive shareware graphics program from <http://www.lemkesoft.com>, to do this task. It has a Brightness/Contrast adjustment facility to simplify this task.

### *Be aware of image file size*

Large images consume large amounts of memory and slow InterMapper's redrawing of the window, especially when viewed over a remote connection. You should balance the image quality against the size of the map. Larger maps may look better, but they may consume large amounts of memory.

**Note:** Use of a compressed image file format such as JPG does not necessarily translate into less memory use.

### *Use contrast and compression to reduce image file size*

Decreasing contrast can decrease the size of an image, so that decreasing the contrast as described above may help decrease the size of the background image as well. Use compressed formats, such as JPG and GIF, to further decrease the overall size of the image file.

### Editing Labels

Use the **Label...** command, available from the Format menu (Cmd/Ctrl-L) to edit the labels for the selected map objects. You can edit the label for a single device or network from the Device or Network Info window.

Every item on a map has its own descriptive label. InterMapper creates a default label showing the device's full DNS name or IP address(es).

#### To edit a map object's label:

1. Make sure the map is in [Edit mode \(Pg 161\)](#).

2. Select one or more map objects.

3. From the Format menu, choose **Label...** (Cmd/Ctrl-L).

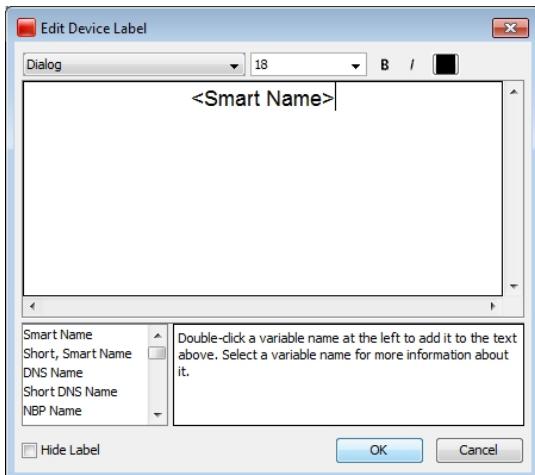
Depending on the object you select, the Edit Device Label dialog or the Edit Network Label dialog appears, as shown below.

4. Enter label data as follows:

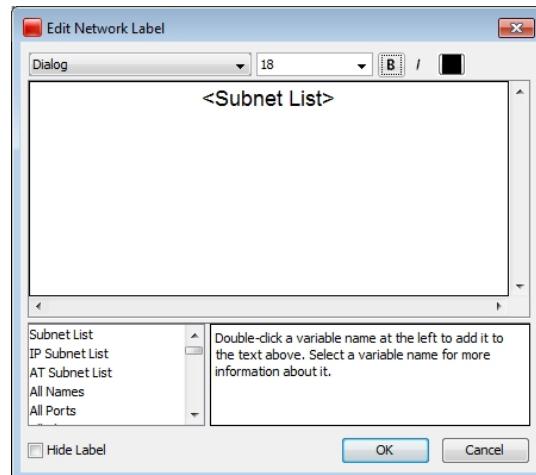
- Enter text in the Label dialog's text box.
- Double-click on any variable names in the list at the lower-left to insert that value into the item's label.
- Select **Hide Label** if desired. (See below.)

For example, the device in the Edit Device Label window uses the short, smart name (the leftmost part of the full domain name). The network shown in the Edit Network Label window has a static (unchanging) label of "Our ISP", and a list of all the subnets in the network shown on the next line.

**Note:** You can also use InterMapper variables and Javascript to insert information dynamically into a device label. For more information, see [Dynamic Label & Alert Text \(Pg 103\)](#).



The Edit Device Label window



The Edit Network Label window

## Hiding a Device or Network Label

In some cases you may not want a label to show at all.

You can hide the label for any device or network unless the icon is set to:

- Rectangle
- Oval
- Cloud
- Text

### To hide the label for a device or network:

1. From the Format menu, choose **Icon...** The Select an Icon window appears.
2. Choose an icon other than one mentioned above and click **OK**. The icon appears for the selected device or network.
3. From the Monitor menu, choose **Label...** The Edit Device Label or Edit Network Label window appears.
4. Select the **Hide Label** check box and click **OK**. The label for the selected device or network disappears.

## Dynamic Label and Alert Text

When you edit a device label, notifier title, or notifier message, you can use a number of techniques to control the resulting text dynamically.

### Showing Parameter or Variable values in a Device Label

When editing a device label, you can show probe parameters, probe variables, and device export attributes in the label. The syntax is:

```
${param:<name of parameter, variable, or attribute>}
```

For example, to show the connect time in a device label corresponding to a TCP probe, your label might look like this:

```
<Smart Name>
Time to establish connection: ${param:_connect} msec.
```

Notice, there is no space after the param: and the name of the variable. (The underscore is part of the variable name. Most names do not have the underscore. ) Any variable that can be shown in the <snmp-device-display>, <script-output>, or <command-display> section of the probe can be used in a label using this syntax. You can show a parameter of the Basic OID probe just as well:

```
Getting data from: ${param:Object ID}
```

You can show device export fields like this:

```
Belongs to map: ${param:MapName}
```

### Using JavaScript in a Device Label or Notifier

You can also use JavaScript in a device label or notifier. Use this to collect information, process it programmatically, and include the results in the label or notifier. The syntax in a label looks like this:

```
<? write( "Hello World" + "\n"); ?>
```

The markers <? and ?> indicate the beginning and end of the JavaScript.

#### Variables and Scope in JavaScript

**Important:** JavaScript in labels and notifiers runs in the global scope within InterMapper. If you declare a variable within the global scope, rather than within a function, the variable is accessible for reading and writing by JavaScript running in any other device label within InterMapper. This may produce unexpected results if you attempt to run the same script in multiple devices.

JavaScript functions are supported, and you can store values within devices and notifiers; these are remembered between polls. These techniques are recommended when you need to protect a variable from being overwritten. Setting variables in devices is described in [Remembering Values from One Poll to the Next \(Pg 106\)](#).

#### ***Example: Simple Scripted Label***

Here is a little more complex, although silly, JavaScript label:

```
<Smart Name>
<?
for (var i=1; i<=3; i++) {
    writeln( "Hello World #" + i);
}
?>
```

The displayed label for the above would be something like this:

```
MyComputer.dartware.com
Hello World #1
Hello World #2
Hello World #3
```

#### ***The write and writeln functions***

Two functions are used to write output to the label:

- The function `write` sends its output to the label without a line break.
- The function `writeln` sends its output to the label, and appends line break at the end, so you do not need to explicitly append the "`\n`" in your JavaScript code.

#### ***Accessing Probe Parameters***

Use JavaScript to access probe parameters using the following syntax:

```
<? writeln( "Getting data from: " + self.get( "Object ID")); ?>
```

The `self` object refers to the device whose label you are setting. The `self` object is always available when using JavaScript to generate a label. Use the same syntax to get access to a probe variable as well:

```
<?
var connTime = self.get( "connect");
writeln( "Time to establish connection: " + connTime);
?>
```

### **JavaScript Error Handling**

If you misspell the name of your variable, (by using "\_conect" in the previous example) the label looks like this:

**Time to establish connection: BAD ARG, see debug log**

If you look in the debug log, you see the following message:

```
12:15:46 JS> [Device: map 'Exporting Fields', device  
'nitro.dartware.com.', probe  
'SNMP Traffic']:BAD ARG: There is no variable called '_conect'. It  
should be the  
name of a probe variable without '$' or curly braces.
```

The error message tells you the map, device, and probe in which the error occurred, and details about what caused the problem.

A JavaScript syntax error results in a label like this:

**JS EXCEPTION, see debug log**

The debug log contains the exception message, but give details about the syntax problem.

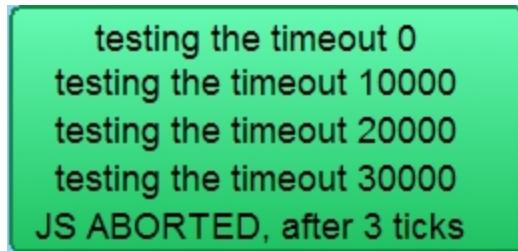
### **Execution Time Limit**

The execution time of a script is limited to between 50 and 100 msec. This prevents the script from monopolizing the CPU. This is more than adequate time to produce a complex label or notifier output.

Here is a way to demonstrate the timeout:

```
<?  
for (var i = 0; i < 1000000; i++) {  
    if(i%10000 == 0) {  
        writeln( "testing the timeout " + i);  
    }  
}  
?>
```

The label would look something like this:



Three ticks is approximately 50 msec.

### ***Remembering Values from One Poll to the Next***

Sometimes it is useful to retain the value of a variable from execution of the JavaScript to the next.

There are two different techniques you can use to achieve this:

- **JavaScript Global Variables** - Any JavaScript variable declared at global scope is retained from one execution of JavaScript to the next. The variable is visible regardless of which device is running the script. The variable is also visible regardless whether the JavaScript is running to generate label text or a notifier's text. Keep this in mind when using the same script for more than one device - you may find yourself overwriting a global variable unexpectedly.
- **Device JavaScript Variables** - A piece of data can be stored in a device. An advantage of these variables over global variables is that each device can have the same named variable but the value will be different for each device. You use self.get(...) and self.set(...) to read and write this data. The name of the variable must be different than any probe parameter or probe variable.

#### ***Example: Storing a Value With a Device***

To read the value stored in the device's variable "MyInformation" into myinfo:

```
var myinfo = self.get( "MyInformation" );
```

To write the value of myinfo out to the device's variable "MyInformation":

```
storedinfo = self.set( "MyInformation", myinfo );
```

The function self.set(...) actually returns the value that is being stored. If the value cannot be saved, (for instance, if you try to save to an existing probe parameter or probe variable) the returned value is the actual value of the parameter or variable, not the one you tried to save.

### ***Example: An Incrementing Counter***

Here is a way to implement a counter that increments each time the label is drawn. Note that the first time the script runs, the counter variable does not yet exist.

This script below gets the value of "Count", displays it, increments it, and saves it. The first time the script runs, `self.get()` returns the string "BAD ARG, see debug log". Since JavaScript cannot turn this value into a number, you can use the JavaScript `isNaN()` function to determine that `n` is `Nan` (Not a Number), and thus has not been initialized.

```
<?
  var n = Number( self.get( "Count") );
  if (isNaN(n)) n = 0;
  writeln( "Count is " + n);
  n++;
  self.set("Count", n);
?>
```

A similar technique would also work for JavaScript global variables as well.

### ***Accessing Device Attributes***

You can also use JavaScript to access device attributes. The syntax is different than for accessing probe parameters and variables. It still uses the `self` object, but the attribute names are simply properties of the `self` object. The syntax looks like this:

```
<?
  var rtt = self.RoundTripTime;
  writeln( "Round-trip time is \n" + rtt + " msec");
?>
```

The above JavaScript reads the last round-trip time into `rtt`, and displays it:

Round-trip time is  
1 msec

If you misspell a device attribute, the error shows up as a JavaScript syntax error because the misspelling is not JavaScript data, but actual language syntax. You would see "JS EXCEPTION, see debug log" in the label, and a detailed explanation in the debug log.

Any device attribute can be used in a label. For a list of device attributes, see [Device Attributes \(Pg 605\)](#).

### ***Accessing Interface Attributes***

Devices connect to networks through interfaces. Each device has a property called `interfaces`. In JavaScript, this property appears as an array of Interface objects. The example below lists all down interfaces:

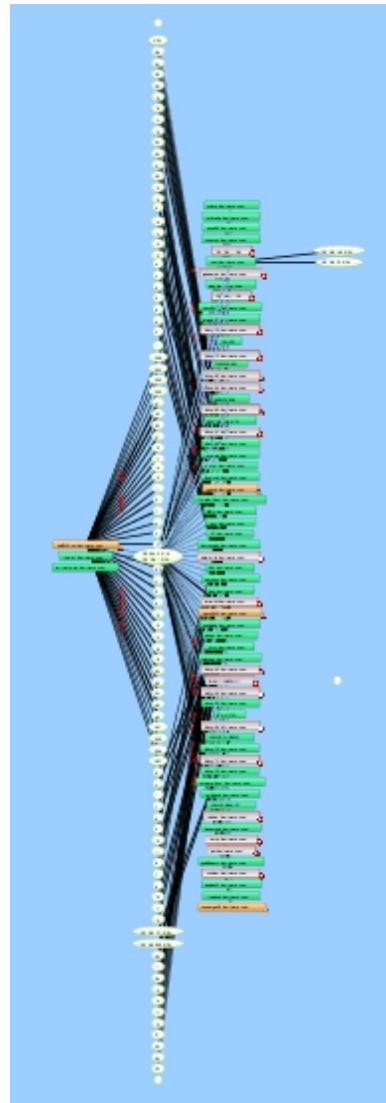
```
<?
var downInterfaces = 0;
for (var i =0; i < self.interfaces.length; i++) {
    var ifc = self.interfaces[i];
    if ((ifc.Enabled == "TRUE") && (ifc.Status == "down")) {
        downInterfaces++;
        write( ifc.Index + ". ");
        write(ifc.Alias.length > 0 ? ifc.Alias : ifc.Name );
        writeln( " : " + ifc.Status);
    }
}
writeln();
writeln(downInterfaces + "/" + self.interfaces.length + " interfaces
down");
?>
```

Any interface attribute can be used in a label. For a list of interface attributes, see [Interface Attributes \(Pg 619\)](#).

## Using the Arrange Commands

You can use the ***Organic***, ***Tree***, ***Cycle***, ***Star***, and ***Bus*** commands available from the Format menu's **Arrange** submenu to rearrange and organize the selected elements automatically.

**Note:** If no objects are selected, ***Organic*** and ***Tree*** operate on all map objects, or on any selected objects. For ***Star*** and ***Bus***, you must have at least one object selected. For ***Cycle***, you must have at least two objects selected.

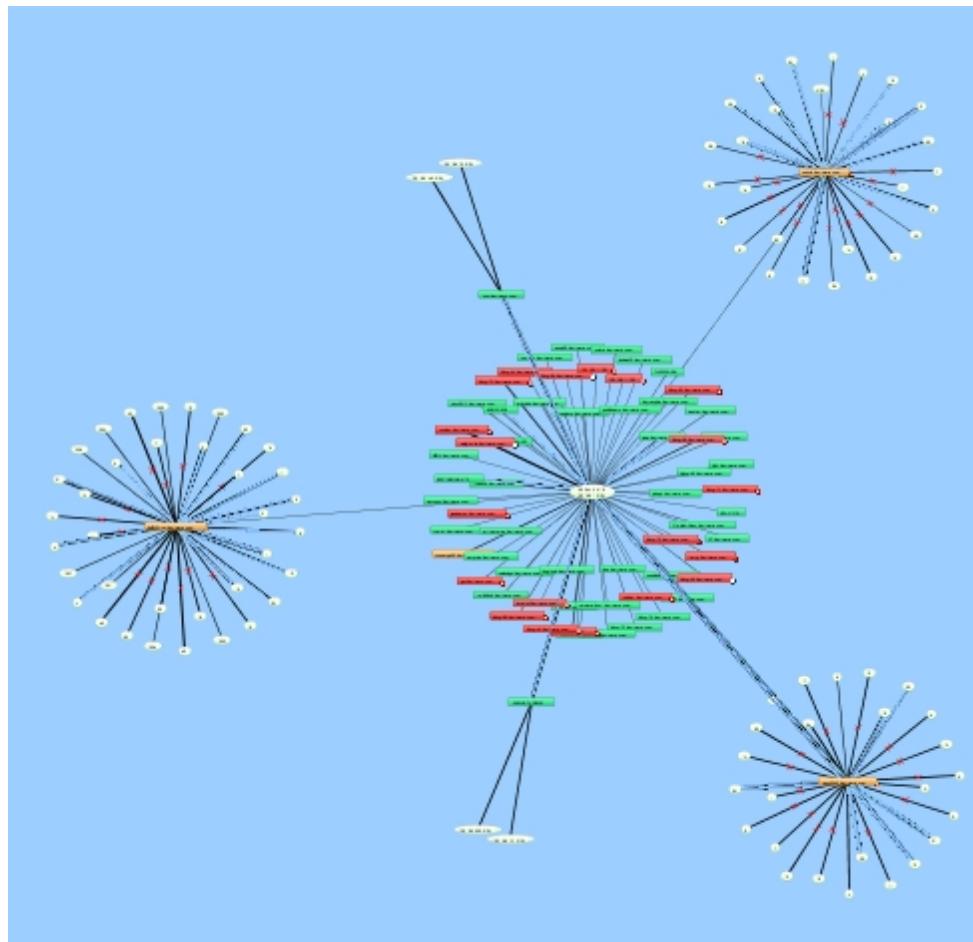


### ***Using the Organic Command***

Use the Organic command, available from the Format menu's Arrange submenu, to arrange the objects on a map so that crossed lines are minimized, and objects are not overlaid on each other. This is the method used to arrange devices during auto-discovery.

To the right is a complex map. Notice that there are many overlapping links.

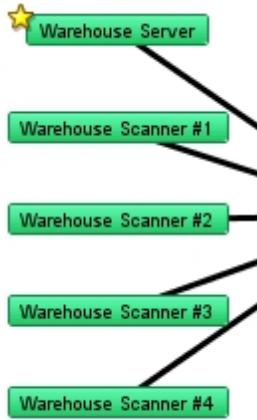
Here is the same map after applying the Organic command.



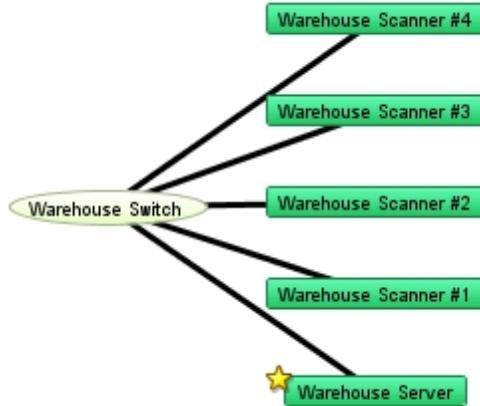
### Using the Tree Commands

Use the **Tree** command to arrange the current selection in a tree. A sub-menu controls whether the tree structure should be drawn to the **right**, **down**, **left**, or **up**.

Arrange items in a tree structure. Choose which direction the branches of the tree should go. Shown below are **Tree > left** and **Tree > right**.



**Tree > left**



**Tree > right**

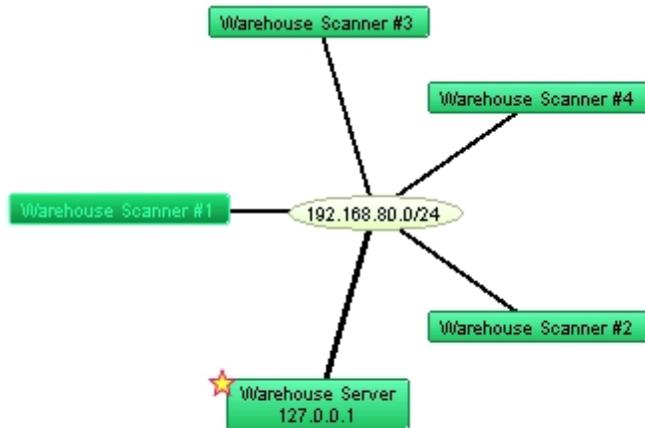
### Using the Bus command

The network oval in the center of the cluster above represents an Ethernet segment that interconnects several devices in an office. To make it a cluster, use the **Bus** command from the **Arrange** submenu.



### Using the Star Command

The **Star** command arranges connected items in a circle around the selected item, similar to the Organic command.



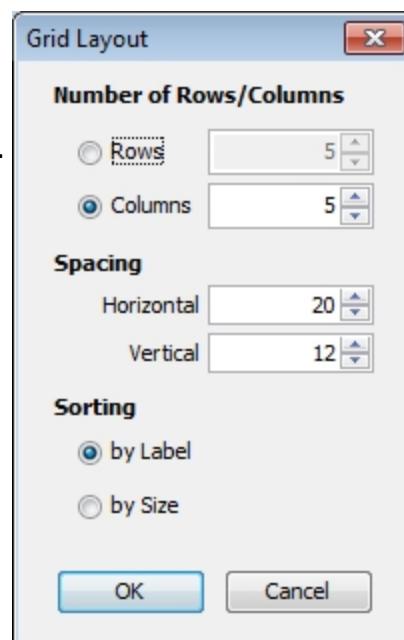
### Using the Grid Command

Use the Grid command to arrange connected items in a grid.

#### To use the grid command:

1. Select the devices you want to arrange in a grid.
2. From the Format menu's Arrange submenu, choose Grid... The Grid Layout dialog appears.
3. Choose your parameters as appropriate.
4. Click OK. The devices are arranged as specified.

The example below shows the result of the Grid layout command after selecting only the devices in Star example above.



2-column grid layout

### Using the Cycle Command

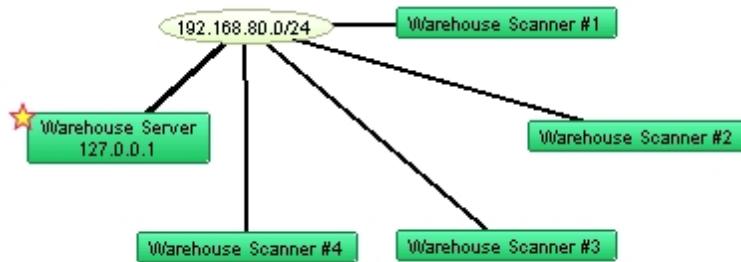
**Note:** The Cycle command is deprecated. We recommend you Organic command for intial map layouts.

Use the **Cycle** command to spread out the items in the map, and make the relationships more clear. The **Cycle** command moves all devices and networks near the edge of the window as shown below.

#### To use the **Cycle** command on all map objects:

1. From the Edit's Select menu, choose **Select All** (Cmd-A).  
All objects in the map are selected.
2. From the Format menu's Arrange submenu, choose **Cycle**.  
The objects are evenly distributed around the map as shown below.

The **Cycle** command moves all devices and networks near the edge of the window as shown below.



*Results of the Cycle command.*

## Other Tips for Arranging Your Maps

Having formed a bus or star cluster, drag it to the edge of the window. This allows you to see the interconnections of the remaining devices. Create other clusters as required.

Once you have identified and arranged the clusters, use the following tips to fine-tune your map:

- **Move one or more items around the window** - Drag them to a new position. Use shift-click to add or remove items from the current selection before dragging.
- **Automatically select connected items** - **Alt/Option-click** an object to select all the leaves connected to it. (A leaf is an object that has no other connections.) A second **Alt/Option-click** selects all the objects (leaves and non-leaves) connected to the current selection. Subsequent **Alt/option-clicks** continue to expand the selection, choosing first the leaves, then the non-leaves that are attached to the current set of selected objects.
- **Use the Format menu commands** to affect *placement* of items in the map. In addition to the **Cycle**, **Bus**, and **Star** commands described above, use these menu commands to change the orientations or sizes of the items in the map.

**Align...** modify the alignment of items

**Rotate...** rotate the selected items around their center

**Scale...** increase or decrease the separation of the selected items

- Use these **Format** menu commands to affect the *appearance* of individual items:

**Icon:** change the item's shape to a rectangle, oval, wire, cloud, text, or other icon

**Label:** modify a text label for an item in the map

**Label position:** change the location of a text label relative to its item

- Right-click (or Ctrl-click) to set the Font, text Size and text Style from the context menu for all selected items.
- If networks or ports are not important for a map, hide them from the [Interfaces Window \(Pg 175\)](#).
- See [Editing Labels for Devices and Networks \(Pg 101\)](#) and [Connecting Devices to Switch Ports \(Pg 115\)](#) for more tips on arranging the map.
- InterMapper periodically scans routers and switches and displays newly discovered interfaces. If you delete the interface/oval from the map, InterMapper redisCOVERS it and displays it again. You can hide them from the [Interfaces Window \(Pg 175\)](#). For more information, see [Hiding and Un-hiding Detail \(Pg 121\)](#).
- If you use a switch's VLAN capabilities to segment your network, you may want to show which equipment is connected to each VLAN segment. Do this by manually dragging device links to the proper port to indicate the correct connection point. See [Connecting Devices to Switch Ports](#) in the [Switches \(Pg 115\)](#).

### Connecting Devices to Switch Ports

Here are some tips for handling switches in your map.

#### Hiding Inactive Ports

Auto-discovered switches will have all their ports shown in a map. This can add a great deal of clutter, and make it difficult to see the real structure of the map. In addition, an inactive (i.e., unused) switch port will cause the switch itself to be placed in alarm.

**Note:** You can also convert your map to Layer 2. Using Layer 2 information, your map is automatically updated to match the topology represented by the switch's Layer 2 information. For more information, see [Mapping with Layer 2 \(Pg 323\)](#).

Use the Interfaces window to select and remove these switch ports.

#### To hide switch ports:

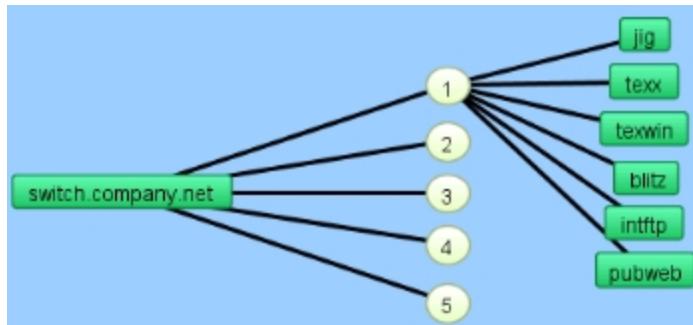
1. With the map editable, right-click/CTRL-click the switch and choose Interfaces Window. The Interfaces window appears, showing the switch's available interfaces.
2. Select or clear the checkboxes to enable or disable switch ports. The disabled interfaces disappear from the map.

### Connecting Devices to Switch Ports

InterMapper does not connect devices to the proper port of a switch. Instead, it connects all the devices of a subnet to the first switch port it discovers (usually the port with ifIndex=1).

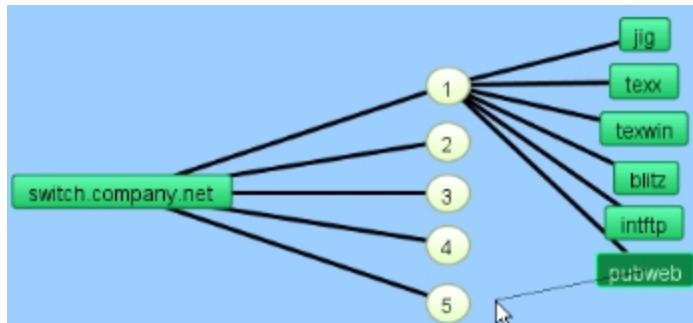
You can manually move a device's link to the proper port by dragging the link from the central oval (labeled "192.168.1.0/24" in the figures below) to the proper port, as shown below:

1. The map before making changes. The switch's ports are shown by the numbered ovals. (Make sure the map is in [Edit mode \(Pg 161\)](#).)

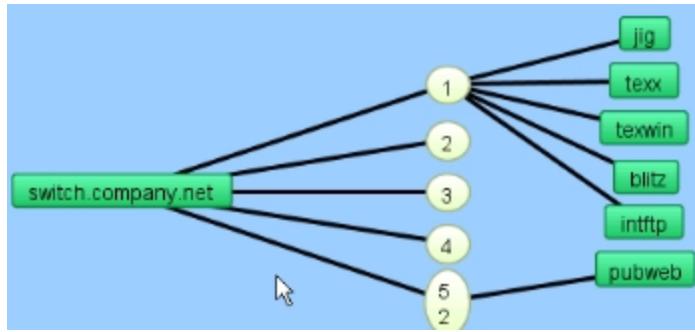


2. Click a link and drag it. A line appears, and follows the cursor.

**Note:** You can drag links only *from* a network.



3. Drag the link to the desired port. The link disconnects from the original network oval and remains connected to the new. Note that the port's oval now contains two port numbers: that of the switch (7) and the port number of the device (2).



*Tip:* When moving links to the proper ports on a switch, it's sometimes easier to change the port labels to display the port's number.

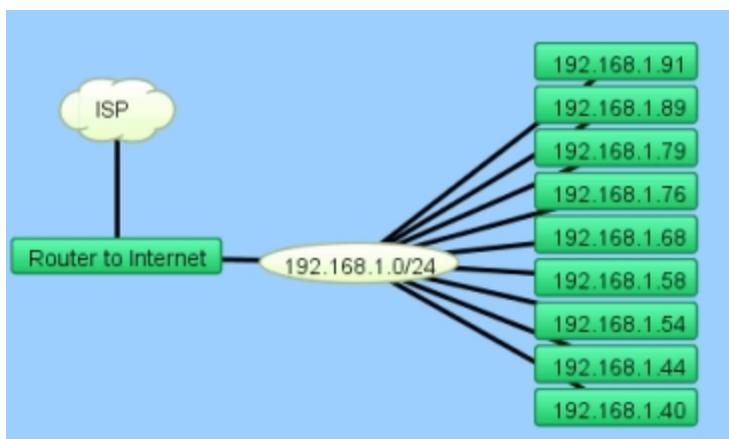
### Adding Unmanaged Hubs and Switches to a Map

InterMapper cannot automatically discover or monitor unmanaged switches and hubs (so-called 'dumb' devices) since they have no IP address. However, there is a workaround that allows you to represent them on an InterMapper map.

To do this, you can create a placeholder icon, and then manually drag the links from the appropriate devices to this new icon. Although InterMapper cannot test or monitor this "fake" equipment, it will appear on the map and display the interconnections of your network as a tool to diagnose problems.

Here is a step-by-step description of the process. Note that this description works equally well for either switches or hubs.

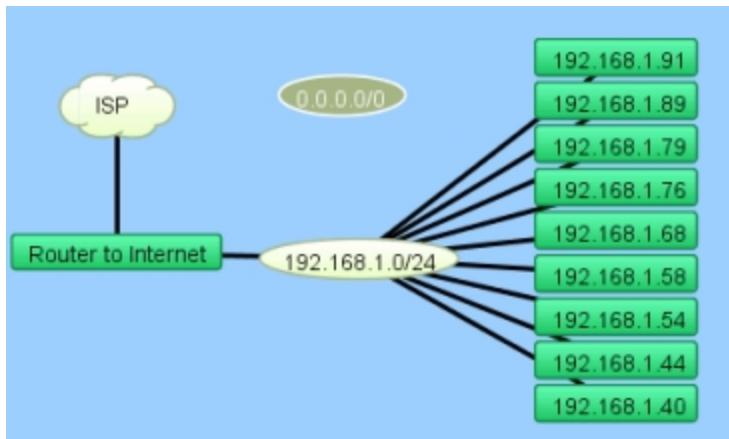
In the starting map, notice that InterMapper has automatically connected a number of devices to the network oval labeled "192.168.1.0/24". We happen to know that the top three devices --IP addresses 192.168.1.91, .89, and .79-- are in fact, connected to a dumb (e.g., unmanaged) hub on the floor above. This page shows how to create a placeholder icon to represent the hub and connect those three devices to it.



#### The problem

The top three devices - IP addresses 192.168.1.91, .89, and .79 - are in fact, connected to a dumb (e.g., unmanaged) hub upstairs.

We want to create a placeholder icon that represents the hub, and then move the connections for those devices to the placeholder.



#### Step 1: Create a placeholder to represent your hub

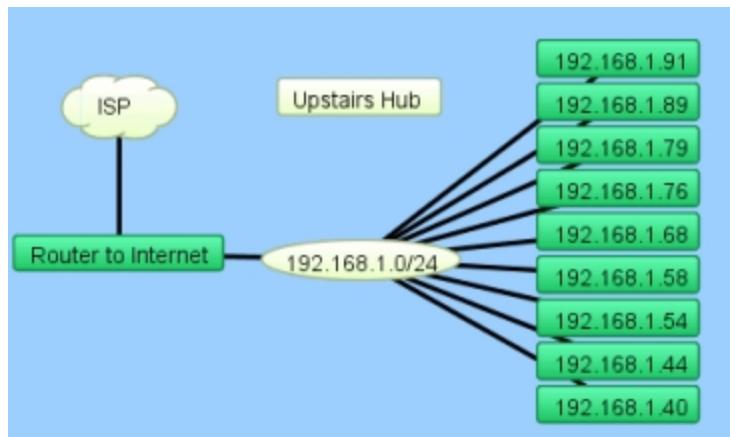
The first step is to create a new (empty) network.

#### To create the new network:

1. From the Insert menu, choose **Network...**

2. Enter a subnet number that's the same as the device's current subnet (oval) as shown in [Adding Networks to a Map](#) (Pg 66).

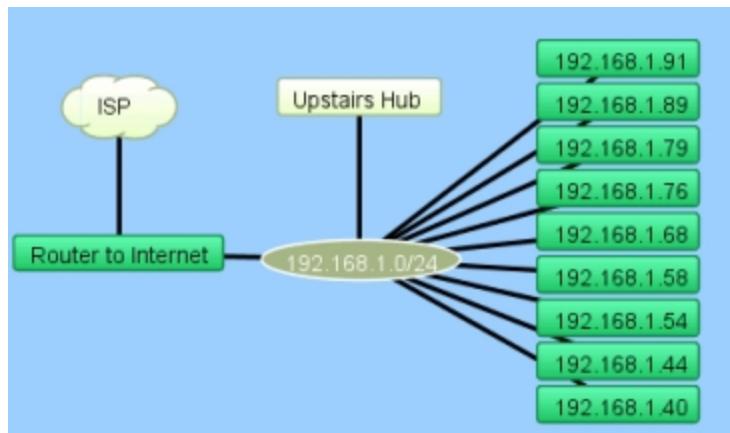
The new network appears as an oval, with the subnet number you entered (not "0.0.0.0/0", as shown in this example).



### Step 2: Tidy up

Tidy up the appearance of the item:

1. Move the new network up a little bit
2. Change its shape to a rectangle using the **Icon...** command from the Format menu.
3. Change its name to "Upstairs Hub" using the **Label (Cmd-L)** from the Format menu.



### Step 3: Connect the hub to the network

Connect this new rectangle to the oval below.

#### To connect the "hub" to the network:

1. Click to select the new rectangle.
2. From the Insert

**Link.** A line appears, connected on one end to the rectangle, and to your mouse cursor on the other. You can also right-click one of the selected devices and choose **Attach**

**To.** A line appears, connected on one end to the rectangle, and to your mouse cursor on the other. You can also right-click one of the selected devices and choose **Attach To** from the device's context menu.

3. Click the network oval below the rectangle. The "hub" is connected to the network

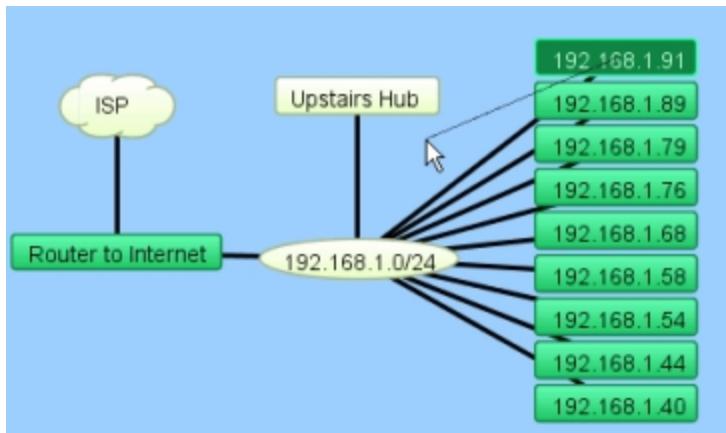
A line appears, connecting the two items together. This line persists as you move the items around your map.

#### **Step 4: Connect the devices to the "hub"**

Drag each of the links for the three devices from the oval to the new rectangle.

#### **To connect the devices to the "hub":**

1. Click on a link (line) for the first



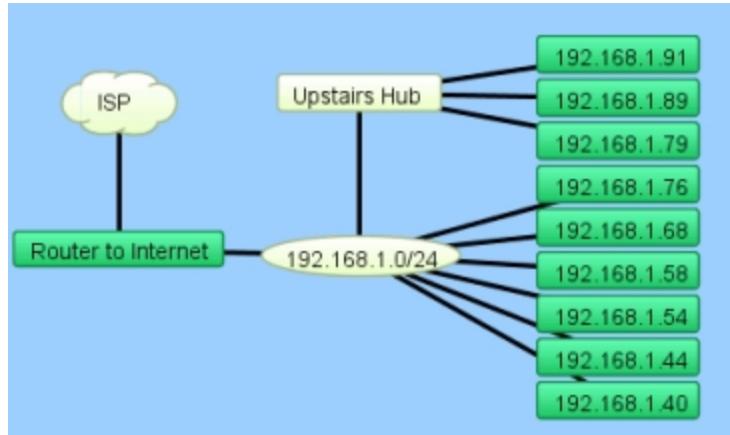
device, and drag it toward the "Upstairs Hub" rectangle.

2. Let go of the mouse when it's over the rectangle.

The line "sticks" to the new rectangle. Do this for all three links.

### The result

Your map should look like this after dragging the three links from the oval to the "fake" hub.



## Hiding and Un-hiding Detail

It is easy to create maps with more detail than you may want to see, especially if your network contains one or more switches. This is because InterMapper periodically scans routers and switches and displays newly discovered interfaces. If you delete a network oval from the map, InterMapper no longer polls the associated interfaces.

- Use the Delete command to delete one or more networks. Select the networks you don't want to see, then choose **Delete** from the Edit menu, or press the Delete key. InterMapper does not poll interfaces for deleted networks.
- **[Create sub-maps \(Pg 69\)](#)** - If you want to hide detail, but still want to monitor its state, and view it occasionally, you can create separate maps containing the detail you want to hide, then make a new map with devices which use the [Map Status probe \(Pg 1\)](#). Each device represents a "sub-map." .
- Use the [Interfaces window \(Pg 175\)](#)to hide or show interfaces.

# Chapter 6

---

## Notifiers and Alerts

*InterMapper* can send many different kinds of notifications to alert the network manager of problems in the network. An entire map can be configured to use a default notifier (or set of notifiers), and then individual devices can have customized notifiers.

### What is a Notifier?

Think of a notifier as a little "robot" that watches the state of one or more devices, and performs a specified action when the device changes to a certain state. The action is called a notification.

You can attach notifiers to a device, and then specify which states (down, up, warning, alarm, critical) should trigger the notifier. When a device changes to that state, the notifier triggers, and *InterMapper* sends the notification.

For example, you can create a notifier that sends an e-mail message. You then attach that notifier to a device. You might also specify that it should be triggered when the device goes down or comes back up. When the device goes into either of those states, the e-mail would be sent.

### Notifier Types

There are several types of notifiers; each uses a different method to send a notification:

- [E-mail \(Pg 135\)](#) - sends an e-mail
- [Alphanumeric Pager \(Pg 138\)](#) - sends a page through a dial-up modem using the TAP protocol.
- [Network Paging \(Pg 146\)](#) - sends a page across the Internet using the Simple Network Paging Protocol (SNPP).
- [SMS Alert \(Pg 147\)](#) - sends a text message to a cell phone via SMS.
- [Sound \(Pg 133\)](#) - plays a sound associated with the state of the device.
- [SNMP Trap \(Pg 156\)](#) - sends an SNMP trap to the specified trap receiver
- [Syslog \(Pg 155\)](#) - sends a message to a syslog server
- [WinPopup \(Pg 154\)](#) (Windows only) - sends a message to the specified user. The message appears in a separate window.
- [Command Line \(Pg 150\)](#) - executes a command on the *InterMapper* host machine.
- [Group \(Pg 137\)](#) - sends notifications to a group of existing notifiers.

### What You Can Do With Notifiers

- The **Notifier List** (Available from the Server Configuration section of the Server Settings window) is a library of notifiers you have created.
- You [create a notifier \(Pg 124\)](#) from the Notifier List, the Default Notifiers dialog, or the Notifiers window.
- You [configure the notifier \(Pg 130\)](#), then [test it \(Pg 132\)](#) to make sure it's working properly.
- You [attach a notifier \(Pg 126\)](#) to a device using the Attach Notifier dialog.

- You [remove a notifier \(Pg 124\)](#) using the Notifier List.
- You [define a set of default notifiers \(Pg 125\)](#) using the Default Notifiers dialog. When you add a new device to a map, the default notifier set is attached to the new device automatically. (You can also create and attach notifiers to individual items.)
- You attach notifiers only to devices, not to networks.

### **Parts of a Notifier**

<b>Notifier Name</b>	This is a human-readable description of the notifier. It's useful to include the type and recipient in the name, e.g., "Network Techs via email" or "Syslog to Main Logger"
<b>Notifier Type</b>	There are many notifier types - e-mail, sounds, traps, etc. - as listed above. Each notifier you create will cause some kind of notification or alert, depending on its parameters.
<b>Notifier Parameters</b>	The parameters of a notifier indicate the recipient or the action to be performed. Parameters can specify an e-mail address, a sound file to play, the address of a syslog or trap server, a pager account, or a script or program to run. Each notifier type determines its parameters.
<b>Notifier Schedule</b>	Each notifier has a schedule associated with it. The schedule specifies the days of the week, and the hours of each day during which a notifier should send notifications. If the event happens outside the schedule, no notification will be sent.

### **About the Notifier List**

The Notifier list is a library of notifiers that you can attach to different devices on your map. It is available from the Server Settings window. You create, configure, edit, remove, and disable notifiers from the Notifier list. Once you have created and configured the notifiers you want to use, you can attach them to devices.

Occasionally, you may be about to attach a Notifier, and discover that you need to create a new one before you can attach it. You can quickly open the Notifier list from the Notifiers window, and create a new notifier.

### **How Notifications Get Sent**

When an event occurs, for example, when a device changes to a new state (Up to Down, Warning to Alarm, Alarm to OK) InterMapper triggers the attached notifiers that apply to that new state. The notifier then sends a notification, as defined in its parameters, to the specified target users as defined by the notifier schedule.

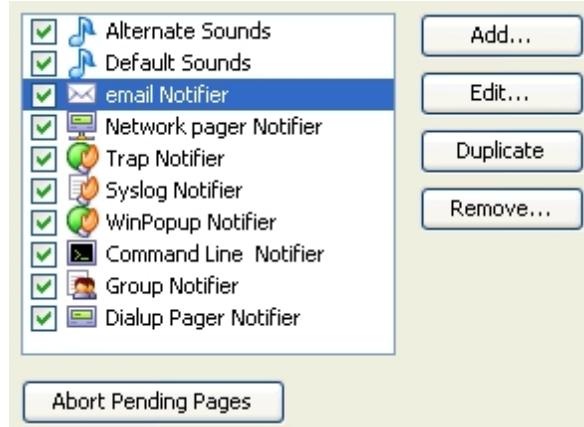
## Working With Notifiers

You create and configure notifiers in the Notifier list. You attach notifiers to devices in the Notifiers window.

### Using the Notifier List

Use the Notifier List to view a list of all notifiers defined for all open maps. You can also use the Notifier List window to:

- Add new notifiers
- Edit existing notifiers
- Copy existing notifiers
- Remove a notifier
- Activate or deactivate a notifier



*Notifier List window. The Default Sounds are built-in.*

#### To view the Notifier List:

- From the Server Settings window's Server Configuration section, choose **Notifier List**. The Notifier List appears.

#### To add a notifier:

1. Click **Add...** The Configure Notifier window appears.
2. Configure the notifier and click **OK**.

#### To edit an existing notifier:

1. Click to select the notifier you want to edit.
2. Click **Edit...** The Configure Notifier window appears, showing the current configuration of the selected notifier.
3. Edit the notifier's configuration, and click **OK**.

#### To make a copy of an existing notifier:

1. Click to select the notifier you want to copy.
2. Click **Duplicate**. The Configure Notifier window appears, showing the current configuration of the selected notifier.
3. Edit the notifier's configuration, and click **OK**.

#### To remove a notifier:

1. Click to select the notifier you want to remove.
2. Click **Remove...** A confirmation dialog appears.
3. Click **Remove**. The selected notifier disappears from the Notifier List.

### To activate or deactivate a notifier:

- Select or clear the check box to the left of the notifier's name in the notifier list. When deactivated, the notifier never triggers. This is useful for vacation periods or other times when you don't want the notifier to be used.

### Defining Default Notifiers

You can create one or more notifiers that, by default, are attached to every new device you create. When the status of the device changes to a specified state, the notifier sends a notification automatically.

InterMapper ships with one default notifier, called "Default Sounds." It plays a default sound when a device goes down, and another sound when the device comes back up.

### To create a set of default notifiers:

1. From the Edit menu, choose **Map Settings...** The Map Settings window appears.
2. Click **Edit Default Notifiers...** The Default Notifiers window appears, showing a list of defined notifiers, with a column containing a check box for each possible device state.
3. For each notifier you want to attach to all new devices, select the check box for each state you want to trigger that notifier.
4. When finished, close the Default Notifiers window. The specified notifiers are automatically attached to each new device added to your map.

**Note:** Changing default notifiers does not change existing notifiers attached to existing devices; it applies only to newly added devices.

### To change all notifiers on a map:

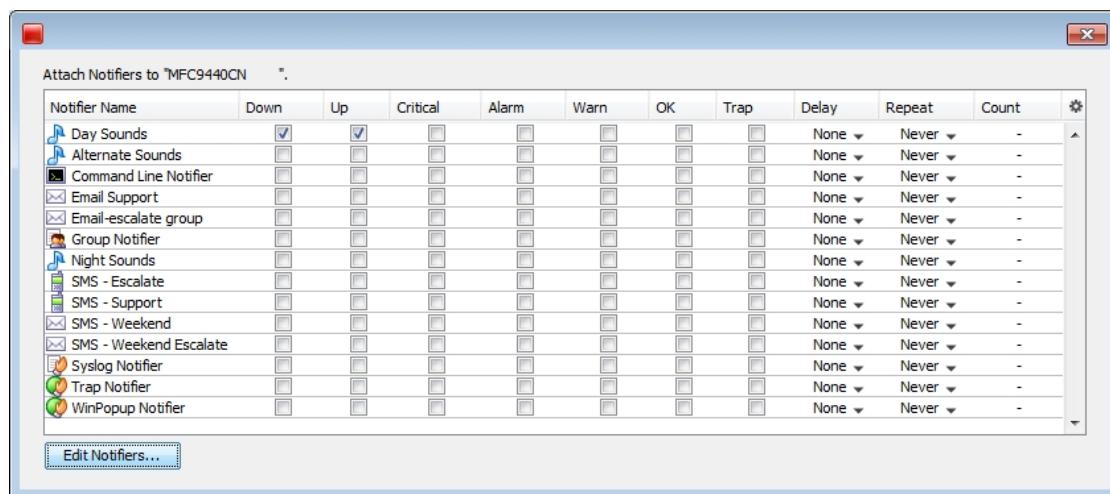
- Select all items on the map, then open the Notifiers window from the Monitor menu. Any changes you make apply to all selected map items.

## Attaching a Notifier to a Device

You can attach one or more notifiers to any device. For each notifier, you can choose which states trigger a notification to be sent. For example, a particular device might have a notifier send an e-mail when a device goes down, but can have a second notifier that plays sounds when the same device goes down, comes up, or enters an alarm state. You might also send an e-mail to an on-site system administrator during the day, and to a different administrator outside business hours.

### To attach a notifier to a device:

1. Select one or more devices.
2. From the Monitor menu, choose **Notifiers Window**. The Notifier Settings window appears, containing the notifiers currently attached to the selected item as shown below.
3. Select or clear the check boxes for the device states you want to trigger the notifier. A notification is sent when the device's state changes to any of the selected states.



Attach Notifier window

**Note:** You can create a new notifier from the Notifier Settings window. The "Edit Notifiers..." button is a shortcut to the Notifier List in the Server Settings page.

### Using the Delay, Repeat, and Count parameters

For each notifier, you can specify **Delay**, **Repeat**, and **Count** parameters. These parameters can be used to control how quickly and how frequently notifications are sent. For example, to avoid unnecessary pages you might configure a notifier to wait until a device has been down for two minutes before sending the first page. You might also choose to re-send a notifier every 10 minutes forever. Notifications are sent until the count is reached, or the device has been acknowledged.

### ***How Delayed Notifiers work***

InterMapper maintains a queue of notifications to be sent. When a DOWN, WARN, ALARM or CRITICAL event happens, InterMapper places a notification in the queue, and sets its "time to be sent" according to the delay. (UP, OK and Trap notifications are never delayed.)

When an UP or OK event occurs, InterMapper first searches the notification queue for the corresponding down, warn, or alarm notification. If it's there, InterMapper removes both the DOWN (or Warn or Alarm) notification and UP (OK) event and won't send either one. If not, then InterMapper sends the UP/OK notification straight away.

### ***Notification Escalation***

You can use notifiers to implement a problem escalation system by creating two or more notifiers for a device. The first notifier can fire quickly to alert someone immediately. A second notifier can be delayed for a period of time, perhaps 30 minutes or an hour, before notifying a second person. If the problem remains when the second notifier's delay time is reached, the second notification is sent. As soon as a problem is acknowledged, no further notifications are sent, even if the outage lasts a long time.

## Using Notification Dependencies

InterMapper can block or suppress notifications for devices that are "behind" or "shadowed by" another failed device. This helps you avoid receiving dozens (or hundreds) of notifications for devices that don't respond because there is a router or link down between InterMapper and that device.

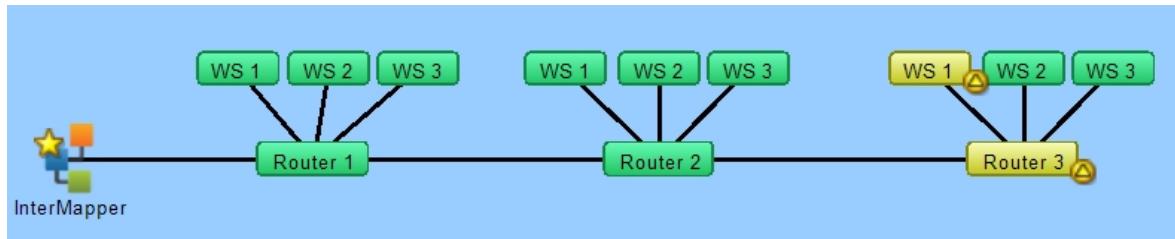
This feature is called *dependencies*, because InterMapper can suppress the notifications for other devices that depend on the failed device.

There's no need to set the dependencies manually between devices on a map. Instead, InterMapper follows the links that are already part of the map.

To enable dependencies, you [set a Vantage Point \(Pg 129\)](#). The Vantage Point indicates the position from which InterMapper views the network. You usually set the Vantage Point on the actual device where InterMapper is running. Once you've set the Vantage Point, InterMapper can determine which devices are dependent on which other devices.

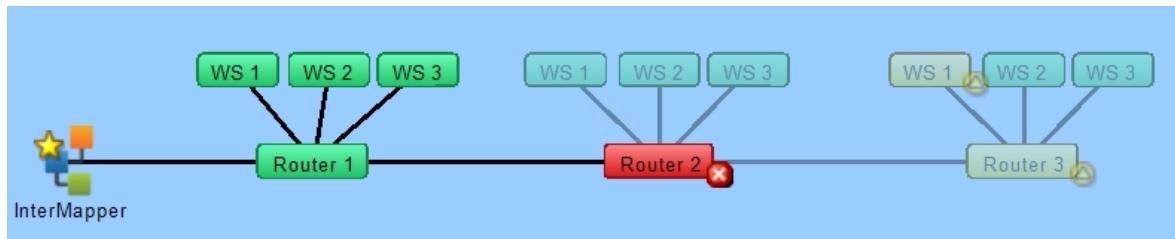
### Example 1: All devices are up

The example below shows a map with several interconnected routers. The yellow star on the InterMapper icon shows that it is the map's vantage point.



### Example 2: One device is down, shows dependent devices

In this example, Router2 has failed. InterMapper will send the normal notifications for Router2, but it will suppress notifications for any of the devices that depend on it. Those dependent devices' icons are dimmed on the map to show they're being shadowed by the failure.



## Setting a Vantage Point

### To set a map's Vantage Point:

1. Make the map editable.
2. Select the device or network you want to use as the Vantage Point.
3. From the Monitor menu's Set Info submenu, choose **Set Vantage Point**.

or

- When the map is editable, right-click (or Ctrl-click) a device or network, then choose **Set Vantage Point** from the context menu's Set Info submenu.

A small star appears next to the item, as shown here.



*A Vantage Point.  
Notice the star  
on the item.*

### Moving and Removing a Vantage Point

You may remove a Vantage Point or move it to a new item.

### To move a Vantage Point to a new item:

- Set the Vantage Point to the new item as described above.

### To remove a Vantage Point:

1. Select the item to which the Vantage Point is currently assigned.
2. From the Monitor menu's Set Info submenu, choose **Remove Vantage Point**.

or

- Control-click the item to which the Vantage Point is currently assigned, then choose **Remove Vantage Point** from the dropdown menu's Set Info submenu.

A star next to the item disappears, and no Vantage Point is set. Notifications are sent for all map items.

## How Dependencies Work

When a device goes down (when no response has been received from it), dependencies are used to determine whether to suppress the notification.

Starting at the Vantage Point, InterMapper follows the links toward the device in question. If the only path to that device passes through a device, a link, or an interface that's already down, InterMapper knows that the device is shadowed, dims its icon, and suppresses the notifications.

If there is no failure along the path, or if there is no path at all (functional or not) to the device, InterMapper allows the notification to go through.

Even though a device is shadowed (and its notifications are suppressed), InterMapper continually probes the device to show its status.

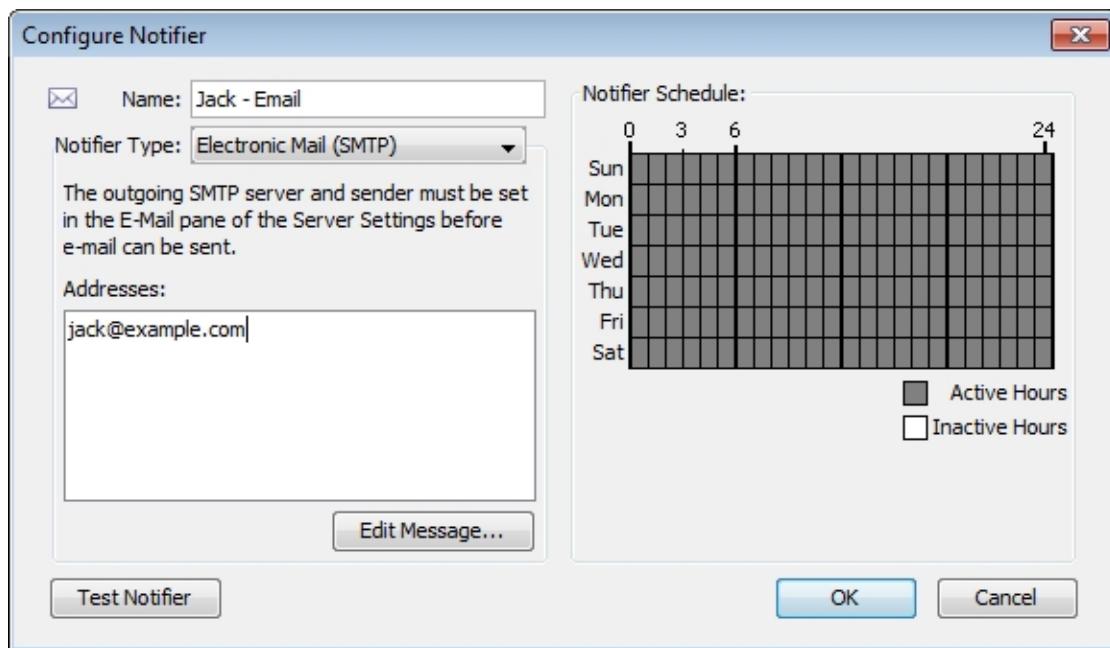
## Configuring Notifiers

A notifier has four attributes:

- A *notifier name*.
- The *type* of notification to send
- A *schedule* of hours during which the notification should be sent
- A set of *parameters* determined by the notification type. This is the information required to allow the notification to be sent. For example, an E-mail notifier requires a valid E-mail address.

### To configure a notifier:

1. Enter a notifier *name* in the **Name** box
2. In the **Notifier Type** dropdown menu, choose a notifier type.
3. In the Configuration panel, enter configuration information for the selected notifier type.
4. In the **Scheduled Hours** panel, choose the hours during which the notifier is active.
5. Click **Test Notifier** to send a test notification.
6. Close the Configure Notifier window.



The Configure Notifier window.

- Use the left side of the window to choose the *type* of notification, and to set the notifier parameters.
- Use the right side of the window edit the *schedule* during which the notification can be sent.

When you select the type of notifier from the **Notifier Type** dropdown menu, the left pane changes to show the parameters required for the selected notifier type.

### **Removing a Notifier**

You can remove a notifier from the Notifier List window.

#### **To remove a notifier:**

1. From the Edit menu, choose **Server Settings...** The Server Settings window appears, with a list of settings in the left pane.
2. From the Server Configuration section of the settings list, choose **Notifier List**. The Notifier List window appears.
3. Click to select the notifier you want to remove.
4. Click **Remove...** A confirmation dialog appears.
5. Click **Yes**. The selected notifier disappears from the Notifier List.

### **Configure Notifier Window Reference**

#### **Name**

Enter a name in the Name box. The name can be any can be any descriptive text string.

*Tip:* If the notifier is active only at certain times of the day or week, you may want to include a description of the time period as well. For example, you could assign names like "Weekend Pager" and "Second Shift Pager" to notifiers that had those time schedules.

#### **Notifier Type**

From the Configure Notifier window's **Notifier Type** dropdown menu, choose a notifier type. For more information, see [Notifier Types \(Pg 122\)](#) at the top of this topic.

#### **Scheduled Hours**

Select a range of hours during which this notification should be sent.

- Active hours are shown in gray.
- Inactive hours are shown in white.

#### **To set a range of hours:**

- Click and drag across a range of hours.
- Click and drag across all blocks to invert the selection.

#### **To add or remove hours from the schedule:**

- Click an individual cell to make it active or inactive.

#### **To activate or deactivate all hours in the schedule:**

- Double-click the **Active Hours** legend to activate all hours in the schedule.
- Double-click the **Inactive Hours** legend to de-activate all hours in the schedule.

**To edit the message sent with the notification:**

- Click **Edit Message...**. The [E-mail Notification page \(Pg 122\)](#) shows the editing interface.

**Note:** You can also use InterMapper variables and Javascript to insert information dynamically into a notifier message or subject. For more information, see [Dynamic Label & Alert Text \(Pg 103\)](#).

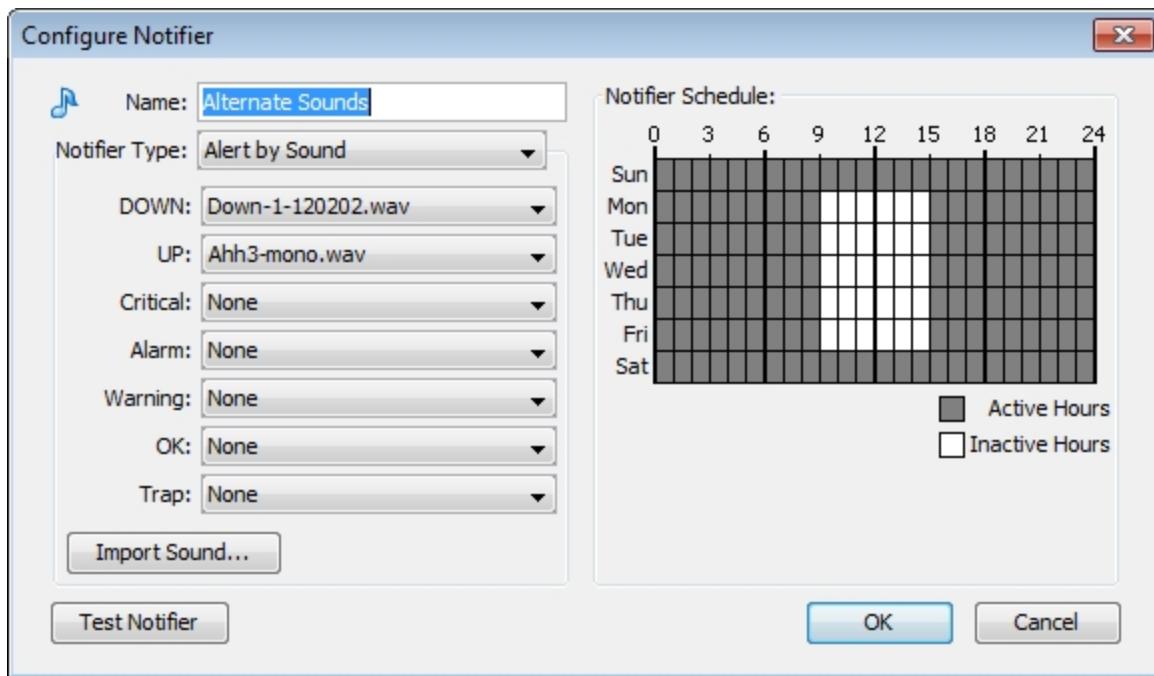
***Test Notifier***

- In the Configure Notifier window, click **Test Notifier**. The notification is sent immediately, with the state defined as "Test."

Once you have created notifiers, you may attach them to all devices (the default notifier is used for all new devices) or to one or more devices.

## Configuring a Sound Notifier

A sound notifier plays a sound whenever a device enters a new state. For each state, you can assign a different sound.



The Configure Notifier window for Sound notifier type. For each device state, you can select a different sound.

### To configure a sound notifier:

1. Create or edit the notifier you want to configure.
2. In the **Notifier Type** dropdown menu, choose **Alert by Sound** if it is not already chosen. The Sound Notifier configuration panel appears as shown in above.
3. For each state, use the **Sound Name** dropdown menu to choose the sound you want to play when the device changes to that state. If you do not want sounds to play for certain states, set those states to **None**. The states are described below.
4. If the sound you want to use for a particular state does not appear, click **Import Sound...** to import a sound file containing the sound you want to use.

### Notes:

- On Windows machines, the available sounds are located in the *InterMapper Settings/Sounds* folder.
- On Mac OS X machines, the available sounds include any system sounds or the sound files in */System/Library/Sounds* folder, as well as those in the */InterMapper Settings/Sounds* folder.
- Supported sound file formats: .WAV, .AIF, and .AU.
- InterMapper RemoteAccess must download each sound file from the InterMapper server, but once it is downloaded it is cached on the remote

machine. Bear in mind that large sound files may affect system performance for remote users.

- Sounds are queued up for playing. One sound does not start until the previously queued sound is completely finished playing. Relatively short sound files are recommended.

## Device States

- **Up** - Plays a sound when a device responds normally after being down.
- **Down** - Plays a sound when a device goes down (fails to respond to InterMapper's queries.)
- **Critical** - Plays a sound when a device enters Critical state.
- **Alarm** - Plays a sound when a device enters Alarm state.
- **Warning** - Plays a sound when a device enters Warning state.
- **OK** - Plays a sound when a device is no longer in critical, alarm, or warning state.
- **Trap** - Plays a sound when InterMapper receives an SNMP trap from the device.

InterMapper's default sound notifiers are as follows:

- **Down** - plays the *Klaxon* sound
- **Up** - plays the *Yahoo* sound
- All other states are set to **None**.

## What you can do with sounds

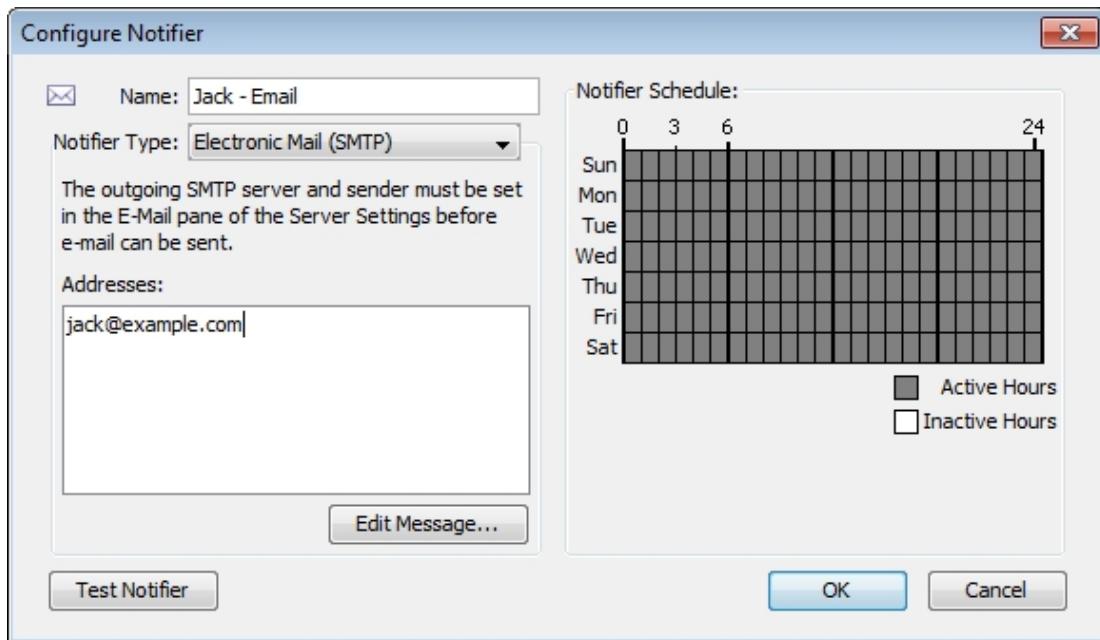
You can use sounds in many different ways to help give you audible indicators the condition of your network. Here are two possible uses for sound notifiers.

- **Create different sound sets for different times of day, or for different days** - create different sound notifiers, each having a different notifier schedule. This can be helpful if you need to, for example, use certain notification sounds during working hours in a busy office, and have louder, more easily distinguishable sounds outside working hours, when you are working away from your computer.
- **Create different sound sets for certain devices** - create sound notifiers for certain kinds of devices, and use different sounds. You can tell without looking if, for example, a certain machine or router goes down. It is also useful if you been having trouble with a particular device.

Sound files must be placed in the InterMapper Settings/Sounds folder before they can be made available in the Server Configuration Notifier List panel of the Server Settings window.

## Configuring an E-Mail Notifier

Use an e-mail notifier to send an e-mail message to one or more recipients. The e-mail message can provide detailed information about the device that triggered the notifier. The example below shows the Configure Notifier window for the E-mail notifier type.



*Configuring an e-mail notifier.*

### To configure an e-mail notifier:

1. In the Configure Notifier window, choose "Electronic mail (SMTP)" from the **Notifier Type** drop-down menu.
2. In the **Address** box, enter the e-mail address you want to receive the notification. You can enter multiple addresses, separated by commas, spaces, tabs, newlines, or carriage returns.

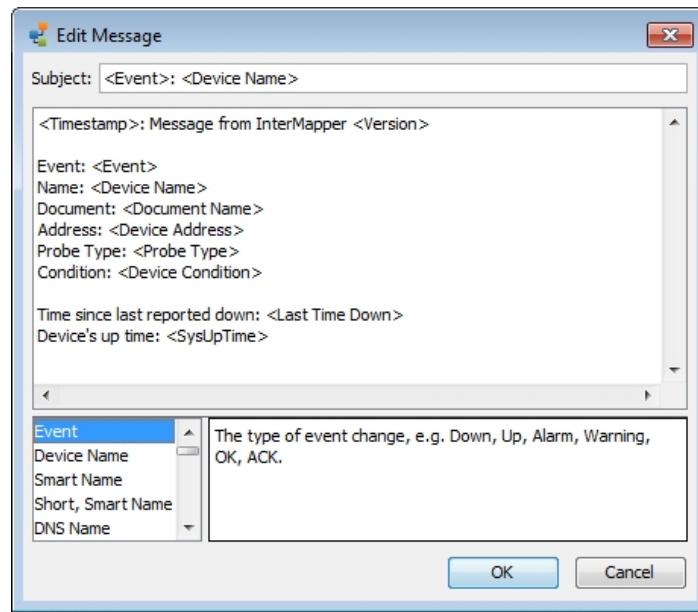
**Note:** E-mail is sent using an outgoing SMTP mail server. Before InterMapper can send e-mail notifications, you must specify the SMTP host you want to use for sending e-mail notifications. For more information on how to specify your outgoing SMTP mail server (and a backup server) see [E-mail Preferences \(Pg 237\)](#).

## Editing the Text of an E-mail Notification Message

*Edit E-mail Message window, showing the default e-mail message.*

An E-mail notifier sends a text message that describes the failure.

Use the Edit Message window to edit the message sent by the notifier. The example below shows the Edit E-mail Message window containing the default e-mail message. The list at the lower left contains variables you can substitute in the text.



Double-click an item to insert it into the message text. When the notification is sent, the inserted item is replaced with its current value in the message text.

**Subject :**

<Event>  
<Device Name>

**Message:**

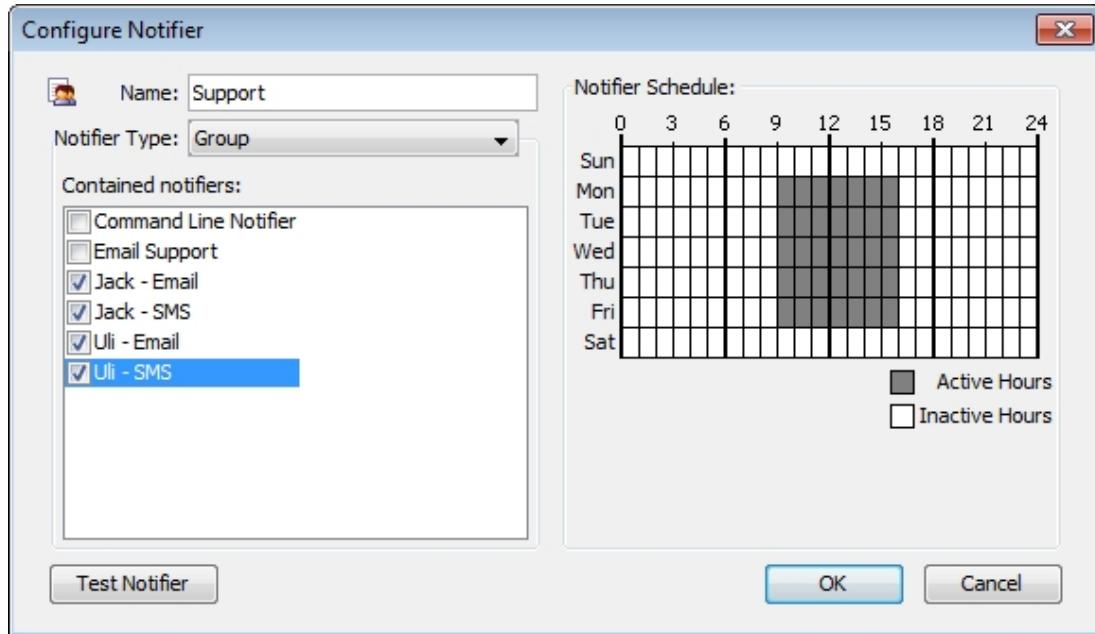
<Timestamp>  
Message from InterMapper <Version>  
Event: <Event>  
Name: <Device Name>  
Document: <Document Name>  
Address: <Device Address>  
Probe Type: <Probe Type>  
Condition: <Device Condition>  
Time since last  
reported down: <Last Down>  
Device's up time: <SysUpTime>

**Note:** You can also use InterMapper variables and Javascript to insert information dynamically into a notifier's subject or message text. For more information, see [Dynamic Label & Alert Text \(Pg 103\)](#).

## Using Group Notifiers

InterMapper can group notifiers together so that a transition to a particular device state sends multiple notifiers, even of different types, for that event.

To create a Group notifier, select **Group** from the **Notifier Type** dropdown menu. A set of currently-defined notifiers appears, with a check box next to each. To create the group notifier, check the appropriate boxes in the list.



### How it works

When the Group notifier is invoked, InterMapper first checks the time schedule. If the time is applicable, InterMapper invokes each of the checked notifiers. They in turn check their schedules, and send the notification if desired.

#### Notes:

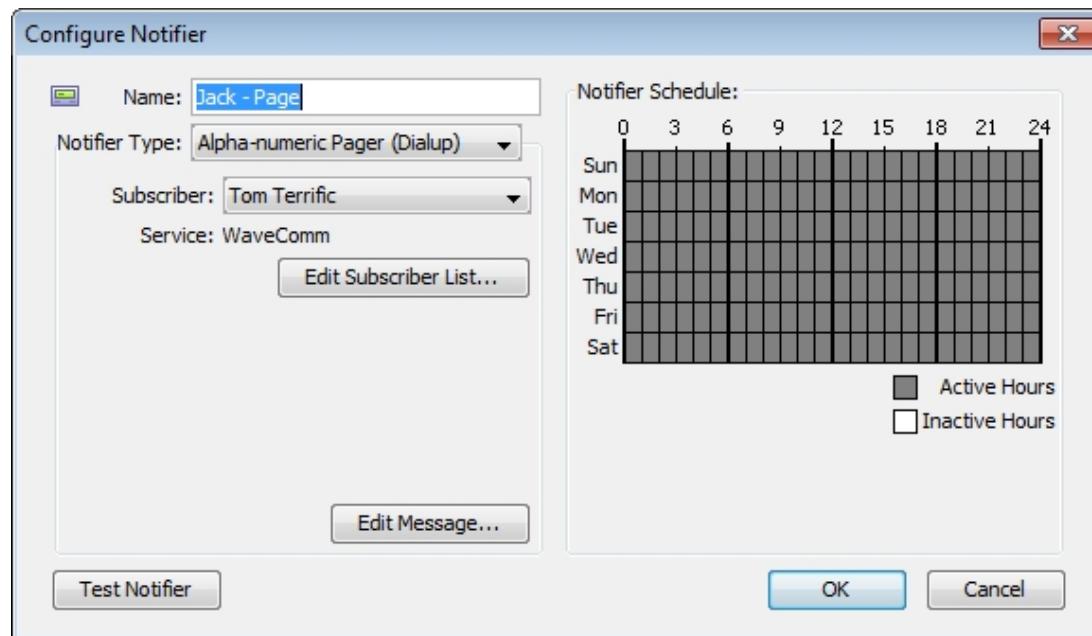
- It is normal for a group notifier's schedule to be 24 x 7, so that the underlying notifiers will govern when they are sent.
- When attaching a group notifier to a device, leave its component notifiers' boxes unchecked. Otherwise, duplicate notifications are sent (once for the group and again for the component).

## Configuring a Pager Notifier to use an Analogue Modem

*InterMapper* uses TAP, the Telelocator Alphanumeric Protocol, with an internal or external analogue modem to connect to a page service, and to deliver a notification.

### To use the built-in support for paging via analogue modems:

1. [Create a new notifier \(Pg 124\)](#).
2. From the **Notifier Type** dropdown menu, select *Alpha-numeric Pager (Dial-up)*. The example below shows the Configure Notifier window with the Alpha-numeric Pager (Dial-up) type.
3. From the **Subscriber** dropdown menu, choose a subscriber, or choose **Edit List...** to add or edit paging services or subscribers.
4. Click **Edit Message...** to edit the message that is sent to the pager. (See warning below)
5. In the **Notifier Schedule** panel, choose the hours during which the page will be sent.
6. When finished, click **OK**.



A notification that uses the built-in modem paging facilities. The page will be sent to the person specified by the *Subscriber* menu.

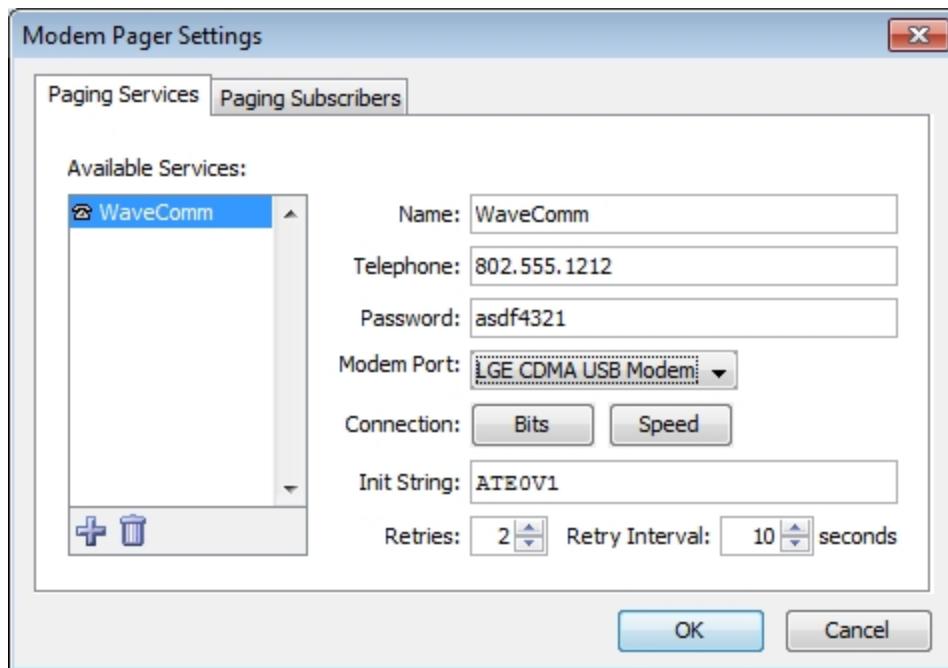
**Warning:** Many paging services limit the length of a message. Sending a longer message can cause multiple pages per event, and can considerably increase your pager bill.

### Setting up Paging Services and Subscribers

Before you can use the paging options, you need to:

- Set up one or more paging services.
- Set up one or more subscribers for that service.

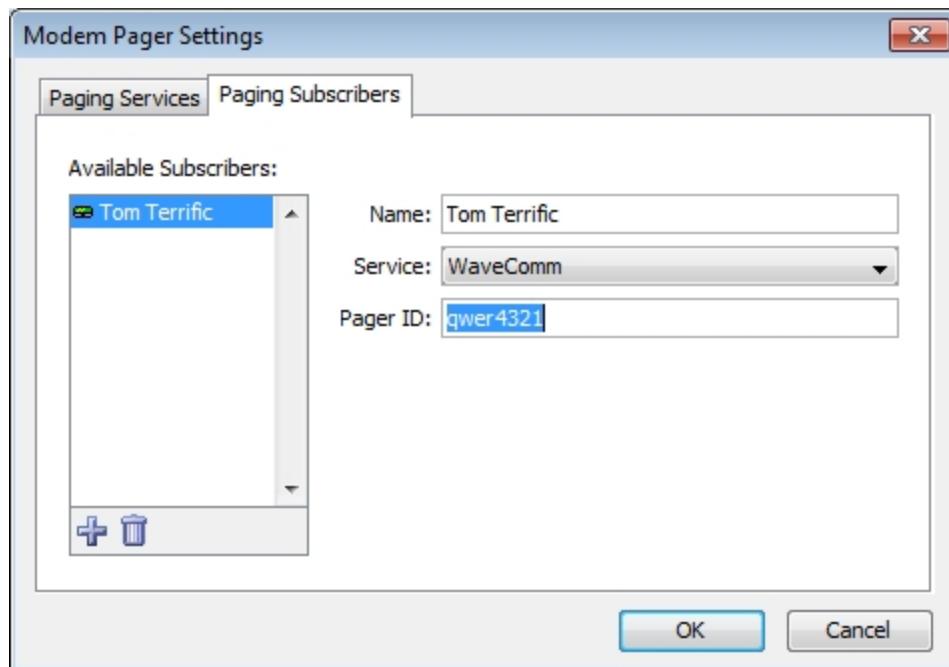
The window above assumes that you have already configured InterMapper for your pager service.



*Entering information about a service*

### To add or edit paging services:

1. Choose **Edit List...** from the **Subscriber** drop-down menu. The Paging Settings window appears.
2. Click the **Paging Services** tab. A list of paging services appears, if any are defined.
3. Click a service to edit, or click **Add**. The information for the paging service appears.
4. Enter dialup information in the boxes provided. Use the information about your paging service to enter the service name, telephone number, and password, the port to which your modem is attached, and the modem configuration.
5. In the **Bits** dropdown menu, choose values appropriate to your modem. Open the menu repeatedly to set the data bits, stop bits, and parity. By default, the values are set to 7 data bits, 1 stop bit, and Even parity.
6. In the **Retries** box, set the number of times you would like the page to be sent if it fails. The default is 2.
7. In the **Retry Interval** box, set the number of seconds to wait between retries. The default is 10 seconds.
8. When finished, click **Done**.



*Entering information about a subscriber*

#### To add or edit paging subscribers:

1. Choose **Edit List...** from the **Subscriber** drop-down menu. The Paging Settings window appears.
2. Click the **Paging Subscribers** tab. A list of paging subscribers appears, if any are defined.
3. Click a service to edit, or click **Add**. The information for the paging service appears.
4. In the **Name** box, enter the name of the person you want to receive the page.
5. From the **Service** dropdown menu, choose the user's Paging Service. If the user's paging service doesn't appear, you need to create it as described above.
6. In the **Pager ID** box, enter the person's pager ID. (This may be different from the Service phone number that you entered when creating the user's Paging Service definition above.)
7. When finished, click **Done**.

### ***Paging Log File***

The paging log file is a special file which will receive logging of all paging traffic and messages, including the details of the modem commands and text written and read. The information in this log may help you or InterMapper Technical Support to troubleshoot paging if it is not working correctly.

To start logging this traffic, use the Log Files server settings panel to create a log file named Paging (The log file name will be "Paging<date>.txt") Logging will continue until the log file is removed through the Log Files panel.

### ***Modem Compatibility***

#### **With Mac OSX**

InterMapper has been tested with Mac OSX using various built-in modems, an external USB modem (MultiTech MT5634ZBA-USB), and an older external modem connected via a KeySpan Twin Serial adapter (using KeySpan's current OSX driver) on a beige G3. With the KeySpan serial adapter, InterMapper lists both serial ports in the Modem Page Settings dialog and you are responsible for choosing the correct one.

#### **With Windows and Unix**

A number of modems have been tested with InterMapper. While we cannot guarantee that a particular modem works, we believe that most modems that support V.34 or a later specification will work well.

## Sending SMS/Text Alerts to a Cell Phone

InterMapper can send SMS or text message alerts to a cell phone, mobile phone, or wireless phone. These notifications will be sent using an analogue modem to dial a TAP paging terminal at your wireless provider.

**Note:** The methods described below depend on an analogue modem dialing a TAP service or a cell phone. You can also use a cell modem to send SMS message directly to another cell phone. For more information, see [Configuring an SMS Notifier \(Pg 147\)](#). This may be preferable at this point.

There are several methods for sending alerts to a mobile phone.

### TAP - the Telelocator Alphanumeric Protocol

InterMapper can send SMS or Text Messages using TAP, the Telelocator Alphanumeric Protocol, with an internal or external analogue modem. It will connect to a paging service and deliver a notification or alert to your cell phone

#### Using TAP to Send a Message

If your paging service provides a TAP paging terminal that forwards pages as SMS or text messages to your wireless phone, you can follow the instructions below to configure InterMapper to send alerts to your phone.

1. Add a new Notifier. To do this, click **Add** in the Server Settings>Notifiers List window. The Configure Notifier window appears.
2. From the **Notifier Type** drop-down list, choose **Alpha-numeric Pager (Dialup)**.
3. Click **Edit Subscriber List**.
4. Add a new paging service. To do this, click **Add** button in the Paging Services tab. Enter the name of the service, the phone number to dial (including any numbers you may need to access an outside line), and a password, if required. Use the default values for **data bits**, **stop bits**, **parity** and **speed** unless your paging service has provided you with different values.
5. Add a new subscriber. To do this, click **Add** button in the Paging Subscribers tab. Enter the **subscriber name**, then select the paging service you created in step 4 from the drop-down list. Enter the subscriber's cell phone number in the **Pager ID** field.
6. When you have finished adding the new paging service and subscriber, click **OK** to return to the Configure Notifier window.
7. Click **Edit Message** if you want to change the data included with the text message. Edit the message, then click **OK** when finished.
8. Edit the notifier schedule, if required.
9. Click **Test Notifier** to confirm that the message can be sent and received.
10. When finished, click **OK**.

**Note:** This procedure has been tested using Verizon's TAP access to their SMS/Text Message system. The access number is 866-823-0501. Other cell providers may offer a gateway to their text/SMS message service.

---

### **Sending a Message if TAP is Not Available**

If your cell phone provider does not provide a TAP interface for text messages, you can use an e-mail-based service to deliver the message. You should contact your cell phone provider for details on sending alerts and notifications via e-mail. **Note:** Remember that sending an alert through e-mail fails if your connection to the Internet is down. See below for a low-tech workaround.

### **Workaround for When Your Internet Connection Is Down**

If your Internet connection is down, but your cell phone provider doesn't offer access to their text/SMS message system via an analogue modem, you can still get notified about problems. Simply create a new Alpha-numeric Pager (Dialup) notifier and enter the cell phone number as the paging service number. It dials the phone directly. There won't be any voice or text/SMS message, but the CallerID will let the recipient know that it's InterMapper calling.

### **Troubleshooting SMS/Text Alerts**

If you encounter any problems, InterMapper can create a log file that shows the details of the paging mechanism. This is useful to review or send to tech support. To do this:

- Open the Server Settings>Log Files window and click **Add** to create a new log file. Name the log file 'paging' and click **OK**.
- Test your notifier again from the Configure Notifier window. The paging.txt file contains detailed logging for the test notification. You can find the paging.txt file in the InterMapper Settings>InterMapper Logs folder on the server. If the information contained in the paging log isn't helpful to you, please send the file with a description of the problem to [support@intermapper.com](mailto:support@intermapper.com).

## Notification Using a Numeric Pager

You can configure InterMapper to use alphanumeric modem paging to send messages to numeric pagers.

To send numeric pages, follow these three basic steps:

1. Create a new paging service.
2. Create one or more paging subscribers to receive the numeric pages.
3. Edit the notification message as you normally would. Any non-numeric characters are removed.

### Step 1: Create a new paging service:

1. From the Edit menu, choose **Server Settings...**
2. In the Server Settings window, click to choose **Notifier List**.
3. Click **Add...** to create a new notifier.
4. From the **Notifier Type** dropdown menu, choose **Alpha-numeric Pager (Dialup)**.
5. From **Subscriber** dropdown menu, choose **Edit List...** The Modem Pager Settings window appears.
6. In the **Paging Services** tab, click **Add**. A New Service appears in the Paging Services list, and an information form for the new service appears at the right.
7. In the **Name** box, enter a name for the new service.
8. Leave the service telephone number blank. (This is what tells InterMapper to do numeric paging instead of alpha-numeric paging.)
9. Data bits, stop bits, parity, and baud rate are irrelevant and may be set to anything legal.
10. Leave the modem init string at the default, ATE0V1.
11. Choose the desired modem. You may create more than one such service, if you want.

### Step 2: Create one or more paging subscribers:

12. Click the **Paging Subscribers** tab and create the paging subscriber(s) who will use numeric paging.
13. Set the service field to use the service created in the steps above.
14. Set the pager id to be the phone number used to dial the pager. To the pager id/phone number, append enough of your modem's pause characters (for most modems, this is a comma) to make sure that InterMapper waits until the call has been answered and any introductory message played to send the tones with the numeric message. This varies from service to service.

**Step 3: Edit the message as you normally would:**

When creating a notifier based on numeric pager subscribers, edit the message as you normally would, using the InterMapper macros if you so desire. When the page is sent, all non-numeric characters will be removed. So, the message:

DOWN: 192.168.1.132

becomes

1921681132

Future versions of InterMapper may contain new macros to provide numeric codes for common events.

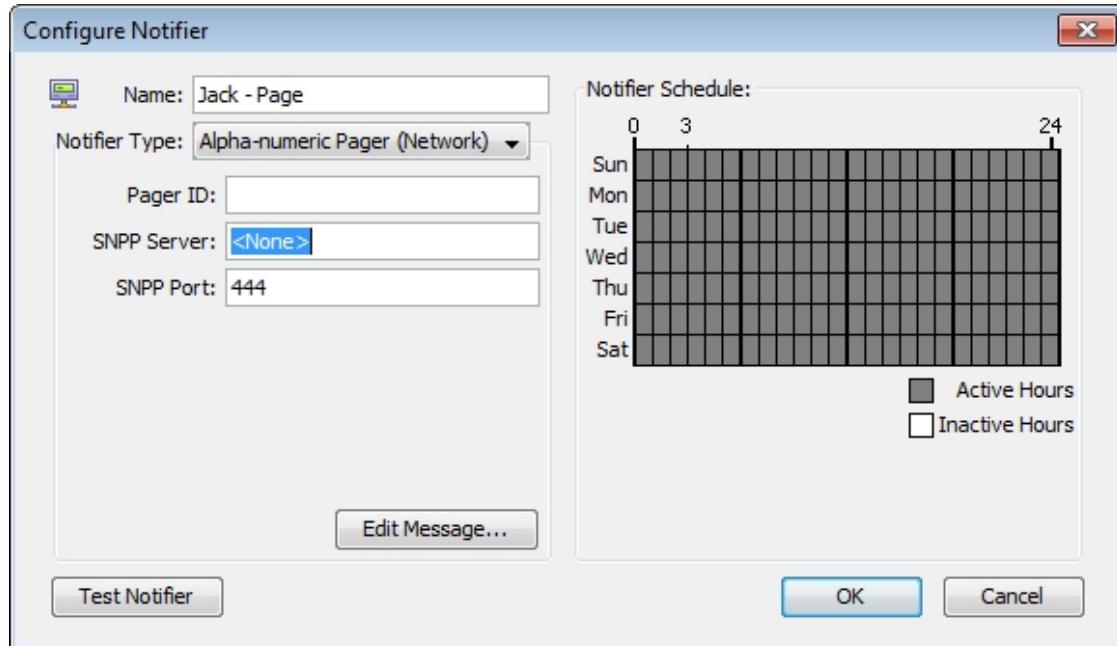
**Paging Log File**

The paging log file is a special file which receives logging of all paging traffic and messages, including the details of the modem commands and text written and read. The information in this log may help you or InterMapper Technical Support to troubleshoot paging if it is not working correctly.

To start logging this traffic, use the **Log Files** panel of the Server Settings window to create a log file named **Paging** (The log file name will be "Paging<date>.txt") Logging continues until the log file is removed through the Log Files panel.

## Configuring a Page Notifier to Send a Page Using SNPP (Network)

Use InterMapper's Simple Network Paging Protocol (SNPP) feature to send pages over a network. Using this protocol, pages can be sent quickly and reliably, without the use of an analogue modem or a separate telephone line.



### To configure:

1. [Create a new notifier \(Pg 124\)](#).
2. From the **Notifier Type** dropdown menu, select *Alpha-numeric Pager (Network)*. The example below shows the Configure Notifier window with the Alpha-numeric Pager (Network) type.
3. In the **Pager ID** box, enter the ID of the pager you wish to call.
4. In the **SNPP Server** box, enter the IP address or domain name of the SNPP Server.
5. If you want to use a port other than the default SNPP port, enter it in the **SNPP Port** box.

Contact your pager provider for IP address, domain name, and SNPP port information.

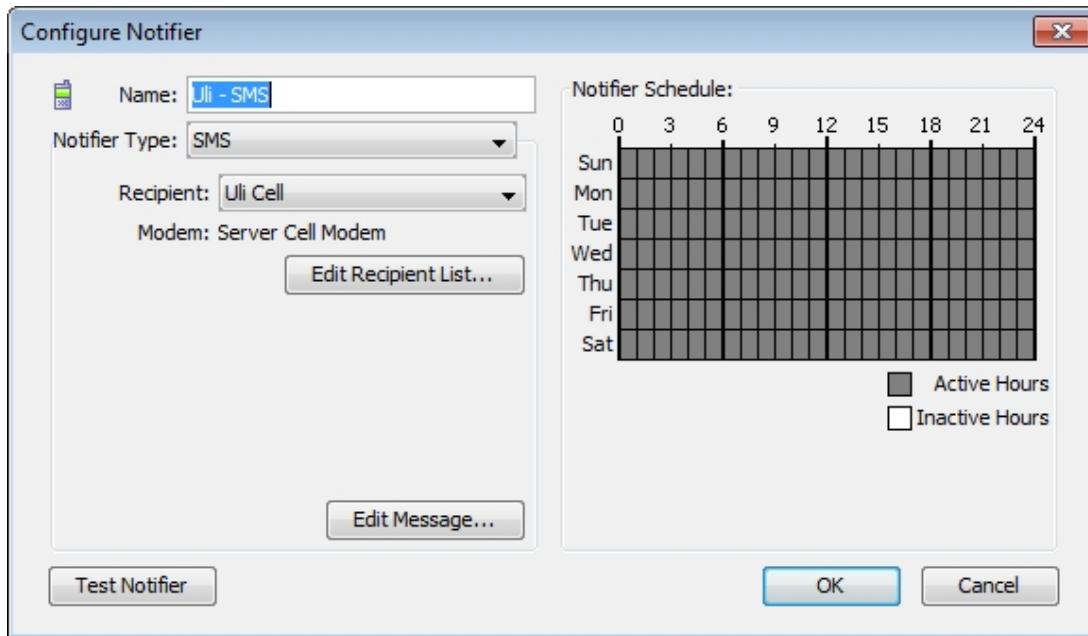
6. Click **Edit Message...** to edit the message that is sent to the pager.
7. In the **Notifier Schedule** panel, choose the hours during which the page will be sent.
8. When finished, click **OK**.

**Note:** InterMapper may not be able to reach your SNPP-based paging service via the Internet if your WAN circuits or routers are down. Be sure that you have a backup notification mechanism for failures to critical services. See the workaround in [Alerts Via Cell Phone \(Pg 143\)](#) for a possible approach.

## Configuring an SMS Notifier

Use an SMS notifier to send a text message directly to a cell phone using a cellular (GSM or CDMA) modem.

**Note:** To state the obvious, the modem used to send SMS messages must be able to connect to a cellular network. If there is no coverage at the location of the SMS modem, the server will not be able to send the notification.

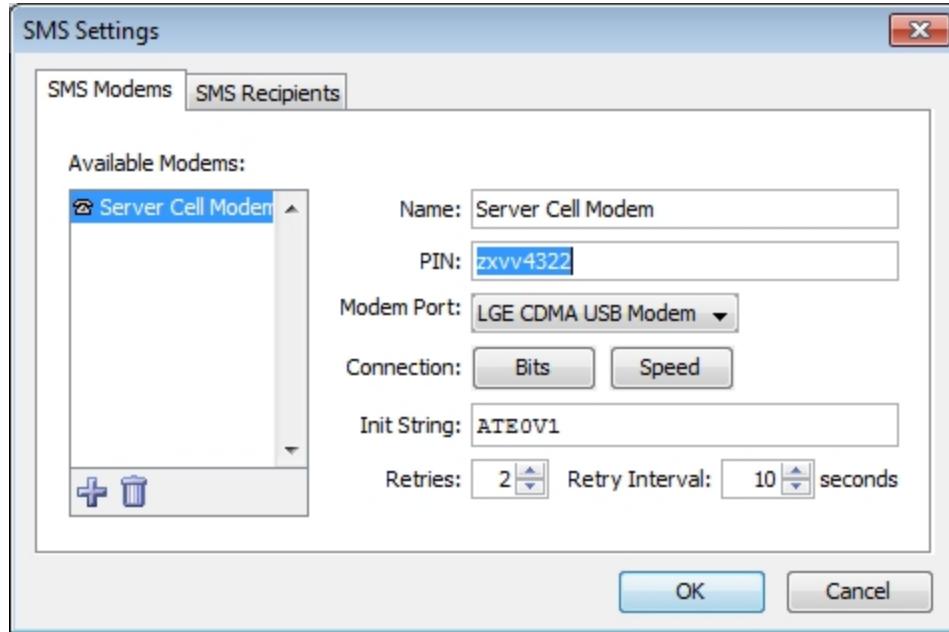


### To configure an SMS notifier:

1. In the Configure Notifier window, choose "SMS" from the **Notifier Type** dropdown menu.
2. In the **Recipient** box, choose the recipient from the dropdown menu. If there are no recipients in the list, click **Edit Recipient List...** to configure connection to an SMS modem and to add and configure SMS recipients. See [Adding and Removing SMS Modems \(Pg 148\)](#) and [Adding and Removing SMS Recipients \(Pg 149\)](#), below.
3. If you want to edit the message, click **Edit Message...**. For more information on editing messages, see [Editing the Text of an E-mail Notification Message \(Pg 136\)](#).

## Adding and Removing SMS Modems

Before you can send SMS messages, you must set up at least one SMS modem through which SMS messages are sent.



### To add an SMS modem:

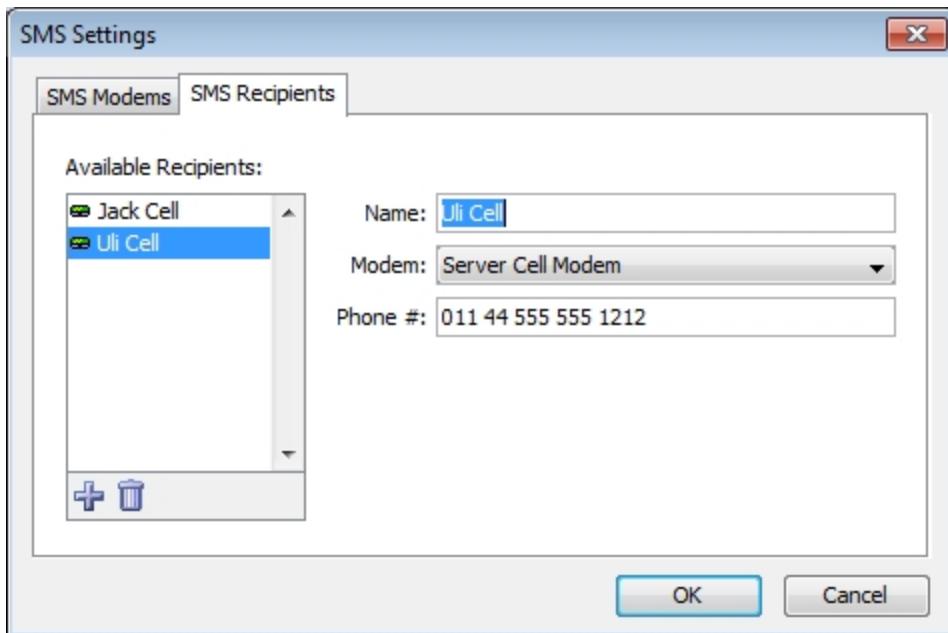
1. From the Configure Notifier window, with SMS selected as the Notifier Type, click **Edit Recipient List...** The SMS Settings window appears.
2. In the SMS window, click the **SMS Modems** tab. A list of available modems appears on the left.
3. Click **Add**. A new modem configuration form appears.
4. Enter a **Name** and **PIN**, choose a **Modem Port**, connection **Bits** and **Speed**, and enter a modem initialization string in the **Init String** box.

**Note:** Not all cell carriers require a PIN.

5. If you want to change the default retry specifications, set the **Retries** and **Retry Interval** values.
6. When finished, click **OK**. The specified modems appear in the recipient's **Modem** dropdown menu.

## **Adding and Removing SMS Recipients**

Before you can send SMS messages, you must set up at least one SMS recipient to receive the message.



### **To add an SMS recipient:**

1. From the Configure Notifier window, with SMS selected as the Notifier Type, click **Edit Recipient List...** The SMS Settings window appears.
2. In the SMS window, click the **SMS Recipients** tab. A list of available recipients appears on the left.
3. Click **Add**. A new recipient configuration form appears.
4. Enter a **Name**, choose a **Modem**, and enter the number of the recipient's phone in the **Phone #** box.
5. When finished, click **OK**. The specified recipients appear in the notifier's dropdown menu. The recipient's specified modem appears when you choose the recipient from the notifier's **Recipient** dropdown menu.

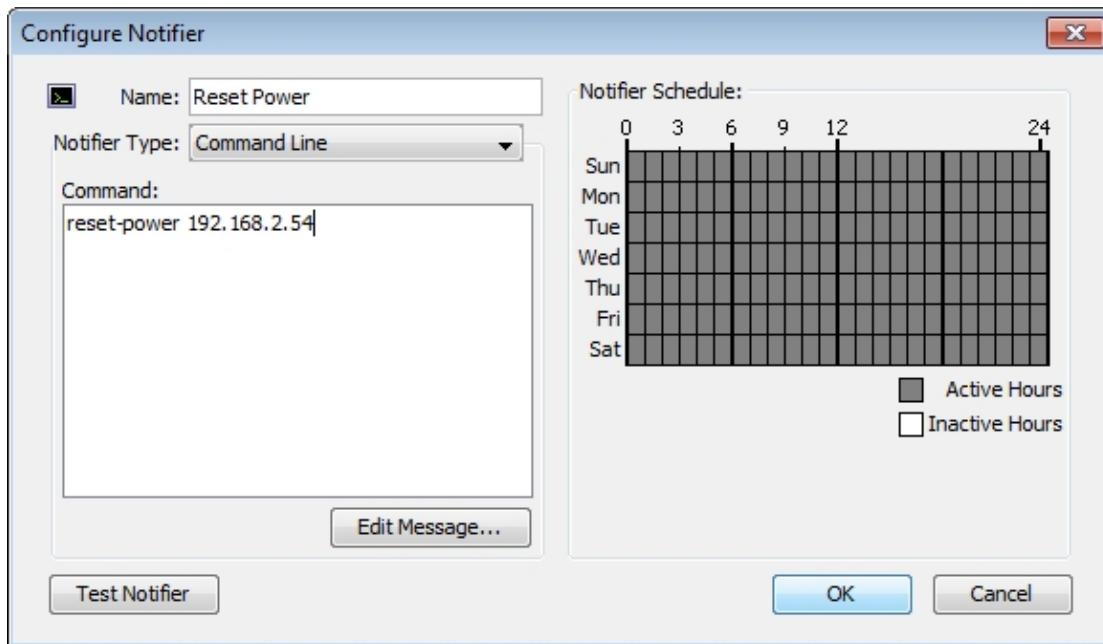
## Command-line Notifiers

Use a command-line notifier specify a command (executable, shell script, batch file, etc.) to be executed as a notification.

### To configure a Command Line notifier:

1. In the Configure Notifier window, choose "Command Line" from the **Notifier Type** drop-down menu.
2. In the **Command** box, enter the command to be executed. Include any arguments, exactly as you would type them on the command line.
3. Click **Test Notifier** to send a test notification.

### Configuring the Command Line notifier



#### Command text box

Specify the executable you wish to run, including any arguments. Note that you need to specify the exact name, including any extensions such as .exe or .cmd.

If you want the message generated by InterMapper to be included in the command, place the text \${MESSAGE} where you would like the message to go.

To include the message escaped for use in an HTTP query string, use \${ESCAPED\_MESSAGE} instead. You are responsible for supplying quotes if it is necessary.

InterMapper allows an expanded command line (that is, the command line with the path added and the message inserted) up to 65535 characters, but you may find that your host platform limits the command-line size to only 255 characters.

Use \${STRIPPED\_MESSAGE} to strip the message of any punctuation that might cause trouble for the command-line notifier

Use \${URLESCAPE} to escape the message for use as a URL.

**Note:** The command box must refer to an executable which resides in the *Tools* subdirectory of the *InterMapper Settings* directory, or a subdirectory thereof. No other executables may be referred to. However, the executables in this directory may be links, shortcuts, or aliases to an executable elsewhere; they will be resolved and executed.

See the [Examples page \(Pg 152\)](#) for an example of a command line notifier.

## Example Notification from a Command Line Program

An interesting tool for notifications that we've found is iPing (<http://www.iping.com/>). This tool gives you several ways of generating by computer a notification that iPing will read to the recipient over the phone. You can use this tool in any version of InterMapper by making an email notifier where the email address is ping.<yourAccountName>@iping.com.

However, iPing also has an API, one method of which allows more control over how the notification is carried out. This method, putnotification, is invoked via http. With a command-line tool like "curl" and InterMapper's command-line notifiers, you can create a powerful and tailored iPing notifier for InterMapper.

### Implementing an iPing Notifier

The curl utility is already available on many Unix systems. If it is not available on yours, or if you are using Windows, you can find out more about it and download a copy from <http://curl.haxx.se/>. You can find out more about the putnotification API method for iPing from <http://www.iping.com/ipingv2/PutNotification.aspx>. The rest of this command-line notifier tutorial assumes that curl is installed and that you have an iPing account.

First, make sure that curl or an alias or soft link to it is in the Tools directory on the InterMapper server. The Tools directory is a subdirectory of the InterMapper Settings directory. If you do not have a Tools directory, you will need to create one. For security reasons, only executables in this directory may be executed as notifiers.

Open the Server Settings dialog box and click on the **Notifier List** entry. Click on the **Add...** button and choose a type of **Command Line**. Give it a name.

In the "Command" field, enter the iPing notification command you want to use. A simple example to send a message to a phone number immediately would be:

```
curl  
"https://www.iping.com/services/iping.asp?method_name=putnotification  
&user_name=testdriver  
&password=12345  
&phone_number=8448675309  
&notification_dt=now  
&msg_text_body=${ESCAPED_MESSAGE}"
```

**Note:** All the text above should be on a single line, with no blank spaces in the URL.

The parameters to the iPing message are:

- **method\_name** must be "putnotification"
- **user\_name** the name of your iPing account
- **password** the password of your iPing account
- **phone\_number** the phone number to dial

- **notification\_dt** Valid notification date/time (see the iPing documentation) or "now"
- **msg\_text\_body** The text of the message to be spoken.

**Note 1:** The msg\_text\_body must be in a form suitable for inclusion in a URL. In particular, the text should not contain spaces, ampersands (&), question marks (?) or a number of other characters. InterMapper provides two macros that make it easy to enter the text:

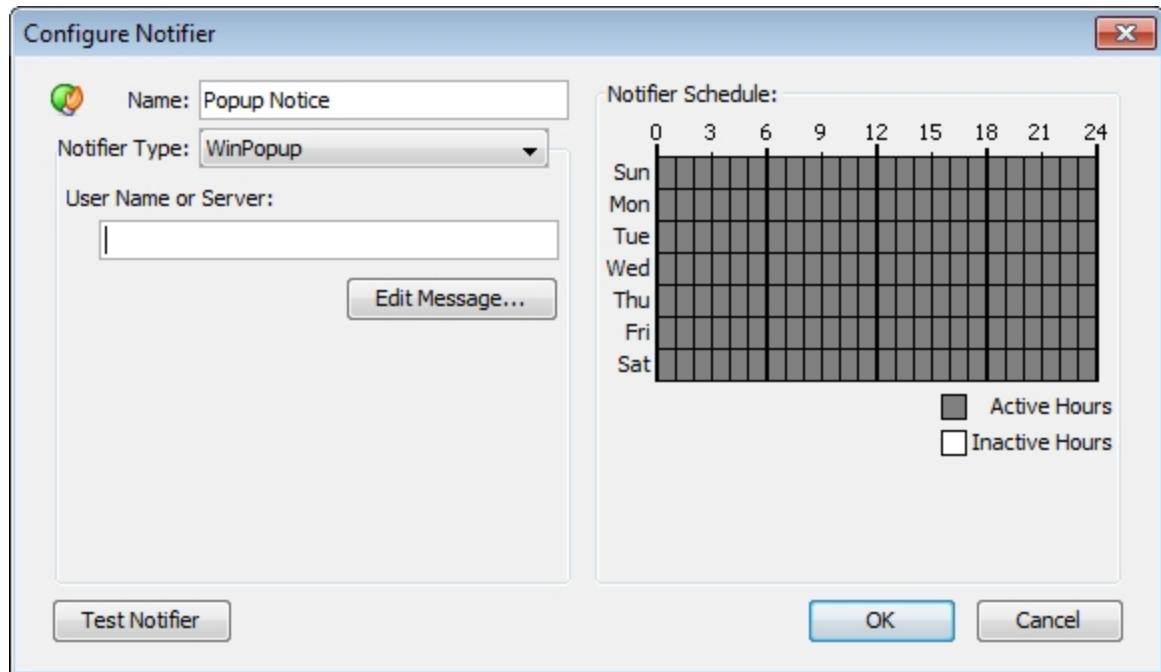
- **`\${URLESCAPE: xxxxx}** This macro returns a string that contains the text ("xxxxx") with all the URL special characters escaped properly.
- **`\${ESCAPED\_MESSAGE}** This macro is a special case facility that performs the URL escaping function on the notifier's \${MESSAGE} string, as entered by the user. Click the "Edit Message" button to modify the default message. The default message is fairly short, as is appropriate for command-line notifications.

**Note 2:** The *curl* command generally exits with a code of zero. This avoids InterMapper log messages warning of unsuccessful notifications.

## WinPopup (Windows Only)

When the devices status triggers a notification, a WinPopup message is sent to the designated person.

**Note:** Windows Messenger Service is not supported in Windows operating systems beyond Windows XP, so the WinPopup notifier works only when both the server and the target user or server are running Windows 2003 server or Windows XP.



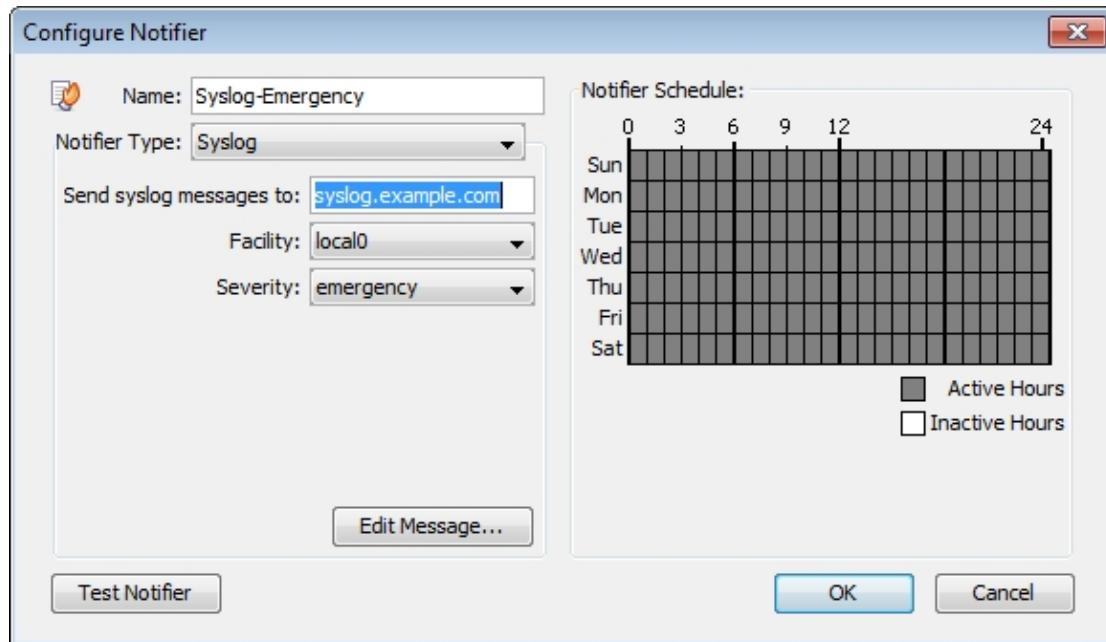
### To configure:

1. In the **User Name** or **Server**: text box, enter the user name or server name of the person to contact.
2. Click **Edit Message...** to edit the message that will be sent.
3. In the **Notifier Schedule** panel, choose the hours during which the page is sent.
4. When finished, click **OK**.

## Configuring a Syslog Notifier

Syslog is a mechanism for recording information about significant events into a log file. It originated on Unix hosts which wrote the information to a local file (the *system log* file). This was later enhanced to write the data across a network to a server that collects the entries.

InterMapper can send a syslog message as a notification. That is, when an event occurs, InterMapper can write the data to a specified syslog server on the network.



**Send syslog messages to:** - the IP address or DNS name of the syslog server that should receive the message

**Facility:** - The syslog server administrator may specify that messages from a particular source be tagged with a certain facility code. Select the facility requested by your administrator.

**Severity:** - Syslog messages can be tagged with a severity, so that the syslog files can be scanned for entries with different priority. Set the desired severity to

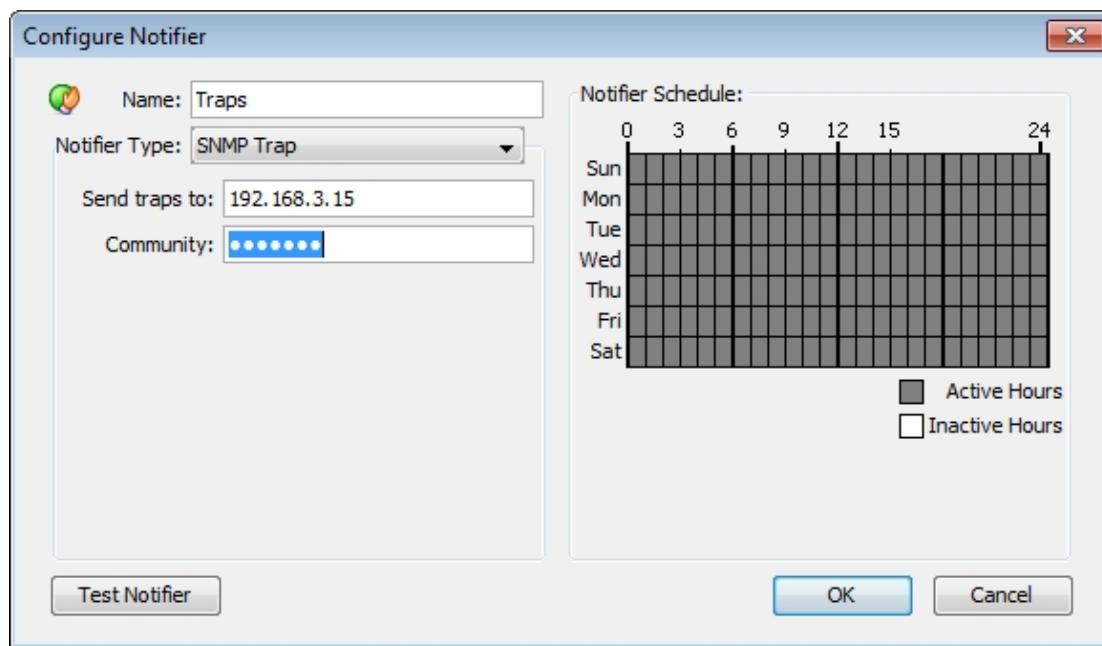
- Emergency
- Error
- Informational
- Alert
- Warning
- Debug
- Critical
- Notice

**Edit message...** - You may enter the format of the syslog message. See [Editing the text of an E-mail Notification Message \(Pg 136\)](#), where this process is described. Newline characters will be converted to spaces, so the message will appear as a single line. Syslog messages will contain "InterMapper" as the syslog tag.

## Notification by SNMP Trap

An *SNMP trap* is an unsolicited SNMP message that is sent to another device. Traps are sent to convey the data immediately, instead of waiting for that device to be polled at some future time.

InterMapper sends a SNMP Trap as a notification when a device goes into a particular state.



*Configuring a Trap Notifier. Enter the IP Address or DNS name for the device to receive the trap, along with the SNMP Trap Community String.*

In the notification Schedule window, select "SNMP Trap" from the dropdown menu, and fill in the IP address or DNS name of the device to receive the trap, and the SNMP Trap Community string.

InterMapper sends six pieces of information in the trap. All are encoded as OCTET STRING. This information is also available in ASN.1 format. in the [Dartware MIB \(Pg 158\)](#).

**Timestamp:** The current date and time, as a string in the format:  
MM/DD HH:MM:SS

**Message:** DOWN, UP, ALARM, WARN, OK, or TRAP (See the [Dartware MIB \(Pg 158\)](#).)

**Device name:** The devices DNS name, as a string

**Condition:** The condition of the device, as it would be printed in the log file.

**Device Address:** The address of the device the triggered the notifier.

**Probe Type:** The type of probe that triggered the notifier

InterMapper's traps contain the following MIB variables, taken from the Dartware MIB (described in detail in [The Dartware MIB \(Pg 158\)](#)):

```
intermapperTimestamp = 1.3.6.1.4.1.6306.2.1.1.0  
intermapperMessage = 1.3.6.1.4.1.6306.2.1.2.0  
intermapperDeviceName = 1.3.6.1.4.1.6306.2.1.3.0  
intermapperCondition = 1.3.6.1.4.1.6306.2.1.4.0
```

## The Dartware MIB

Help/Systems Inc. has registered the Enterprise 6306 for its own SNMP variables.  
The remainder of this page shows the Dartware MIB in ASN.1 notation.

```

-- ****
-- DARTWARE-MIB for InterMapper and other products
--
-- May 2007
--
-- Copyright (c) 2000-2007 by Dartware, LLC
-- All rights reserved.
-- *****

DARTWARE-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE, enterprises
        FROM SNMPv2-SMI
    DisplayString
        FROM SNMPv2-TC;

dartware MODULE-IDENTITY
    LAST-UPDATED "200507270000Z"
    ORGANIZATION "Dartware, LLC"
    CONTACT-INFO "Dartware, LLC
                    Customer Service

                    Postal: PO Box 130
                    Hanover, NH 03755-0130
                    USA

                    Tel: +1 603 643-9600

                    E-mail: support@dartware.com"

DESCRIPTION
    "This MIB module defines objects for SNMP traps sent by
InterMapper."

REVISION "200705300000Z"
DESCRIPTION
    "Updated descriptions to show timestamp format, correct strings
for intermapperMessage."

REVISION "200512150000Z"
DESCRIPTION
    "Added intermapperDeviceAddress and intermapperProbeType."

REVISION "200507270000Z"
DESCRIPTION
    "First version of MIB in SMIv2.

::= { enterprises 6306 }

notify     OBJECT IDENTIFIER ::= { dartware 2 }
```

```
intermapper OBJECT IDENTIFIER ::= { notify 1 }

intermapperTimestamp OBJECT-TYPE
    SYNTAX   DisplayString (SIZE(0..255))
    MAX-ACCESS  read-only
    STATUS    current
    DESCRIPTION
        "The current date and time, as a string, in the format 'mm/dd
hh:mm:ss'.'"
    ::= { intermapper 1 }

intermapperMessage OBJECT-TYPE
    SYNTAX   DisplayString (SIZE(0..255))
    MAX-ACCESS  read-only
    STATUS    current
    DESCRIPTION
        "The type of event - Down, Up, Critical, Alarm, Warning, OK,
or Trap - as a string."
    ::= { intermapper 2 }

intermapperDeviceName OBJECT-TYPE
    SYNTAX   DisplayString (SIZE(0..255))
    MAX-ACCESS  read-only
    STATUS    current
    DESCRIPTION
        "The (first line of the) label of the device as shown on a
map, as a string."
    ::= { intermapper 3 }

intermapperCondition OBJECT-TYPE
    SYNTAX   DisplayString (SIZE(0..255))
    MAX-ACCESS  read-only
    STATUS    current
    DESCRIPTION
        "The condition of the device, as it would be printed in the
log file."
    ::= { intermapper 4 }

intermapperDeviceAddress OBJECT-TYPE
    SYNTAX   DisplayString (SIZE(0..255))
    MAX-ACCESS  read-only
    STATUS    current
    DESCRIPTION
        "The device's network address, as a string."
    ::= { intermapper 5 }

intermapperProbeType OBJECT-TYPE
    SYNTAX   DisplayString (SIZE(0..255))
    MAX-ACCESS  read-only
    STATUS    current
```

```
DESCRIPTION
  "The device's probe type, as a human-readable string."
 ::= { intermapper 6 }

-- For SMIv2, map the TRAP-TYPE macro to the
-- corresponding NOTIFICATION-TYPE macro:
--
-- intermapperTrap TRAP-TYPE
--   ENTERPRISE  dartware
--   VARIABLES   { intermapperTimestamp, intermapperMessage,
--                  intermapperDeviceName, intermapperCondition }
--   DESCRIPTION
--     "The SNMP trap that is generated by InterMapper as a
-- notification option."
--   ::= 1

intermapperNotifications OBJECT IDENTIFIER ::= { intermapper 0 }

intermapperTrap NOTIFICATION-TYPE
  OBJECTS { intermapperTimestamp, intermapperMessage,
            intermapperDeviceName, intermapperCondition,
            intermapperDeviceAddress, intermapperProbeType }
  STATUS current
  DESCRIPTION
    "The SNMP trap that is generated by InterMapper as a
notification option."
 ::= { intermapperNotifications 1 }

END
```

# Chapter 7

---

## Monitoring Your Network

Once you have arranged your map, you can switch it to monitor mode. You may already have noticed that devices were changing colors while you were arranging the map. This shows that *InterMapper* was already polling devices, even as you were editing the map's layout.

### Making the Map Editable

#### To change a map between Monitor mode and Edit mode:

- Click the lock button at the left end of the toolbar in the Map window, or press **Tab** as a keyboard shortcut. The tool switched between locked and unlocked as shown.

### Changing the Poll Interval

The **Poll Interval** drop-down menu sets the polling interval for the map.



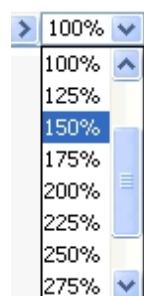
#### To change the Poll Interval:

- Choose a value from the **Poll Interval** drop-down menu.

**Note:** You can also change the poll interval for one or more individual devices, using the [Set Poll Interval \(Pg 367\)](#) command, available from the Monitor menu. The map's poll interval value affects only those devices that are using the default poll interval.

### Zooming In On the Map

The Map Zoom drop-down menu sets the zoom factor for the map. If you choose **Auto**, the map zooms automatically when you resize the window.



#### To change the Map Zoom setting:

- Choose a value from the **Map Zoom** drop-down menu.

### Understanding the Map

InterMapper provides visual cues to help you understand the states of the devices on your map quickly. Here is a summary of the visual indicators available in your map:

- [Color Codes \(Pg 162\)](#)
- [Status Badges \(Pg 162\)](#)
- [Dotted lines \(or "moving ants"\) \(Pg 163\)](#)
- [Boxes and Ovals \(or "bubbles"\) \(Pg 163\)](#)
- [Line Styles \(Pg 164\)](#)
- [An X on a link \(Pg 164\)](#)

#### Color Codes

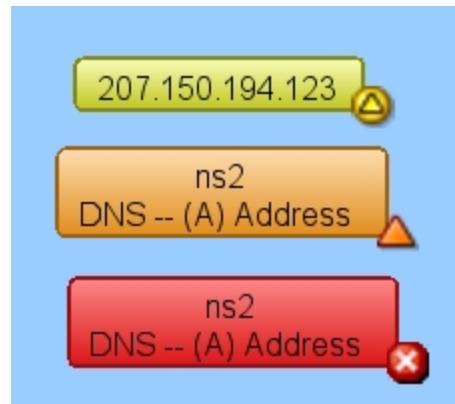
Devices turn different colors depending on the magnitude of the problem detected. Links may be "haloed" with yellow or orange as utilization reaches 50 and 90 percent respectively. These are coupled with status badges, described below.

These are the default color assignments. You can redefine the colors from the [Server Settings \(Pg 238\)](#) window.

#### Status Badges

InterMapper uses status badges as additional visual cues to increase the ease with which you can determine the status of a device among many devices.

**Note:** You can specify which badges you want appear on devices from the [InterMapper User Preferences](#) window.



Badge	Color	Meaning
	<b>Red</b>	<b>Down</b> - No response has been received from the device within the specified timeout period.
	<b>(Flashing)</b> <b>Red</b>	<b>Critical</b> - The specified threshold for critical state has been met
	<b>Orange</b>	<b>Alarm</b> - The specified threshold for alarm state has been met.
	<b>Yellow</b>	<b>Warning</b> - The specified threshold for warning state has been met.
	<b>Green</b>	<b>Up</b> - The device is working below the specified thresholds.
	<b>Gray</b>	<b>Unknown</b> - The device is not being polled, so its state is unknown.
	<b>Purple</b>	<b>Searching</b> - The device is searching for adjacent routers (during auto-discovery) or is tracking down unnumbered interfaces.  <b>Acknowledge - Timed or Indefinite</b> - The device's problem has been acknowledged and notifications are being suppressed, either indefinitely, or for a specified period of time.
		<b>Acknowledge - Basic</b> - The device's problem has been acknowledged, and notifications are being suppressed until the device comes back up, at which time the checkmark is cleared.

### Dotted lines (or "moving ants")

InterMapper draws dotted lines ("ants") next to a link to indicate that its current traffic flow is above a user-settable threshold value. Use the **Thresholds>Traffic** panel of the Map Settings window, available from the **Edit** menu, to change the settings and to view a legend of the different varieties of ants. You see the ants only in Monitor mode (as opposed to Edit mode.) To toggle between the two modes, click on the pencil icon in the toolbar or press **Tab**.

InterMapper regularly polls all the visible interfaces for packets, bytes, errors and discards.

**Note:** InterMapper uses SNMP to query the MIB of SNMP-enabled equipment to compute and display the traffic processed by each interface. Traffic indication appears only for SNMP-enabled devices.

### Boxes and ovals (or "bubbles")

The *boxes* represent the physical equipment of your network. The *ovals* represent the networks which link the routers together. The numbers in the bubbles are "network identifiers". For IP networks, the number is the network and the subnet portion of the IP addresses of all devices on it. For example, "192.0.16.0/24" is a network where IP addresses are in the range 192.0.16.0-192.0.16.254, and the

subnet mask has 24 bits (it is a Class C network.) This is described in detail in the [Subnet Mask \(Pg 670\)](#) FAQ.

Click and hold on a router or network to see a status window with information about that item. (This only works in "browse" mode -- press **Tab**, or click on the pencil icon in the upper left corner until it has the slash through it).

### Line styles

The style of the line corresponds to the type of interface.

—————	<b>10 Mbit Ethernet</b>
—————	<b>100 Mbit Ethernet or FDDI</b>
-----	<b>Serial Line - T3 Speed</b>
-----	<b>Serial Line - T1 Speed</b>
.....	<b>Serial Line - 56 K or other</b>
.....	<b>Frame-Relay Interface Type</b>
=====	<b>ATM Interface Type</b>
———	<b>LocalTalk Interface Type</b>
.....	<b>Any type not specifically represented</b>

As with the networks and devices, you can click and hold a link to see a Status window, containing information about the interface type and traffic statistics.

### An X on a link

An **X** in the middle of a line or link means the link (or interface, or port) is down, as determined by SNMP. A red **X** signifies that the link's *operational status* is down.

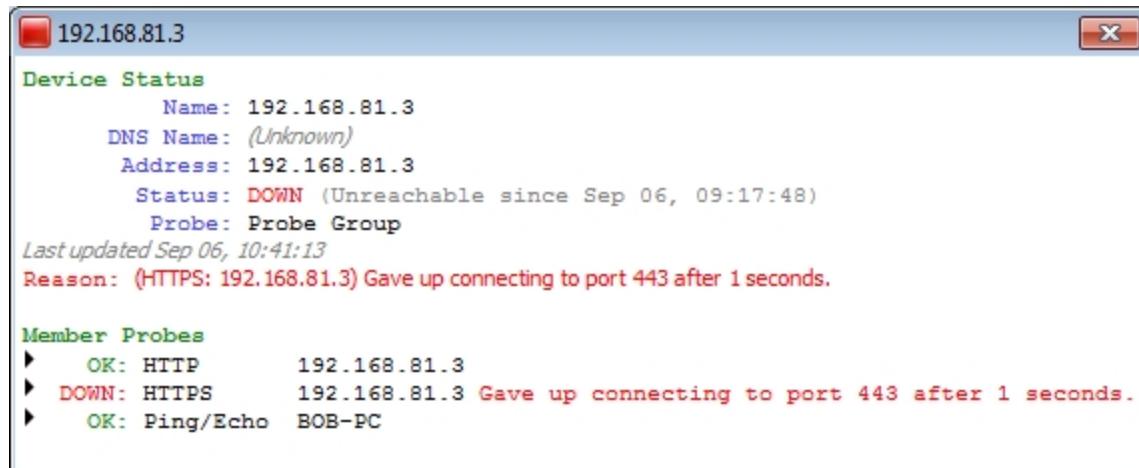
This could mean that it's broken, or simply that nothing is plugged into the interface. A blue **X** signifies that the link's *administrative status* is down (e.g., it has been explicitly disabled by an administrator.)



Many times, a switch is in Alarm state (orange) because it has ports that are not in use, and therefore, down. To resolve this, you should hide the ports from the [Interfaces Window \(Pg 175\)](#).

## Viewing Status Windows

*InterMapper* shows detailed status about any item on a map (a device, a network, or a link) in a Status window, as shown in the Device Status window below.



### To view device, network, or link status:

1. Make sure your map is in Monitor mode (click the pencil at the upper left of map window until there is a slash through it, or press the **Tab** key.)
2. Click and hold a device, network, or link on the map, or right-click the device, network, or link, then choose **Status Window**. The Status window for the selected device appears.
3. Release the mouse button to hide the Status window.

### To keep a Status window open:

1. Make sure your map is in Monitor mode.
2. Click and hold the device, network, or link on the map.
3. Drag to a new location. As you drag, the  cursor (Windows) or a transparent window appears.
4. Release the mouse. You have "torn" the window off; it remains open, located where you released the mouse.

### Customizing a Status Window

If you are using a custom TCP or SNMP probe, you can override the default contents of a Status window. For more information, see *Custom Probes* and *Customizing Status Windows* in the [Developer Guide](#).

### Device Status Window

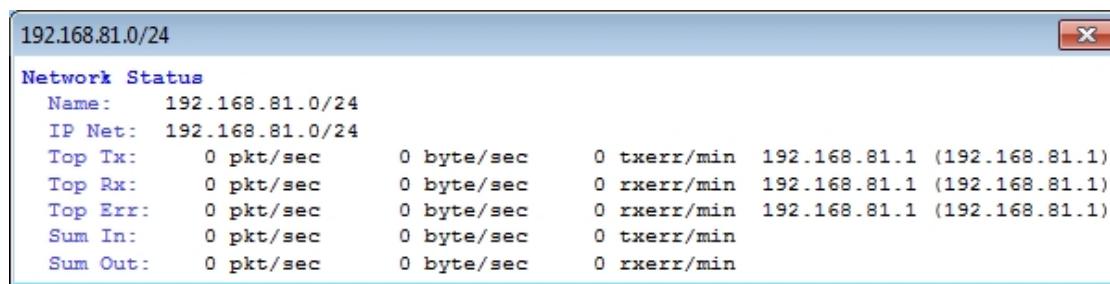
- Click and hold the mouse on a device to open its *device status* window, or right-click the device and choose **Status Window**.
- Click and drag to tear the window off and leave it open.
- Click the underlined Reset link to set Packet Loss to zero. This also resets the device's availability measurement.

**Note:** The map must be in Edit mode to reset the Packet Loss value.

The window shows the device name, network address, device status, the probe used to poll it, up-time (i.e., SNMP sysUptime, if available), availability (the percentage of the time the device was available based on the number of packets lost while testing), round-trip time (in msec), and spanning tree status (if available).

When the device reports a problem, the reason for the most important error is shown in red at the bottom of the Status window.

### Network Status Window



- Click and hold the mouse on a network oval to open its *network status* window, or right-click the network and choose **Status Window**..
- Click and drag to tear the window off and leave it open.

The *network status* window shows the network's IP address and subnet mask, (if available) and information about the amount of traffic flowing on that network segment. This data comes from all the SNMP devices attached to that network oval.

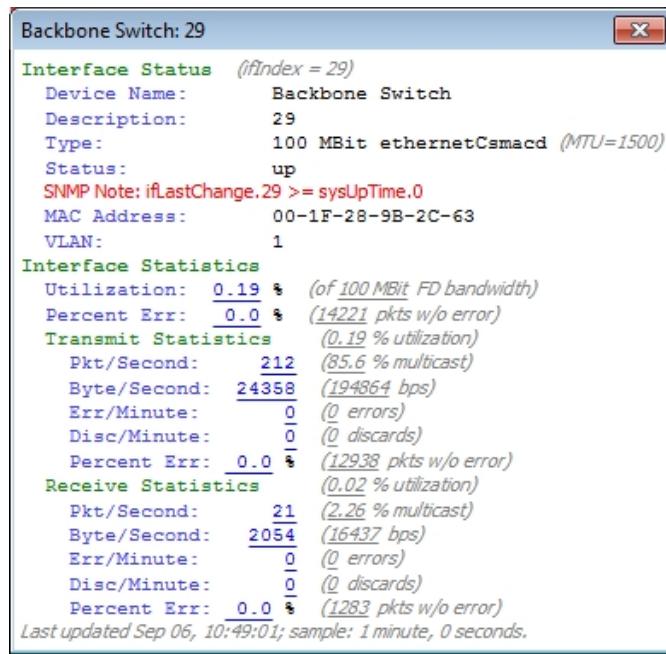
- **Top Tx** - tells which device is transmitting the most data
- **Top Rx** - tells which device is receiving the most data
- **Top Err** - tells which device is reporting the highest error rate for the link
- **Sum In/Sum Out** - the sum of all the transmitters and receivers connected to that network.

**Note:** The traffic statistic shown are only for devices connected to this network that speak SNMP: Ping/Echo, or TCP-based devices (such as HTTP, FTP, etc. probes) do not have this information and are ignored when computing the sums and maximums displayed in the Status Window.

### Link Status Window

- Click and hold the mouse on a link, or right click the link and choose **Status Window**. to open its *link status* window.
- Click and drag to tear the window off and leave it open.

The *link status* window shows the link's interface name and description, its type (10 or 100 Mbps, 1.5 Mbps T-1, etc.), its status and up-time, its IP and MAC addresses (when available), traffic statistics (transmitted from and received by the interface), and the time since the last poll.



*Tip:* Certain devices do not report their link speed accurately in their SNMP responses. This causes InterMapper to report a value which is not actually correct. To work around this, switch the map to Edit mode, then right-click the link and choose **Set Link Speed...** The Set Link Speed window appears, allowing you to set Transmit and Receive speeds.

## The Info Window

Use the Info Window, available from the Monitor menu or a device or network context menu, to view and edit information about a selected device or network.

The appearance and content of an info window varies, depending on whether the selected object is a device or network.

- For details on viewing and editing device info, see [The Device Info Window \(Pg 169\)](#).
- For details on viewing and editing network info, see [The Network Info Window \(Pg 173\)](#).

### To open an info window:

Click the device or network whose info you want to view and do one of the following:

- Press **Ctrl/Cmd-I** to open the info window.
- From the Monitor menu, choose **Info Window**.

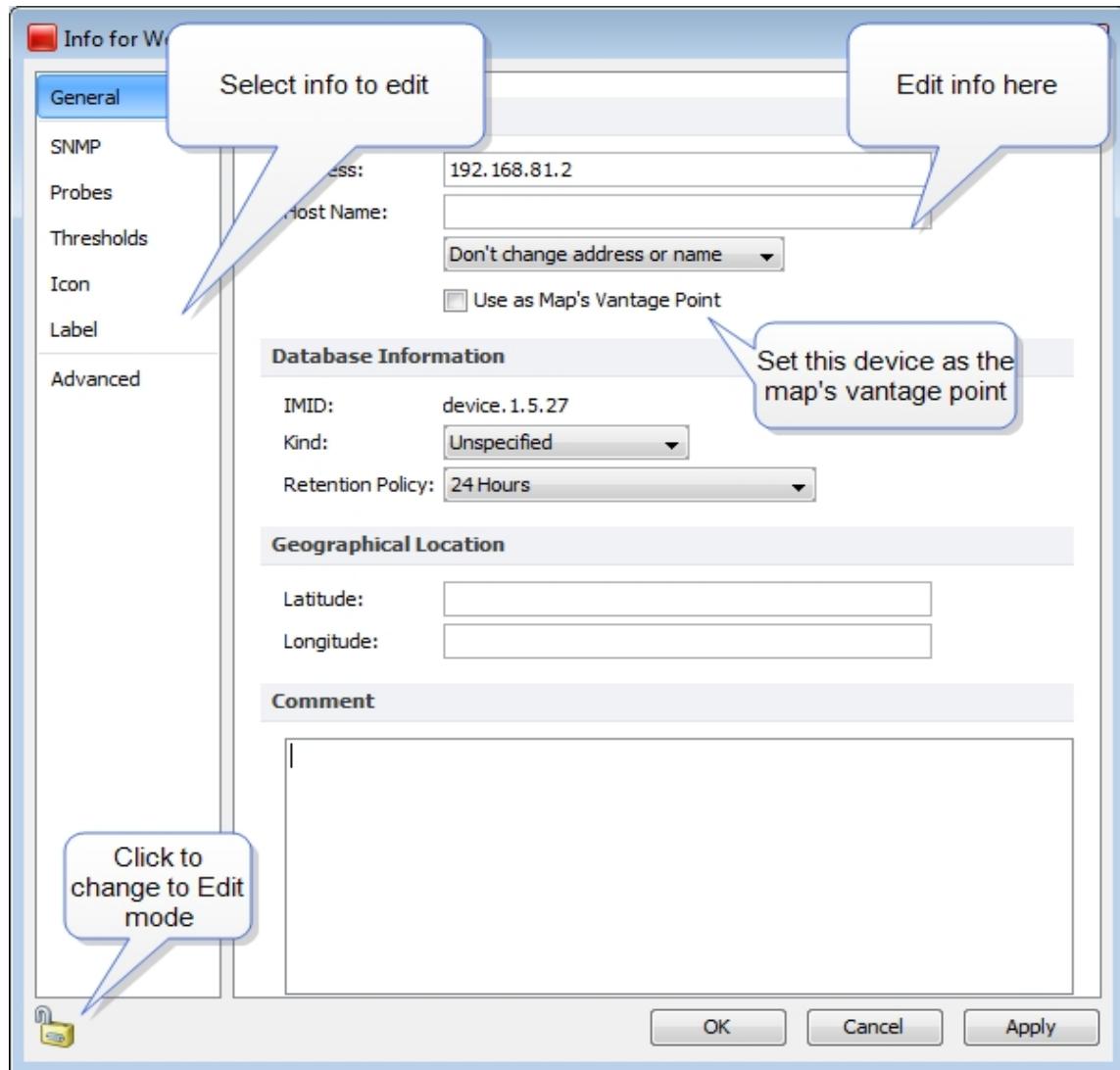
Alternatively, right-click the device or network and choose **Info Window**.

### Once the window is open:

- Click the lock icon (lower left) to change the map to Edit mode.
- Click a info section on the left to view or edit that info type.
- Click **Apply** to save your changes.
- Click **OK** to save your changes and close the Info window.

## The Device Info Window

Use the Device Info window to view and edit information about a device.



To use the device window:

- Click a section on the left to edit that info type.
- Edit the info as described below.
- Click **Apply** to save your changes.
- Click **OK** to save your changes and close the Info window.

### General Pane

Use the Device Info window's General pane to edit general information about the device.

#### Editing General Info

- **Address** - view or edit the device address. This is the address that is used when the device is polled.
- **Host Name** - view or edit the device's host name. This is the host name that is used to resolve the address
- **Resolve** - choose **address to set name, name to set address, or neither**.
- Select **Use as Map's Vantage Point** to use this network as the map's [Vantage Point \(Pg 128\)](#).
- **IMID** - view InterMappers internal device ID. (This info is read-only.)
- **Kind** - choose from the dropdown menu to specify the type of device.
- **Retention Policy** - choose a Retention Policy to specify how data for this device is saved.
- **Latitude** - set the device's latitude.
- **Longitude** - set the device's longitude.
- **Comment** - enter text in the **Comment** box to add a comment to the device.

### SNMP Pane

Use the Info window's SNMP pane to view available SNMP information. This is a read-only pane, so there are no options to edit.

### Probes Pane

Use the Device Info window's Probes pane to view and edit the device's probes.

#### Editing Probe Info

From the Probes pane, you can add and remove probes, and edit a probe's information.

##### To edit a probe's information:

1. Make the map editable by clicking the Lock icon at lower left.
2. To change the probe, right-click (or Control-click) the probe you want to edit, and choose **Set Probe...** from the context menu. The Set Probe window appears.
3. Choose the probe you want to use and edit the settings as needed.
4. Click **OK** to close the Set Probe window.

##### To add a probe:

1. Click the plus icon (+) at the bottom of the Probes pane. The Set Probe window appears.
2. Click to choose a probe from the probe list on the left.
3. Edit the probe settings as needed.
4. Click **OK** to close the Set Probe window.

**Note:** When you add a probe, the device becomes a probe group.

## Thresholds Pane

Use the Device Info window's Thresholds pane to view and edit threshold settings for the device.

### ***Editing Threshold Info***

1. Open the Info window for the device you want to edit.
2. Make sure the map is in Edit mode.
3. Click **Thresholds** to view the Thresholds pane.
4. Select the **Ignore Outages** check box to suppress alerts for the device when it goes down or comes up.

**Note:** The **Ignore Outages** check box suppresses alerts only with respect to outages, not to other state changes, thresholds, or to any alerts triggers by probes attached to the device. This is useful if a device such as a laptop or mobile device goes up or down (or leaves the network completely) as part of its normal operation.

5. Clear the **Use Map Defaults** check box.
6. Enter new values in the boxes you want to change.
7. Click **Apply** to activate the changes without closing the window or **OK** to activate and close the window. The selected device uses the new values.

## Icon Pane

Use the Device Info window's Icon pane to change the icon for the device.

### ***Editing Icon Info***

To change the device's icon:

1. From the dropdown menu at the top of the pane, choose an icon set.
2. Scroll through the set and choose an icon. You can see what it looks like by clicking on it. You can see what it looks like in different states by clicking the colored buttons below the preview area.
3. When you have found an icon you want to use, click **Apply** to activate the icon without closing the window or **OK** to activate the icon and close the window.

## Label Pane

Use the Device Info window's Label pane to edit the device's label.

### ***Editing a Label***

A label can contain any combination of text, variables, and JavaScript. For detailed information on editing labels see [Editing Labels \(Pg 101\)](#) and [Dynamic Label and Alert Text \(Pg 103\)](#).

## **Advanced Pane**

Use the Advanced pane to choose the mapping behavior of a device, and whether to collect Layer 2 information.

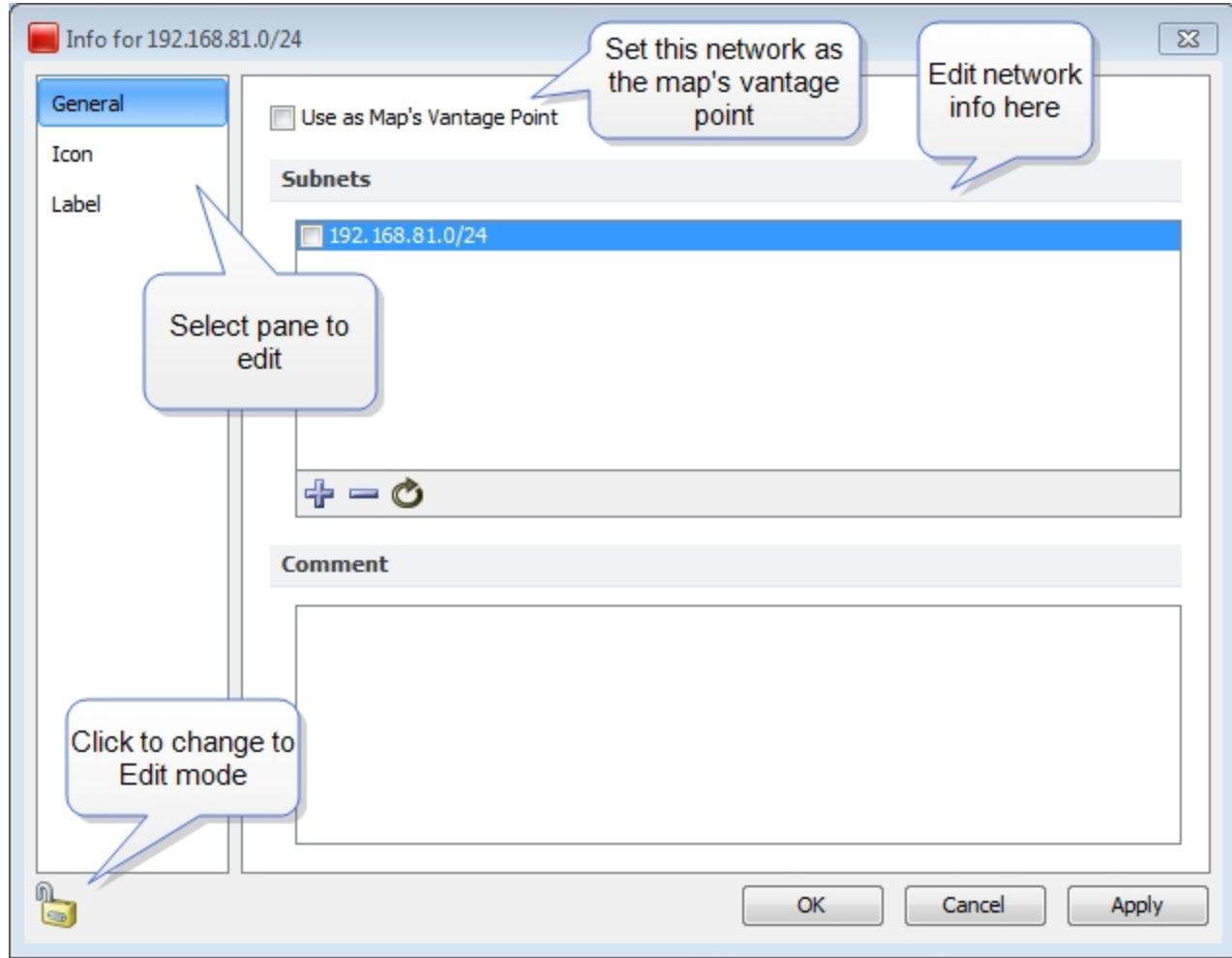
### ***Mapping Behavior***

- **Determine network information for each port separately** - use this option when mapping Routers.
- **Propagate all network number information from one port to all ports** - use this option when mapping switches.
- **Do not propagate network information about the ports** - use this option when mapping hubs and end systems.

### ***Layer 2***

- **Poll this address for Layer 2 information** - clear this box to prevent this device's IP address from being polled for Layer 2 information. This is equivalent to the **Remove switch from Layer 2 database** command, available when you right-click a switch in the [Layer 2 view's Filter pane](#).
- **Allow Layer 2 connection** - clear this box to prevent InterMapper from making a connection from this device to other devices on the map using Layer 2 information.

## The Network Info Window



### General Pane

Use the General pane to view a list of subnets that appear on the map, to control which subnets appear, to add and remove subnets, to set the network as the map's Vantage Point, or to add a comment.

- **Add a subnet** - Click plus (+) at the bottom of the General pane to add a subnet.
- **Remove a subnet** - Select a subnet from the Subnets list, and click minus (-) at the bottom of the General pane to remove the subnet from the list and the map.
- **Add a Comment** - enter text in the **Comment** box to add a comment to the network.
- Click ***Use as Map's Vantage Point*** to use this network as the map's [Vantage Point \(Pg 128\)](#).
- After making a change, click **Apply** to save the change without closing the Info window. Click **OK** to save the change and close the Info window.

### **Icon Pane**

Use the Network Info window's Icon pane to change the icon that appears on the map for the selected network.

The Icon pane operates exactly as the [Device Info window's Icon pane \(Pg 171\)](#).

### **Label Pane**

Use the Network Info window's Label pane to edit the network's label.

The Label pane operates exactly as the [Device Info window's Label pane \(Pg 171\)](#).

## Interfaces Window

InterMapper can show the interfaces of a particular router or switch. This is convenient for viewing the specifics of those interfaces (for example, the ifAlias or Name assigned to each individual port) or for viewing the status of the port.

### To view the Interfaces window:

1. Right-click the router or switch for which you want to view the Interfaces Window.
2. From the context menu, choose **Interfaces Window**.

or

- From the Monitor menu, choose **Interfaces Window**.

**Note:** You may open as many interfaces windows as you like. Each window is updated at the device's poll interval.

### The Interfaces Window

ifAlias	Name	Description	Type	TX Speed	RX Speed	VLAN	Index	Status
1	1	ethernet...	100 M	-	1	1	1	●
2	2	ethernet...	100 M	-	2	2	2	●
3	3	ethernet...	100 M	-	3	3	3	●
4	4	ethernet...	100 M	-	2	4	4	●
5	5	ethernet...	100 M	-	4	5	5	●
6	6	ethernet...	100 M	-	2	6	6	●
7	7	ethernet...	100 M	-	1	7	7	●
8	8	ethernet...	100 M	-	1	8	8	●
9	9	ethernet...	100 M	-	1	9	9	●
10	10	ethernet...	100 M	-	4	10	10	✗
11	11	ethernet...	10 M	-	1	11	11	●
12	12	ethernet...	100 M	-	600	12	12	✗
13	13	ethernet...	100 M	-	1	13	13	●
14	14	ethernet...	100 M	-	1	14	14	●

Display unnumbered interfaces    Ignore interface discards      58 interfaces  
 Allow Periodic Reprobe       Ignore interface errors

The Interfaces window displays one row for each port/interface on the device. It shows the following information in columns:

- **Show/Hide Checkbox** - When checked this interface will be visible on the map. Unchecking this box will hide the interface.
- **ifAlias** - The ifAlias assigned to the interface.
- **Name** - The name assigned to the interface.
- **Description** - The description assigned to the interface.
- **Type** - The type of the interface, as defined in MIB-II.

- **Status** - The status of the interface as determined by ifAdminStatus and ifOperStatus. A green dot means the interface is operational. If ifOperStatus is ≠ 1, then a red "X" appears (the interface is down.) If ifAdminStatus is ≠ 1, then a blue "X" is shown (the interface has been disabled administratively.)
- **TX Speed** - The Transmit Speed reported by the interface, in bits per second.
- **RX Speed** - User-settable value that is used when InterMapper computes the utilization of the receive side of the interface. If the value is not set, InterMapper uses the TX Speed for the calculation. This is useful when the transmit and receive speeds are different (for example, in asymmetric DSL links). You can set change both the RX Speed and TX speed using the **Set Link Speed...** command, described below.
- **Index** - The ifIndex of the interface.
- **VLAN** - Contains the VLAN ID that has been assigned to the interface.
- **Display unnumbered interfaces** - Select or clear this box to choose whether to see all the unnumbered interfaces on a switch. By default, *InterMapper* does not display unnumbered interfaces.
- **Allow periodic reprobe** - Select or clear this box to choose whether or not a device is to be automatically reprobed every 12 hours.
- **Ignore interface discards** - Select or clear this box to choose whether to ignore interface discards.
- **Ignore interface errors** - Select or clear this box to choose whether to ignore interface errors.

### Hiding and Deleting Interfaces

You can hide interfaces, or you can delete them.

#### To hide an interface:

- Clear the check box next to the interface. If you hide an interface, a network associated that interface disappears from the map, and remains that way. The interface is no longer polled, and data is no longer collected.

#### To delete an interface:

- Click the line for the interface you want to delete and press **Delete**.

or

- Right-click the interface line and choose Delete from the context menu.

#### Hiding vs. Deleting an Interface

Use the following information to help you decide whether you want to hide or delete an interface:

- **Probe rediscovery** - When you *hide* the interface, it does not reappear unless you "unhide" it. When you *delete* an interface, InterMapper redisCOVERS it and displays it again the next time it re-probes the device unless you clear the **Allow periodic reprobe** check box.
- **Data Collection** - When you *hide* the interface, data collection stops. It starts when you re-enable it. When you *delete* an interface, data collection resumes when the interface is rediscovered.

- **Polling** - When you *hide* the interface, polling for that interface stops. It starts when you re-enable it. When you *delete* an interface, it is polled, and thus reappears when rediscovered.
- **Layer 2 Discovery** - When you *hide* the interface, Layer 2 discovery for that interface stops. It starts when you re-enable it. When you *delete* an interface, the interface is rediscovered, and Layer 2 information is collected.

## Acknowledging Down Interfaces

You can acknowledge one or more down interfaces from the Interfaces window.

To acknowledge down interfaces:

1. In the Interfaces window, select the rows for the interfaces you want to acknowledge.
2. Right-click one of the selected interfaces and choose Acknowledge... The Acknowledge window appears.
3. Create an acknowledgement as described in [Acknowledging Device Problems](#).

## Copying Data from the Interfaces Window

You can copy data from the Interfaces window for use in spreadsheet or other application.

**To copy data from the Interfaces window:**

1. Select the rows you want to copy. Shift-click to select contiguous rows, Ctrl-click to select non-contiguous rows.
2. Press **Ctrl/Cmd-C**. The selected rows are copied to the clipboard in tab-delimited format.

## Setting the Data Retention Policy for an Interface

You can set the retention policy for an interface from the Interfaces window.

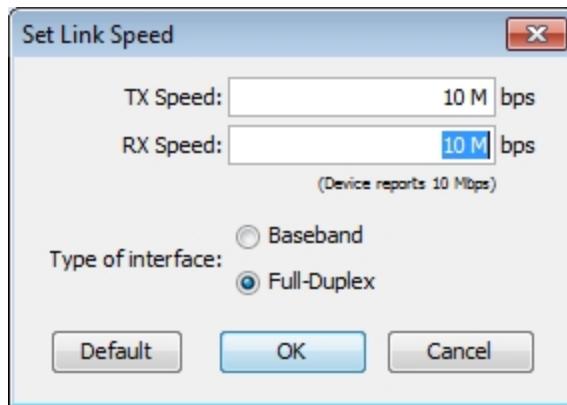
**To set the retention policy for a particular interface:**

1. Right-click the interface and choose **Set Data Retention** from the context menu.  
The Set Retention Policy window appears.
2. Choose a retention policy from the **Data Retention Policy** dropdown menu.  
Data is collected as specified by the selected policy.

## Setting the Link Speed

With the map editable, use the Set Link Speed window to set the TX Speed and RX Speed for a particular interface. There are two ways to open the Set Link Speed window:

- Right-click the link, and choose **Set Link Speed...** from the context menu.
- From the Interfaces Window, right-click the Interface whose speed you want to set, and choose **Set Link Speed...** from the context menu.



The following units are permitted:

- K (Kilo), M (Mega), G (Giga), T (Tera), P (Peta)

These are all valid values:

- 1000000
- 1000 K
- 1M

**Note:** The **RX Speed** box is disabled when **Type of interface** is set to **Baseband**.

### About Packet Loss

InterMapper has the ability to monitor both long-term and short-term packet loss. These are useful for detecting problems in your network.

Long term Packet Loss is measured from the time InterMapper starts testing a device. InterMapper computes this from the total number of pings or SNMP queries sent, and the fraction of those that fail to respond.

#### Long-term Packet Loss

The Long-term Packet Loss is displayed in the device's Status Window, along with the total number of packets sent and responses received. It is possible to reset this value using the **Reset** link in the device's Status Window.

#### Short-term Packet Loss

InterMapper measures Short-term Packet Loss by counting the number of lost packets in the last 100 sent. To do this, each device retains the history of the last 100 packets sent/received.

The short-term packet loss is displayed in the device's Status Window as a percentage of the number of dropped packets in the last 100. This value can be reset via the **Reset** link in the Status Window(which resets all the device's statistics), or by selecting one or more devices and choosing **Monitor -> Reset Short-term Packet Loss**.

#### Packet Loss Notifiers

InterMapper can send alerts/notifiers when the short term packet loss statistics exceed certain thresholds. That is, when short term packet loss exceeds a warning, alarm, or critical threshold, the device will turn to the appropriate color and InterMapper will send the appropriate alert. These thresholds can be set in several places:

- **Server Settings** - Device Thresholds apply to all devices on all maps
- **Map Settings** - Device Thresholds apply to all the devices on a particular map, overriding the Server Settings value.
- **Individual device - Set Thresholds...** sets the thresholds for that particular device, overriding the map-wide or server-wide settings.

To disable alerts/notifications for high packet loss, set the packet loss thresholds to 100%.

#### Ignoring lost packets during outages

When a device goes down, InterMapper stops updating the packet loss history (both short and long term) for the duration of the outage. This prevents the packet loss statistics from continuing to increase during an outage. (If InterMapper continued to count lost packets while a device was down, the statistics would incorrectly indicate there was high packet loss when it was likely the problem was something else.)

In addition, InterMapper ignores the packets lost when determining that a device has gone down. For example, the default is that three successive lost packets will

indicate that the device is down (no longer responding). However, these three dropped packets would be shown (incorrectly) as a 3% packet loss. Consequently, InterMapper removes those dropped packets from the history, so that it shows an accurate accounting.

When the device subsequently responds (after the problem has been corrected), InterMapper begins counting successful and lost packet responses again.

## Acknowledging Device Problems

Use the Acknowledge command, available from the Monitor Menu, to acknowledge failures or problems in the network. When you acknowledge a problem, the InterMapper program does the following:

- Changes the device's icon color to blue to show that the problem has been acknowledged.
- Stops further notifications of the problem, either for the duration of this outage, or for a specified time period.
- Writes any comment you enter into to the Event Log file, along with the name and IP address of the user who acknowledged the problem.
- Displays the comment in the device's Status Window.

### Why are Acknowledgements useful?

Acknowledgments allow the network administrator to see the state of the network, as well as the responses that have been made to the current set of problems.

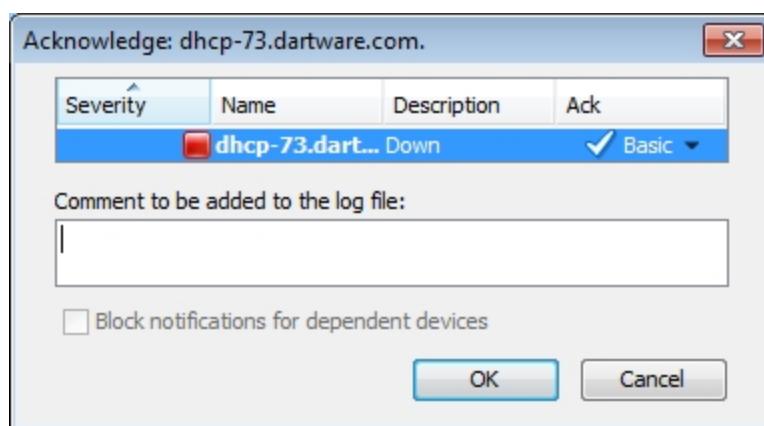
Use Acknowledgements to:

- **Indicate that someone has taken responsibility for a problem -** Because acknowledging a problem turns the affected device's icon blue, it's easy to see that someone is aware of (and is presumably working on) the problem.
- **Emphasize new problems -** The normal color of icons on a map should be green (operating correctly) or blue (having trouble, but being worked on.) When a new problem occurs, the affected devices' color are red, orange or yellow, depending on the severity. This makes it easy to see where new troubles lie. After acknowledgment, these devices will also be blue.
- **Suppress notification for a problem device -** When a device has been acknowledged, no further notifications are sent.
- **Provide information about the problem and its management -** Enter a comment to convey information about the failure, and/or the corrective action.

### Acknowledging a problem

#### To acknowledge a problem with a device:

1. Click the device (s) you want to acknowledge.
2. From the Monitor menu,



- choose **Acknowledge...** (Cmd-' or Ctrl-'). The Acknowledge window appears.
3. If you want keep the device in Acknowledgement mode for a specific period of time, or for an indefinite period, choose **Indefinite** or **Timed...** in the **Ack** column.
  4. If you want to suppress notifications for devices that depend on this device, click to select the **Block notifications for dependent devices** check box.
  5. Enter a comment, then click **Acknowledge**. The selected device's icon changes to blue, and your comment is written to the Event Log file. Notifications are cancelled for the selected device for the duration of this outage.

### **Basic, Timed and Indefinite Acknowledgements**

InterMapper offers three kinds of acknowledgements:

#### **Basic**

The device is acknowledged, and notifications are suppressed until it gets better or worse. The icon turns blue to indicate that someone has taken responsibility for it, and that no further notifications will be sent.

As soon as the device's state changes to any other status, its acknowledge status is automatically cleared, and notifications resume. From then on, notifications are sent for any subsequent failures.



Down, with Basic Acknowledgement

#### **Timed**

The device is acknowledged, and notifications suppressed for the specified period of time. The icon turns blue (if it's not okay), and the wrench badge appears to show that notifications will be blocked for the specified time. In this case, the state of the device is OK.



Up, with Timed Acknowledgement

#### **Indefinite**

The device remains acknowledged until the operator *unacknowledges* it.

As with the **Timed** acknowledgement, the icon turns blue and the wrench badge appears to remind the operator that notifications are suppressed. In this case, the device is DOWN.



Down, with Indefinite Acknowledgment

**Note:** With timed and indefinite acknowledge, you can acknowledge a device even when it is up and okay (i.e., green). This is useful if you know that there may be future outages (for example, planned maintenance) with the device, and you want to avoid extraneous notifications. You cannot do this with Basic Acknowledge.

**Note:** The presence of the wrench badge is a safety measure. When you scan the map visually, the wrench indicates devices whose notifications are currently being blocked.

### Acknowledgements and Dependencies

When you acknowledge a device, use the **Block notifications for dependent devices** check box to specify whether the acknowledged device should be considered in finding dependencies. Checking the box suppresses notifications for any device "on the other side" of the device being acknowledged.

#### To suppress notifications for all devices that are dependent on the selected device:

- Check the **Block notifications for dependent devices** box. Notifications are suppressed for any device that depends on the selected device.

For more information on dependencies and dependent devices, see [Using Notification Dependencies \(Pg 128\)](#).

### Unacknowledging a Device

Use the Unacknowledge command to restore the device to its current notification state.

#### To remove the acknowledgement for a device:

1. Click to select the device, or choose multiple devices.
2. From the Monitor menu, choose **Un-Acknowledge**. The selected devices are returned to their current notification states, and their notifications are no longer suppressed.

## Outage Alarms on Interfaces

InterMapper treats an outage on each device interface as a separate alert event. Each time an interface goes down, the device will go into alarm. The device icon turns orange, and the affected interface gets a red "X". Any Alarm notifications for that device are triggered.

You can right-click an affected interface's link, and select "Acknowledge". The device turns back to green (or its previous state/color), the interface link gets a blue "X", and no further notifications for that device are sent. InterMapper also writes a line in the Event Log file for these events. The format of the Event Log entries is:

```
09/30 14:03:32 link DOWN : [1] switch.example.com - 1
...
09/30 14:03:49 link ACK : [1] switch.example.com - 1
```

If another interface subsequently goes down, the same process repeats:

- the device turns orange
- an entry is written to the Event Log file
- the affected interface gets a red "X"
- notifications are sent
- you can acknowledge the new interface

If two interfaces go down more or less simultaneously, a single set of alarm notifications is sent. If you right-click to acknowledge one interface, the device itself remains orange because it still has unacknowledged down interfaces. No further notifications will be sent. When all the down interfaces have been acknowledged the device returns to its previous state and color.

Once acknowledged, a link's Status Window show the interface's status as "ACK (down)".

You can acknowledge and unacknowledge multiple interfaces from the device's Interfaces Window. Select one or more interfaces in the list, and choose Acknowledge or Unacknowledge. This has the same effect as doing each interface individually.

You can un-acknowledge a link by right-clicking on it. This replaces the blue "X" with a red one, and re-enables any repeated notifications for that device.

**Tip:** Choose from two methods of handling down interfaces.

1. Acknowledge the interface as described above. This is good for outages on operational interfaces that are expected to return to service in the near future.
2. If you know that an interface will be down for a long time, you can hide that interface. This tells InterMapper not to monitor its status and removes it from the map to minimize the visual clutter. To show or hide an interface, open the device's Interfaces Window and check/uncheck the box in the left column.

### Setting Error and Traffic Thresholds

You can set device and traffic thresholds for devices and connections so you can view errors and traffic flows in a meaningful way.

You can set thresholds for packet loss and response time for all devices on a map. You can also override default thresholds for a particular device.

For devices, you can set thresholds for:

- **Timeout** - specify the number of seconds that indicates the device is down.
- **Number of lost packets** - specify a number of lost packets between 1 and 10 required to set a device to a down state.
- **Interface errors** - specify the number of interface errors-per-minute required to set a device to warning, alarm or critical state.
- **Short-term packet loss** - specify a number of packets out of the last 100 required to set a device to warning, alarm, or critical state. This metric is applicable only to packet-based probes. This statistic can be viewed from the device's status window.
- **Response Time** - specify a response time in milliseconds required to set a device to warning, alarm, or critical state. This statistic can be viewed from the device's status window.

As stated above, these statistics can be seen in the device's status window.

### Setting Default Thresholds for a Map

You can set default device and traffic thresholds for a map. Use the Map Settings window, available from the Edit menu, to set default thresholds.

#### Setting Default Device Thresholds

Use the **Device** section of the Map Settings window to set default device thresholds for a map so that errors for all devices are reported at the same levels.

The screenshot shows the 'Map Settings' window with the 'Device' tab selected. The 'Down Thresholds' section is visible, showing a 'Number of lost packets (1 - 10)' input field set to '3'. The 'Other Thresholds' section displays three rows of threshold settings for 'Interface errors', 'Short-term packet loss', and 'Response Time', each with columns for 'Warning', 'Alarm', and 'Critical' levels. The 'Interface errors' row has values 2, 10, and 20 per minute. The 'Short-term packet loss' row has values 2, 5, and 20 of last 100. The 'Response Time' row has values 1000, 5000, and 20000 msec.

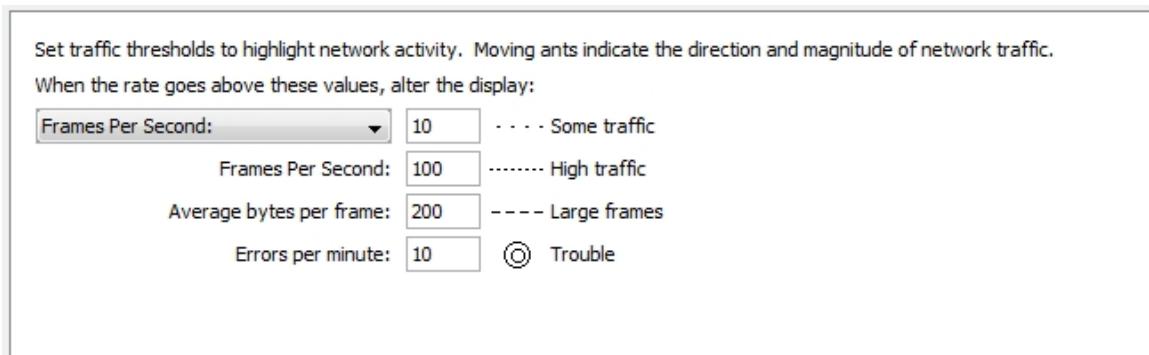
	Warning	Alarm	Critical	
Interface errors:	2	10	20	per minute
Short-term packet loss:	2	5	20	of last 100
Response Time:	1000	5000	20000	msec

**To set the default device thresholds for a map:**

1. In an editable map, choose **Map Settings** from the Edit menu. The Map Settings window appears.
2. In the left pane, click **Device**. The default thresholds for the map appear in the right pane.
3. Enter the settings you want to change, and click **OK**. The map uses the new threshold settings.

**Setting Default Traffic Thresholds**

Use the **Traffic** section of the Map Settings window to set traffic thresholds for a map. You cannot set traffic thresholds for a specific device.

**To set the default traffic thresholds for a map:**

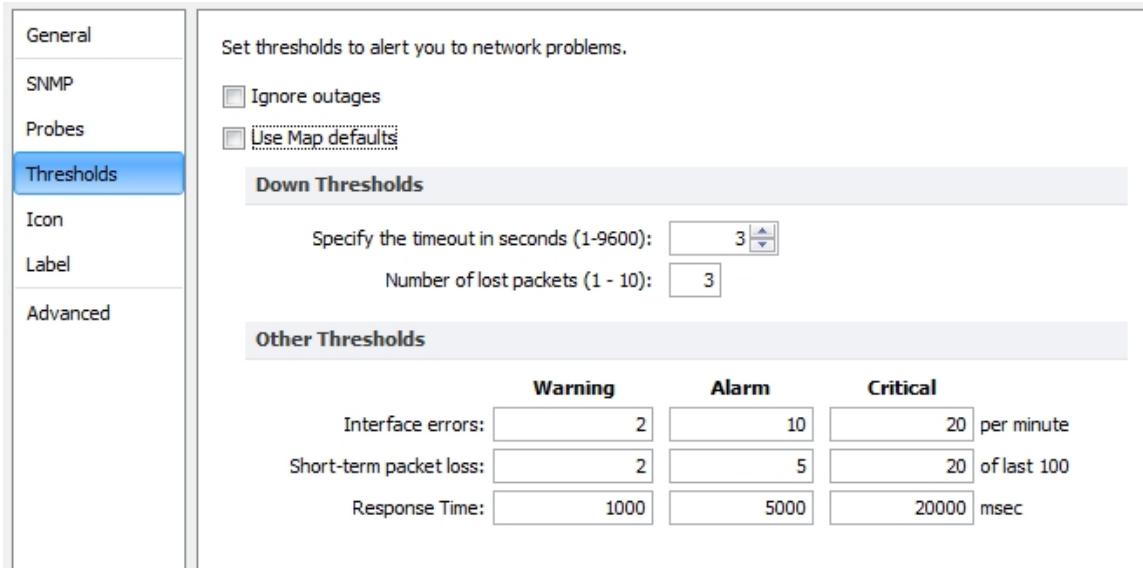
1. In an editable map, choose **Map Settings** from the Edit menu. The Map Settings window appears.
2. In the left pane, click **Traffic**. The current traffic thresholds for the map appear in the right pane.
3. Enter the settings you want to change, and click **OK**. The map uses the new threshold settings.

For more information on traffic threshold settings, see [Map Settings Window \(Pg 84\)](#).

### Setting Thresholds for a Specific Device

You can set device thresholds for a specific device, with different values than the default map settings. You cannot set traffic thresholds for a specific network or link. You do this from the Info window.

**Note:** When setting thresholds for a probe group, you can set the thresholds only for an individual probe, or use the Map's default settings. For more information, see [Setting Thresholds for Probe Groups \(Pg 189\)](#) below.



**Note:** Only SNMP probes have thresholds for all three parameters (response time, packet loss and interface errors); a ping/UDP-based probe monitors only response time and packet loss, and a TCP probe monitors only response time.

#### To set the device thresholds for a specific device:

1. With the map in Edit mode, right-click a device and choose **Info window**, or choose **Info window** from the Monitor menu. The Info window appears.
2. In the Info window, click **Thresholds**. The Thresholds pane appears.
3. Clear the **Use Map Defaults** check box.
4. If you want to suppress alerts for the device when it goes down, select the **Ignore Outages** check box.

**Note:** The **Ignore Outages** check box suppresses alerts only with respect to outages, not to other state changes, thresholds, or to any alerts triggers by probes attached to the device. This is useful if a device such as a laptop or mobile device goes up or down (or leaves the network completely) as part of its normal operation.

5. Enter new values in the boxes you want to change, and click **OK** or **Apply**. The selected device uses the new values.

## Setting Thresholds for Probe Groups

When setting thresholds for a probe group, you can set the thresholds only for an individual probe, or use the Map's default settings.

To set thresholds for a probe group:

1. Double-click a probe group. The Info window for the probe group appears.
2. In the left pane of the Info window, click **Probes**. A list of probes in the probe group appears.
3. Right-click (or Ctrl-click) the probe for which you want to set thresholds, and choose **Info Window**. The Info window for the selected probe appears.
4. In the left pane, click **Thresholds**. The threshold settings for the selected probe appear.
5. Clear the **Use Map Defaults** box, then set the thresholds as needed and click **OK**. The thresholds for the selected probe are set.
6. Continue setting thresholds for each probe as needed, then click **OK** in the probe group's Info window.

### Sending Feedback

Use the **Send Feedback...** and **Send a Screenshot...** commands, available from the Help menu, to send comments or report bugs. You can also use the Send Feedback window to [submit updates for an existing ticket](#).

**Note:** If the window appears automatically, you have encountered a client-side bug. (A bug on the server is not visible from the client.) If you have selected the **Automatically E-mail InterMapper bug reports** check box in the Server Preferences > E-mail panel, the server sends bug reports to InterMapper Support when an error is encountered by the InterMapper Server.

#### To send feedback:

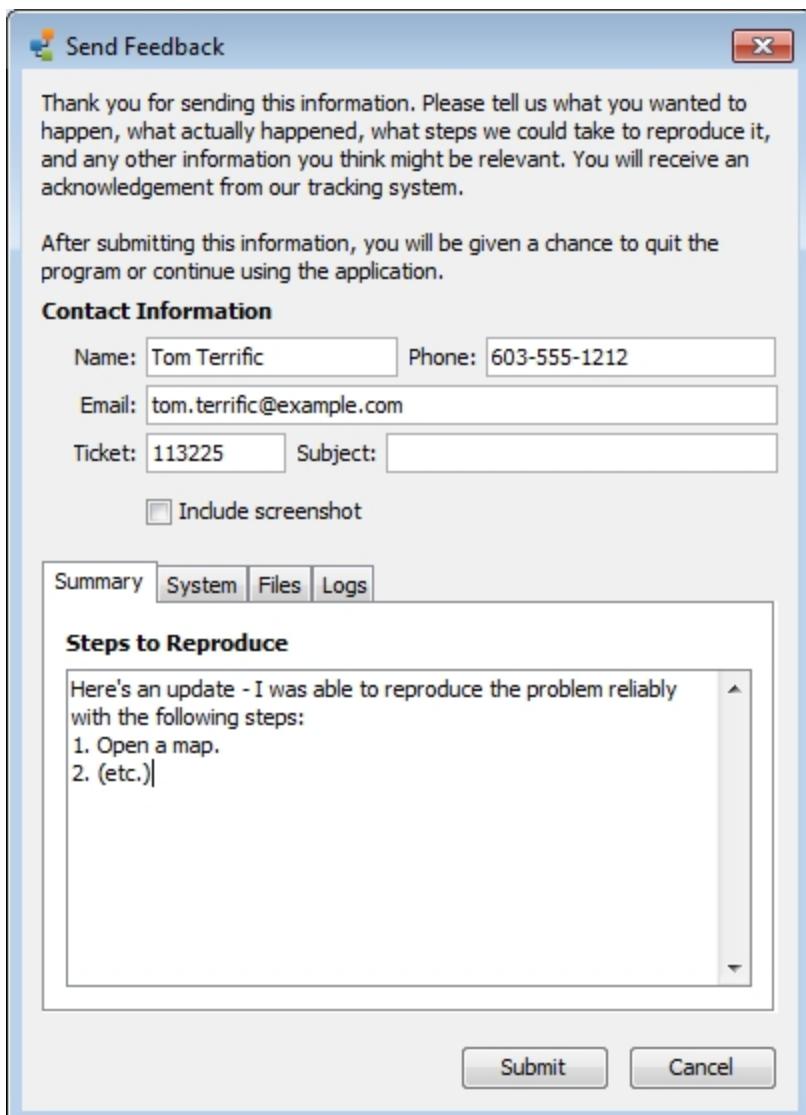
1. From the Help menu choose **Send Feedback...**

The Send Feedback window appears.

2. Enter or edit contact information as needed, and enter a **Subject** for the feedback.

This should be a short description of the comment or bug. If you are updating an existing support ticket, you can simply enter the ticket number, and

the content of your feedback submission is added to that ticket. See [To Update an Existing Support Ticket](#) for more information.



3. If you are reporting a bug, enter the steps required to reproduce the bug or condition into the **Steps to Reproduce** box. If you are making a comment or suggestion, enter it in the box.
4. If you want to include a screenshot, click **Include screenshot**.
5. To include additional information, click the **System**, **Files**, or **Logs** tab. See additional information below.
6. When ready, click **Submit**.

**To send feedback with a screenshot:**

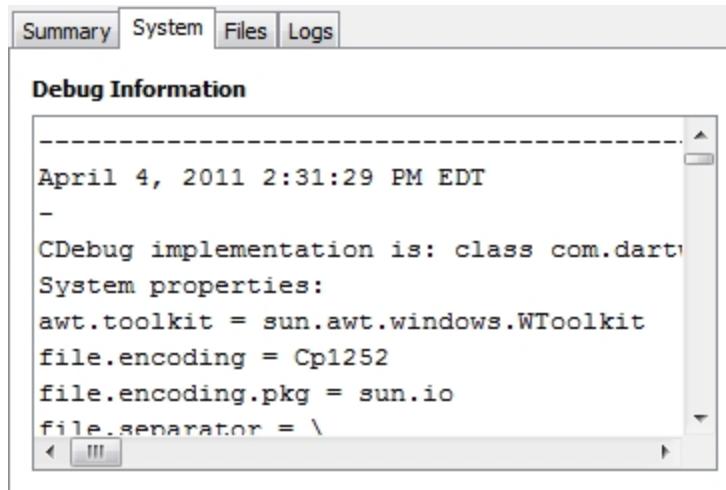
- From the Help menu choose **Send a Screenshot...**. The Send Feedback window appears, with a note that a screenshot is included. Enter information as appropriate as described above.

**To update an existing support ticket:**

1. From the Help menu choose **Send Feedback...**. The Send Feedback window appears.
2. Enter the ticket number in the **Ticket** box.
3. Enter additional information in the **Summary** tab, attach additional files on the **Files** tab, or and send additional logs on the **Logs** tab.

### System Tab

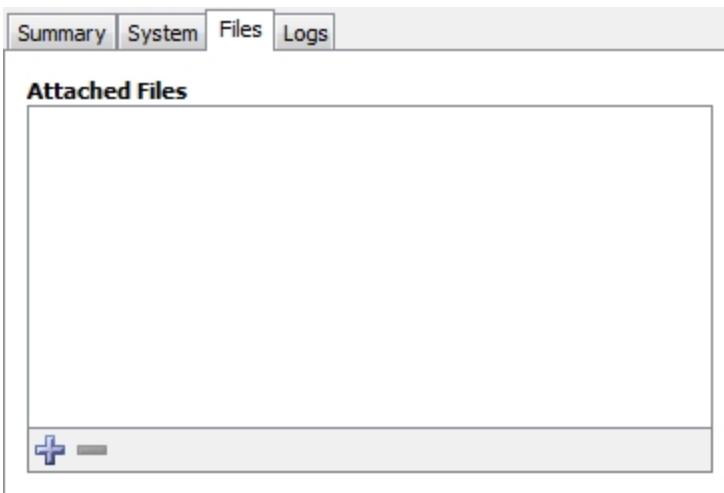
Use the System tab to view and edit the Debug information that gets sent with the report.



### Files Tab

Use the Files tab to include files with the report.

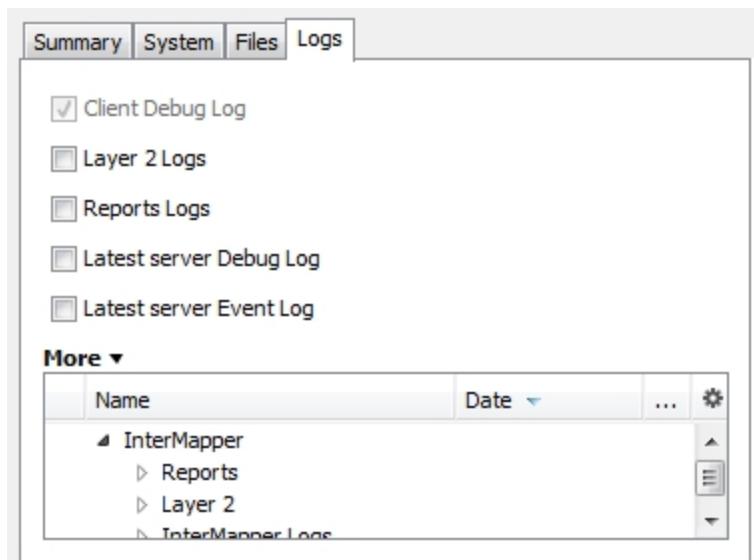
- Click the **Add file** button (plus icon) to add a file to send. The path to the file appears in the Attached Files list.
- To remove a file from the list, click to select a file line in the Attached Files list, and click the **Remove selected file** button (minus icon).



### Logs Tab

Use the Logs tab to choose the log files you want to include with the report.

- Select or clear the check boxes to choose the log files you want to send.
- Expand the More list to view additional log files you can choose to send.

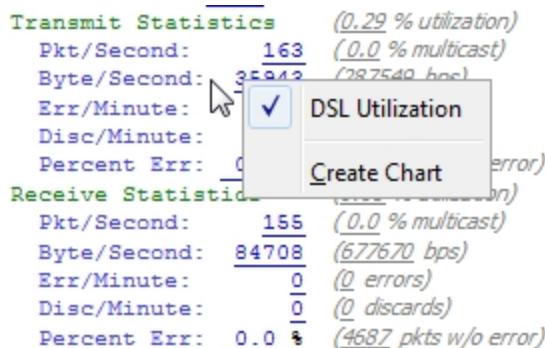


## Creating Charts

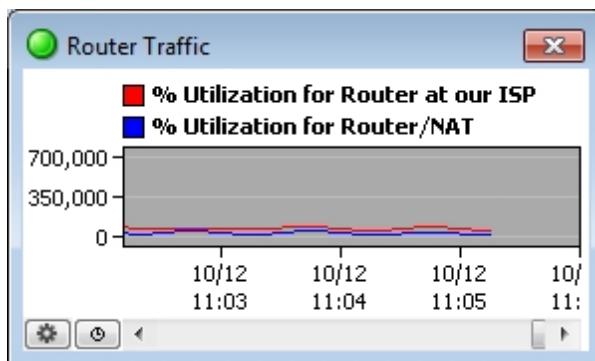
*InterMapper* charts display the history of one or more variables. This information can also be saved to a log file for further analysis.

### To create a chart:

1. Open one of the status windows as described in [Viewing Status Windows \(Pg 165\)](#).
2. Tear the status window off to create a new window.
3. Click on any of the underlined values. If the underlined value appears any existing charts, a list of charts appears, along with a Create Chart option.



4. Click **Create Chart**. A new chart appears.
5. To add more variables to the chart, drag their underlined values to the chart. The example below shows a typical chart.



A chart showing two traces.

For more information about charts, see [Using Charts. \(Pg 194\)](#)

## Using Charts

*InterMapper* displays historical information in a *chart*. Charts can hold an unlimited number of datasets for an unlimited time period. These data can also be written to a tab-delimited text file.

A chart is a persistent window that belongs to a particular map. All the data that is displayed in a chart must come from devices or links of that map.

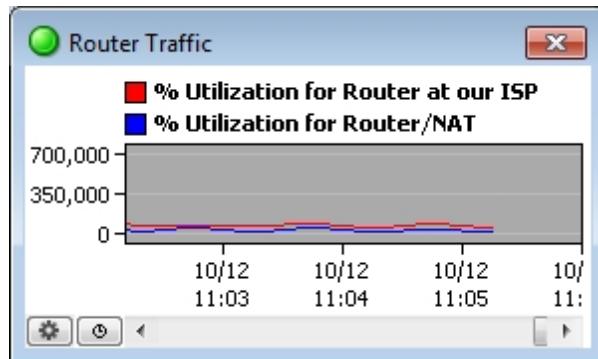
The figure on the right shows a chart with two variables. You can control its labels, axes, options, and time intervals, as described in the pages of this section.

You use the options available from the [Charts Menu \(Pg 197\)](#) to view and hide charts.

You use the options available from the [Chart Options \(Pg 200\)](#) menu to view and edit the parameters which control content and appearance of each chart.

You can also specify the file that logs the chart's data, and control options for creating new chart log files. For more information, see [Chart Log Files \(Pg 206\)](#).

Below is a Quick Start guide for using charts.



## Viewing and Hiding Charts

You view and hide charts using the Charts command in the View menu or by selecting options from the [Charts menu at the bottom left of the chart's window.](#) (Pg 197).

### To show an existing chart:

- From the Windows menu, choose the chart you want to view by selecting it from the **Charts** submenu.

or

- Click the  button in the tool bar to view a list of charts associated with the map. Double-click a chart to view it.

or

- Right/Ctrl-click the  button in the tool bar to view a dropdown menu of charts associated with the map without changing to the Chart List view. Choose a list from the dropdown menu.

or

- Right/Ctrl-click a chart in Chart List view and choose **Show Chart**.

### To hide a chart:

- Click the chart's close box. The chart is hidden, but the chart's data is preserved, and continues to be collected.

### To scroll the chart:

- Drag the chart's background to scroll the chart right or left.

## **Creating and Adding Datasets to Charts**

### **To create a chart:**

1. Open one of the status windows as described in [Viewing Status Windows \(Pg 165\)](#).
2. Tear the status window off to create a new window.
3. Click on any of the underlined values. If the underlined value appears any existing charts, a list of charts appears, along with a Create Chart option.
4. Click **Create Chart**. A new chart appears.

### **To add a dataset to an existing chart:**

1. Open a Status window.
2. Drag an underlined value (blue or grey) from a status window into the chart. The variable is added to the chart.

**Note:** To see what device a dataset belongs to, right-click (or Ctrl-click) the dataset's legend in the Chart window, and choose **Show Device**. If you are viewing the Map window in Map view, the device is highlighted momentarily. In List view, the device is selected in the list.

## **Editing Charts**

Edit the parameters that control a chart's content and appearance from the [Chart Options window \(Pg 200\)](#), available from the [Chart menu \(Pg 197\)](#).

## **Deleting Charts**

Use the **Delete Chart...** command, available from the [Chart menu \(Pg 197\)](#) to delete a Chart.

## Chart Menus

InterMapper provides three menus you can use to view and edit charts.

### The Charts Menu

Use the Charts menu to view and hide charts.

#### To show all charts:

From the Charts submenu of the Windows menu, choose **Show Charts**. All defined charts for the current map appear.

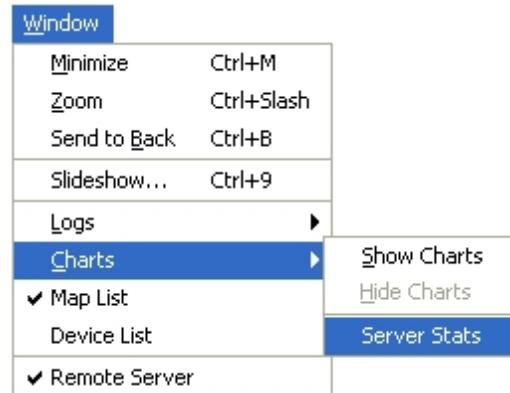
#### To hide all charts:

From the Charts submenu of the Windows menu, choose **Hide Charts**. All defined charts for the current map disappear.

#### To view an individual chart:

From the Charts submenu of the Windows menu, choose the chart you want to show. When the chart is visible, a checkmark appears in the submenu next to the chart name, as shown at the right.

**Note:** From the Charts list window, select one or more charts, then right/Ctrl-click a selected chart line and choose **Show Chart**.



The Charts menu

### The Chart Menu

To view the Chart menu:

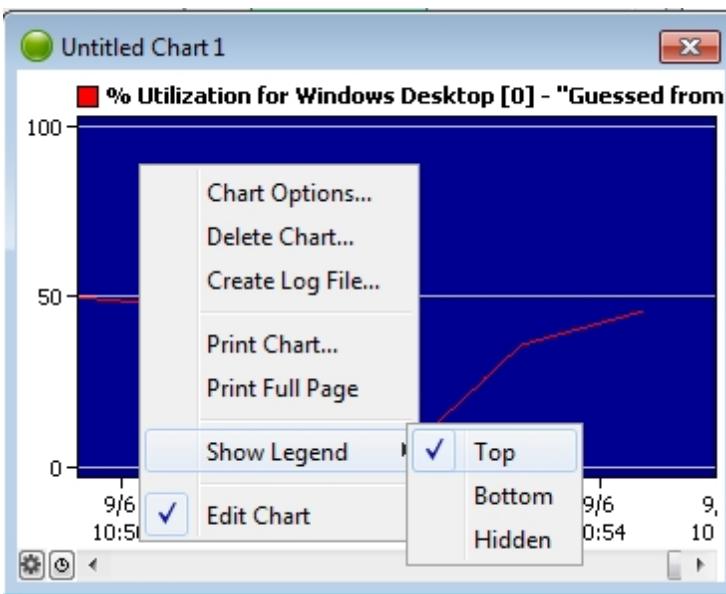


- Click the icon in the lower left to access the Chart dropdown menu.

or

- Right/Ctrl-click in the chart's data area.

The Chart dropdown menu appears.



*The Chart dropdown menu.*

**Chart Options...** - Choose this option to view and edit parameters for the current chart. For more information, see [Chart Options \(Pg 200\)](#).

**Delete Chart** - Choose this option to delete the current chart and its data.

**Log File...** - Choose this option to create a log file to receive the data for the current chart.

**Show Legend** - Choose an option from the **Show Legend** submenu to place the chart's legend at the top, bottom, or to hide the legend completely.

**Edit Chart** - If the map is not in edit mode, this is the only option available. Choose this option to edit the chart and view the Chart dropdown menu.

### The Time Interval Menu

Use the Time Interval dropdown menu, located next to the Chart dropdown menu icon at the lower left corner of the Chart window to set the time between the tick marks on the chart's horizontal axis.



## Chart Options

Use the Chart Options window to view and edit the parameters that define a chart's appearance and content.

The Chart Options window is available from the [Chart menu \(Pg 197\)](#), or by right-clicking within the chart window.

### Applying Changes In the Chart Options Window

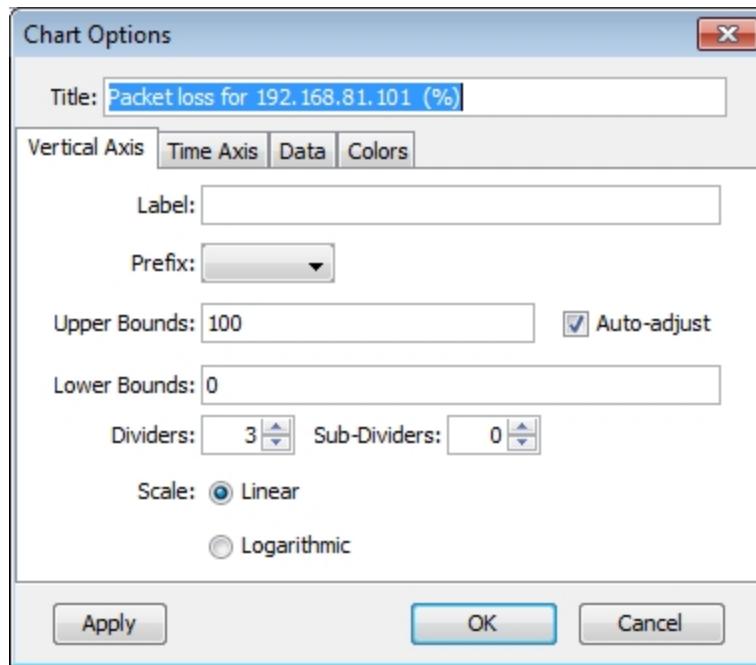
Use the Apply button to apply changes to a chart. Here are some things you should know about using the Apply button:

- Click **Apply** to apply changes you have made on any of the tabs, without closing the Chart Options window.
- Click **Cancel** to undo any changes you've made and applied.
- Click **OK** to apply any changes and close the window.
- Close the window to save any changes you've already applied.

### Setting the Chart Title

The chart's title appears in the Charts menu and in the chart's title bar. Enter a title in the **Title** box.

## Vertical Axis Tab



### Vertical Axis Tab parameters

- **Label** - Enter a label for the vertical axis of the chart.
- **Prefix** - Select a prefix for the data displayed in the chart. InterMapper automatically scales the values to match this prefix, and inserts the prefix into the vertical axis label. (example: "volts" would become " $\mu$ -volts".)
- **Upper Bounds, Lower Bounds** - Enter values to control the vertical scale of the chart. The range of values depends on the variable being monitored.
- **Auto-adjust** - Select or clear the ***Auto-adjust*** check box to choose whether to allow InterMapper to adjust the scale of the chart automatically. If the ***Auto-adjust*** check box is checked, the upper and/or lower bounds are adjusted automatically so that data points are always displayed, no matter how much they increase or decrease.
- **Dividers, Sub-Dividers** - Click the up- and down-arrows or enter a number of dividing lines to set the number of horizontal dividers and to set the number of sub-dividers you want to appear between the dividers.

**Example:** To divide a chart into 10 parts, you'll need eleven dividers. You can do either of the following:

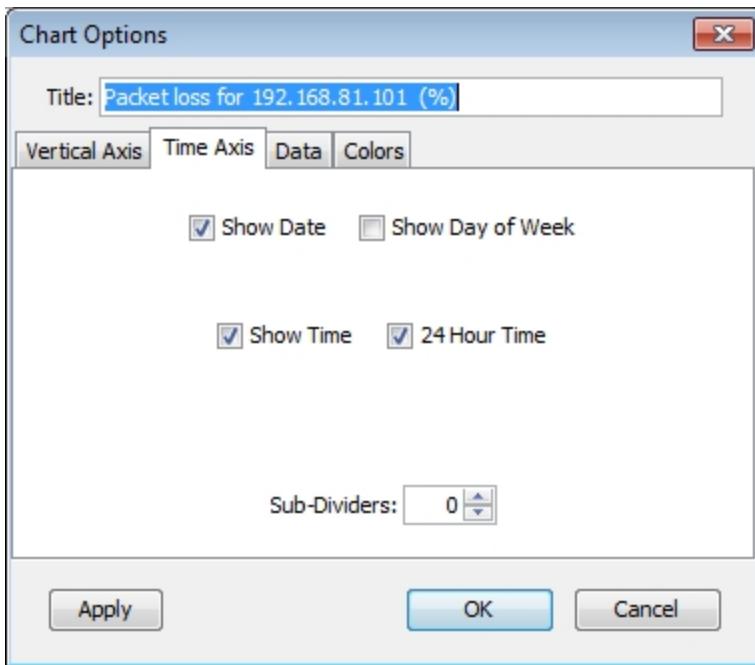
- Set the number of dividers to 11, with no sub-dividers.
- Set the number of dividers to 3, and the sub-dividers between each divider to 4.

- **Scale** - Click to choose **Linear** or **Logarithmic**. scaling of the displayed values. When you choose **Logarithmic** scaling, you can set the Y-axis labels to powers of 10 by setting the desired upper bound and lower bounds, then adjusting the number of dividers to match. A lower bound of zero is converted to 1.

**Example:** To create a log scale with labels of 3000, 300, 30, and 3:

- Set the upper bound to 3000
- Set the lower bound to 3
- Set the number of dividers to 4

### Time Axis Tab

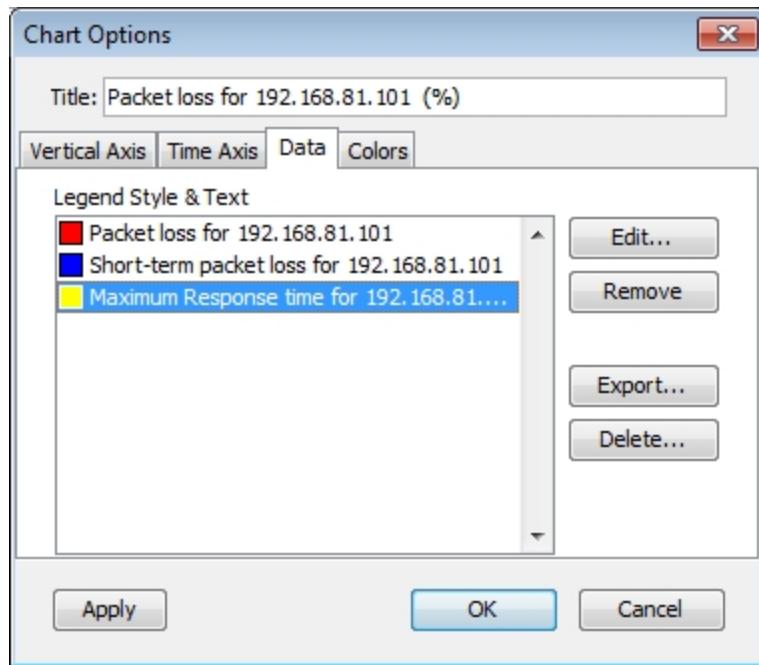


#### Time Axis Tab parameters

- **Show Date, Show Day of Week, Show Time, 24 Hour Time** - Check or clear these boxes to specify which labels appear on a chart's horizontal axis by default.
- **Sub-Dividers** - Click the up- and down-arrows to specify the number of unlabeled vertical sub-dividers to draw between data points.

## Data Tab

The Data tab shows a lists of datasets used in the current chart. Use the Data tab of the Chart Options window to export a dataset, to remove it from the chart, or to edit the appearance of a dataset's legend.



The Data tab of the Chart Options window

### To remove a dataset from the chart:

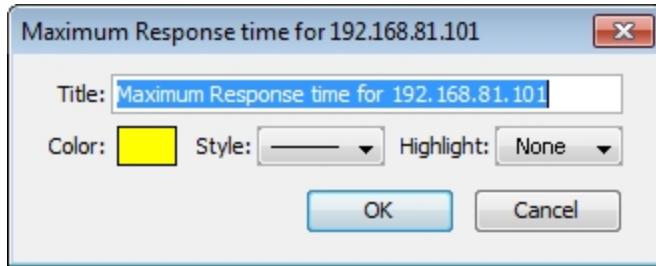
1. In the list of datasets, click the dataset you want to remove from the chart.
2. Click **Remove**. The dataset disappears from the list.

### To export a dataset:

1. In the list of datasets, click the dataset you want to export.
2. Click **Export**. A standard file dialog appears.
3. Enter a filename, choose a location, and click **Save**. A tab-delimited text file is created, with one data value per line.

### To edit the appearance of the legend for a dataset:

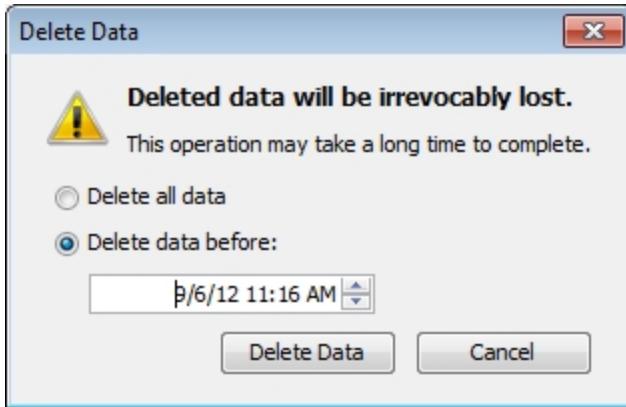
In the list of datasets, double-click the data for the set whose legend you want to edit. The edit window for the dataset's legend appears:



1. Click the **Color** rectangle and choose a color for the dataset.
2. Choose a line style for the dataset from the **Style** drop-down menu.
3. Choose a highlight icon for the dataset from the **Highlight** drop-down menu.
4. Edit the chart's title in the **Title** text box.
5. Click **OK** to save your changes.

### To delete a range of data from a dataset:

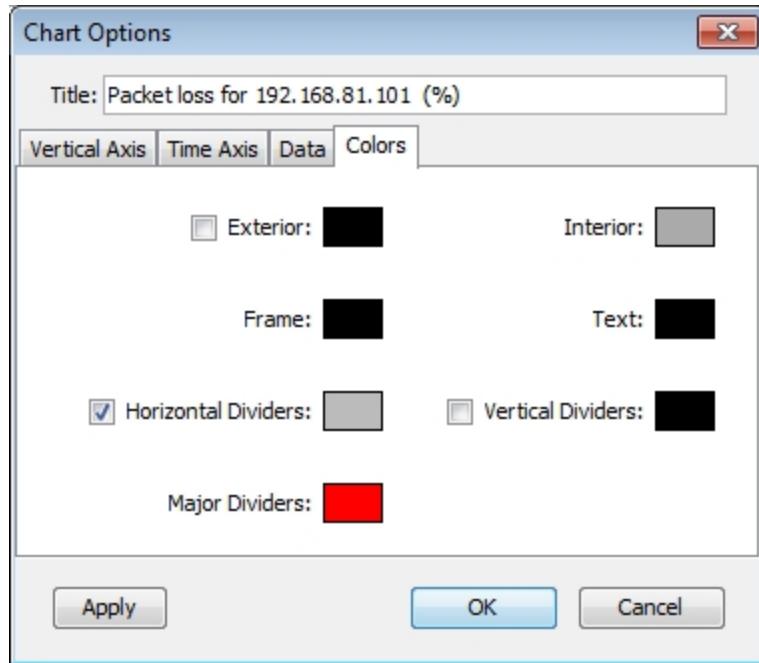
1. In the list of datasets, click to select the dataset containing the data you want to delete.
2. Click **Delete...**. The Delete Data window for the dataset appears.



3. Set the date and time. Data before this date and time are deleted from the dataset.
4. Click **OK**. The specified data is deleted from the dataset.

## Colors Tab

Use the Colors tab of the Chart Options window to define the colors for various parts of the chart.



- **Exterior** - Click to set the color of the chart's background, outside the data area. Click the check box to use the color.
- **Interior** - Click to set the background color for the data area of the chart.
- **Frame** - Click to set the line color for the frame of the data area.
- **Text** - Click to set the color for the chart's text.
- **Horizontal Dividers** - Click to set the line color for the chart's horizontal dividers. Click the check box to use the color.
- **Vertical Dividers** - Click to set the line color for the chart's vertical dividers. Click the check box to use the color.

### To change a color:

- Click a color box in the window above to set the color. Use the system color picker to select a new color.

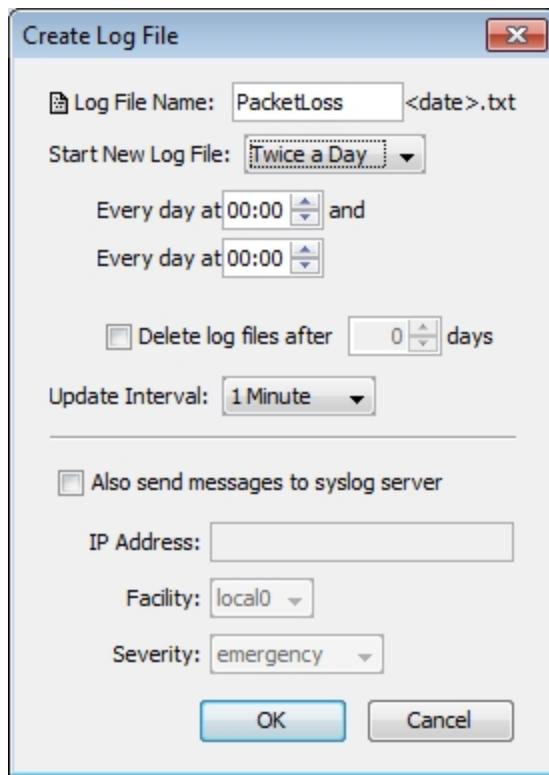
### Chart Log Files

InterMapper can write chart data to a tab-delimited text file. You can specify separate log files for each chart, or you can send the data from several charts to a single log file.

#### To specify a log file to receive chart data:

1. From the [Chart dropdown menu](#) (Pg 197), select **Log file...** The Create Log File window appears, as shown at right.
2. In the **Log File Name** box, enter the name of the new log file.
3. Set the preferences for the new log file using a window similar to the example at the right. For more details creating log files, see [Log Files \(Pg 230\)](#). When finished, click **OK**.

Each line of the tab-delimited file contains a date and time stamp and the current values of the variables defined by the chart.



Specifying a chart log file

#### To stop logging data to a log file:

1. From the Server Settings window, choose the [Log Files](#) (Pg 230) panel of the Server Preferences section. The Log Files panel appears.
2. Click to select the file for which you want to stop logging data.
3. Click **Remove**. The file disappears from the list, and chart data is no longer written to that file.

## Log Windows

*InterMapper* writes information about interesting events into [log files \(Pg 230\)](#). These streams of information can be viewed in the Log window. This allows you to review log files without the need for an external text editor.

These three logs are pre-defined:

### [\*\*The Event log \(Pg 208\)\*\*](#)

Use this log to view all events generated during the monitoring of devices. It includes events in which a device changes state, reasons for alarm notifications, and many other events.

### [\*\*The Outages log \(Pg 219\)\*\*](#)

Use this log to view a list of devices and networks that have been down, and the times that they came back up.

### [\*\*The Debug log \(Pg 220\)\*\*](#)

Use this log to view a list of detailed debug messages that may be useful for debugging *InterMapper*.

You create and control the preferences for log files from the Log Files panel of the Server Settings window. For more information on creating, viewing, and controlling the events that appear in log files, see [Server Preferences - Log Files. \(Pg 230\)](#)

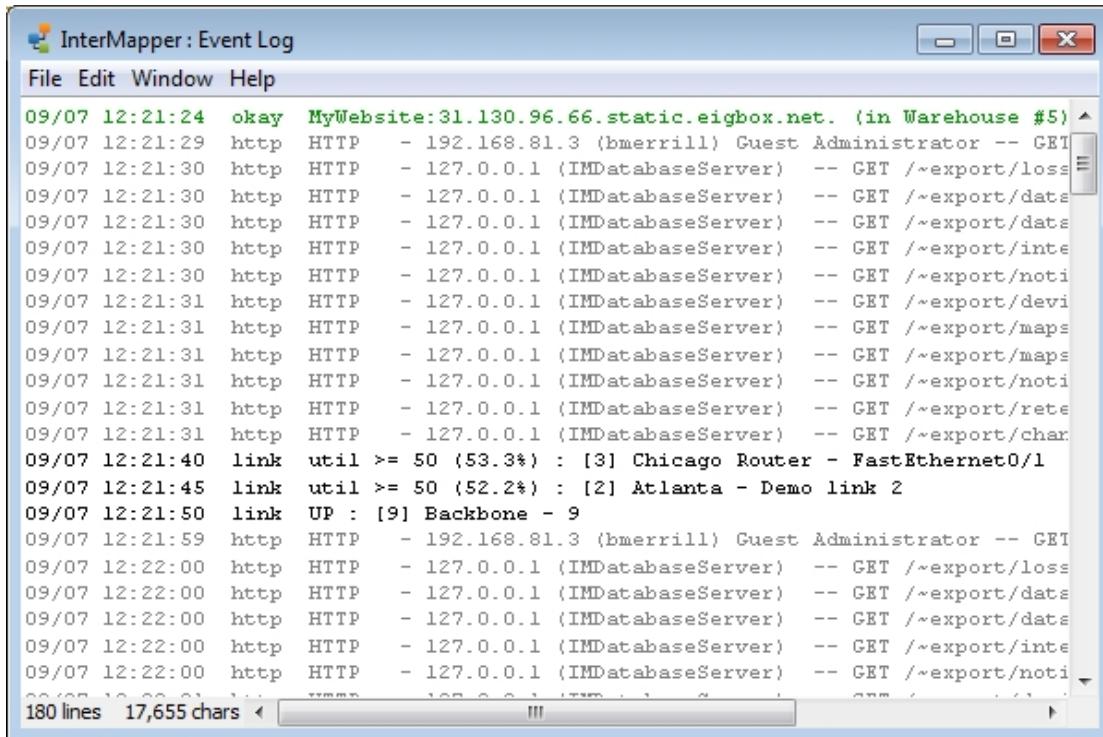
**Note:** Debug log and Event log are encoded in UTF-8 format. To edit those files, your text editor must support UTF-8 encoding in order to view foreign characters correctly.

### The Event Log

*InterMapper* writes information about interesting events into *event logs*. These streams of information are written to log files on-disk, and can be viewed in one of the Log windows. The Event Log is a pre-defined log file which serves as a default "catch-all" log file.

#### To open the Event Log window:

- From the Windows Menu, choose **Event Log** from the Logs submenu. The Event Log window appears, as shown below.



The screenshot shows the 'InterMapper : Event Log' window. The menu bar includes File, Edit, Window, and Help. The main area displays a log of events. The log entries are as follows:

```
09/07 12:21:24 okay MyWebsite:31.130.96.66.static.eigbox.net. (in Warehouse #5) ^
09/07 12:21:29 http HTTP - 192.168.81.3 (bmerrill) Guest Administrator -- GET /~export/loss
09/07 12:21:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/data
09/07 12:21:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/data
09/07 12:21:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/inte
09/07 12:21:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/noti
09/07 12:21:31 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/devi
09/07 12:21:31 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/maps
09/07 12:21:31 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/maps
09/07 12:21:31 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/noti
09/07 12:21:31 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/rete
09/07 12:21:31 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/char
09/07 12:21:40 link util >= 50 (53.3%) : [3] Chicago Router - FastEthernet0/1
09/07 12:21:45 link util >= 50 (52.2%) : [2] Atlanta - Demo link 2
09/07 12:21:50 link UP : [9] Backbone - 9
09/07 12:21:59 http HTTP - 192.168.81.3 (bmerrill) Guest Administrator -- GET /~export/loss
09/07 12:22:00 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/data
09/07 12:22:00 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/data
09/07 12:22:00 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/inte
09/07 12:22:00 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/noti
```

180 lines 17,655 chars

The main Event Log window. It can show information about device ups and downs, high traffic on links, web, telnet, and InterMapper RemoteAccess server connections, as well as error messages.

As entries are written to the Event Log file, (stored in the InterMapper Settings/InterMapper Logs" folder) they are also placed at the bottom of this window.

If the window is scrolled to the very bottom of the Event Log, it scrolls automatically as new events are appended to the log.

## Event Log Messages

All event log messages have one of these two formats:

### Message Format - Devices

<timestamp> <tag> <fullname>:: <message>

The <tag>s are:

```
"UP  ": <message> = "(Was down for <duration:3>)"  
"DOWN": <message> = "(Was up for <duration:3>)"  
"okay": <message> = <threshold-condition>  
"warn": <message> = <threshold-condition>  
"alarm": <message> = <threshold-condition>  
"ACK ": <message> = <acknowledge-message>  
"UNAC": <message> = ""  
"TRAP": <message> = <trap-message>
```

where the <duration:3> can be one of:

- "[0-9]+ seconds?"
- "[0-9]+ minutes?, [0-9]+ seconds?"
- "[0-9]+ hours?, [0-9]+ minutes?, [0-9]+ seconds?"
- "[0-9]+ days?, [0-9]+ hours?, [0-9]+ minutes?"

### Message Format - All Other Events

```
<timestamp> <tag> <message>
```

### Summary of Log Messages

This page lists all log messages that InterMapper writes to a log, with a description of each. Items shown in *italics* are variable names that are substituted with the proper value when the log message is created.

**Note:** Debug messages are not documented by Help/Systems, because they are subject to change, and do not follow a specified format.

#### *General Messages*

These messages describe InterMapper's actions as it starts up, enables and disables servers, and opens and closes the map files. These messages always go to the Event Log window.

##### **\*\*\*\* Starting *appName***

InterMapper is starting up. This entry contains the program's version number

##### **\*\*\*\* Quitting *appName***

The InterMapper application is quitting.

##### **\*\*\*\* Opening map *docName***

The named map is being opened.

##### **\*\*\*\* Closing map *docName***

The named map is being closed.

##### **http Starting web server on port *portnumber***

InterMapper is starting its web server on port *portnumber*

##### **http Stopping web server on port *portnumber***

InterMapper is stopping the web server

##### **imrm Starting Remote server on port *portnumber***

InterMapper is starting its InterMapper RemoteAccess server on port  
*portnumber*

##### **imrmStopping Remote server on port *portnumber***

InterMapper is stopping the InterMapper RemoteAccess server

##### **tln Starting telnet server on port *portnumber***

InterMapper is starting its Telnet server on port *portnumber*

##### **tln Stopping telnet server on port *portnumber***

InterMapper is stopping the Telnet server

##### **Start-up error: Could not open *porttype* port *portnumber*.**

InterMapper could not open the specified port during startup

##### **Error sending udp packet. (Err = *errNumber*)**

InterMapper received an error attempting to send a UDP packet

**DNS-Related Messages**

\*\*\*\* Address Change: "www" changed from x.x.x.x to y.y.y.y. (DNS z.z.z.z)

The Device named www changed its IP address from x.x.x.x to y.y.y.y according to the DNS server at z.z.z.z

\*\*\*\* No IP address for "www". (DNS z.z.z.z)

InterMapper was not able to determine an IP address for the device named www from the DNS server at z.z.z.z

\*\*\*\* Name Change: "w.w.w.w" changed from "xxx" to "yyy". (DNS z.z.z.z)

The IP address w.w.w.w changed its DNS name from xxx to yyyy according to the DNS server at z.z.z.z

\*\*\*\* No domain name for x.x.x.x. (DNS z.z.z.z)

InterMapper was not able to determine a DNS name for x.x.x.x from the DNS server at z.z.z.z

\*\*\*\* "No response from DNS x.x.x.x when resolving 'yyy' to an address.

The DNS server at x.x.x.x did not respond when attempting to resolve the DNS name yyy to an address.

\*\*\*\* "No response from DNS x.x.x.x when resolving 'y.y.y.y' to a name.

The DNS server at x.x.x.x did not respond when resolving the address y.y.y.y to a name.

dbug "DNS packet with bad format from y.y.y.y"

InterMapper received a DNS response with an invalid format.

dbug "Error ### while processing DNS reply from y.y.y.y"

InterMapper received an error while processing a DNS response.

\*\*\*\* Connected to > InterMapper DataCenter at 127.0.0.1

InterMapper connected successfully to InterMapper DataCenter

\*\*\*\* Disconnected from > InterMapper DataCenter at 127.0.0.1

InterMapper was disconnected from InterMapper DataCenter

### **Probe File Error Messages**

These messages describe problems with the Custom Probe files. Many of them are self-explanatory.

dbug "MyProbe: Can't match "MyProbe""", cFileName, lineStr

dbug "xxxx: Invalid Probe ID."

The probe xxxx contains an invalid ID (i.e., the package is not a valid string)

dbug "MyProbe: Invalid Probe Name.", cFileName

dbug "MyProbe: Invalid Probe Human Name.", cFileName

dbug "MyProbe: Probe definition does not contain a valid <description> section.", cFileName

dbug "MyProbe: Probe definition does not contain a valid <snmp-device-variables> section.", cFileName

dbug "xxxx: Probe definition does not contain a valid <snmp-device-display> section."

The xxxx probe file does not contain a valid <snmp-device-display> section.

dbug "MyProbe: Probe definition does not contain a valid end tag for <MyProbe>.", cFileName, endTagStr

### **Telnet Server Messages**

\*\*\*\* x.x.x.x denied access to tcp server.

An attempt to connect to the Telnet server from address x.x.x.x was refused.

tInt TELNET - x.x.x.x denied access.

An attempt to connect to the Telnet server from address x.x.x.x was refused.

tInt TELNET - x.x.x.x denied access because there are too many connections.

An attempt to connect to the Telnet server from address x.x.x.x was refused because there were too many connections already established.

tInt TELNET - Accepted connection from x.x.x.x

A user at x.x.x.x successfully connected to the Telnet server.

tInt TELNET - Accepted user connection from x.x.x.x

Telnet server accepted a user connection from x.x.x.x

tInt TELNET - x.x.x.x authenticated as "username".

The Telnet server accepted a connection from an authenticated user, "username"

tInt TELNET - Closed connection from x.x.x.x

The user at address x.x.x.x disconnected from the Telnet server.

### **Trap-Related Messages**

trap "y.y.y.y (not on map) :: text-msg"

InterMapper received a trap from device y.y.y.y containing the *text-msg*

trap "An error occurred while processing a SNMP trap from y.y.y.y. (err = #####)"

InterMapper encountered an error processing a trap from y.y.y.y

### **Notification Messages**

ntfy "Silenced e-mail notification to "username"."

InterMapper suppressed an e-mail notification to the listed user because of the Snooze Alarm

ERR! "Failed to send e-mail notification to "username" for "message: devicename" event. Check e-mail configuration. (err = ###)"

InterMapper was unable to send an e-mail notification to the named person because of the error code ###

ntfy "Sent e-mail notification to "username" for "message: devicename" event. (n of m)"

InterMapper sent an e-mail notification as indicated. The "n of m" indicates that the n'th repeated message has been sent

ntfy "Silenced pager message notification to "username"."

InterMapper suppressed a page to the listed user because of the Snooze Alarm

ERR! "Failed to send pager notification to "username" for "message: devicename". (err = ###)"

InterMapper was unable to send a page to the named person because of the error code ###

ntfy "Sent pager message notification to "MyProbe" for "MyProbe: MyProbe".", itsUserName, eventMesg, deviceName

\*\*\*\* "Silenced sound notification to "MyProbe".", itsUserName

ERR! "Failed to send sound notification to "MyProbe". (err = %d)", itsUserName, err

ntfy "Silenced SNMP trap notification to "MyProbe".", itsUserName

ERR! "Failed to send SNMP trap notification to "MyProbe" for "MyProbe: MyProbe". (err = %d)", itsUserName, eventMesg, deviceName, err

ntfy "Sent SNMP trap notification to "MyProbe" for "MyProbe: MyProbe".", itsUserName, eventMesg, deviceName

ERR! "Failed to send e-mail notification to MyProbe. Check user configuration.", itsUserName

ERR! "Failed to send pager notification to MyProbe. (err = %d)", itsUserName, err

\*\*\*\* "Silenced all notifications until MyProbe.", timeStr

---

ERR! "SMTP Failure: Can't connect to "MyProbe". Error = %d", itsMailServer, err

ERR! "SMTP Failure: Server connection to "MyProbe" idle for more than 4 minutes.  
Disconnecting...", itsMailServer

ERR! "SMTP Failure: Server "MyProbe" won't accept mail from MyProbe. (Reply = %d)", itsMailServer, reversePath, replyCode

ERR! "SMTP Failure: Server "MyProbe" rejected recipient MyProbe. (Reply = %d)",  
itsMailServer, emailAddr, replyCode

ERR! "SMTP Failure: Server "MyProbe" failed when sending mailto MyProbe. Mail  
not sent. (%s Reply = %d)", itsMailServer, emailAddr, cmdName, replyCode

### **Web Server Messages**

**http HTTP - address (user) authLevel -- command argument**

InterMapper received a *command* request for *argument* from *address*

**http HTTP - ERROR: JPEG compression failed. Compressed length = xxx. (Error = yyy)**

InterMapper got an error code of yyy when attempting to compress the JPEG image whose length is yyy bytes.

**http HTTP - ERROR: JPEG compression failed. Can't obtain/lock PixMap**

InterMapper was unable to compress a JPEG image because it was already compressing an image. If this problem persists, quit InterMapper and relaunch it.

**http HTTP - ERROR: JPEG compression failed. Can't create graphics offscreen. (Error = yyy)/dt>**

InterMapper received the yyy error code when attempting to compress a JPEG image.

**http HTTP - ERROR: PNG compression failed because there is not enough memory. (yyy K available)**

InterMapper failed to compress a PNG

**http "HTTP - ERROR: PNG compression failed. (Error = ###)"**

InterMapper received an OS error ### when attempting to compress the PNG image

**http "HTTP - y.y.y.y -- Unknown HTTP Version: xxx"**

InterMapper received an unknown version - xxx - in an HTTP request from y.y.y.y

**http "HTTP - y.y.y.y -- Missing HTTP Version."**

No HTTP version was included in the HTTP request from y.y.y.y

**http "HTTP - y.y.y.y -- Unknown HTTP Command: xxxx"**

An HTTP request from y.y.y.y contained an unknown "xxxx" command

http "HTTP - y.y.y.y -- Disconnected before response was sent."

The HTTP client at y.y.y.y disconnected before InterMapper had sent the entire response

http "HTTP - ERROR: Unable to create ### x ### JPEG image. (Error = err)"

InterMapper received an *err* OS error code when attempting to generate a ### x ### JPEG image.

http "HTTP - ERROR: Unable to create ### x ### PNG image. (Error = err)"

InterMapper received an *err* OS error code when attempting to generate a ### x ### PNG image.

link "msg (util%) : [ifIndex] device-name - ifDescr"

Logged to the event log when the utilization crosses some threshold. 'msg' is a message of the form "util < nn" or "util >= nn" where 'nn' is the threshold. The actual link utilization follows in parentheses. 'ifIndex', 'device-name', and 'ifDescr' identify the individual interface.

dbug "device-name UTIL[ifIndex]=util? type: upTimeNow=nn,  
upTimePrev=nn;inOctetNow=nn, inOctetPrev=nn; outOctetNow=nn,  
outOctetPrev=nn; bps=nn

Logged to the event log when the interface utilization calculated is greater than 110%. In general, a value greater than 100% indicates an erroneous value for one of the inputs; this log message prints out all the inputs to the calculation for later analysis. device-name and ifIndex indicate the interface, util is the utilization percentage, type indicates the type of calculation: FullDuplex or Baseband. The other numbers are the values of sysUpTime.0, ifInOctets, ifOutOctets, and ifSpeed.

dbug Saved backup copy of *mapname* in "InterMapper Settings:Old Maps" folder.

InterMapper saved a copy of the original file (*mapname*) in the Old Maps folder before saving a version of the file in a newer format. This allows you to retrieve the earlier file and use it with an older copy of InterMapper.

dbug An error occurred while attempting to save backup copy of *mapname*

InterMapper was not able to create a backup copy of the named map

dbug Can't locate backup folder to save backup copy of *mapname*

InterMapper couldn't locate or create the InterMapper Settings:Old Maps folder.

dbug Device '*devicename*' was using non-existent probe '*probename*', now set to non-polling.

The named device was set to be probed with a non-existent probe type. It has been set to "non-polling", and will no longer be probed.

***InterMapper RemoteAccess Server Messages***

imrn "Accepted user connection from y.y.y."

An InterMapper RemoteAccess user connected in from y.y.y.y

imrn "Closed connection from y.y.y.y."

InterMapper closed the connection to the Remote client at address y.y.y.y

imrn "y.y.y.y denied access."

The InterMapper RemoteAccess client at y.y.y.y was denied access

imrn "y.y.y.y denied; too many connections."

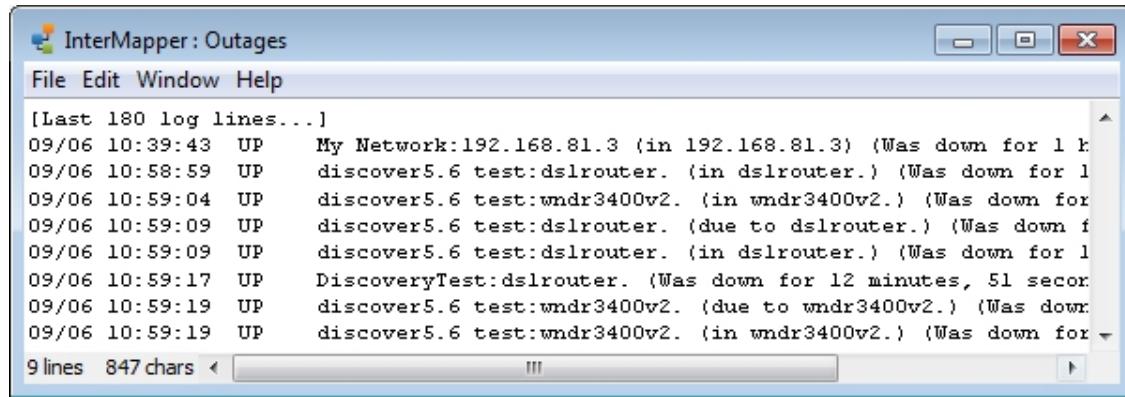
InterMapper denied access to an InterMapper RemoteAccess client because it already had too many connections operating.

## The Outages Log

InterMapper summarizes outages that have occurred in the **Outages Log**. An *outage* is defined as a device that has gone from the UP state to the DOWN state, and then returned to the UP state. InterMapper tracks the start and end time of the outage, and computes the duration. Each time a device goes DOWN and then comes back UP, an entry is placed in the Outages log.

### To open the Outages Log window:

- From the Windows Menu, choose **Outages** from the Logs submenu. The Event Log window appears, as shown below.



The Outages window shows the start and end time and the duration of outages.

The controls in the Outages Log window are identical to those of the other [Event Log \(Pg 208\)](#) windows, and are described on that page.

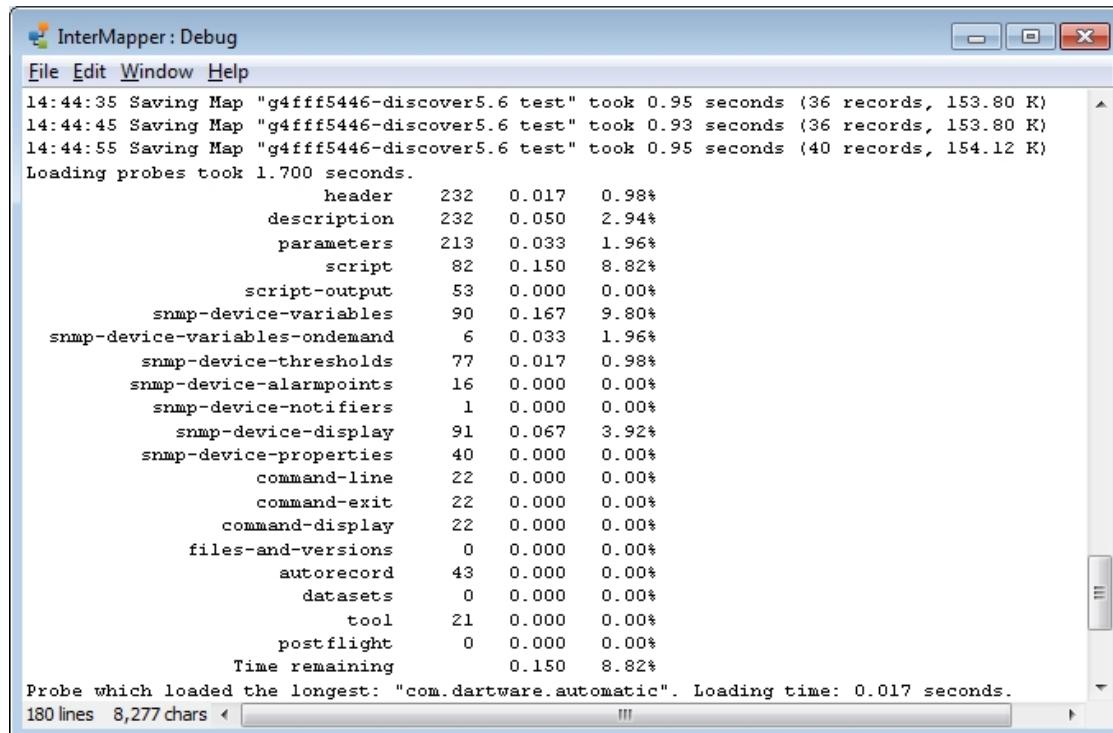
### Debug Logs

InterMapper maintains two debug logs:

- **The Server Debug Log** - available from the Window menu's Logs submenu.
- **The Client Debug Log** - available from the Help menu's Diagnostics submenu.

#### Server Debug Log

The Server Debug Log contains details of the InterMapper Server's operations that can be valuable for troubleshooting various configuration problems. It stores messages generated by the server.



The screenshot shows a Windows application window titled "InterMapper: Debug". The menu bar includes File, Edit, Window, and Help. The main window displays a log of server operations. The log starts with timestamped messages about saving maps and then moves into a detailed breakdown of loading probe times for various categories. At the bottom, it shows the longest probe loaded and the total number of lines and characters.

Category	Time	Count	Percentage
header	0.017	232	0.98%
description	0.050	232	2.94%
parameters	0.033	213	1.96%
script	0.150	82	8.82%
script-output	0.000	53	0.00%
snmp-device-variables	0.167	90	9.80%
snmp-device-variables-on-demand	0.033	6	1.96%
snmp-device-thresholds	0.017	77	0.98%
snmp-device-alarmpoints	0.000	16	0.00%
snmp-device-notifiers	0.000	1	0.00%
snmp-device-display	0.067	91	3.92%
snmp-device-properties	0.000	40	0.00%
command-line	0.000	22	0.00%
command-exit	0.000	22	0.00%
command-display	0.000	22	0.00%
files-and-versions	0.000	0	0.00%
autorecord	0.000	43	0.00%
datasets	0.000	0	0.00%
tool	0.000	21	0.00%
postflight	0.000	0	0.00%
Time remaining	0.150		8.82%

Probe which loaded the longest: "com.dartware.automatic". Loading time: 0.017 seconds.  
180 lines 8,277 chars

Some examples of information that is stored:

- A series of messages generated when the server is started or stopped.
- A message when a map is opened or saved.
- A series of messages when probes are reloaded.
- Most messages contain an indicator of how long a particular operation took.

#### To open the Debug Log window:

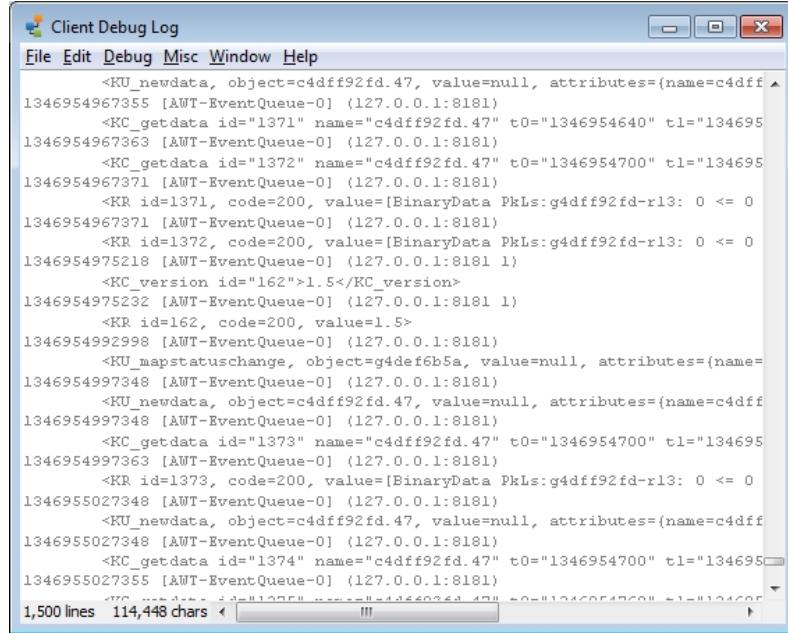
- From the Window menu's Logs submenu, choose **Client Debug Log**.

## Client Debug Log

The Client Debug Log shows details of InterMapper's operations that can be valuable for debugging problems with the program. If you have trouble with InterMapper, the support staff may ask you to [Send Feedback \(Pg 190\)](#). The Send Feedback form sends the Client Log by default.

### The Client Debug Log Window

The Client Log Window shows the contents of the Client Log.



#### To open the Client Debug window:

- From the Help menu's Diagnostics submenu, choose ***Client Debug Log***.

**Macintosh:** Command + Option + Shift + Z

**Windows:** Control + Alt + Shift + Z

**Linux/Unix:**

The Client Debug Log window opens, and **Debug** and **Misc** menus appear in the menu bar at the top of the window.

In general, Help/Systems does not document the information shown in the Client Debug Log window, because its messages will change from version to version.

**Note:** Opening the Client Debug Log window creates two new menus. Certain of the items in these menus are designed to test InterMapper's crash recovery facilities. Certain others may exercise portions of the program that may crash.

# Chapter 8

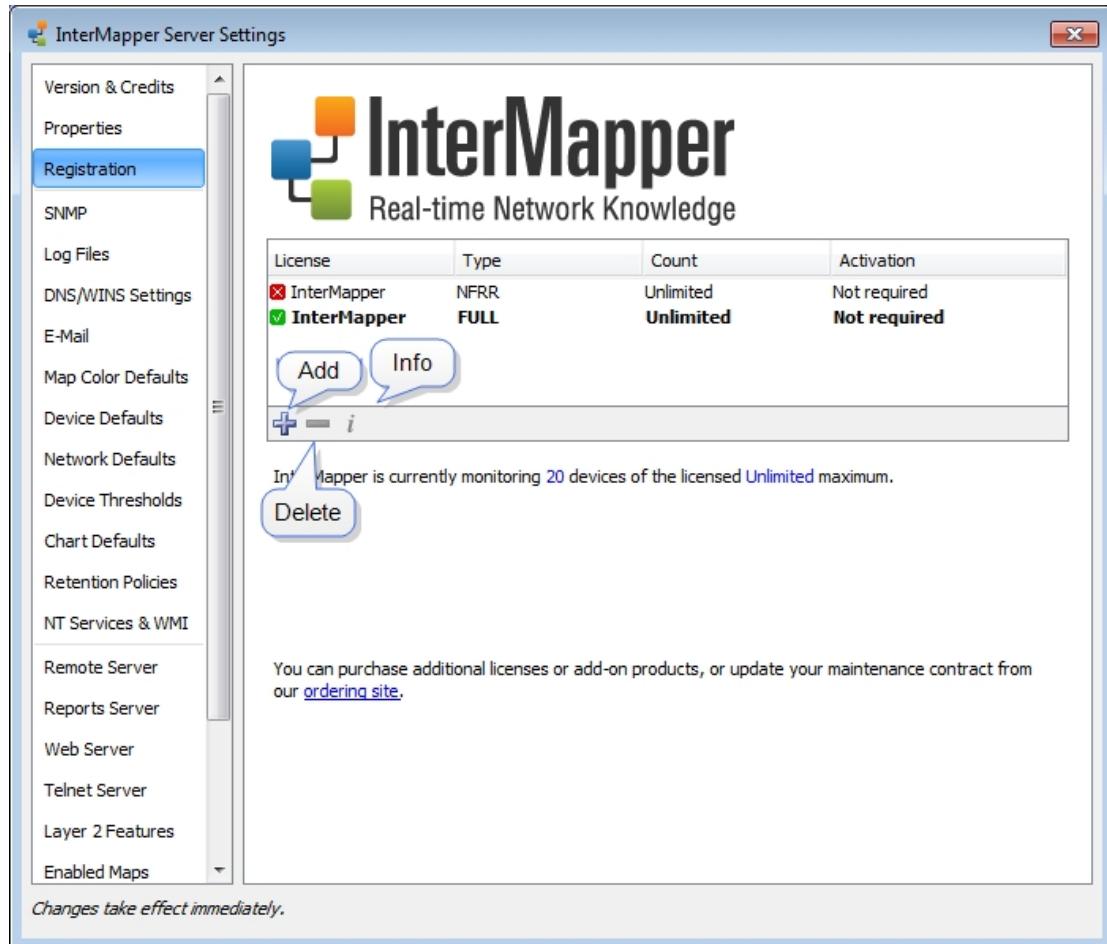
---

## Server Settings

Use the Server Settings window to view and edit the settings of an InterMapper server. You must have administrator privileges to access the Server Settings window.

The Server Settings documentation in this manual is divided into three topics:

- [Server Information Panels \(Pg 224\)](#) - view information about the InterMapper version. View and edit the server name and software licenses.
- [Server Preferences Panels \(Pg 226\)](#) - set defaults and other preferences for your server.
- [Server Configuration Panels \(Pg 249\)](#) - set up the web, telnet, Reports, and InterMapper Remote servers, enable and disable maps, create users and groups and set up map access, define notifiers, and set up an SSL certificate for the InterMapper server.



Use the Server Preferences section of the Server Settings window to view and edit default InterMapper's server settings.

**To view and edit InterMapper server settings:**

1. From the Edit menu, choose **Server Settings...** The Server Settings window appears, showing three sections of settings on the left. On the right is a panel in which the selected settings appear.
2. Click the subsection for the settings you want to edit. The selected settings appear in the right panel.

## Server Information Panels

Use the Server Information panels of the Server Settings window to view and edit information about the current version of InterMapper and your system.

### InterMapper Version & Credits

Use the Version & Credits panel to view the following information.

<b>Version</b>	View the version of InterMapper software currently running.
<b>Built On</b>	View the date on which the InterMapper software was built.
<b>Credits</b>	View information about the developers of InterMapper, as well as copyright information about InterMapper and its associated technologies. Click links to view websites or to email developers.

### Properties

Use the Properties panel to view information about the InterMapper host system. You can also set the server name from this panel:

<b>Server Name</b>	View and set the name of the machine on which InterMapper is running. This name appears in the Map List window.
<b>&lt;OS type&gt; System Version</b>	The type of operating system and version number.
<b>&lt;OS type&gt; Running Time</b>	The length of time the operating system has been running.
<b>Server Running Time</b>	The length of time the InterMapper Server has been running.
<b>Network Interfaces</b>	Lists network interfaces available on the machine on which InterMapper is installed.

### Registration

Use the Registration panel to view information about your monitored devices, to view a list of licensed products, and to add new licenses for software.

- |                               |  |
|-------------------------------|--|
| <b>License List</b>           | Shows a list of licenses and add-on products.  |
| <b>Monitoring information</b> | The number of monitored devices and your licensed monitoring limit are shown below the InterMapper logo. |
- Note:** Some InterMapper licenses specify a number of devices you can monitor. Demo probes do not reduce the number of devices available for monitoring.

## Server Preference Panels

Use the following panels of the Server Settings window to set global preferences for the selected server.

In the left pane of the Server Settings window, click a button to view and edit its settings, as follows:

- [SNMP \(Pg 227\)](#)
- [Log Files \(Pg 230\)](#)
- [DNS/WINS settings \(Pg 235\)](#)
- [E-Mail \(Pg 237\)](#)
- [Map Default Colors \(Pg 238\)](#)
- [Device Defaults](#)
- [Network Defaults \(Pg 240\)](#)
- [Chart Defaults \(Pg 243\).](#)
- [Device Thresholds \(Pg 242\).](#)
- [NT Services & WMI \(Pg 248\)](#)

**Note:** You can also set preferences for a particular map using the **Map Settings** panel, available from the Edit menu. For more information, see [Map Settings \(Pg 84\)](#).

## SNMP Preferences

Use the SNMP subsection of the Server Preferences section to set the default SNMP settings for each SNMP access method. These settings are used for all new devices.

### About SNMP Versions

InterMapper can retrieve data from devices using SNMP version 1, version 2c, or version 3. Each of these can access the same SNMP information, but through different means:

- **SNMPv1** was the original version, and provided a simple means for retrieving data. Security was provided through *community strings* that acted like a password to allow or deny access to the information. The Read-Only community string gave permission to the requester to read data; the Read-Write community string gave permission to modify data. All data transmissions (including the community string) were sent "in the clear", that is, unencrypted.
- **SNMPv2c** provided additional, more efficient methods to request data, and added new data types (such as 64-bit counters) so that the monitoring system could get more accurate data. SNMPv2c is like SNMPv1 in that it uses the same community string system, and transmits data in the clear.
- **SNMPv3** provides the same data retrieval facilities as SNMPv2c, with additional security. There is a secure method of providing authentication information (so the device knows whether to respond to the query or not), as well as a privacy function that encrypts the entire transmission so that eavesdroppers cannot discern the data.

### What is an SNMP Community String?

The SNMP Read-only Community string is like a user id or password that allows access to a router's or other device's statistics. InterMapper sends the community string along with all SNMP requests. If the community string is correct, the device responds with the requested information. If the community string is incorrect, the device simply ignores the request and does not respond.

**Note:** SNMP Community strings are used only by devices which support SNMPv1 and SNMPv2c protocol. SNMPv3 uses username/password authentication, along with an encryption key.

### Community String Types

There are actually three community strings for SNMPv1-v2c-speaking devices:

- **SNMP Read-only community string** - enables a remote device to retrieve "read-only" information from a device. InterMapper uses this information from devices on its maps.
- **SNMP Read-Write community string** - used in requests for information from a device and to modify settings on that device. InterMapper does not use the read-write community string, since it never attempts to modify any settings on its devices.

- **SNMP Trap community string** - included when a device sends SNMP Traps to InterMapper. InterMapper accepts any SNMP Trap community string.

By convention, most SNMPv1-v2c equipment ships from the factory with a read-only community string set to "public". It is standard practice for network managers to change all the community strings so that outsiders cannot see information about the internal network. (In addition, network managers may employ firewalls to block any SNMP traffic to ports 161 and 162 on the internal network.)

### SNMP Server Settings Pane

InterMapper remembers the default settings for each of the various SNMP access methods. These are set in the **Server Settings>SNMP** preference pane.

These options control how InterMapper interacts using the Simple Network Management Protocol (SNMP).

The screenshot shows the 'SNMP Version' dropdown set to 'SNMPv1'. The 'SNMPv1-2c Community' field contains '\*\*\*\*\*'. The 'SNMPv3 Authentication' dropdown is set to 'MD5'. The 'User name' field is empty. The 'Privacy' dropdown is set to 'None'. Below these fields are three checkboxes: 'Listen for SNMP traps on UDP port 162' (checked), 'Also listen for SNMP traps on port:' (with value '161') (unchecked), and 'Verbose trap logging' (unchecked).

This pane allows you to specify the following:

- **SNMP Version** - Select the default SNMP version to be used for new devices in autodiscovery. InterMapper will attempt to use the selected version when it discovers a new device. If it gets a response, it will continue to use that version. If that fails, then it will simply ping the device.
- **SNMPv1-2c Community** - If the selected SNMP Version is either SNMPv1 or SNMPv2c, InterMapper will use this community string to attempt to communicate with the device.
- **SNMPv3 Authentication** - If the selected SNMP version is SNMPv3, InterMapper will use the specified authentication method (SHA, MD5, or None) with the indicated password on the right to authenticate with the device.
- **User Name** - The SNMPv3 user name to be used for authentication and privacy.
- **Privacy** - When using SNMPv3, the privacy method (DES, AES, or None) will be used with the encryption password on the right.

- **Listen for SNMP Traps on UDP Port 162** - Check this box if you want InterMapper to listen for SNMP traps sent from devices to the standard port 162.
- **Also listen for SNMP traps on UDP port** - InterMapper can listen for traps on a second, non-standard port (in addition to port 162). Check this box and enter the port number in the text box. Traps received on this alternate port are handled in the same manner as those received on port 162.
- **Verbose trap logging** - Check this box to instruct InterMapper to display the full OID and contents for all varbinds of a trap, instead of simply the varbind contents.

### **Setting SNMP Preferences for Specific Devices**

The panel shown above sets the default SNMP preferences that InterMapper uses when querying devices. You can also set SNMP preferences for individual devices on your map using the **Set Community...** (SNMPv1-v2c) or **Set Probe...** (all three SNMP versions) commands, available from the Monitor menu. You can set various parameters for one or more devices at a time, by selecting the devices you want to change before executing the command.

## Log File Preferences

InterMapper writes information to log files about various events. Use the log files to review the events surrounding a particular problem, helping you to troubleshoot the problem more effectively.

### To view an existing log file:

- Choose the file you want to view from the Logs submenu of the Windows menu.

### To view and edit the preferences for log files:

- From the Edit menu, choose **Server Settings...** The Server Settings window appears.
- Click **Log Files**. A list of log files appears in the right panel, showing the current Log File preferences for the selected log file.

## Setting Preferences for Log Files

**Log File Options**

Name	Rotate Interval
Debug	Daily at 00:00
Event Log	Daily at 00:00
Outages	Daily at 00:00
Paging	Daily at 00:00
SMS	Daily at 00:00

**Add New Log**

**Log File Name:** Debug <date>.txt

Start New Log File: Once a Day  
Every day at 00:00

Delete log files after 7 days

Also send messages to syslog server  
IP Address: \_\_\_\_\_  
Facility: local0  
Severity: emergency

**Delete this Log**

This log file records low-level information as InterMapper runs. This information is often useful in tracing program operation. To see the Debug Window, choose Window->Logs->Debug in any open map window.

The Log File preferences pane shows a list of currently defined log files with properties for the selected file.

- **To see a brief explanation of the function of a log file,** click the log file in the list. The explanation appears in the lower panel of the Preferences pane.
- **To add a log file,** click **Add New Log**. The [Log File Preferences \(Pg 232\)](#) for the new log file appear.
- **To edit a log file definition,** click to select a log file definition. The properties for the selected log file appear. The [Log File Preferences \(Pg 232\)](#) for the selected log file appear.
- **To delete a log file,** click to select a log file definition, then click **Delete this Log**. The log file definition disappears from the list.

**Note:** The Debug Log, Event Log and Outages Log cannot be deleted.

***Log File Preferences***

The example above typical log file preferences. It shows the names of the log files, and their rotation intervals.

**To add a new log file:**

1. Click **Add New Log**. The [Log File preferences \(Pg 232\)](#) for the new log file appear.
2. [Set the log file preferences \(Pg 232\)](#) as described below.

**To edit preferences for an existing log file:**

1. Click to select the log file. The [Log File preferences \(Pg 232\)](#) for the selected log file appear.
2. [Set the log file preferences \(Pg 232\)](#) as described below.

**Setting Log File Preferences**

**Log File Name** - Set the filename (actually the prefix) for the log file. You can enter up to 14 characters (see [Log File Naming and File Format \(Pg 234\)](#) below.) The file is given a .TXT extension, and can be edited with any text editor.

**Start New Log File** - Use these settings to specify how often and at what point in a log cycle the current log file is closed and a new one is opened. This allows you to break the log files into convenient sizes and/or time epochs. Choose from these options:

- Never
- Once daily
- Twice daily
- Once weekly
- Twice weekly

**Delete log files after \_\_ days/weeks** - Check this box to force InterMapper to delete old log files automatically after a certain date.

**Note:** Each time InterMapper starts a new log file, it checks to see if any log files should be deleted. On platforms where the file creation date is available, it is used to determine whether a log file should be deleted. If the creation date is not available, the file's last modification date is used.

### Also send messages to syslog server

Click this checkbox to specify that all log file entries be sent to a syslog server. Set the values for:

- **IP Address** - enter an IP address for the syslog server.
- **Facility** - choose a value to match your local system conventions.
- **Severity** - choose a value to match your local system conventions.

### Redirecting Log Entries

By default, all entries go to the built-in Event Log file. You can redirect streams of log entries from InterMapper's Remote Server, Web Server, or Telnet server to a particular log file (and syslog server). This can be useful, for example, for sending all web access events one file, and all outage events to a different file.

#### To redirect a log entry stream:

1. Create a new log file definition for the file you want to receive the log entries, as described above.
2. From the Edit menu, choose **Server Settings...** The Server Settings window appears.
3. In the left panel of the Server Settings window, click to choose the server (Remote, Web, or Telnet) whose log entries you want to send to a different log file. The panel for the selected server appears.
4. In the **Send Log File Entries to** menu, choose the log file you created to receive the log entries.
5. Click **OK**. All log file entries for the selected server are redirected to the new log file.

## Log File Naming and File Format

Log files are saved in text format in the *InterMapper Settings:InterMapper Logs* folder. Each file has a user-defined prefix that describes its function, and ends with a suffix of *.yyyymmddhhmm.txt*, where the suffix is the (four-digit) year, month, day, hour and minute when the file was created. The prefix can be up to 14 characters in length.

## Log File Sources

Log information comes from several sources, including:

- Up and down entries for the devices being logged
- Hits on the built-in web server
- Connections to the InterMapper RemoteAccess and Telnet server
- InterMapper's own internal status and error messages

Three built-in log files are always present, and cannot be deleted:

- The **Event Log** file - when you first launch InterMapper, the Event log file receives all entries from all sources. You can divert certain streams to other log files.
- The **Outages** file - contains entries that describe the start and end times of outages, as well as their duration. This stream of entries cannot be redirected to any other log file.
- The **Debug** file - displays certain debugging information, as described in [The Debug Window \(Pg 220\)](#).

## DNS/WINS Settings

Use the DNS/WINS Settings section to specify the DNS server(s) and WINS server(s) that InterMapper uses. InterMapper uses your current DNS servers as its default.

InterMapper can use one or more Domain Name Service servers (DNS) to convert DNS names to addresses and back. InterMapper checks the listed DNS server(s) at regular intervals to make sure that the DNS name and IP address for a device match.

When you start InterMapper on a MacOS X or Windows machine, the DNS servers specified by the current network configuration are used. On Unix machines, you must enter one or more DNS server addresses manually.

The DNS addresses are optional: if the preference is empty, InterMapper does not attempt to make DNS <-> IP address conversions.

For example, when InterMapper polls a device that has a name assigned, it looks up the corresponding IP address in the DNS. If the resulting address has changed since the device was added to a map, InterMapper logs an error message.

InterMapper will use the Domain Name Servers listed below to look up device names and IP addresses.

Comma-separated list of DNS server addresses:

192.168.81.1

Search Domain:

Minimum interval between DNS checks: 5 Minutes ▾

Use WINS name resolution

InterMapper will use the WINS Servers listed below to look up device names and IP addresses.

Comma-separated list of WINS server addresses:

Use broadcast if lookup fails

WINS Scope:

*DNS/WINS Settings pane.*

---

## Setting DNS Monitor Preferences

Set DNS Monitor preferences as follows:

- **Comma-separated list of Domain Name Server addresses** - Enter a list of Domain Name Server addresses, separated by commas.
- **Search Domain** - Enter a name to append to a partial domain name to make a fully-qualified domain name.
- **Minimum interval between DNS checks** - Set this value to the amount of time to wait between successive queries for a host. Use a larger value to reduce the number of times the DNS is checked.

## Setting WINS Preferences

You can specify one or more WINS servers that InterMapper will use for WINS lookups. InterMapper can also fall back to broadcast lookups for WINS/NetBIOS name lookups. Unless instructed by your network administrator, you should usually leave the WINS Scope blank.

- **Use WINS name resolution** - Check this box to allow InterMapper to use the specified WINS servers to look up device names and addresses.
- **Comma-separated list of WINS server addresses** - Enter a list of addresses, separated by commas.
- **Use broadcast if lookup fails** - Check this box to allow InterMapper to use broadcast lookups for WINS/NetBIOS lookups if the WINS lookup fails.
- **WINS Scope** - Enter a WINS Scope. This should only be necessary if instructed by your network administrator.

### E-Mail Preferences

Use this panel to enter the information required to send e-mail notifications.

InterMapper sends e-mail notifications to these SMTP servers using the sender information specified.

Primary SMTP	Host: <input type="text"/>	Port: <input type="text"/>
	User: <input type="text"/>	
	Password: <input type="text"/>	
Back-up SMTP	Host: <input type="text"/>	Port: <input type="text"/>
	User: <input type="text"/>	
	Password: <input type="text"/>	

The From: line and Errors-To: line of the message will be set to the values below.

From address:	<input type="text"/>
Errors to:	<input type="text"/>

Automatically e-mail InterMapper crash reports

Send crash reports to:

*Configuration for sending e-mail notifications.*

### Setting E-mail Preferences

- **Primary SMTP** - Enter the Host name. If your SMTP server requires authentication, enter a User, Password, and Port for the primary SMTP host. Port 25 is typically used for outgoing E-mail servers.
- **Back-up SMTP** - Enter the Host name. If your SMTP server requires authentication, enter a User, Password, and Port for the back-up SMTP host. If unsuccessful sending through the primary host, InterMapper attempts to deliver e-mail messages through the Back-up host.
- **From address** - Enter the E-mail address you want to appear as the *From:* line of the message.
- **Errors to** - Enter the address you want to use in the *Errors-To:* line of the message. Bounce messages are returned to this address.
- **Automatically e-mail InterMapper bug reports** - Check this box to allow InterMapper to send reports of errors and bugs to the staff at Help/Systems automatically.
  - **Send bug reports to** - Enter the E-mail address you want to use when sending bug reports.

## Default Map Colors

When InterMapper creates a new map, it uses a set of default colors for the items and features on the map. Use the Map Colors preferences to set the default colors for a map.

Use the Default Map Colors preference to view and edit the default colors for all map items and features.

Click a color below to change the default color of the corresponding map feature.

Background: 

Links: 

Ants: 

Labels: 

Networks: 

Discovery: 

Up: 

Warning: 

Alarm: 

Critical: 

Down: 

Unknown: 

Acknowledged: 

[Revert to Factory Defaults](#)

*The Map Color Defaults subsection of the Server Preferences section of the Server Settings window. Click any of the colors to open the Color Picker and select a different color for that device/link.*

### To view and edit the Default Map Colors preference:

- From the Server Preferences section of the Server Settings window, click **Map Color Defaults**. The Map Color Defaults preferences appear in the right pane.

### ***Colors you can change***

The following colors can be defined.

- **Background** - Set the map's background color. This is overridden by a background image.
- **Ants** - Set the color of the traffic flow indicators that appear on a link. These are often referred to as "marching ants." Traffic flow indicators only appear in links to SNMP devices.
- **Networks** - Set the default color of network ovals.
- **Up** - Set the color of devices that are in the "Up" state.
- **Alarm** - Set the color of devices that are in "Alarm" state.
- **Down** - Set the color of devices that are in the "Down" state.
- **Acknowledged** - Set the color of devices that have gone down and the outage has been acknowledged.
- **Links** - Set the color of links, the connections between devices, networks, or interfaces.
- **Labels** - Set the default color of device and network labels.
- **Discovery** - Set the color of a network that is the target of the discovery process.
- **Warning** - Set the color of devices that are in the "Warning" state.
- **Critical** - Set the color of devices that are in the "Critical" state.
- **Unknown** - Set the color of devices that are in an "Unknown" state.

### **To change a map color:**

1. Click in that feature's box. The Color Picker appears.
2. Click to choose the desired color.
3. Click **OK**.

**Note:** Changing the default colors does not change the colors assigned to an existing map. Change an individual map's colors from the [Map Settings \(Pg 84\)](#) window.

## Default Device and Network Preferences

When devices and networks are first added to the map, InterMapper shows devices as rectangles and networks as ovals.

Use the Device Defaults and Network Defaults Preferences to change the default appearance of devices and networks.

**Note:** The Device Defaults and Network Defaults Preferences are identical in appearance and function. One affects the default appearance of devices, while the other affects the default appearance of networks.

### Device Defaults

The defaults for devices are shown below:

New Devices on a map will have the appearance specified below.

Shape:  Color:

Label Font:

Label Style:  Bold  Italic

Label Size:

Position:

*The Device Defaults Panel*

### Network Defaults

The defaults for a network are shown below:

New Networks on a map will have the appearance specified below.

Shape:  Color:

Label Font:

Label Style:  Bold  Italic

Label Size:

Position:

Numbered Networks:

*The Network Defaults Panel*

## **Setting Default Device and Default Network parameters**

### **To view and edit the default Device and Network parameters:**

1. From the Map List window, click to select any map on the server whose settings you want to edit.
2. From the Edit menu, choose **Server Settings...** The Server Settings window appears.
3. In the Server Preferences section, click the Device Defaults or Network Defaults subsection. The default settings for the selected subsection appear.
4. Edit the preferences as described below.
5. When finished, click **OK**.

**Shape** Choose a default shape for the device or network from the dropdown menu.

**Color** Choose a default color for the device or network from the dropdown menu.

**Label** Choose a default font for the device or network's label.

**Font**

**Label** Choose a default font size for the device or network's label.

**Size**

**Position** Choose a default position for the label text, relative to the device or network icon.

**Note:** The **Position** parameter affects only *Wire* and *Icon* shapes.

**Edit** Set default labels for numbered and unnumbered networks, as

**Label...** described in [Editing \(Pg 101\)](#) [Labels \(Pg 101\)](#).

## Default Device Thresholds

You can set default device thresholds any new device added to a map.

**Note:** Only SNMP probes have thresholds for all three parameters (round-trip time, packet loss and interface errors); a ping/UDP-based probe monitors only round-trip time and packet loss, and a TCP probe monitors only round-trip time.

For more information, on device thresholds, see [Setting Error and Traffic Thresholds \(Pg 186\)](#).

Set thresholds to alert you to network problems.

### Down Thresholds

Number of lost packets (1 - 10):

### Other Thresholds

	Warning	Alarm	Critical	
Interface errors:	<input type="text" value="2"/>	<input type="text" value="10"/>	<input type="text" value="20"/>	per minute
Short-term packet loss:	<input type="text" value="2"/>	<input type="text" value="5"/>	<input type="text" value="20"/>	of last 100
Response Time:	<input type="text" value="1000"/>	<input type="text" value="5000"/>	<input type="text" value="20000"/>	msec

*The Default Device Thresholds Panel*

### Chart Defaults

Charts (see [Creating Charts \(Pg 193\)](#) and [Using Charts \(Pg 193\)](#)) can show historical data for values received from one or more devices. Use the Chart Defaults panel of the Server Preferences section of the Server Settings window to view and edit the default settings for a newly-created chart.

#### To view and edit Chart Default preferences:

1. From the Edit menu, choose **Server Settings...** The Server Settings window appears, showing the list of available settings. On the right is a panel in which the selected settings appear.
2. Click **Chart Defaults**. The Chart Defaults panel appears in the right panel of the Server Settings window.

#### Axes Tab

Use the Axes Tab of the Chart Defaults panel to define the appearance and behavior of newly-created charts.

##### Upper Bounds,

##### Lower Bounds -

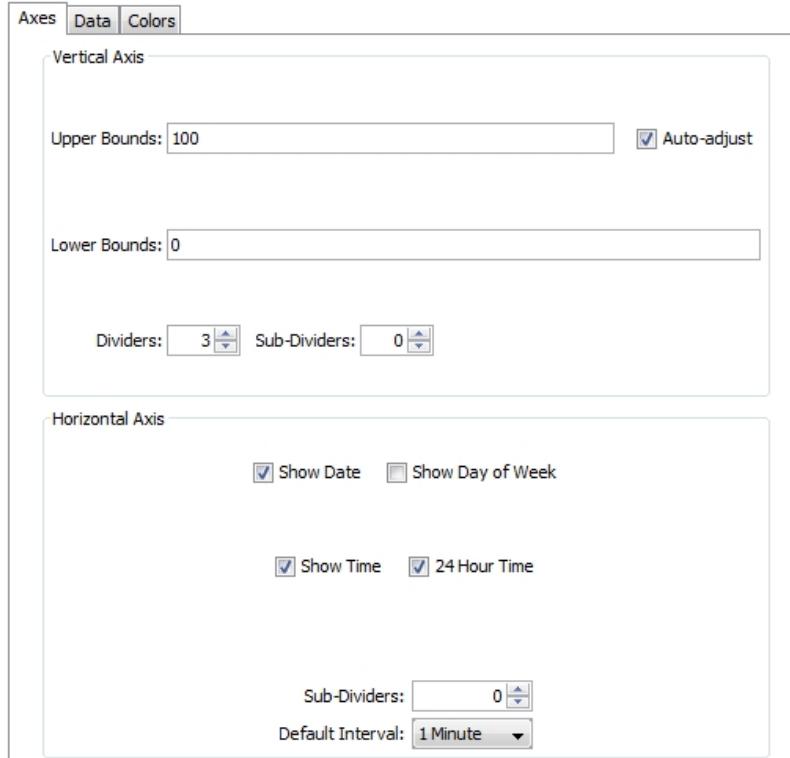
Enter values to control the vertical scale of the chart. The range of values depends on the variable being monitored.

##### Auto-adjust -

Select or clear the **Auto-adjust** check box to choose whether to allow InterMapper to adjust the scale of the chart automatically. If the **Auto-adjust** check box is checked, the upper and/or

lower bounds are adjusted automatically so that data points are always displayed, no matter how much they increase or decrease.

**Dividers, Sub-Dividers** - Click the up- and down-arrows or enter a number of dividing lines to set the number of horizontal dividers and to set the number of sub-dividers you want to appear between the dividers. Example: Set the number of



The Axes Tab

dividers to 3. Set the number of sub-dividers to 4. This gives a total of 11 dividers. (Three dividers - top, bottom, and center, with four dividers between each. Eight subdividers and three dividers.)

**Show Date, Show Day of Week, Show Time, 24 Hour Time** - Click to select or clear these check boxes to specify which labels appear on a chart's horizontal axis by default.

**Default Interval** - Use the drop-down menu to choose a default interval between time stamps on the X-axis (horizontal) of new charts. Shorter intervals show finer detail, longer intervals show a longer history.

**Note:** Because InterMapper saves all the data points, there is no limit to the amount of memory needed to save a chart. Choosing a longer time interval does not save memory - all the data points are saved.

**Sub-Dividers** - Click the up- and down-arrows to specify the number of vertical sub-dividers to draw between data points.

### Data Tab

Use the Data Tab of the Chart Defaults panel to choose line and data point styles.



The Data Tab

Use the Data tab to control the way in which data appears in the chart.

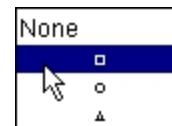
#### Style

Use the **Line Style** menu to choose a line thickness for the default line.



#### Highlight

Use the **Highlight** menu to choose the icon to be drawn at the end of each line segment.



### Colors Tab



*The Colors Tab*

Use the Colors tab to set the default colors for charts.

#### To change a color:

Click a color box to set the color. A color-selection window appears.

For more information on colors and how they are used, see the [Colors Tab \(Pg 205\)](#) section of Chart Options.

## Retention Policies

Use the Retention Policies pane to create and edit retention policies that can be used to specify how data is stored for a particular device or map.

Data Retention Policies affect how much data is stored for charts and reports.

Unless otherwise specified, InterMapper will apply this Data Retention Policy to data when first added to a chart.

Data Retention Policy for new Charts: 24 Hours ▾

Name	Original	5 Min.	Hourly	Daily	Chart Data
24 Hours	1 Day	1 Day	1 Day	1 Day	Forever
autorecord	1 Day	1 Month	1 Week	355 Days	Forever
Chart Only	None	None	None	None	Forever
Critical Data	1 Day	2 Months	355 Days	Forever	Forever
Forever	Forever	Forever	Forever	Forever	Forever
IM46Charts	Forever	Forever	Forever	Forever	Forever
None	None	None	None	None	None
Server Default	1 Day	2 Weeks	6 Months	1,775 Days	Forever
SLA Data	1 Day	2 Months	6 Months	355 Days	Forever

Add - Delete - Edit

+ - ✎

*The Retention Policies pane*

Each row shows a Retention Policy, and its setting for retaining Original, 5-minute, Hourly, and Daily data from devices, as well as data from Charts.

### Using the Retention Policies Pane

- **Default Retention Policy for new Charts** - choose a policy to apply by default.
- **Policy list** - click to select the policy you want to delete or edit.
- **Add Policy** - click + to add a new policy.
- **Delete Policy** - click to select the policy you want to delete, then click -.
- **Edit Policy** - click to select the policy you want to edit, then click the Pencil tool.

### Creating and Editing a Retention Policy

#### About Retention Policies

You can use data retention policies to consolidate raw data, reducing the amount of data stored. Data retention policies control how often and how much data is averaged and reduced.

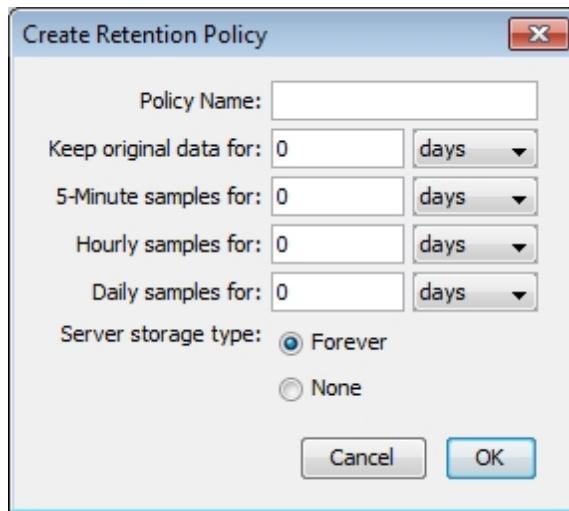
A data retention policy can be applied to a specific map, to one or more devices or interfaces on a map, to an individual dataset, or to all maps on an InterMapper Server. Policies also affect the way InterMapper stores chart data.

#### Creating Retention Policies

Use the Create Retention Policy window to define a new retention policy. The same window is used for editing an existing policy.

#### To create a retention policy:

1. Click the plus icon to open the Create Retention Policy window.
2. Enter a policy name.
3. Specify how long you want to keep **original data, 5-Minute, Hourly, and Daily** samples.
4. Select a **Server Storage type**:
  - **Forever** - all charted or exported values are saved to a local disk file.
  - **None** - data is polled, but is not saved for charting or exporting.



#### To edit a retention policy:

1. In the Retention Policies pane, click the retention policy you want to edit.
2. Click the pencil icon. The Edit Policy window for the selected policy appears.

## NT Services & WMI

InterMapper can monitor and send notifications for NT Services running on another computer. InterMapper uses the Service Control Manager facilities of the underlying Windows host to communicate with a remote computer to track the state of its services.

### Notes:

- You must be running the InterMapper server on a Windows computer to use this capability.
- The InterMapper server computer must be able to log onto the target Windows computer *as a service*. For more information, see [Authentication for NT Services Probe \(Pg 552\)](#) in the topic, "Monitoring NT Services with the Windows NT Services Probe".
- If a command-line probe contains the NTCREDENTIALS flag, InterMapper runs the probe as the user specified here.

Use the NT Services panel of the Server Preferences section to set the User and Password for the machine. If you are running InterMapper Server on a Windows machine, this allows InterMapper to build a list of services the machine is running.

Please enter the username and password of an account with Administrator privileges on the InterMapper machine.

Administrator privileges are necessary in order that the NT Services and WMI probes be able to establish connections to the target machines.

InterMapper is not currently running under an administrator account; it will use the username and password you supply to elevate its privileges each time it needs to poll an NT Services or WMI device.

User:	<input type="text"/>
Password:	<input type="password"/>

*NT Services & WMI panel*

## Server Configuration Panels

InterMapper provides three built-in servers you can use to view and retrieve information about the status of the network from remote computers. Each server's built-in firewall must be configured before it can be used. By default, each server's firewall is set up so that access is denied.

Use the Server Configuration panels of the Server Settings window to view and edit settings for the built-in servers, to manage users and groups, to control map access, and to manage a list of [notifiers/alerts \(Pg 124\)](#).

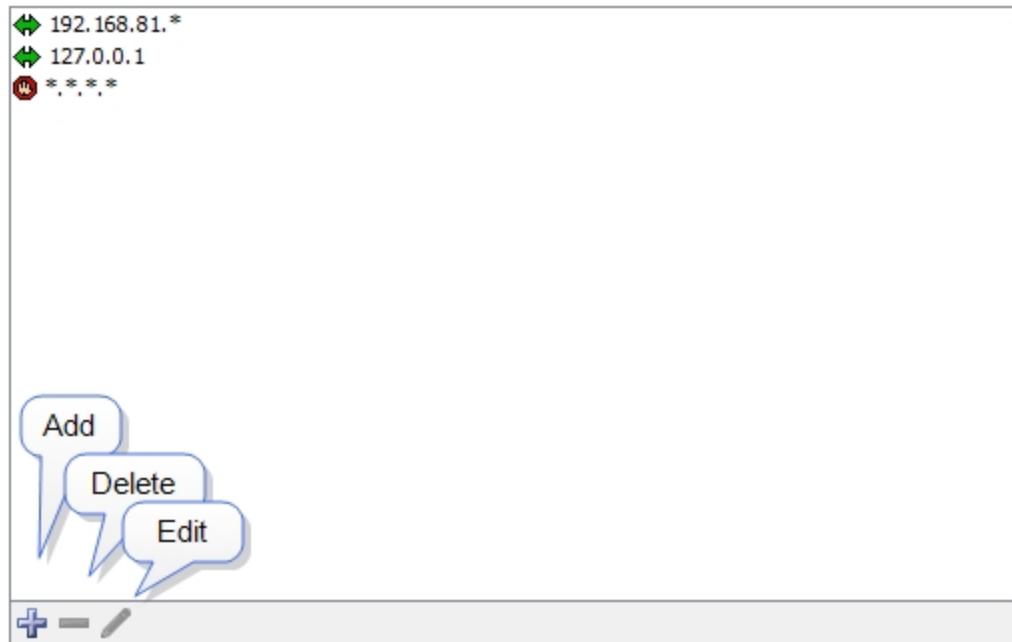
In the left pane of the Server Settings window, click the button for the settings you want to edit, as follows:

- [\*\*Remote Server \(Pg 254\)\*\*](#) - Start, stop, or edit settings for the InterMapper RemoteAccess server.
- [\*\*Reports Server \(Pg 257\)\*\*](#) - Start stop, or edit settings for the InterMapper Reports Server.
- [\*\*Web Server \(Pg 261\)\*\*](#) - Start, stop, or edit settings for the InterMapper web server.
- [\*\*Telnet Server \(Pg 263\)\*\*](#) - Start, stop, or edit settings for the InterMapper Telnet server.
- [\*\*Layer 2 Features \(Pg 265\)\*\*](#) - Turn on Layer 2 discovery for your server.
- [\*\*Enabled Maps \(Pg 267\)\*\*](#) - View a list of available maps, enable or disable maps, and import or export maps.
- [\*\*Users \(Pg 269\)\*\*](#) - View, Add, and Edit users and groups, and control access for users and groups.
- [\*\*Map Access \(Pg 276\)\*\*](#) - Control access by any user or group to any map through the web server or remote server.
- [\*\*Notifier List \(Pg 278\)\*\*](#) - View, add, copy, edit and remove notifiers.
- [\*\*SSL Certificate \(Pg 280\)\*\*](#) - Create new Certificate Signing Requests (CSR) and upload new certificates to the InterMapper server.

For more information on configuring your servers, see [Server Access Control \(Pg 252\)](#). It tells how to set a server's port, discusses encryption and when to use it, and describes how to configure a server's built-in firewall's list of IP addresses.

## Configuring a Firewall

For each built-in server, the Firewall list shows all the addresses that are allowed to connect or are blocked:



- If an incoming address matches an *Allow* address (or range), the connection is allowed.
- If the incoming address matches a *Deny* address, the connection is dropped.
- Firewall definitions are checked against the incoming address in the order in which they appear.

### Changing the order of a firewall definition

Firewall definitions are applied in the order in which they appear. You can change the order of the definitions after you have created them.

#### To move a firewall definition to a different position in the list:

- Click and drag the firewall definition to the new position.

### Entering Address Ranges

You can enter addresses in the access control list in three different formats:

- **Fully-specified IP addresses**  
Example: 192.168.1.10
- **Address ranges**  
Example: 192.168.1.1-31. This specifies any device in the range 192.168.1.1 to 192.168.1.31.
- **Addresses with a "\*" wildcard** Each wildcard corresponds to a range of 0-255.  
Example: 192.168.1.\* (equivalent to 192.168.1.1-255)

Example: `192.168.*.*` (Class B range)

Example: `*.*.*.*` ("all addresses")

**Tip:** To deny access to certain addresses, add them at the top of the list and set the **Access** attribute to "Deny".

For a description of the Access Control process and the rules InterMapper uses to determine whether a user should be allowed to connect to an InterMapper server, see the [Server Access Control \(Pg 252\)](#) page.

## Controlling Access to Your Server

You can configure the firewalls of InterMapper's built-in servers to accept or deny connections from a client based on its IP address. You can also require a user name and password. Once accepted, a connection is associated with a user name that is used to determine which maps and permissions are available. For some examples of typical access control setups, see [Access Control Examples \(Pg 274\)](#).

**Note:** You can also control access through the [InterMapper Authentication Server \(Pg 574\)](#), which connects to an external authentication server such as Radius, LDAP, or ActiveDirectory to authenticate a user. For more information, see [Authentication Server \(Pg 574\)](#).

### The Access Control Process

When a user attempts to connect to one of the InterMapper servers, the request goes through these steps:

1. **The client's IP address is checked against the list of firewall definitions.** If the address matches a DENY address in the firewall list, or if the address fails to match an ALLOW address, the connection is dropped with a "not allowed" response.
2. **The client's IP address is checked against the list of Automatic Login addresses.**

If the client's IP address matches an Automatic Login address, the connection is accepted and is assigned the user name associated with that Automatic Login.

3. If the client's IP address does not match an Automatic Login address, the connection is accepted and authentication by a username and password begins, as follows:
  - a. **Web server** - issues a "401 Unauthorized" response, which forces the web browser to request a username/password from the user.
  - b. **Telnet server** - prompts for a username and password.
  - c. **Remote server** - proceeds after the InterMapper RemoteAccess client requests and supplies a username and password.
4. **The username and password are verified against InterMapper's built-in authentication database.** If they match, the connection is assigned the user name. Otherwise, the connection is dropped with a "not allowed" response. When using the Remote and Telnet servers, an error message appears, saying that the user name is not allowed. When using the Web server, a web page appears, saying that the user is not allowed access.
5. **The users is checked for membership in a Special Group.** These special groups give broader access:
  - **Administrators Group**  
If the user is a member of the Administrators group, the connection is given full (read/write) access to every map and setting.
  - **FullWebAccess Group**  
If you have created a group named *FullWebAccess*, all members of that

group are given full access to all maps through the web server. As with all web access rights, this is a read-only view. This membership also overrides any individual map access settings.

- **FullTelnetAccess Group**

If you have created a group named *FullTelnetAccess*, all members of that group are given full access to the Telnet server.

- **FullLogAccess Group**

If you have created a group named *FullLogAccess*, all members of that group are given full access to all log files.

6. **The user is granted access to maps.** Once a connection has a user name associated with it, InterMapper then checks to see which information is available for that user. Access to individual maps can be granted using the "Map Access" server setting (see [Map Access \(Pg 276\)](#) for more info).

If a user is not in the Administrators, FullWebAccess, or FullTelnetAccess group, and has no access to an individual map, the connection is dropped with a "not allowed" response, since the user has no options for access.

## The Remote Server

InterMapper's Remote Server allows a user to configure and edit maps on an InterMapper installation from a remote computer. To allow these changes, the Remote Server accepts connections from the InterMapper or InterMapper RemoteAccess application, running on a different computer. For more information about InterMapper RemoteAccess, see the [InterMapper Remote](#) web site.

InterMapper always listens for remote connections on its localhost interface, 127.0.0.1. This allows a user to run a copy of the InterMapper RemoteAccess application on the machine that is running InterMapper. For security, InterMapper refuses all Remote Server connections from non-localhost addresses by default to prevent unauthorized configuration.

You can configure InterMapper to accept connections from remote computers, giving varying degrees of access by IP address or by username and password.

Unlike the Telnet and Web servers, you cannot start or stop the Remote Server. You configure the Remote Server using the Remote Server settings panel of the Server Configuration section, found in the Server Settings window.

### Remote Server Listening On Port 8181 [Secure]

Listen for connections on TCP port:

Access Control List to Remote Server based on IP Address:

- 192.168.81.\*
- 127.0.0.1
- \*.\*.\*.\*



Show Connected Clients

Send log file entries to:

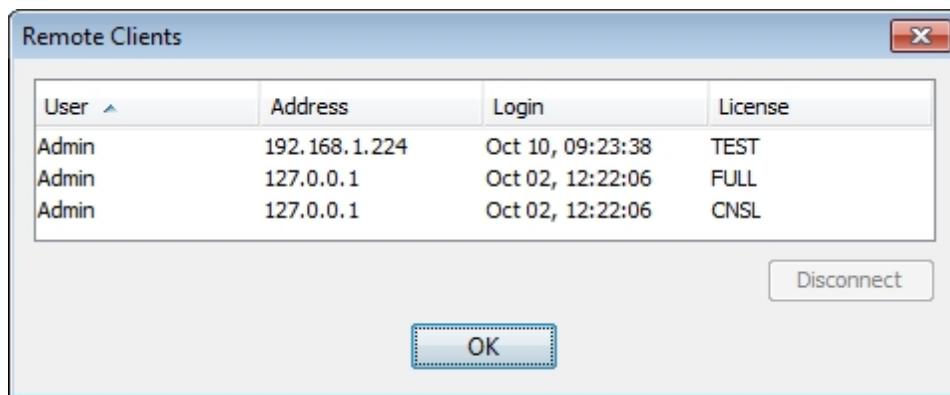
### To configure the Remote Server:

1. From the Edit menu, choose **Server Settings...** The Server Settings window appears.
2. In the Server Configuration section, click **Remote Server**. The Remote Server panel appears.
  - Enter a TCP port number, or use the default value.
  - To configure access to the Remote Server, click the Plus icon to add addresses to the Remote Server firewall.
  - To remove an entry, click the Minus icon.
  - To edit an entry, click the pencil icon.
  - To see a list of clients connected to the server, click **Show Connected Clients**. (See below)
  - If you want entries from this server to be sent to a different log file, choose a log file from the **Send log file entries to** dropdown menu. For more information on log files, see [Log Files \(Pg 230\)](#).

**Note:** The Server Settings window is available only to users who have administrator privileges.

### Showing Connected Clients

Click Show Connected Clients to view a list of InterMapper clients connected to the server. The Remote Clients window appears, showing the connected user's name, IP address, time of login and type of license.



### Additional Information

For more information on configuring your Remote Server, see [Server Access Control \(Pg 252\)](#). It describes how to set your Remote Server's port, discusses encryption and when to use it, and describes how to configure the built-in firewall's list of IP addresses.

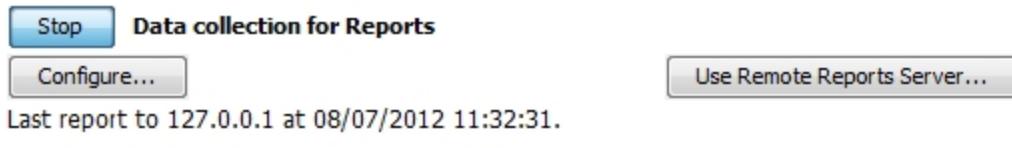
For more information on configuring your built-in servers' firewalls, see [Configuring a Firewall \(Pg 250\)](#).

For more information on users and groups, see [Users and Groups \(Pg 269\)](#). It describes how to set up users and groups, and how you specify who may use the Remote Server. It also discusses administrator access to the Remote Server.

For more information on setting permissions for a particular map, see [Controlling Access to a Map \(Pg 276\)](#). It describes how to set up unique access controls (by username) for an individual map.

### Reports Server

The Reports Server stores data in a database for use in reports. Use the Reports Server panel, available from the Server Configuration section of the Server Settings panel, to specify the amount of data you want to store in the database.



Every minute, InterMapper Reports will retrieve current data points from this server. In addition, InterMapper Reports will collect earlier data on the schedule specified below:

Oldest data to collect:

Collection Schedule:

Import all previous data as quickly as possible.

*InterMapper Reports Server Configuration pane*

### Setting up the Reports Server

If InterMapper DataCenter is running on the same host machine as InterMapper Server, the Reports Server is automatically configured, and you can start collecting data as soon as you start it.

If InterMapper DataCenter is installed on another host machine, you need to configure InterMapper to use that server.

#### To open InterMapper DataCenter and configure the Reports Server:

- Click **Configure...**. For more about configuring the Reports Server, see [Configuring InterMapper DataCenter](#) for more information.

### Starting Data Collection

You can start and stop collection of data on the Reports Server.

#### To start or stop collecting InterMapper data:

- Click **Start (Data collection for Reports)**.
- Click **Stop** to stop data collection.

## Specifying an InterMapper Reports Server connection

If InterMapper DataCenter is running on a different host than the InterMapper Server, you must also specify the server, port, and an account login for the database you want InterMapper to use.

### To configure the InterMapper Reports Server connection:

- From the Reports Server panel of the Server Settings window, click **Use Remote Reports Server...** and enter the information in the dialog InterMapper Reports Server Settings window as shown.



### Collecting Current Data

Every minute, InterMapper Reports Server sends a request for a certain number of rows of current data to insert into the database. The request contains a start and end time, where the start time is the oldest data desired, and the end time is the newest (generally, the present time).

The response from InterMapper Server contains the rows to insert into the database, as well as the time of the next row to request. InterMapper Reports Server uses this information to update its notion of the current time, and the subsequent requests use that time.

The number of rows in the request is automatically adjusted so that the insertion process uses approximately half of the (one minute) time interval. Typically, 500 rows are requested for events and 25,000 rows are requested for data points.

If the time of the next row in the response is less than the requested end time, InterMapper Reports Server can tell that there is more data available.

### Collecting Pre-Existing Data

In parallel, InterMapper Reports Server retrieves old (historical) data by working backwards (from newer to oldest), requesting data from the InterMapper Server. It does this by making requests for a set of data rows *older* than a particular time.

The InterMapper Server responds with those rows, and InterMapper Reports Server inserts them and updates the time of the next (oldest) row. Subsequent requests start at this time, and retrieve still older data rows.

Use the **Collection Profile** dropdown menu to specify the rate at which InterMapper Reports Server requests the historical data:

- **Now** - attempts to retrieve the historical data as fast as possible. It uses most of the remainder of the one-minute time interval (the time left after retrieving the current data) to request historical data. InterMapper Reports Server adjusts the number of rows in its request so that it will finish inserting in time to start the next current data request.
- **Gradually** - retrieves historical data between every other polls for current data.
- **Nightly** - only retrieves historical data between the hours of 1AM and 3AM. During this time period, it uses the "Now" profile.
- **Weekend** - retrieves historical data between the hours of 01:00 and 23:00 on Saturday and Sunday. During this time period, it uses the "Now" profile.
- **Never** - does not retrieve historical data at all.

## What Data Gets Collected?

Certain variables for probes are recorded automatically when data is collected from a device by InterMapper Reports Server. You can also specify other variables you want to record when data for a device is stored.

For all probes, the following data is recorded:

- response time (in msec)
- long-term packet loss (%)
- input byte rates for all visible interfaces.
- output byte rates for all visible interfaces.

For built-in probes, Help/Systems has selected values that make sense to record for each probe.

For custom probes, you can specify which variables should be recorded. The syntax for this is described in *Recording Probe Data* in the Developer Guide.

### The Web Server

InterMapper can act as a web server, publishing most of the information available from the InterMapper application. Before InterMapper accepts web connections, you must configure the web preferences as described in [Server Details \(Pg 250\)](#).

You start, stop, and configure the Web Server from the Web Server panel, in the Server Configuration section of the Server Settings window, as shown below.

**Web Server Listening On Port 80**

URL: <http://192.168.81.3:80>

Listen for connections on TCP port:

Use a secure protocol (SSLv3/TLS)

---

Access Control List to Web Server based on IP Address:

 192.168.81.*
 *.*.*.*

---

Send log file entries to:

**Note:** When configuring the InterMapper web server on a machine where IIS is also installed, do not use the default port 80. IIS uses port 80 by default, and this will prevent the InterMapper web server from starting.

**To start, stop or configure the Web Server:**

1. From the Edit menu, choose **Server Settings...** The Server Settings window appears.
2. In the Server Configuration section, click **Web Server**. The Web Server panel appears.
  - To start the Web Server, click **Start**.
  - To stop the Web Server when it is running, click **Stop**.
  - Enter a TCP port number, or use the default value.
  - To use a secure protocol, check the **Use a secure protocol (SSLv3/TLS)** box.
  - To configure access to the Web Server, click **Add...** to add addresses to the Web Server firewall. For more information on configuring firewalls, see [Configuring a Firewall \(Pg 250\)](#).
  - From the **Send log file entries to:** menu, choose a log file to which you want to send log entries.

**Note:** The Server Settings window is available only to users who have administrator privileges.

For more information on configuring your Web Server, see [Server Access Control \(Pg 252\)](#). It describes how to set your Web Server's port, discusses encryption and when to use it, and describes how to configure the built-in firewall's list of IP addresses.

For more information on users and groups, see [Users and Groups \(Pg 269\)](#). It describes how to set up users and groups, and how you specify who may use the Web Server. It also discusses administrator access to the Web Server.

For more information on setting permissions for a particular map, see [Controlling Access to a Map \(Pg 276\)](#). It describes how to set up unique access controls (by username) for an individual map.

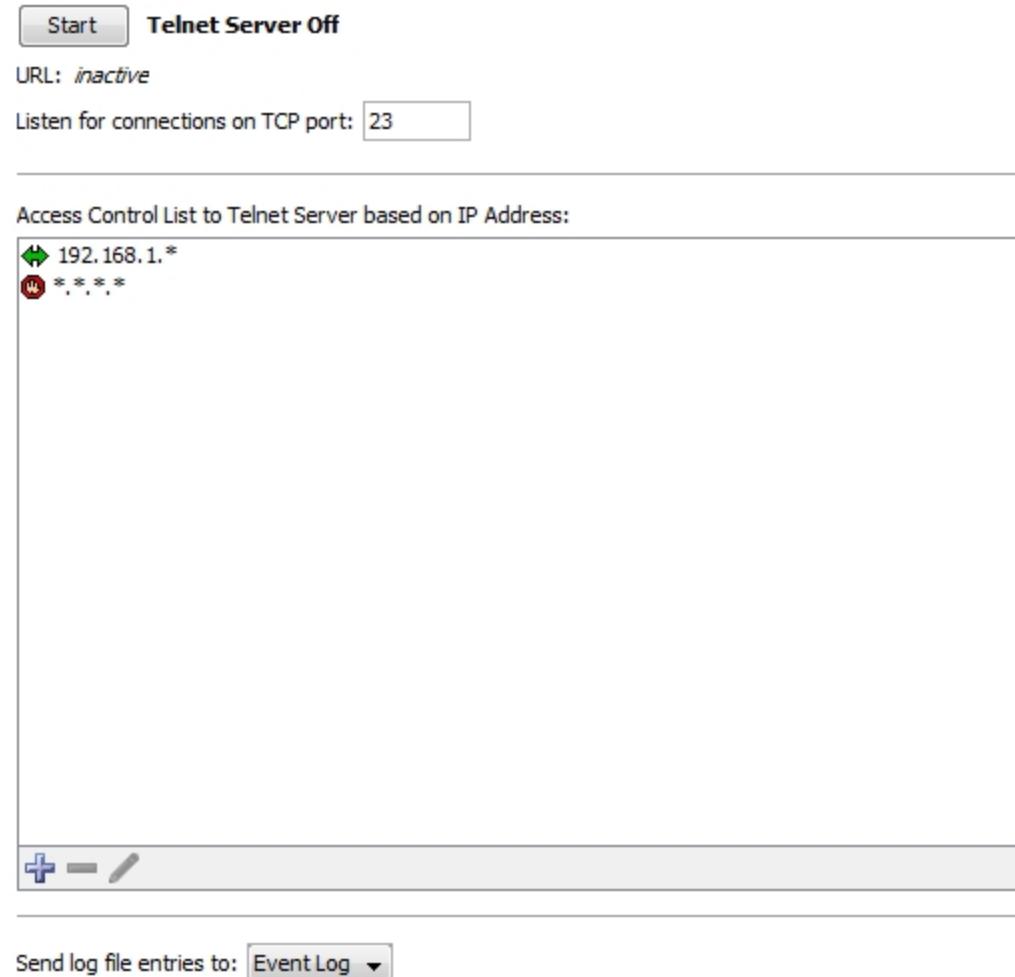
**Connecting to the Web Server**

Once you have started the Web Server, a URL appears below the Web Server's **Stop** button. Click the URL, or enter the URL in a web browser. If the Web Server is configured correctly, the InterMapper Web Server's home page appears in your browser window.

## The Telnet Server

InterMapper provides a telnet service that gives basic information about the devices being monitored as well as detailed information about the InterMapper server itself. Before InterMapper accepts Telnet connections, you must configure the Telnet Server firewall preferences as described in [Configuring a Firewall \(Pg 250\)](#).

You start, stop, and configure the firewall for the Telnet Server from the Telnet Server settings panel, in the Server Configuration section of the Server Settings window, as shown below:



**To start, stop or configure the Telnet Server:**

1. From the Edit menu, choose **Server Settings...** The Server Settings window appears.
2. In the Server Configuration section, click **Telnet Server**. The Telnet Server panel appears.
  - To start the Telnet Server, click **Start**.
  - To stop the Telnet Server when it is running, click **Stop**.
  - Enter a TCP port number, or use the default value.
  - To configure access to the Telnet Server, click **Add...** to add addresses to the Telnet Server firewall.

**Note:** The Server Settings window is available only to users who have administrator privileges.

For more information on configuring your Telnet Server, see [Server Access Control \(Pg 252\)](#). It describes how to set your Telnet Server's port, discusses encryption and when to use it, and describes how to configure the built-in firewall's list of IP addresses.

For more information on users and groups, see [Users and Groups \(Pg 269\)](#). It describes how to set up users and groups, and how you specify who may use the Telnet Server. It also discusses administrator access to the Telnet Server.

### Layer 2 Features

Use the Layer 2 Features panel to enable Layer 2 features and specify how you want to use them.

The Layer 2 features collect information about the connectivity of your ethernet switches. This information can be used to produce more complete maps.

Enable Layer 2 features on this server      [1 Maps Enabled](#)

Collect detailed information from SNMP devices on specific maps and use this information to calculate the Layer 2 topology of the network:

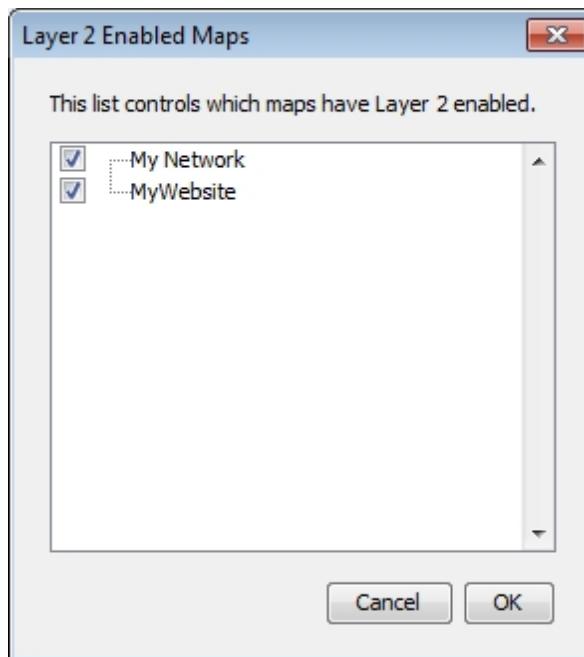
Every Hour      Now  
Last Updated: 12/13/11 10:32 AM

[Click to enable maps for Layer 2](#)

Collect complete information about all devices on the network  
 Limit Layer 2 discovery to CDP and LLDP only

 The selected option uses switch forwarding tables in conjunction with CDP, LLDP and other SNMP information to determine the connections between switches. On large networks, you may notice high CPU utilization on your switches and routers when the discovery process is running. We recommend that you use this option sparingly until you have determined how your devices respond.

- **Enable Layer 2 features on this server** - select this check box to turn on Layer 2 features.
- **[NN] Maps Enabled** - Click this link to choose the maps for which Layer 2 is enabled. The Layer 2 Enabled Maps window appears as shown below.



**Note:** In order to use the Layer 2 features in your map, *after* enabling Layer 2 features in the Server Settings window, you must enable them in the [Map Settings window](#) for each map that contains Layer 2 devices.

---

## Discovery Options

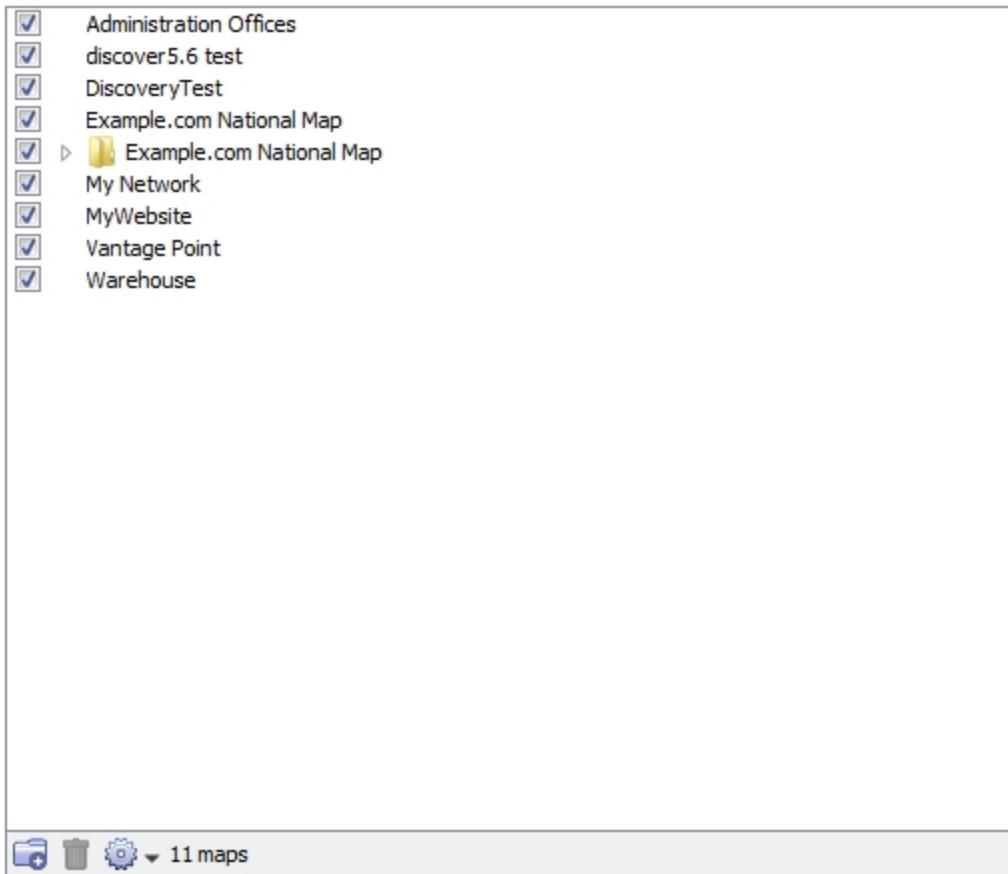
- **Layer 2 discovery period** - select a discovery period from the dropdown menu to specify how often to initiate discovery requests. Choose **Manually** to collect Layer 2 information only when you choose.
- **Now** - click the Now button to perform a discovery and collect Layer 2 data immediately.
- **Collect complete information about devices on the network** - select this option to collect detailed information from SNMP devices. This may place significant CPU load on your switches and routers during discovery.
- **Limit Layer 2 discovery to CDP and LLDP only** - select this option to request only CDP and LLDP information from Layer 2 devices. This option reduces the CPU load on your switches during the discovery process. It has the effect of limiting discovery only to switches.

### Enabled Maps

Use the Enabled Maps panel of the Server Settings window to enable and disable maps, to remove maps, to organize them into folders, and to import and export them.

Select a check box to enable a map; clear the box to disable it.

Use the tools below to create folders, or to delete or perform other operations on selected maps. Drag maps into or out of folders.



- **Checked maps** - these maps are active. InterMapper actively polls everything on the map.
- **Unchecked maps** - these maps are not "active". InterMapper does not poll the devices on those maps.

The Enabled Maps panel lists available maps and shows which ones are enabled. From the Enabled Maps panel, you can do the following:

- **Enable or Disable a map.** Click the check box to the left of a map in the list to enable or disable it.
- **Import a map.** Click **Import...** to import data into InterMapper.
- **Export a map.** Click **Export...** to save the current map as an InterMapper map file on your local machine.
- **Duplicate a map.** Click to select a map, then click **Duplicate** to create a copy of it.

- **Remove a map.** Click to select a map, then click **Remove**. A confirmation window appears.  
**Note:** When you remove a map, it is placed in the *Maps (Deleted)* folder.
- **Create a new Folder.** Click a map at the level you want to create the folder, then click **New Folder**. (see below)

### ***Organizing Maps into Folders***

From the Enabled Maps panel, you can create folders, and use them to organize your maps. This organization then appears in the Map List window.

#### **To organize maps into folders:**

1. If you want to create a folder in the top level of the map list, click any map at the top level, and click **New Folder**. A folder appears, with the name "Untitled". To create a folder within a folder, click the folder in which you want to create the new folder.
2. Enter a name for the new folder and press *Enter*. The folder's name changes to the specified name, and the folder moves to the correct alphabetic location in the list.
3. Drag maps into the folder.

**Note:** When you create a folder with the same name as a map at the same hierarchical level, a folder appears. Once the folder is created, when you double-click the folder in the Map List window, the map opens.

### ***Map File Locations***

Maps are stored in the following locations:

- Enabled maps are stored in the "InterMapper Settings/Maps" folder.
- Disabled maps are kept in the "InterMapper Settings/Maps (Disabled)" folder.
- When you delete a map, it is not discarded, but is placed in the "InterMapper Settings/Maps (Deleted)" folder.

**Note:** While it is possible to place maps in the Maps folder using the file system, this is not recommended. If the server is running when you place the files in the folder, the map(s) are ignored and an error is logged when you go to the Server Configuration>Enabled Maps panel of the Server Settings window. Use the Enabled Maps panel's **Import Map** button to add maps to the Maps folder.

## Users and Groups

Use the Users panel of the Server Settings window to [add \(Pg 271\)](#) and [edit \(Pg 272\)](#) users and [groups \(Pg 272\)](#), to [assign users to groups \(Pg 272\)](#), and to assign privileges and access to maps.

**Note:** The Server Settings window is available only to users who have administration privileges.

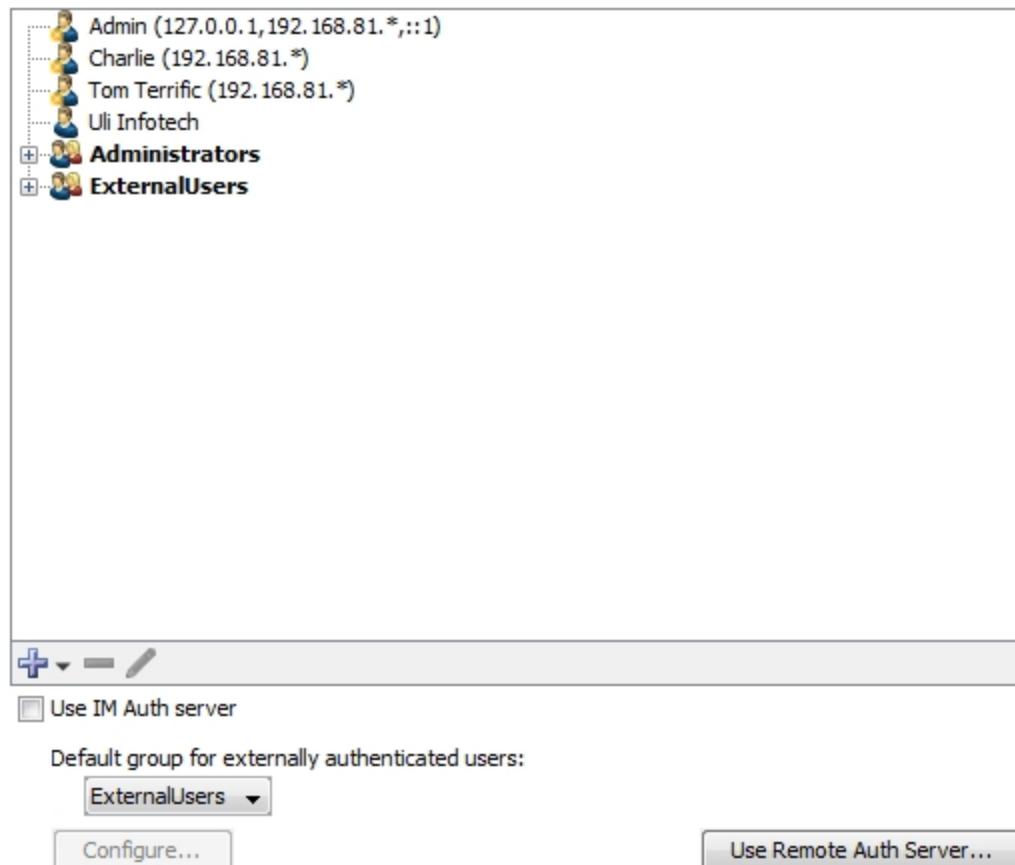
### The Users Panel

Use the Users panel to maintain the list of users and groups allowed to access the various servers.

- To add a user, click **New User....**
- To add a group, click **New Group...**
- To remove a user or group, click to select the user or group, then click **Remove**.
- To edit a user or group's information, click to select the user or group, then click **Edit...**
- To use the [InterMapper Authentication server](#), select the **Use IM Auth Server** check box. Click **Configure...** to open the [InterMapper DataCenter](#) to set up the IMAuth Server.
- To use an Authentication Server on another computer, click **Use Remote Auth Server...**
- Choose a **Default group for externally authenticated users** from the dropdown menu.

The example below shows a typical user and group configuration in the Users panel of the Server Settings window.

This list shows the users and groups on the server.  
Drag a user to a group to add it.



### *Setting up Users and Groups*

#### **What are Users and Groups?**

- **User**

An individual identified by a user name and password, or identified automatically from a clients' IP address or range.

- **Group**

A collection of users. A group can be given permissions to access certain servers or maps, and may be given different levels of access for a server or map.

### Creating a New User

To create a new user:

1. Click the **+** button and choose **Add User...**. The User Information dialog appears, as shown in the two examples below.
2. Enter the name and password for the new user in the **Name** and **Password** text boxes.  
or  
Omit the password and enter an IP address range in the **Automatic Login** text box.  
or  
Select the **Use External Authentication** check box, and enter the username used by the external authentication server. No password is necessary; authentication is performed by the external authentication server.

### How Automatic Login Works

- If a connection arrives from an address that matches the Automatic Login address, the person is automatically logged in as the specified user.
- If you supply both the password and automatic-login address, the person is logged in automatically from the specified address, but must supply a password when connecting from other addresses.
- Automatic-login addresses should be unique between users; the resulting Login name is not guaranteed if two automatic-login addresses are the same.
- For more information see [Controlling Access To Your Server \(Pg 252\)](#).



*Creating a new user*

These two examples show two different users. 'Fred Flintstone' must log in with a name and password, and 'Tom Terrific' is automatically identified when connecting from IP address 192.168.\*.\*.

## Editing User Information

### To edit the information about a user:

1. In the user list, click to select the user you want to edit.
2. Click **Edit...** or double-click the user entry. The User Information dialog appears, containing information for the selected user.

## Managing Users and Groups

A group is a collection of users, all of whom have the same set of permissions.

### To create a new group:

1. Click the **+** button and choose **Add Group...** The Group Information dialog appears, as shown above.
2. Enter the name of the new group.
3. Click **OK**. The new group appears in the User list.



*New group window. Enter the name of the new group in this window.*

## Adding and Removing Group Members

### To view the users in a group:

Click the plus sign (+) to the left of the group to expand it.

### To add a user to a group:

Click and drag the user's entry to the group entry. The user appears in the list of users for that group.

### To remove a user from a group:

1. Expand the group list to view the users in the group.
2. Click the entry for the user you want to remove, and click the **Remove** button. A confirmation dialog appears.
3. Click **OK**. The user is removed from the group.

**Note:** When you remove a user from a group, the user definition is removed only from the group, not from the user list. To remove a user completely from the list and all groups, see [Removing Users and Groups \(Pg 273\)](#) below.

### **Removing Users and Groups**

#### **To delete a user or group completely:**

1. Click to select the user you want to remove.
2. Click the **Remove** button. A confirmation dialog appears.
3. Click **OK** to confirm. The user or group entry is removed from the list.

**Note:** The **Administrators** group is a special group that is always present, and cannot be removed.

**Note:** The **FullWebAccess** group is a special group you define. If present, its members can view all web pages.

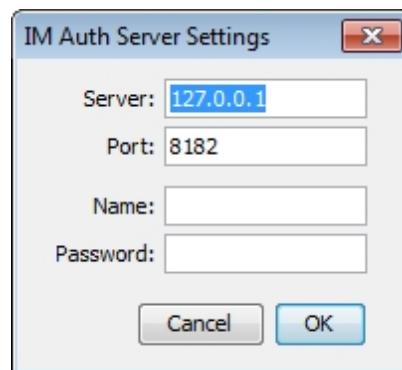
**Note:** The **FullLogAccess** group is a special group you define. If present, its members can view all log files.

**Note:** The **FullTelnetAccess** group is a special group you define. If present, its members have full access to the Telnet server.

### **Configuring the InterMapper Authentication Server**

Click the **Use Remote Auth Server...** button to connect to an InterMapper Authentication Server installed on a different machine from InterMapper. For more information, see [Authentication Server \(Pg 574\)](#).

**Note:** If the InterMapper Authentication Server is installed on the same machine as InterMapper, you need only check the **Use IM Auth Server** check box. The default server and port are used, and there is no need to enter a name or password.



### **Importing Users and Groups**

Use the Import button to upload a file containing data for users and groups. For information on importing data, see [Importing Data \(Pg 588\)](#). For information on the User/Group data structure, see [User Attributes \(Pg 630\)](#).

## Access Control Examples

Here are some typical access control configurations that might be used in different settings:

### Allow connections from anywhere (no authentication)

1. From the Server Settings window, click a server (Remote Server, Web Server, or Telnet Server). A list of firewall entries appears in the right pane.
2. Add a firewall definition and set it to "Allow \*.\*.\*.\*."
3. From the [Users panel \(Pg 269\)](#), create a Guest account with an Automatic Login address of "\*.\*.\*.\*".

**Note 1:** This is a very open setting. Be sure that you actually intend to allow anyone to connect. This configuration might be reasonable if InterMapper were running behind a firewall, and thus not visible outside your organization.

**Note 2:** The IP wildcard example above works with 32-bit IPv4 address. InterMapper now supports 128-bit IPv6 addresses. Wildcard characters are not currently supported for IPv6 addresses.

### Allow connections from anywhere, but with authentication

1. Define your user names and passwords as described in [Users and Groups \(Pg 269\)](#).
2. From the Server Settings window, click **Remote Server**. A list of firewall entries appears in the right pane.
3. Add a firewall definition and set it to "Allow \*.\*.\*.\*."

Anyone that connects is required to provide a username/password.

### Allow web connections to see all maps

1. Define a group named **FullWebAccess**.
2. Add users to that group.

The users in the group can view all web pages.

### Allow people from known addresses to connect without entering a password

This is called an *automatic-login* user.

1. Create a new user with the desired name.
2. Leave the **Password** box empty.
3. Enter the desired IP address in the **Automatic Login** box.

All connections from that IP address or range are automatically connected, and are assigned the specified user name.

### Allow a non-administrator user to see the log files

1. Define a group named FullLogAccess.
2. Add users to that group.

The users in the group can view all the log files.

### Allow an automatic-login user name to connect from elsewhere by entering a password

- Create an [automatic-login user](#) (Pg 274) as described above, but enter a password.

When connecting from an IP address *within* the range specified for automatic login, the user is automatically connected and assigned the specified user name.

When connecting from an IP address *outside* the range specified for automatic login, the user is prompted for a user name and password.

### Deny all connections from certain addresses or sites

You can prohibit connections from certain sites.

1. From the Server Settings window, click **Remote Server**. A list of firewall entries appears in the right pane.
2. Click **Add...** The Firewall Definition dialog appears.
3. In the **IP Address** box, enter an IP address or [IP address range](#) (Pg 250).
4. From the **Access** dropdown menu, choose **Deny**.
5. Click **OK**.

All connections from the specified IP address or range are denied.

### Give a single user access to a specific map

1. From the Users tab, [create a new user](#) (Pg 250).
2. From the Maps tab, set the user's permissions for the Web and Remote servers.

These permissions are tested only if the user fails to match the global IP address test and/or username and password

## Controlling Access to a Map

You can use the Map Access panel of the Server Settings window to authorize access to a map to one or more users or groups.

**Note:** All individuals in the Administrators group have access to all maps.

### The Map Access Panel

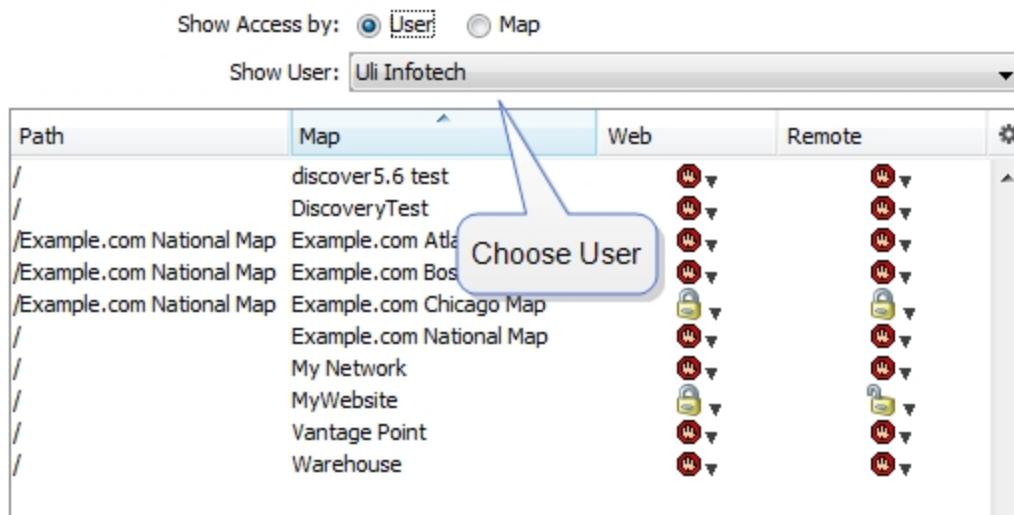
InterMapper lets you control the access rights to each map in two ways:

- **Control access by user** - View each user's rights to a particular map
- **Control access by map** - View each map's access rights for a particular user

The top example shows the list sorted per-user: it shows the rights that Crabby Appleton has for each of the maps. The bottom example shows the list sorted per-map: that is, it shows what access each user has to the Current Wireless Probes map.

#### Controlling Map Access by User

Choose **Show Access by: User** to control each map's access by a specific user through the Web and Remote servers.



The screenshot shows a software interface for managing map access. At the top, there are two radio buttons: 'User' (selected) and 'Map'. Below that is a dropdown menu labeled 'Show User' with the value 'Uli Infotech'. The main area is a table with columns: Path, Map, Web, and Remote. The 'Map' column header is currently selected. The table lists various map paths and their details. A blue callout bubble points to the 'Show User' dropdown with the text 'Choose User'.

Path	Map	Web	Remote
/	discover5.6 test	W	W
/	DiscoveryTest	W	W
/Example.com National Map	Example.com Atla	W	W
/Example.com National Map	Example.com Bos	W	W
/Example.com National Map	Example.com Chicago Map	L	L
/	Example.com National Map	W	W
/	My Network	W	W
/	MyWebsite	L	L
/	Vantage Point	W	W
/	Warehouse	W	W

- To set a user's access for any open map, choose the user from the **Show User** dropdown menu.
- To allow access to the selected map through the Web server, click the pencil icon in the **Web** column for the user or group whose access permissions you want to set, then select a permission level.
- To allow access to the selected map through the Remote server, click the pencil icon in the **Remote** column for the user or group whose access permissions you want to set, then select a permission level.

### Controlling User Access by Map

Choose **Show Access by: Map** to control each user's access to a specific map through the Web and Remote servers.

The screenshot shows a configuration interface for managing user access. At the top, there are two radio buttons: 'User' (unchecked) and 'Map' (checked). Below them is a dropdown menu labeled 'Show Map:' with the value 'Warehouse'. The main area is a table with three columns: 'Name', 'Web', and 'Remote'. The 'Name' column lists several entries: 'Admin (127.0.0.1, 192.168.81.\*,:1)', 'Charlie (192.168.81.\*)', 'Tom Terrific (192.168.81.\*)', 'Uli Infotech', 'Administrators', and 'ExternalUsers'. The 'Web' and 'Remote' columns contain icons representing different access levels: padlocks, document icons, and other symbols. A blue callout bubble with the text 'Choose map' points to the 'Map Name' dropdown.

- To set access control parameters for any open map, choose that map from the **Map Name** dropdown menu.
- To allow access to the selected map through the Web server, click the pencil icon in the **Web** column for the user or group whose access permissions you want to set, then select a permission level.
- To allow access to the selected map through the Remote server, click the pencil icon in the **Remote** column for the user or group whose access permissions you want to set, then select a permission level.

### Map Access Permission Levels

Select a map's Web and Remote server access permission levels for each user or group as described below:

- No Access** Deny access to this map.
- Read-Only Access** Allow the user to view the map, but do not allow changes.  
(Access to the web server is always read-only.)
- Read-Write Access** Allow the user to view and edit the map.

## Notifier List

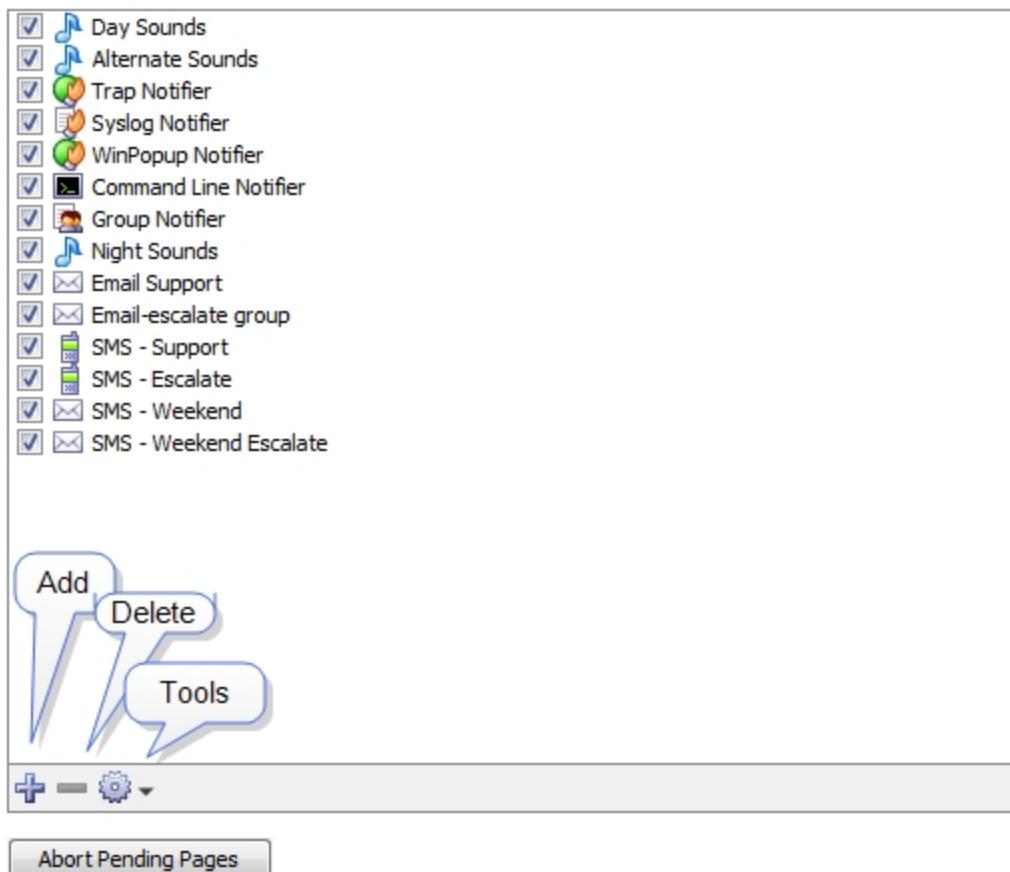
Use the Notifier List section of the Server Settings window to add, edit, copy and delete notifiers. For more information, see [Using Notifiers \(Pg 124\)](#).

### To view and edit the Notifier List:

1. From the Edit menu, choose **Server Settings...**. The Server Settings window appears, showing three sections on the left, each containing a list of available settings. On the right is a panel in which the selected settings appear.
2. Click **Notifier List**. A list of notifiers appears in the right panel of the Server Settings window.

A notifier sends an alert when the notifier is triggered by an attached device.

Uncheck a notifier to deactivate it for all devices (e.g., during vacation periods).



*Notifier List Panel*

**From the Notifier List panel, you can do the following:**

- **Add a notifier.** Click The Configure Notifier window appears. For detailed information on configuring notifiers see [Configuring a Notifier \(Pg 124\)](#).
- **Edit an existing notifier.** Click to select the notifier you want to edit, then choose **Edit...** from the Tools dropdown menu. The Configure Notifier window appears, showing the current settings for the selected notifier.
- **Duplicate a notifier.** Click to select the notifier you want to duplicate, then choose **Duplicate** from the Tools menu. The Configure Notifier window appears, showing the current settings of the selected notifier, but with the name "<selected notifier> Copy."
- **Delete a notifier.** Click to select a notifier, then click minus (). A confirmation window appears.
- **Abort Pending Pages.** All messages sent to pagers still in process are terminated as soon possible, and any pages waiting to be sent are deleted. This affects only pages sent to Dialup Pagers; it has no affect on SNPP pages or other notifiers.

## SSL Certificates

InterMapper's web and remote servers can employ a certificate to encrypt the data going between the server and clients. This assures that the client has connected to the actual server, and not another server acting as an impostor.

InterMapper ships with a certificate signed by Help/Systems Inc. This will work; the data is encrypted. But it's not using strong encryption (that is, it's easily broken) and web browsers using HTTPS connections will give a warning that there is a problem with the certificate, and that the data might be intercepted in transit.

To get stronger encryption and verification that the server is authentic, you can create and install your own SSL certificate. This is a three-step process:

1. Create a Certificate Signing Request (CSR). The CSR contains all the information needed to identify the computer. InterMapper has a built-in function for collecting this information and building the certificate.
2. Sign the CSR. Signing is a process where an authority verifies the information in the certificate.
3. Upload the signed certificate into InterMapper to make it operational.

In either case, you must first create a Certificate Signing Request (CSR), which is a file that you can create using InterMapper. You then sign the CSR yourself, or send it to a commercial Certificate Authority to sign.

Use the SSL Certificate panel, available from the Server Configuration section of the Server Settings window to create a Certificate Signing Request, and to upload a signed certificate to the InterMapper server.

The remainder of this topic describes the three separate steps in detail.

### The SSL Certificate Panel

InterMapper is currently using a sample SSL certificate that will encrypt sessions using a known private key. All versions of InterMapper ship with the exact same certificate and private key. Although the data between the client and server are encrypted, this configuration offers no security from spoofing or eavesdropping by a determined attacker using the proper tools.

To increase security, you should create your own certificate. To do this, create a new "Certificate Signing Request", then sign it yourself (for example, using OpenSSL) or use a commercial certificate authority. When you have the new SSL certificate, upload it by clicking the button below. Please refer to the InterMapper documentation for more details.

[Create CSR...](#)

[Upload Certificate...](#)

#### Step 1: Create a Certificate Signing Request

1. From the Edit menu, choose **Server Settings...** The Server Settings window appears.
2. In the Server Configuration section, click **SSL Certificate**. The SSL Certificate panel appears.
3. Click **Create new CSR...** The Certificate Signing Request window appears, as shown below.
4. Enter the required information as described below, and click **OK**. A 1,024-bit private key is generated for your computer, and the information is then used to create the Certificate Signing Request. The key and a copy of the CSR are saved in the *InterMapper Settings:Certificates* folder, and a standard Save File dialog appears.

You are being asked to save a copy of the CSR (with a filename of the FullyQualifiedDomainName.csr) on your disk. We recommend you save this on the desktop so it's easy to find when you create a signed certificate. After you have requested a signed certificate, you can discard this file.

5. Click **Save**. The new certificate is saved in the specified location.

## Enter the following information for your Certificate Signing Request:

- Common Name**

Enter your *full* DNS name or IP address of your server. If possible, it should include your domain name.

- Organization**

Enter the name of your organization.

- Organizational Unit**

If applicable, enter the name of an organizational unit within your organization, such as a department or division name.

- Country**

Enter a two-letter abbreviation for your country

- State or Province**

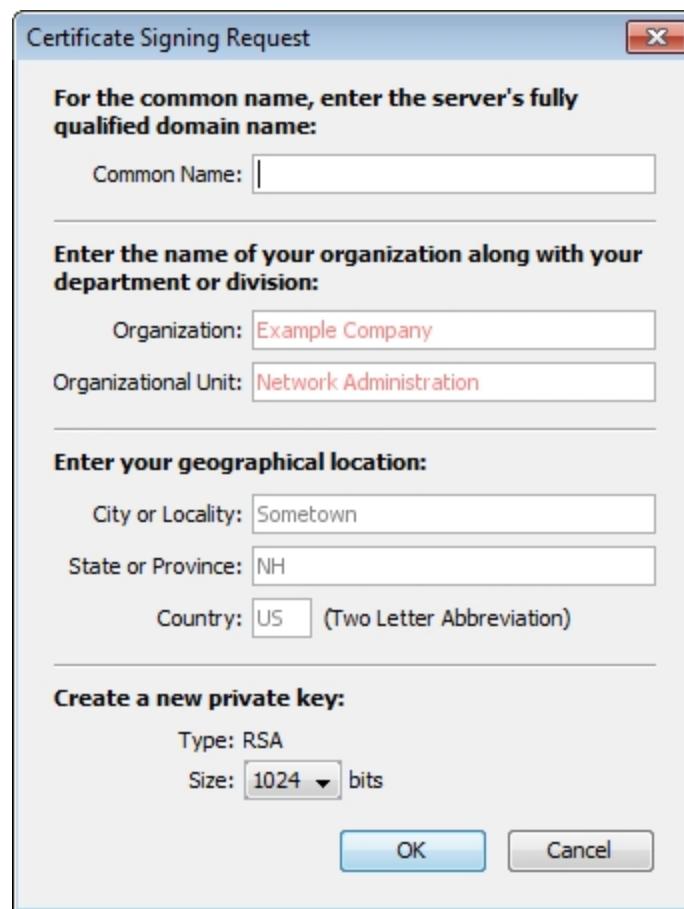
Enter a state or province name or abbreviation

- City or Locality**

Enter a descriptive location of the server.

- Make new private key**

The first time you generate a CSR, this box is dimmed. On subsequent uses, select this check box to create a new private key. Leave it unchecked to use the same private key.



The Certificate Signing Request window.

When you click the OK button, InterMapper will generate a 1,024-bit private key for your computer, then use the information entered above to create the Certificate Signing Request. InterMapper will save following files in the *InterMapper Settings:Certificates* folder:

- SSLCertificateKeyFile** contains your private key
- Pending.csr** the Certificate Signing Request (CSR) file

You will also be asked to save another copy of the CSR (with a filename of the *FullyQualifiedDomainName.csr*) on your disk. We recommend you save this on the desktop so it's easy to find when you are ready to create a signed certificate. You may discard this file after you have requested a signed certificate.

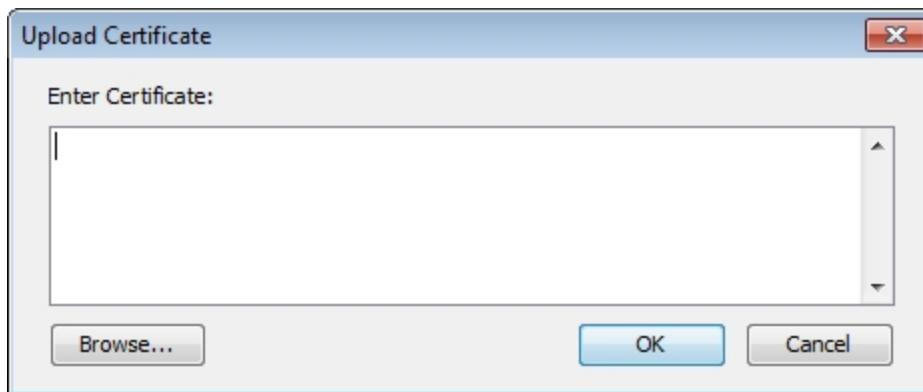
### Step 2: Sign the Certificate

Once you have a CSR file, you must have it signed. There are two ways to do this:

1. You can use the OpenSSL software (available from <http://www.openssl.org>) or use the Windows CA to sign this CSR. This will create a self-signed certificate that you can easily use within your own organization.
2. You can send the CSR to any of several commercial certificate authorities, such as InstantSSL (<http://www.instantssl.com>), Verisign (<http://www.verisign.com/products/site/index.html>), or Thawte (<http://www.thawte.com>). These companies return a signed certificate that is globally-recognizable as authentic.

### Step 3: Uploading the Signed Certificate

After the certificate has been signed, you can upload it using **Upload new Certificate...**. Either copy and paste the text of the certificate into this window, or click **Browse...** and locate the certificate file on your hard drive.



At the conclusion of this, the InterMapper Settings:Certificates folder contains files named:

- **SSLCertificateKeyFile** contains your private key, created above.
- **SSLCertificateFile** contains your signed certificate (the file from Verisign, InstantSSL, or OpenSSL.) Be sure to remove any suffix (such as ".pem") from the file name.
- **SSLCACertificateFile** contains the public certificate chain of the signing CA's (in order).

Stop the affected server from the Server Settings window, and then start it again. These certificates are then used for HTTPS and InterMapper Remote client connections if the SSL/TLS boxes are checked in the respective server settings.

## Using an externally generated CSR and Private Key

If you use a different application from InterMapper to create your Certificate Signing Request (CSR), InterMapper will not have access to the private key used to create the CSR. To upload your certificate with the private key, create one text file containing the signed certificate, the private key, and the CA's public certificate chain (if included), and use the "Upload new certificate..." button to upload this combined file.

## Technical Notes

The design for this scheme is based on the SSL section of the Apache Mod-SSL httpd.conf file.

1. For InstantSSL, the SSLCACertificateFile is the same as the ca-bundle file, described in [http://www.instantssl.com/ssl-certificate-support/cert\\_installation/](http://www.instantssl.com/ssl-certificate-support/cert_installation/)
2. If there is no SSLCertificateKeyFile, InterMapper will look for the private key in SSLCertificateFile.
3. InterMapper will always load the additional CA certificates, if they exist, from SSLCertificateFile first, then it will check SSLCACertificateFile if it exists.
4. It is possible to set up the configuration so there is only one file with everything in it: SSLCertificateFile.
5. InterMapper will convert CR's to LF's in the file data before loading it. There's no need to worry about CR-LF translation issues.

# Chapter 9

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## InterMapper Flows™

InterMapper has always made it easy to see heavy traffic at a glance. Its charts show when traffic peaks, but not what it's used for.

InterMapper Flows™ is a feature of InterMapper that allows you to get deeper insight into the traffic on your network. It is a Flows analyzer that works with NetFlow, sFlow, JFlow, and cFlow, and can show the following:

- Top talkers and listeners
- Top protocols in use
- Top conversations and sessions
- Detailed session information to identify particular machines

### How InterMapper Flows Works With InterMapper



InterMapper Flows collects and stores Flows data from any device that supports its collection (Flows Exporter). For information on supported devices, see [Supported Exporters \(Pg 303\)](#). You can choose the available exporters from which you want to collect data. For more information, see [Flows Settings - Exporters Tab \(Pg 304\)](#).

## The Flows Window

Use the Flows window to view and analyze traffic at a very detailed level.

InterMapper Flows acts as a NetFlow/sFlow collector; the Flows window provides a view of Flows data collected from supported hardware and software exporters.

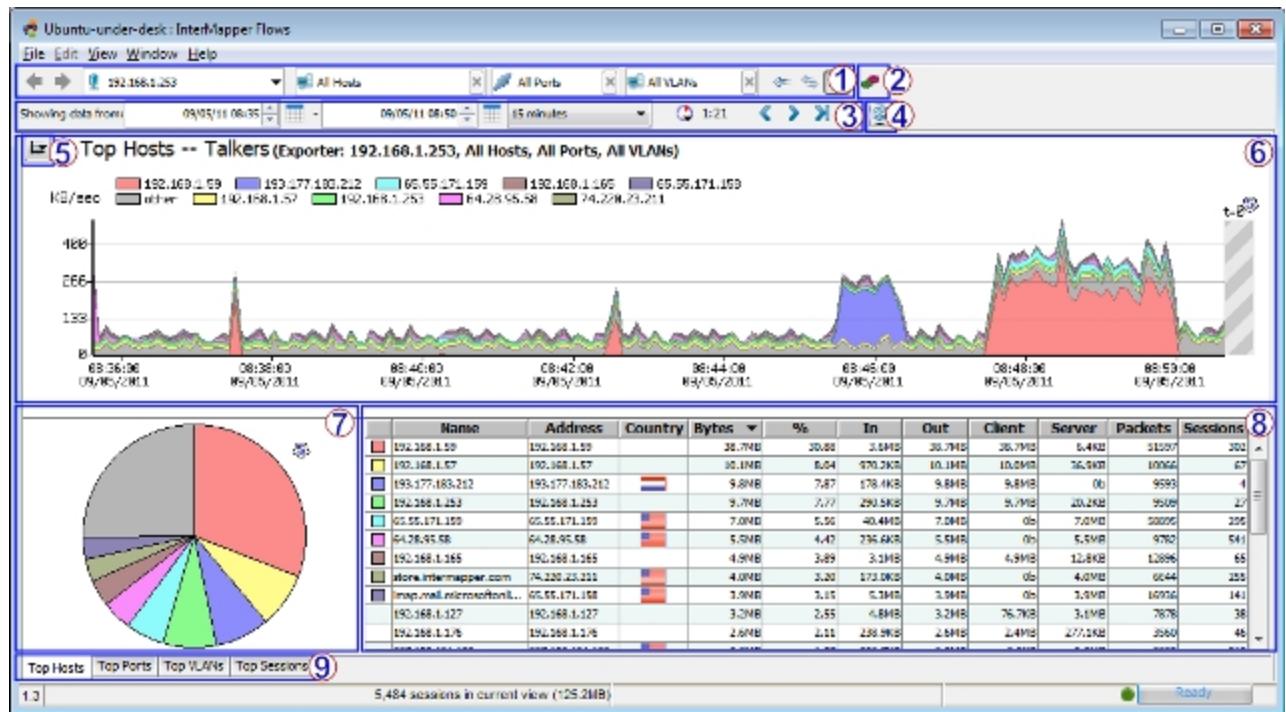


### To open the Flows window:

- To see network traffic data from any device, **Right-click** or **ctrl-click** a device that shows an exporter badge and choose **Flows Window**.  
**Note:** The Exporter badge appears for any device that is set up to be a Flows exporters. For more information, see [Flows Settings - Exporters Tab \(Pg 304\)](#).
- To see the traffic through an exporter's interface, **Right-click** or **ctrl-click** a link and choose **Flows Window** from the **Show In** submenu.

## Understanding the Flows window

Use the Flows window to view Flows data in a number of ways.



When you first open the Flows window, the Hosts tab is selected.

- **1: Filter tools** (Pg 289) - select the subset of Flows data you want to view.
- **2: InterMapper Flows Settings** (Pg 304) - view and edit InterMapper Flows settings.
- **3: Time Range Selection tools** (Pg 291) - select and navigate Flows data over a specified period.
- **4: Refresh button** (Pg 291) - click to refresh the current view of Flows data.
- **5: Set Graph Scale** - choose a scale to use for viewing data in the Stack Chart.
- **6: Stack Chart** - view current Host, Port, or VLAN data in a stacked area chart.
- **7: Hosts, Ports, or VLANs pie chart** - view current Host, Port, or VLAN data as a percentage of total data flow in a pie chart.
- **8: Hosts, Ports, or VLANs list table** - view details about a specific host, port, or VLAN.
- **9: Page Selection tabs** - Click a tab to choose a Flows window page. (see below.)

Click a tab to choose one of these Flows window pages:

- **[Top Hosts tab \(Pg 293\)](#)** - view a list of top talkers, listeners, or both, with stack and pie charts showing the relative activity of each.
- **[Top Ports tab \(Pg 297\)](#)** - view a list of ports with the highest activity, with stack and pie charts showing the relative activity of each.
- **[Top VLANs tab](#)** - view a list of VLANs with the highest activity, with stack and pie charts showing the relative activity of each.
- **[Top Sessions tab \(Pg 302\)](#)** - view a list of sessions, with start and end IP addresses and the start and end time of each session.

#### ***Flow Type Icons***

When collecting data from both NetFlow and sFlow exporters, you can tell at a glance what kind of exporter the data is coming from.

	<b>NetFlow</b>	This icon is shown when viewing data from a NetFlow exporter. Depending on the version, the icon shows a 1, 5, 7, or 9.
	<b>Data</b>	
	<b>sFlow Data</b>	This icon is shown when viewing data from an sFlow exporter.
	<b>J-Flow, CFlow</b>	These exporters implement a Flows format that is identical to NetFlow v5, so they appear as NetFlow v5 in the Flows window.

**Filter Tools**

Use the filter tools to view a subset of the data, selecting from available exporters, talkers, listeners, ports or sessions collected by InterMapper Flows.

**Previous/  
Next view**

Click the left arrow to view the current tab with a previous set of filters. If you have clicked a previous set of filters, click the right arrow to view the current tab with the next set of filters in the view history.

**Exporter**

Choose a different exporter from the dropdown menu to view traffic from that exporter. You can also choose a specific interface on an exporter from the dropdown menu.

**Host**

Enter an IP address or subnet (x.x.x.x/#) to view traffic from that host or subnet or choose from the dropdown menu. Enter an exclamation point (!) to exclude the specified host.

**Port**

Enter a port from the dropdown menu to view traffic from that port or choose from the dropdown menu. Enter an exclamation point (!) to exclude the specified port.

**VLAN**

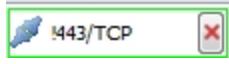
Enter a VLAN number in the box to show Flows activity for only that VLAN. Enter an exclamation point (!) to exclude the specified VLAN.

**Talkers/  
Both/  
Listeners**

Click the left arrow to view Top Listeners (receivers) only, the right arrow to view Top Talkers (senders) only, and the button with both arrows to view Top Hosts by the total traffic sent and received by each host.

**Context Menu**

Right-click or Ctrl-click an area of host activity in the Stack chart, Pie chart, or list and choose from the context menu. The menu changes depending on which area of the window you



**Exclude  
Host/Port/VLAN**

right-click.

Get more detail in the [Top Hosts](#) (Pg 293), [Top Ports \(Pg 297\)](#), or [Top Sessions \(Pg 302\)](#) tab.

Enter an exclamation point (!) to negate a filter, or right-click (Ctrl-click) a host, port or VLAN in the pie chart or graph and choose **Exclude**.

Negated filters are shown with green border.

### Time Range Selection

Use the time range selection controls to view and select a range of time for which you want to view.



#### To select a time range:

- Select by dragging across an area of the stack chart.
- For precise control, enter times in the Showing data from Start and End time fields.
- Click the calendar icon to set a Start or End date.
- Use the dropdown menu to choose a preset time range. When you change this value, the current End time is preserved.
- Use the time navigation controls shown below to jump back or forward by the amount shown in the time range dropdown menu or jump to now.

	<b>Back in Time</b>	Click the left arrow to view the previous page of data. The amount of data shown is determined by the current setting of the time range dropdown menu.
	<b>Forward in Time</b>	Click the right arrow to view the next page of data. The amount of data shown is determined by the current setting of the time range dropdown menu.
	<b>Forward to Now</b>	Click the Now button to view the latest data. The amount of data shown is determined by the current setting of the time range dropdown menu.
	<b>Zoom Out</b>	Click the Zoom Out button to reset the time range to the most recent setting in the Time Range dropdown menu.
	<b>Refresh</b>	Click the Refresh button to view the most recent data, based on the setting of the time range dropdown menu.
	<b>Auto-refresh Interval</b>	Choose a refresh interval from the Auto-refresh dropdown menu.
<b>Time until refresh</b>		The time to the right of the Auto-refresh Interval button indicates the time until the next refresh of the window.

**Reports and Settings**



**Save** Click this button to save the report to disk. A standard file dialog appears. The report is saved in PDF format, and contains the Top Hosts, Top Ports, and Top Sessions tabs.



**Print Report** Click this button to print a report using the current time range and filter settings. A standard print dialog appears.



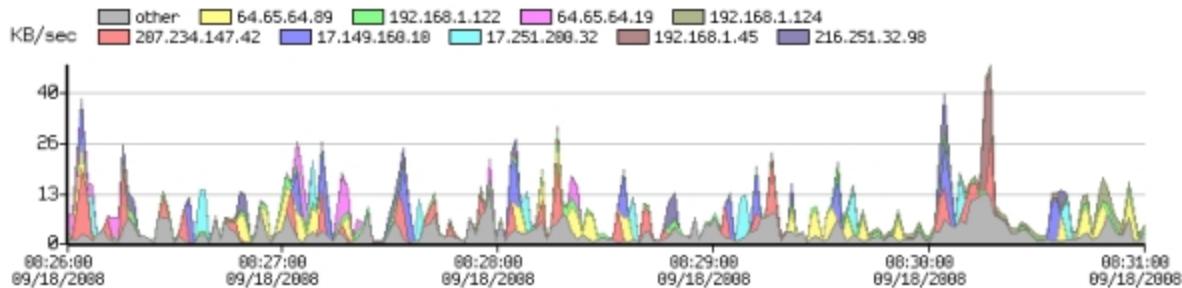
**Open Settings Dialog** Click this button to open the InterMapper Flows Settings dialog. For more information, see the [InterMapper Flows Settings \(Pg 304\)](#) topic.

## Top Hosts Tab

- Click the **Top Hosts** tab (or type **Ctrl-1**) to view a list of top talkers, listeners, or both, with stack and pie charts showing the relative activity of each.

### The Stack Chart

Use the Top Hosts tab's Stack chart to view the relative activity of different hosts over time. Each host's activity is stacked with the others, with the top host on the bottom of the stack. Here's a typical stack chart:



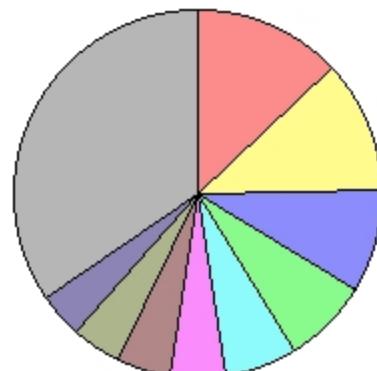
The legend above the chart shows the top hosts for the data you are currently viewing.



- Click a legend (above the Stack chart) to select the corresponding line in the Host list.
- Mouse over an area of the Stack chart to view the host address for that activity.
- Click an area of the stack chart to select the corresponding line in the Host list.
- Click and drag to select a region of the chart to reset the time range to that area of the Stack chart.
- Click the **Set Graph Scale** button to set the vertical scale for the Stack chart. Choose **Auto** to normalize the scale to the displayed data, or select a scale between 1Kbits/second and 10GBytes/second.
- Right-click an area of the Stack chart and choose from the context menu as described below.

### The Pie Chart

Use the Pie chart to view the relative activity of each top host in proportion to the others.



- Click a pie segment to select the corresponding line in the Host list.
- Mouse over a pie segment to view the host address for that segment.
- Right-click an area of the Pie chart and choose from the context menu as described below.

### The Host List

Use the Host List to view detailed statistics about a particular host. Below is a typical host list, which shows the top 25 hosts.

- Click a column heading to sort by that column. Click again to reverse the sort.
- Click an unselected row to select it.
- Shift-click an unselected row to select all rows between that row and the currently selected row.
- Control-click a row to select or de-select it.
- Right-click a line or IP address from the Host list, and choose from the context menu as described below.

Legend	Hostname	Address	Count-Byte- s	%	In	Out	Clien- t	Serv- er
	207-234-147-42.ptr.example.com	207.234.147.42	385.5- KB	13.- 03	41.7K- B	385.5- K	3.9KB	381.6- KB
	example.net	64.65.64.8-9	343.3- K	11.- 61	35.2K- B	343.3- KB	0b	343.3- KB
	nwk-www.example.co-m	17.149.160-.10	267.7- KB	9.0- 5	12.9K- B	267.7- KB	0b	267.7- KB
	dhcp-122.dartware.co-m	192.168.1.-122	223.0- KB	7.5- 4	1.1MB	223.0- KB	217.5- KB	5.5KB
	cup-www.example.co-m	17.251.200-.32	189.9- KB	6.4- 2	8.1KB	189.9- KB	0b	189.9- K
	vws.example.net	64.65.64.1-9	142.3- K	4.8- 1	17.2K	142.3- KB	0b	142.3- KB
	nitro.dartware.co-m	192.168.1.-45	141.1- KB	4.7- 7	670.4- KB	141.1- KB	74.2K- B	66.9K- B
	dhcp-124.dartware.co-m	192.168.1.-124	125.1- KB	4.2- 3	76.6K	125.1- KB	83.9K- B	41.2K- B
	hosting.example.-com	216.251.32-.98	115.8- KB	3.9- 1	8.5KB	115.8- KB	0b	115.8- KB
	eclair.example.net	64.65.64.6-4	98.1K- B	3.3- 2	18.8K	98.1K- B	0b	98.1K- B
	outgoing02.exam-ple.net	64.65.64.1-25	69.2K- B	2.3- 4	26.0K	69.2K- B	0b	69.2K- B
	192.168.1.12	192.168.1.-12	63.3K- B	2.1- 4	67.8K	63.3K- B	25.5K- B	37.8K- B
	<up to 25 rows>							
	Other	Other	396.5- KB	13.- 40	555.8- KB	396.5- KB	118.5- KB	278.0- KB

- **Legend** - The top 10 hosts are indicated with color legends. The report shows the top 25 hosts or ports, but places the "Other" category at the bottom of the list, as it shows total traffic for the remaining hosts or ports not shown in the previous 24 rows.
- **Hostname** - Contains the host name of the talker or listener.
- **Address** - Contains the IP address of the talker or listener.
- **Country** - Contains a flag indicating the country in which the host name or IP address originates.
- **Bytes** - The volume of traffic (in bytes/kbytes/mbytes) for a particular row in the specified time interval.
- **%** - The percentage of traffic attributed to this host during the specified time interval.
- **In** - The number of bytes received by the host's IP address.
- **Out** - The number of bytes sent from the host IP address.
- **Client** - The number of bytes transmitted when the host was acting as a client (for example, sending a request to another server.)
- **Server** - The number of bytes transmitted when the host was acting as a server (for instance, when responding to a request from a client.)

**Note:** InterMapper Flows uses heuristic rules to determine which host is operating as a client or server:

- It has a built-in list of common server ports. If the port matches an entry in the list, it is treated as a server.
- If there is no match with a common host port, the lower-numbered port is treated as a server.
- **Packets** - The number of packets sent or received by this host.
- **Sessions** - The number of sessions including this host.

***Context Menu - Top Hosts tab***

Right-click or CTRL-click (Mac) on the Stack chart, Pie chart, or Host list, and choose from the Context menu as follows:

**Stack chart:**

- **Select On [host]** - include only traffic from the selected host.
- **Exclude [host]** - exclude traffic from the selected host.
- **Center on this** - centers the stack chart on the selected point in the timeline.

**Pie chart:**

- **Select On [host]** - include only traffic from the selected host.
- **Exclude [host]** - exclude traffic from the selected host.

**Hosts List:**

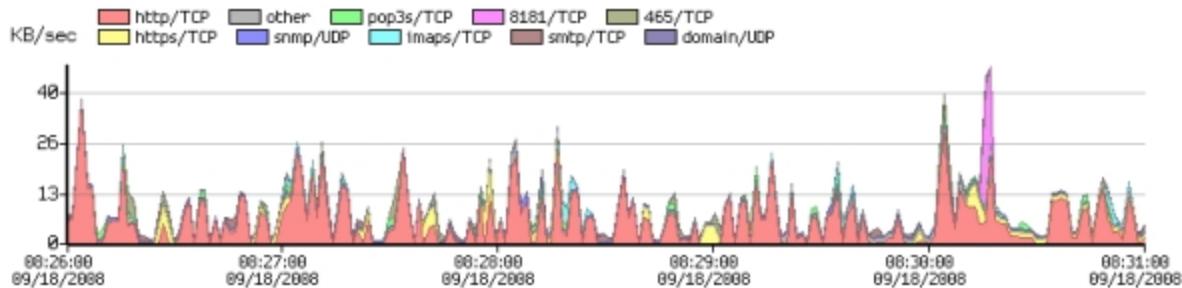
- **Select All** - select all rows of the table
- **Filter on selected host** - include only traffic to or from the selected host
- **Exclude selected host** - exclude traffic from the selected row
- **Copy selected rows** - copy the fields from the selected table rows to the clipboard
- **Copy IP address** - copy only the IP address from the selected row to the clipboard
- **Whois Lookup** - see the Whois description for the selected host.

## Top Ports Tab

- Click the **Top Ports** tab (or type **Ctrl-2**) to view a list of ports with the highest activity, with stack and pie charts showing the relative activity of each.

### The Stack Chart

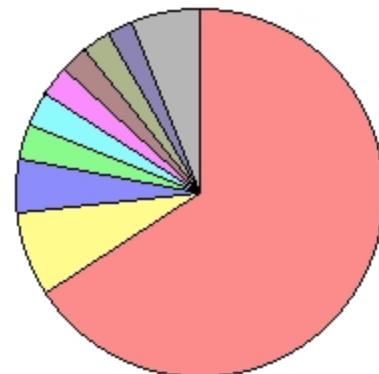
Use the Top Ports tab's Stack chart to view the relative activity of different ports over time. Each port's activity is stacked with the others, with the top port on the bottom of the graph. Here's a typical stack chart:



- Click a legend above the Stack chart to select the corresponding line in the Port list.
- Mouse over an area of the Stack chart to view port information for that activity.
- Click an area of the stack chart to select the corresponding line in the Port list.
- Click and drag to select a region of the chart to reset the time range to that area of the Stack chart.
- Click the **Set Graph Scale** button to set the vertical scale for the Stack chart. Choose **Auto** to normalize the scale to the displayed data, or select a scale between 1Kbits/second and 10GBytes/second.
- Right-click an area of the Stack chart and choose from the context menu as described below.

### The Pie Chart

Use the Pie chart to view the relative activity of each top port in proportion to the others.



- Click a pie segment to select the corresponding line in the Ports list.
- Mouse over a pie segment to view the port corresponding to that segment.
- Double-click a segment of the pie chart to set a filter allowing you to view data only for the selected port.
- Right-click or Ctrl-click a point in the timeline and choose **Center on This** from

the context menu to bring a particular point in the Stack chart to the center of the timeline.

- Double-click a pie segment, or right-click or Ctrl-click a segment and choose **Select on Port/Protocol [Service or Port number]** from the context menu to set a filter for that port.
- Right-click an area of the Stack chart and choose from the context menu as described below.

### The Ports List

Use the Ports List to view detailed data about the top 25 ports.

- Click a column heading to sort by that column. Click again to reverse the sort.
- Click an unselected row to select it.
- Shift-click an unselected row to select all rows between that row and the currently selected row.
- Control-click a row to select or de-select it.
- Right-click or Ctrl-click a row and choose **Select All** to select all rows.
- Right-click a selected row and choose **Copy Selected Rows** to copy the currently selected set of rows to the clipboard in tab-delimited format.

Legend	Service	Protocol	Port	Bytes	%
	HTTP	TCP	80	1.9MB	65.76
	HTTPS	TCP	443	223.8KB	7.57
	SNMP	UDP	161	134.8KB	4.56
	POP3S	TCP	995	92.8KB	3.14
	IMAPS	TCP	993	89.6KB	3.03
	8181	TCP	8181	78.3KB	2.65
	SMTP	TCP	25	74.0KB	2.50
	465	TCP	465	72.2KB	2.44
	DOMAIN	UDP	53	68.8KB	2.33
	1278	UDP	1278	41.6KB	1.40
	ICMP	ICMP		22.7KB	0.77
	1220/TCP	TCP	1220	17.1KB	0.58
	106/TCP	TCP	106	11.6KB	0.39
< up to 25 rows >					
	OTHER	IP		13.4KB	0.45

- **Legend** - The top 10 ports are indicated with colored legends. The report shows the top 25 ports, but places the "Other" category at the bottom of the list, as it shows total traffic for the remaining ports not shown in the previous 24 rows.
- **Service** - Contains the name of the server associated with the port.
- **Protocol** - Contains the protocol (TCP/UDP/GRE/ICMP) associated with the port.
- **Port** - The port number
- **Bytes** - the volume of traffic (in bytes/kbytes/mbytes) for a particular row in the specified time interval.

- **%** - the percentage of that traffic for the specified port in the specified time interval.

#### **Context Menu - Top Ports tab**

Right-click or CTRL-click (Mac) on the Stack chart, Pie chart, or Ports list, and choose from the Context menu as follows:

##### **Stack chart:**

- **Select On [port]** - include only traffic from the selected port.
- **Exclude [port]** - exclude traffic from the selected port.
- **Center on this** - centers the stack chart on the selected point in the timeline.

##### **Pie chart:**

- **Select On [port]** - include only traffic from the selected port.
- **Exclude [port]** - exclude traffic from the selected port.

##### **Ports List:**

- **Select All** - select all rows of the table
- **Filter on selected port** - include only traffic to or from the selected port
- **Exclude selected port** - exclude traffic from the selected row
- **Copy selected rows** - copy the fields from the selected table rows to the clipboard
- **Copy IP address** - copy only the IP address from the selected row to the clipboard
- **Whois Lookup** - see the Whois description for the selected port.

## Top VLANs Tab

Click the **Top VLANs** tab (or type **Ctrl-3**) to view a list of VLANs with the highest activity, with stack and pie charts showing the relative activity of each.

### The Pie Chart

Use the Pie chart to view the relative activity of each top VLAN in proportion to the others.

- Click a pie segment to select the corresponding line in the VLAN list.
- Mouse over a pie segment to view the percentage of traffic for that VLAN.
- Right-click an area of the Pie chart and choose from the context menu as described below.



### The VLAN List

Use the VLAN List to view detailed statistics about a particular VLAN.

- Click a column heading to sort by that column. Click again to reverse the sort.
- Click an unselected row to select it.
- Shift-click an unselected row to select all rows between that row and the currently selected row.
- Control-click a row to select or de-select it.
- Right-click a line in the VLAN list, and choose from the context menu as described below.

Legend	VLAN	Bytes	%
	0	385.5K	13.03
	1	343.3K	11.61
	2	267.7K	9.05
	3	223.0K	7.54
	4	189.9K	6.42
	5	142.3K	4.81
	6	141.1K	4.77
	7	125.1K	4.23
	8	115.8K	3.91
	9	98.1K	3.32
	10	69.2K	2.34
	11	63.3K	2.14
<up to 25 rows>			
	Other	396.5KB	13.40

- **Legend** - The top 10 VLANs are indicated with color legends. The report shows the top 25 VLANs, but places the "Other" category at the bottom of the list, as it shows total traffic for the remaining VLANs not shown in the previous 24 rows.
- **VLAN** - Contains the number of the VLAN.
- **Bytes** - The volume of traffic (in bytes/kbytes/mbytes) for a particular row in the specified time interval.
- **%** - The percentage of traffic attributed to this VLAN during the specified time interval.

#### ***Context Menu - Top Hosts tab***

Right-click or CTRL-click (Mac) on the Stack chart, Pie chart, or Host list, and choose from the Context menu as follows:

##### **Stack chart:**

- **Select On VLAN [NN]** - include only traffic from the selected host.
- **Exclude VLAN [NN]** - exclude traffic from the selected host.
- **Center On This** - centers the stack chart on the selected point in the timeline.

##### **Pie chart:**

- **Select On VLAN [NN]** - include only traffic from the selected host.
- **Exclude VLAN [NN]** - exclude traffic from the selected host.

##### **VLANs List:**

- **Filter on selected VLAN** - include only traffic to or from the selected VLAN.
- **Exclude selected VLAN** - exclude traffic from the selected row.
- **Select All** - select all rows of the table.
- **Copy selected rows** - copy the fields from the selected table rows to the clipboard.

## Top Sessions Tab

- Click the **Top Sessions** tab (or type **Ctrl-4**) to view a list of sessions, with client and server IP addresses and the start and end time of each session.

Use the Top Sessions tab to view detailed data about sessions with the greatest amount of traffic.

- **Client** - The IP address or host name of client in the session.
- **Server** - The IP address or host name of the server to which the session is connected.
- **Service** - The service being used during the session.
- **Total Bytes** - The total number of bytes sent and received during this session.
- **Client Port** - The port number used by the session's client.
- **Server Port** - The port number used by the session's server.
- **Protocol** - The protocol (TCP/UDP/GER/ICMP) used during the session.
- **Client Packets** - The total number of packets sent by the client during this session.
- **Client Bytes** - The total number of bytes sent by the client during this session.
- **Server Packets** - The total number of packets sent by the server during this session.
- **Server Bytes** - The total number of bytes sent by the server during this session.
- **Start Time** - The session's start time. If the session started before the start of the time range currently being viewed, the start time is shown in a different color.
- **Last Update** - The time of the last packet sent or received during the session. If the session ended before the start of the time range currently being viewed, the Last Update time is shown in a different color.
- **Exporter** - The IP address of the exporter that recorded the session.
- **In** - The index of the device interface through which the client packets entered.
- **Out** - The index of the device interface through which the server packets entered.
- **VLAN In** - The number of the VLAN used for incoming packets.
- **VLAN Out** - The number of the VLAN used for outgoing packets.

### ***Sorting the Sessions List***

You can sort the Sessions list by any column.

#### **To sort the Sessions list:**

- Click a column heading to sort by that column.
- Click again to reverse the sort.

## Supported Exporters

**NetFlow:** InterMapper Flows handles NetFlow v1, v5, v7, and v9 exports from routers and switches from Cisco and other NetFlow-compatible vendors as well as a number of software exporters.

**sFlow:** InterMapper Flows handles sFlow versions 2, 4, and 5, including MIB Enterprise numbers 4300 and 14706 from equipment from HP, Extreme, Foundry, Force10, and others.

**J-Flow, CFlow:** Identical to NetFlow v5, implemented by different vendors. The NetFlow v5 icon appears when using these exporters

### Using InterMapper Flows with sFlow

sFlow provides information about the traffic through the network, including the sender and recipient of the traffic flows and the protocols used.

To configure InterMapper Flows to receive the sFlow data, you must first enable sFlow export on the router or switch. Most modern gear uses SNMP to enable/disable sFlow export, as described in the [sFlow specification](#).

InterMapper Flows lets you specify the exporter(s) that should send data.

#### To add an sFlow exporter:

1. Open the Flows Settings window, and click the Exporters tab.
2. Set the sFlow port (default is 6343) at the bottom of the window.
3. Click the **Add sFlow exporter** button. The Enter sFlow Information window appears.
4. Enter the IP address of the exporter, the SNMP read/write community string, choose the IP address for the collector, choose a sampling rate, and click OK. InterMapper Flows configures the selected exporter (via SNMP) to send sFlow records to the specified collector. The exporter appears in the Exporters list in a few moments.

## InterMapper Flows Settings

Use the Flows Settings window to view and edit settings for InterMapper Flows.

### To open the Flows Settings window:

- Click the Settings icon in the top-right corner of the Flows window:



The following tabs are available in the Settings window:

- Use the [\*\*Exporters \(Pg 304\)\*\*](#) tab to choose which exporters you want to collect from.
- Use the [\*\*Appearance \(Pg 307\)\*\*](#) tab to select a coloring theme for protocols and hosts.
- Use the [\*\*Preferences \(Pg 308\)\*\*](#) tab to set parameters that control behavior of InterMapper Flows.
- Use the [\*\*Advanced \(Pg 309\)\*\*](#) tab to set performance-related parameters, the path to your database, and a database size.
- Use the [\*\*Registration \(Pg 311\)\*\*](#) tab to view information about your current InterMapper Flows license, and to enter a new license key.
- Use the [\*\*About \(Pg 312\)\*\*](#) tab to view version information about InterMapper Flows and its components.

### Exporters tab

Use the Exporters tab to select the exporters from which you want to collect data.

Enabled	Status	Expand	Exporter	Tag	Version	Total Flows	Flows/hr	Latest Update
<input checked="" type="checkbox"/>			192.168.1.130	PQS or Procure	NetFlow 9	8514757	1062274	09/06/11 09:36:51
<input checked="" type="checkbox"/>			Interface1	inbound		61990927	220246	
<input checked="" type="checkbox"/>			Interface2	outbound		483803047	1904193	
<input type="checkbox"/>			192.168.1.109		NetFlow 9	11446340	718087	08/16/11 08:29:55
<input checked="" type="checkbox"/>			192.168.1.57	iBook-PQS	NetFlow 5	33033509	227352	09/06/11 09:36:51
<input checked="" type="checkbox"/>			192.168.1.253	PQS Exporter	NetFlow 5	30442620	227363	09/06/11 09:36:51
<input checked="" type="checkbox"/>			192.168.1.176	nProbe	NetFlow 5	17559939	261670	09/06/11 09:36:51

## Choosing and Adding Exporters

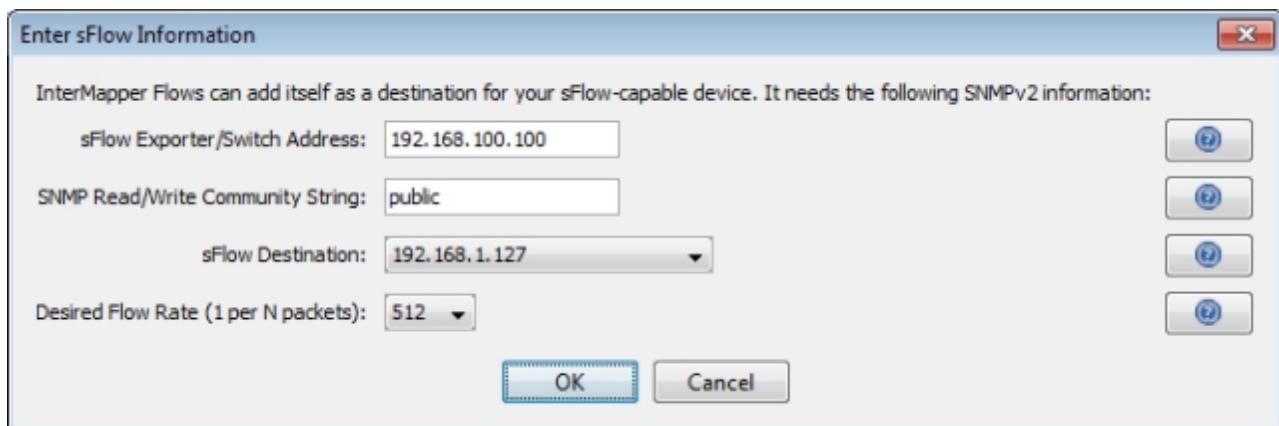
The Exporters tab lists all available exporters.

### To choose exporters:

- To enable or disable collection and analysis of data from an exporter, select or clear the **Enabled** check for an exporter.

**Note:** NetFlow exporters appear in the list automatically if they are properly configured. The exporter must be configured to send data to InterMapper Flows.

- To add an sFlow exporter, click **Add sFlow Exporter**. The Enter sFlow Information window appears as shown below. Enter information about the exporter, then click OK. InterMapper Flows sends SNMP commands to the exporter to turn on sFlow.



### Enter information as follows:

- **sFlow Exporter/Switch Address** - enter the address of an SNMPv2-capable sFlow exporter.
- **SNMP Read/Write Community String** - enter the community string for the exporter.
- **sFlow Destination** - the address of the InterMapper Flows collector. Your server may have multiple network devices, each with its own IP address. InterMapper Flows makes its best guess as to which IP address should be listed ad your sFlow collector, but it may guess wrong. If the exporter isn't registered correctly, try a different IP address.
- **Desired Flow Rate (1 per N packets)** - ask the exporter to send an sFlow update every **N** packets. The exporter may not be able to honor this request, so InterMapper Flows keeps track of the actual update rate as well.

**Additional Columns:**

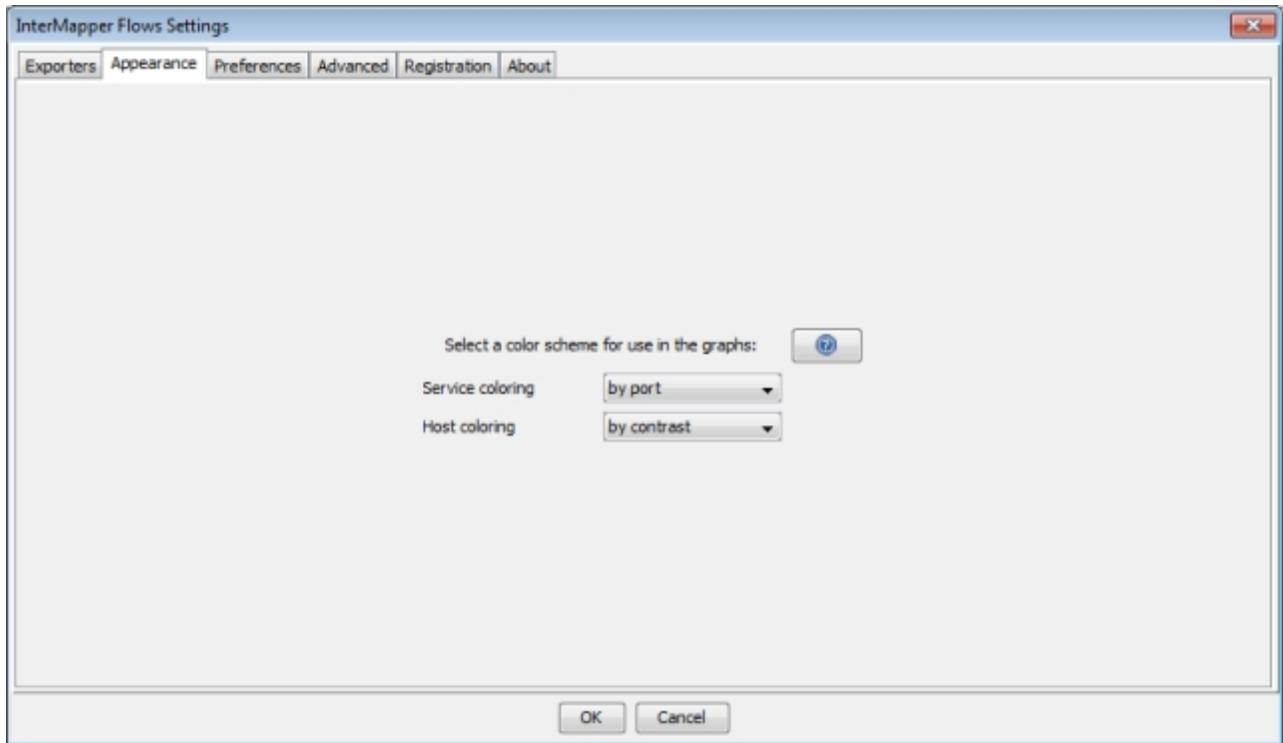
- **Expand** - click the right-pointing arrow to expand an exporter to view information for all available interfaces. Click the down-pointing arrow to collapse the exporter's interface lines.
- **Tag** - double-click to edit the tag for any exporter or interface. Tags appear in the Exporter/Interface selection dropdown in the Flows window. InterMapper Flows fills in these tags, if available, from every device.
- **Version** - shows the NetFlow or sFlow version used by the exporter.
- **Total Flows** - total number of Flow records exported.
- **Flows/hr** - average flows-per-hour from this exporter.
- **Latest Update** - the date and time of the last update from this exporter.
- **First Report** - the date and time of the first report from this exporter.

**Additional Boxes:**

- **NetFlow port** - InterMapper Flows listens for NetFlow v1, v5, v7, and v9 on this port. 2055 is the default port, but ports 9555 and 9995 are sometimes used.
- **Database remaining** - each exporter has an estimated flow rate, updated the last time it reported. The combined rate is used to calculate an estimated database capacity.
- **sFlow port** - InterMapper Flows listens for sFlow on this port. The default port is 6343. This must be different from the NetFlow port. Make sure that this port is not firewalled from any of your exporters.
- **Add sFlow Exporter button** - click this button to add an sFlow exporter. The Enter sFlow Information window appears.

### **Appearance tab**

Use the Appearance tab to choose the coloring scheme used to color charts in the Flows window.



#### **Choose color schemes as follows:**

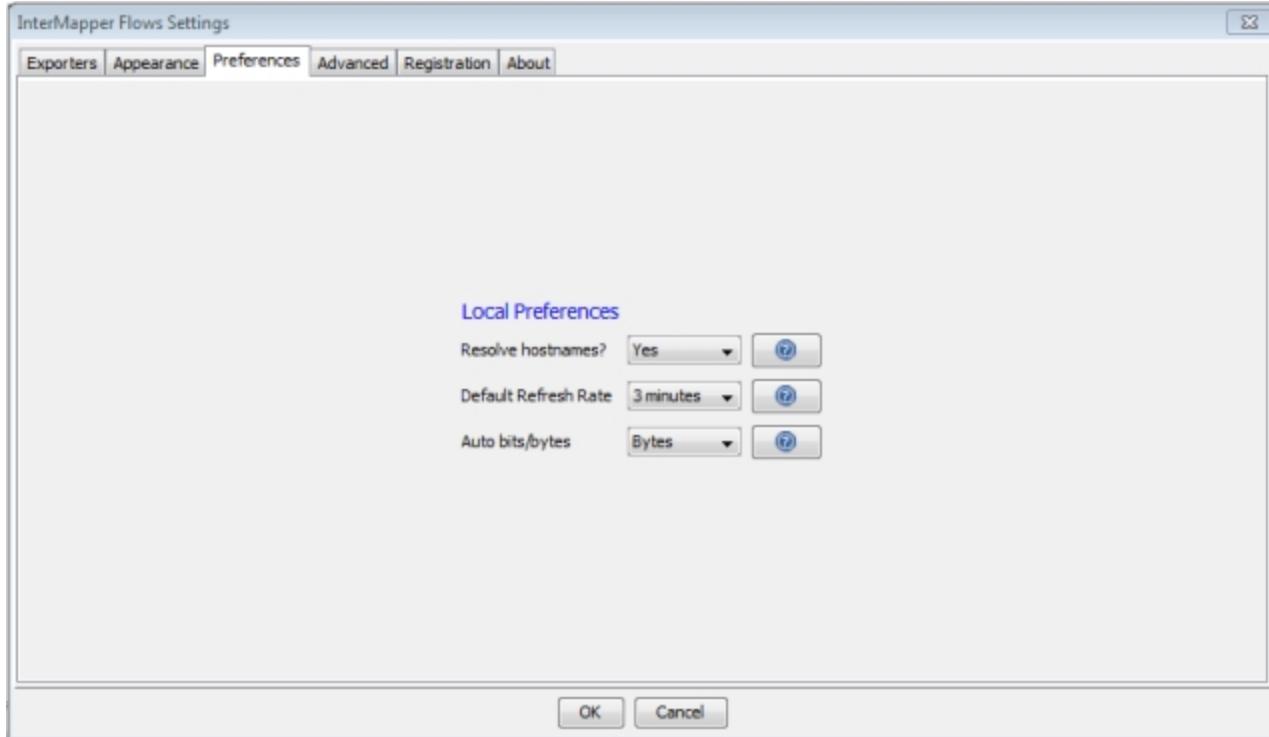
- **Service coloring** - choose a scheme to use for Services.
- **Host coloring** - choose a scheme to use for Hosts.

Two different color scheme strategies are used for charts and graphs:

- **By port or host** - colors are fixed for each port or host. This means the color for a port or host is the same in every chart in which that port or host appears. Because of the limited number of colors, it is possible for two adjacent hosts in a chart to have the same color.
- **By contrast** - chart colors are assigned in the same order for each chart. This provides greater contrast, but a single host or port might be colored differently in each chart, or in the same chart at different times.

### Preferences Tab

Use the Preferences Tab to set local preferences for InterMapper Flows.

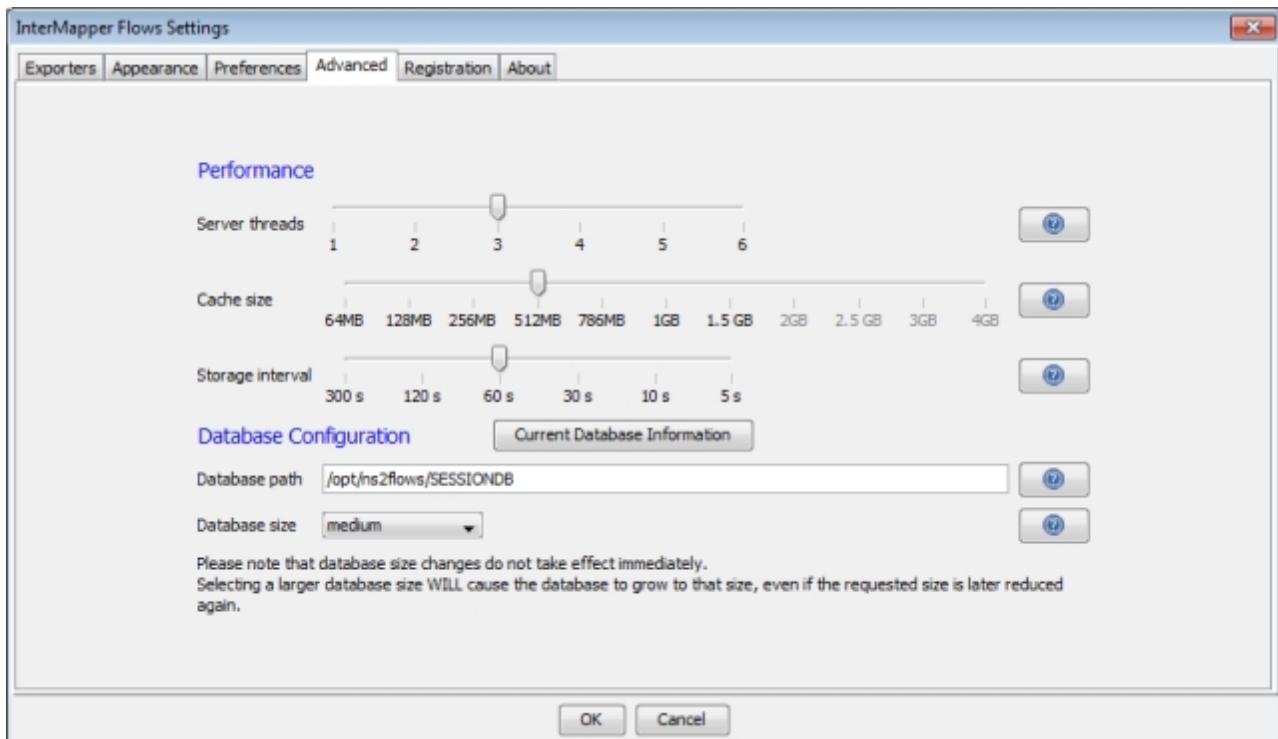


### Local Preferences

- **Resolve hostnames?** - choose **Yes** to resolve IP addresses to show host names. Choose **No** to display only IP addresses. This can improve performance and security.
- **Default Refresh Rate** - choose a default refresh rate for a new Flows window. To override this setting in any Flows window, choose a different refresh rate from the Auto-update dropdown menu.
- **Auto bits/bytes** - choose a default display setting of **Bits** or **Bytes** for any new Flows window. To override this setting, choose a different setting from the Graph Scale dropdown menu at the upper left of the Stack Chart.

### Advanced tab

Use the Advanced tab to set performance- and database-related parameters.



### Performance settings

- **Server threads** - the number of available query threads to start. In practice, this number can be quite small. It is the number of concurrent requests that InterMapper Flows will handle without queuing requests. A good rule of thumb for this value is the number of processors in the server, plus 1. For example, a quad-core server might use 5 threads.
- **Cache size** - the size of the memory session cache. Session records are written to disk regularly, but to speed up queries (for graphs and tables) a number of them are cached in memory. It is safe to set this close to the memory capacity of the server.

#### Notes:

- Larger values for the session cache will increase server startup/restart times as records are loaded from disk.
- A cache larger than 1.5Gb requires a 64-bit processor.
- **Storage interval** - the number of seconds between disk commits. Committing more often may decrease performance by using physical media more often. Committing less often requires more session cache to avoid losing data.

### Database Configuration settings

- **Database path** - specify a path to an existing directory. The server must have read/write access to this directory.
- Note:** If you change the database path, the existing database is not copied to the new location, however, you can do this manually while the service is not running. The old database is not deleted.
- **Database size** - available sizes as shown below (calculated from the current flow rate):

Size	# Session Records	Size on disk
tiny	3000	~400 KB
small	~8 million	~1000 MB
medium	80 million	~10 GB
large	800 million	~100 GB
very large	2 billion	~256 GB

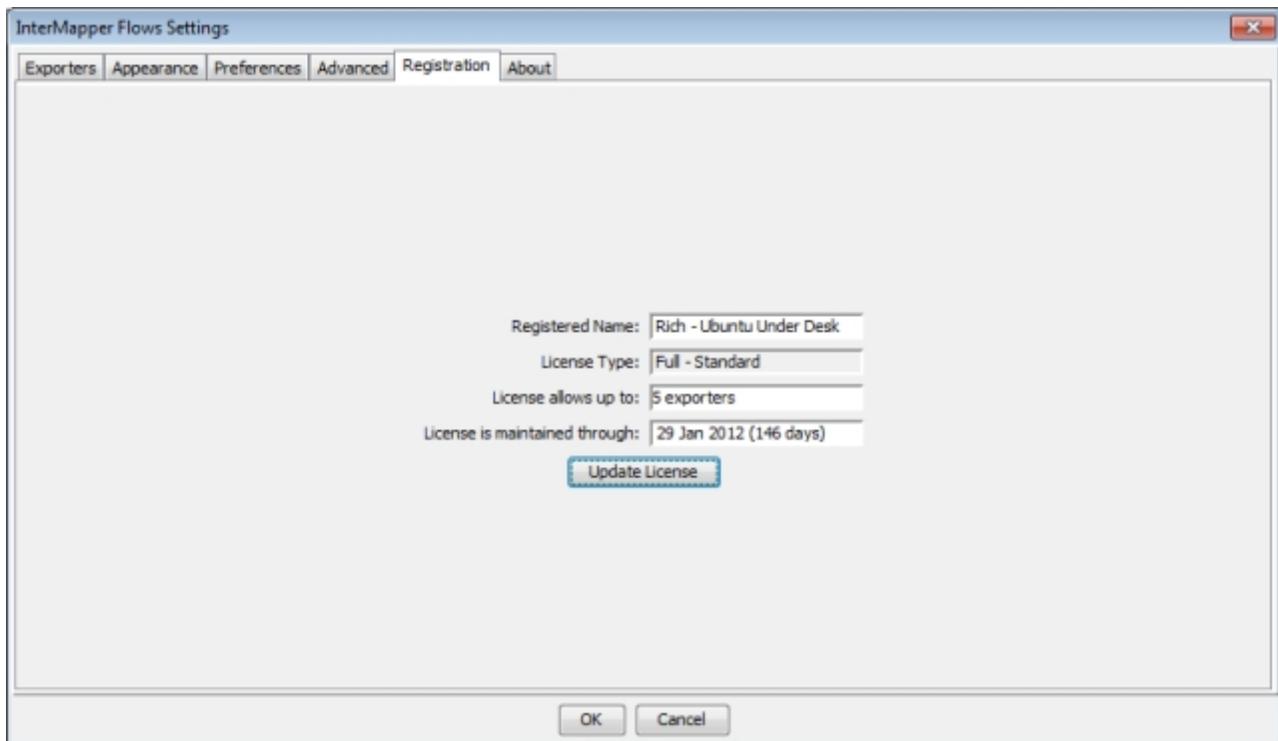
**Note:** Resizing a database may be a gradual process. Growing a database simply allocates more space for session records, while shrinking a database takes longer, as records are cropped over time.

- **Current Database Information** button - shows the maximum size of the database, the number of records in the database, and the number of days over which those records have been collected.

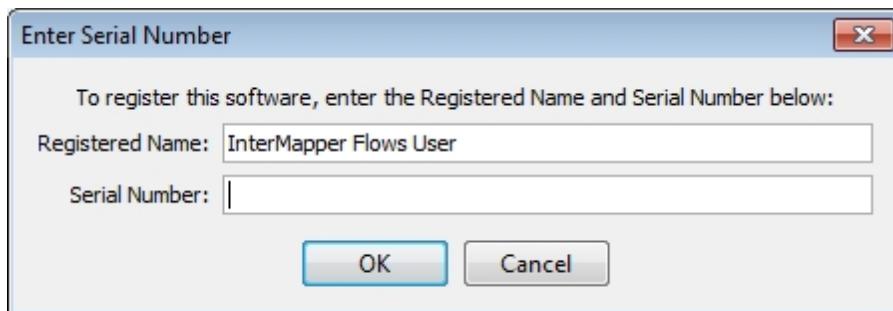


### **Registration tab**

Use the Registration tab to enter or update your license key.

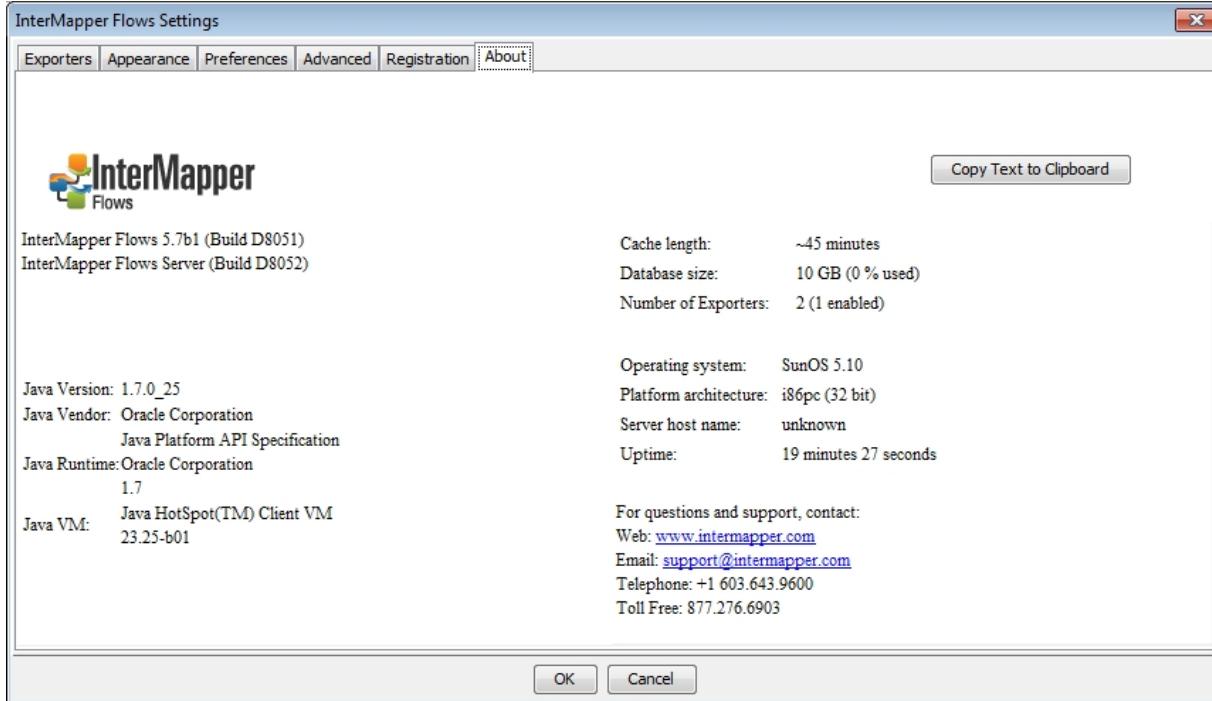


- **Registered Name** - the name to which the software is registered.
- **License Type** - Demo, Evaluation, NFR (Not for resale), Test, or Full.
- **License allows up to** - the number of allowed exporters.
- **License operates through** - for evaluation, demo and NFR serial numbers, this is the last day of operation for InterMapper Flows. For purchased licenses, the end date for the maintenance contract is shown.
- **Update License** button - click to enter a user name and serial number for your copy of InterMapper Flows. The Enter Serial Number dialog appears:



### About tab

Use the About tab to view information about InterMapper Flows and the platform on which it is running. Click **Copy to Clipboard** to copy detailed information about the configuration of InterMapper Flows to the clipboard for pasting into another document. This is useful when corresponding with technical support.



## Using the Layer 2 View

### Overview

Use the Layer 2 view of the Device List window to view information about your switches and what's connected to them. With the Layer 2 view, you can answer questions like:

- What switch port is this computer connected to?
- What computers are connected to that switch port?
- How are these two switches connected?

### What Layer 2 Processing Does

InterMapper periodically scans all the switches on maps where Layer 2 is enabled (see the [Layer 2 Features pane \(Pg 84\)](#) of the Map Settings window). It collects information regarding which devices are attached to which ports, what other switches are present, and places the resulting information into the Endpoints pane.

InterMapper Layer 2 uses device MAC addresses to identify devices. It looks through the forwarding databases of the switches to identify the ports where devices connect. The Layer 2 process also looks through ARP tables and other sources of data to map the MAC addresses to IP addresses, to collect DNS names, VLANs, and other information, locating each device as precisely as it can.

When Layer 2 passes the connection information back to the map, automatically showing the connection of each device on the map to the proper port on the switch.

In order to use InterMapper's Layer 2 features, you must:

1. Enable [Layer 2 features](#) in the Server Settings window.
2. Enable them in the [Map Settings window](#) for any map containing switches you want to include during Layer 2 discovery.

To use the Layer 2 connection information to make connections on the map automatically, select ***Automatically change this map to show Layer 2 connections*** in the Layer 2 Features pane of the Map Settings window.

**Note:** The Layer 2 View is disabled when:

- Layer 2 features are not enabled.
- The user is not an administrator.
- The user is not a member of the FullLayer2Access group.

### Viewing Layer 2 Information

Layer 2 information is shown in a "sub-view" of the global Device List Window, available from the Window menu.

#### To open the Layer 2 view:

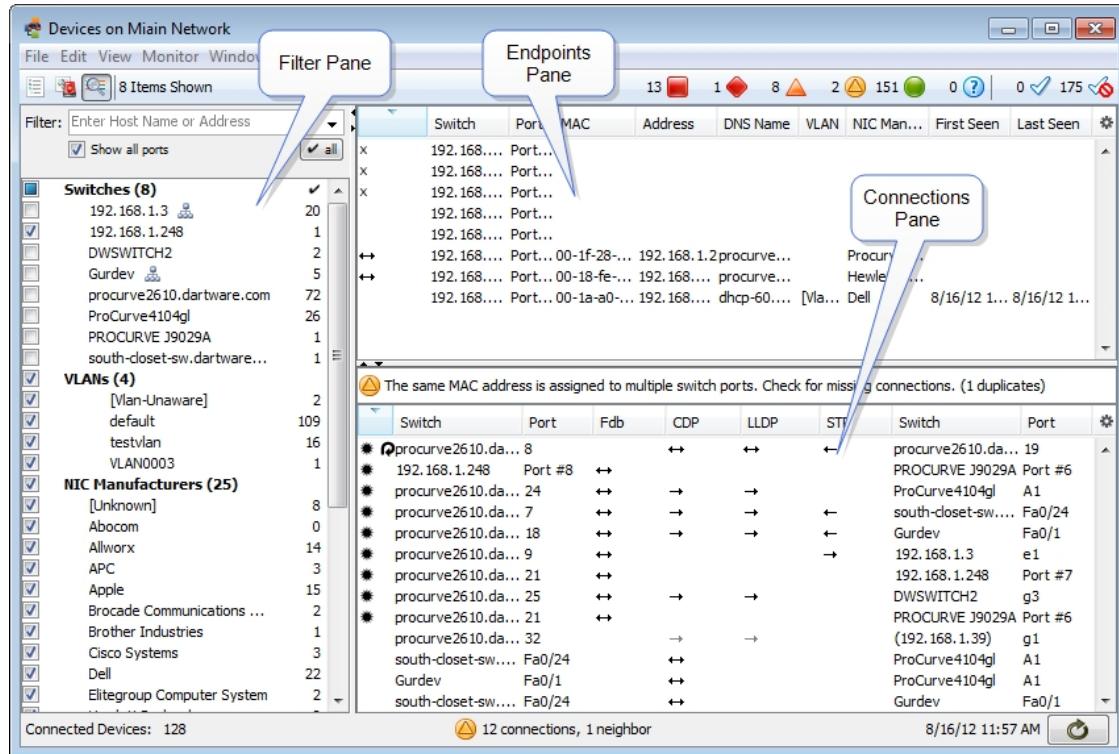
1. From the Window menu, choose Device List. The Device List window opens.
2. In the Device List window, click the Layer 2 view button, as shown at right. The Layer 2 window appears.



### Alternatively, you can:

- Right-click a device on a map and choose **Show in Layer 2** from the context menu.
- Select a device on a map and choose **Show in Layer 2** from the Monitor menu.

### The Layer 2 View



### Understanding the Layer 2 View

The Layer 2 View contains three main panes:

- The **Endpoints pane (Pg 317)** - the upper right pane lists all switch ports and the devices connected to them. It contains only those ports and devices that match the filter criteria in the Filter pane.
- The **Filter pane (Pg 315)** - the left pane provides criteria for showing or hiding endpoints based on their presence on a particular switch, VLAN, or the endpoint's manufacturer. lists available switches, the VLANs in which they appear, and manufacturers of network interface cards of the devices connected to them. Use the check boxes to select or hide endpoints in the Endpoints pane, and type additional criteria to help select the endpoints you want to view.
- The **Connections pane (Pg 318)** - the lower right pane provides details about switch-to-switch connections.

## The Filter Pane

Use the Filter pane to limit the endpoints you want to view in the Endpoints pane. Choose a combination of switch, VLAN and NIC Manufacturer to select the devices you want to view.

The **Switches** section lists each switch by name, and shows the number of endpoints attached to that switch.

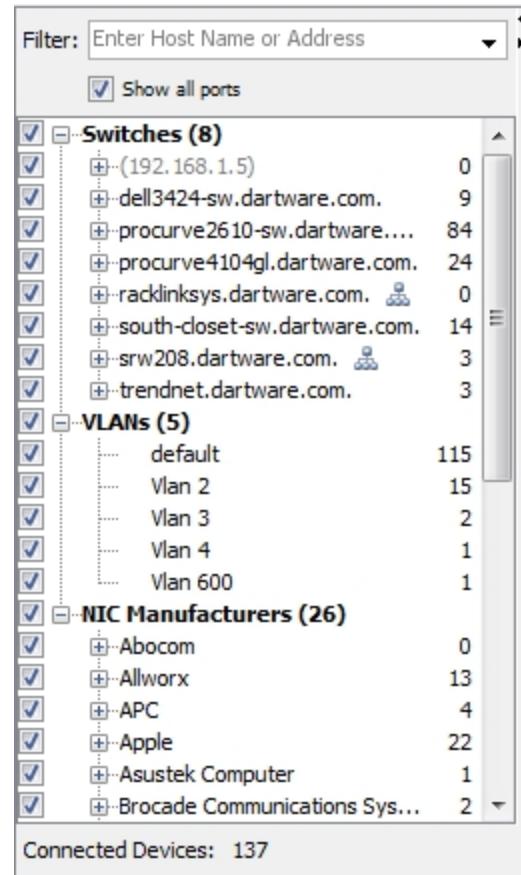
The **VLANs** section lists all VLANs and the number of endpoints on each.

The **NIC Manufacturers** section lists all unique NIC Manufacturers connected to devices.

The right column of the Filter Pane shows a count of endpoints present for each of the criteria. See [Understanding Endpoint Counts \(Pg 316\)](#) for more information.

Use these methods to control the filter criteria:

- By default, all check boxes are selected.
- Select or clear check boxes to get the combination of switch, VLAN, and NIC Manufacturer that matches the devices you want to view.
- Double-click a check box to select it and clear all other check boxes in the section.
- Expand the Switch tree to view and select switch ports.
- Right-click a switch and choose **Remove switch from Layer 2 database** to prevent the switch from being polled for Layer 2 information. This is equivalent to the **Poll this address for Layer 2 information** check box, available in the [Set Behavior window](#).
- Expand the VLANs tree to view and select VLANs.
- Expand the NIC Manufacturer tree to view and select NIC models from those available.
- Select or clear the **Show all ports** box to show or hide the ports to which in the Endpoints pane to which nothing is connected.
- Use the Filter Control (see below) for additional control of the set of rows that are displayed in the Endpoints pane.
- The Filter box provides significant additional filtering capability. Enter a hostname or address in the **Filter box** to limit the devices shown in the



Endpoints pane. See [Using the Filter Box \(Pg 317\)](#) below for many more options.

- Certain flags appear next to entries. See [Understanding Layer 2 Flags \(Pg 320\)](#).
- A switch that appears in grey and in parentheses indicates that the switch was previously detected, but is no longer on a Layer 2-enabled map.

### **Understanding Endpoint Counts**

The right column of the Filter pane shows the number of Endpoint devices (specifically, the number of distinct MAC addresses) for each of the filter criteria.

- An SNMP-enabled managed switch or hub appears as zero endpoints, since it is not considered an endpoint.
- A single endpoint (host, workstation, server, router, etc.) will show as one endpoint.
- If an unmanaged hub or switch is present, or if the switch is not present on a Layer 2-enabled map, the endpoint count reflects the number of endpoints detected "out that port". In some cases, this may be a very large number of endpoints.

The number of endpoints indicated in the Filters panel often exceeds the number of entries in the Endpoints pane. This discrepancy occurs because the Endpoints panel often displays multiple entries for the same MAC address. Multiple entries appear in the following cases:

- **Multi-homed devices** - devices with multiple IP addresses that use a single MAC address. The flag at right appears.
- **Interior devices** - devices attached to an unmanaged switch or hub that is placed between two managed switches. InterMapper's Layer 2 algorithm cannot show the correct switch port (because it's unmanaged), so it indicates the device as an "interior" device – between two managed switches. Interior devices are indicated with left or right arrows as shown at right.

When you select the **Show All Ports** box, the Endpoints pane also shows:

- All ports, whether a device is connected or not
- Ports that are connected to other switches. (Normally these are hidden because switches are not considered endpoints.)
- Fuzzy devices (any device whose connection point cannot be completely determined.)

For more information, see [Understanding Layer 2 Flags \(Pg 320\)](#).

### Using the Filter Box

Use the Filter box, located at the top of the Device Filter pane, to limit the devices you see in the Endpoints pane.

- Enter a host name or address to view only devices connected to that domain or address.
- From the Filter dropdown menu, select or clear **Endpoints Only** to include or exclude entries for ports with switches, unknown devices, and devices identified as "fuzzy" (see [Understanding Fuzzy Devices \(Pg 322\)](#).)
- In the Map or List view, select a device, then choose **in Layer 2** from the **Show** submenu, available from the Monitor menu and the context menu, to view that device's connections in the Layer 2 View.
- If the value is in double-quotes, list all endpoints where the value is part of the NIC Manufacturer. (e.g. "App" will match "Apple", "Appliance", etc.)
- If the value is an IPv4 CIDR block, list all endpoints with IP addresses in that CIDR block. (For example, enter "192.168.1.1/24")
- If the value is decimal digits separated by periods, or just digits, treat it as an IPv4 address. There are three forms:
  - a. **192.168** matches any IP address that begins with 192.168
  - b. **.1** matches any IP address that ends with .1
  - c. **10** matches any IP address that begins with 10. (no period necessary).
- If the value is hexadecimal and separated by dashes, treat it as a MAC address. Search for endpoints with the MAC address or MAC address substring. (e.g. "00-00-0c", "00-00-d7-00-10-ab")
- If the value starts with an alphabetical character, resolve the host name to an IPv4 address and filter on that IP address.
- If the value starts with '#', process the specified debug command (e.g. "#help")

### Understanding and Using the Endpoints Pane

The Layer 2 view's Endpoints pane lists all *endpoint* devices (servers, workstations, and routers) and the switch ports they are connected to. It does *not* include managed switches, which are not considered to be endpoints.

The columns of the Endpoints pane are:

- **Flags** - flags that give detailed information about the port or device. See [Layer 2 Flags \(Pg 320\)](#) for more information.
- **Switch and Port** - describe a particular switch port
- **MAC and Address** - contain the MAC address and the IP Address of the device.
- **DNS** - the DNS name of the device (if known).
- **VLAN** - the VLAN(s) supported by this port.
- **NIC Manufacturer** - the manufacturer of the Network Interface Card (NIC), derived from the MAC address.
- **First Seen** - the time the device was first detecting during a Layer 2 scan.
- **Last Seen** - the most recent time the device was detected during a Layer 2 scan.

- **Present** - two numbers, separated by "/". The first is the number of times this device was seen during a scan, the second is the total number of scans.
- **ifAlias** - the ifAlias taken from the Switch and Port (if available).

Switch	Port	MAC	Address	DNS Name	VLAN	NIC ...	First Seen	Last Seen	
procure4104gl.dartware.com	A1	00-12-0e...	192.168.1....	trendnet...		Abocom			
procure4104gl.dartware.com	D1	00-25-4b...	192.168.1.63	dhcp-63.d...	Vlan 600	Apple	10/20/11 ...	10/20/11 ...	
procure4104gl.dartware.com	D1	00-25-4b...	192.168.1.63	dhcp-63.d...	default	Apple	10/20/11 ...	10/20/11 ...	
procure4104gl.dartware.com	D9	00-50-56...			default	VMware	7/25/11 6...	7/25/11 1...	
procure4104gl.dartware.com	B10	00-50-56...	192.168.1....	dhcp-122...	default	VMware	10/19/11 ...	10/19/11 ...	
procure4104gl.dartware.com	D1	00-25-4b...	192.168.1.68	dhcp-68.d...	Vlan 600	Apple	10/20/11 ...	10/20/11 ...	
procure4104gl.dartware.com	D1	00-25-4b...	192.168.1.68	dhcp-68.d...	default	Apple	10/20/11 ...	10/20/11 ...	
procure4104gl.dartware.com	D18	00-50-56...	192.168.1....	dhcp-118...	default	VMware	6/24/11 2...	10/20/11 ...	
procure4104gl.dartware.com	D7	00-50-56...	192.168.1....	solaris.dar...	default	VMware	7/22/11 6...	10/20/11 ...	
procure4104gl.dartware.com	D2	00-50-56...	192.168.1....	aurorax-s...	default	VMware	6/24/11 2...	10/20/11 ...	
procure4104gl.dartware.com	D1	00-17-f2-0...	192.168.1....	cswmac.d...	default	Apple	6/24/11 2...	10/20/11 ...	
procure4104gl.dartware.com	D1	00-11-11-...	192.168.1....	cswvmwar...	default	Intel	6/24/11 2...	10/20/11 ...	
procure4104gl.dartware.com	D1	00-0c-29-...	192.168.1....	csww2k8...	default	VMware	8/16/11 4...	10/20/11 ...	
procure4104gl.dartware.com	B17	00-50-56...	192.168.1....	supportw2...	default	VMware	7/22/11 6...	10/20/11 ...	
procure4104gl.dartware.com	B14	00-0c-29-f...	192.168.1....	aurora-ms...	default	VMware	6/24/11 2...	10/20/11 ...	

### Controlling what you see in the Endpoints Pane

- In the Filter pane, click various combinations of Switch, VLAN, and NIC Manufacture to control the rows that appear in the Endpoints pane.
- In the Endpoints pane, click a column heading to sort by that column. Click again to reverse the sort.
- Click the sprocket at the right end of the Endpoints pane's column heading bar to add to or remove columns from the Endpoints Pane.
- By default, the Endpoints pane shows endpoints only - it hides ports connected to other switches, ports with no devices attached (regardless of whether they are up or down) or devices marked as "fuzzy." Select the Show All Ports box near the top of the [Filter pane \(Pg 315\)](#) to show all ports.

### Using Layer 2 Information to Update Map Connections

In addition to this tabular view, InterMapper can pass the connection information back into the Map view, automatically showing the connection of each device on the map to the proper port on the switch. This simplifies the creation and arrangement of your maps; all you need to do is tidy up the map. Turn this feature on from the Layer 2 Features pane of the [Map Settings \(Pg 91\)](#) window.

### Understanding and Using the Connections Pane

The Layer 2 Connections pane lists all switches, the switches they are connected to, and the ports through which they are connected. This information is derived from the switch's forwarding tables, as well as information available through Cisco Delivery Protocol (CDP), Link Layer Delivery Protocol (LLDP), and Spanning Tree Protocol (STP).

Switch	Port	VLAN	Fdb	CDP	LLDP	STP	Switch	Port	
procurve2610-sw.dart...	7	default	↔	→	→	←	south-drawer-sw.dar...	Fa0/24	▲
procurve2610-sw.dart...	8		↔	↔	↔	←	procurve2610-sw.d...	19	≡
procurve2610-sw.dart...	9	default	↔			←	dell3424-sw.dartwar...	e1	▼
procurve2610-sw.dart...	9			→	→		procurve4104gl.dart...	A1	
procurve2610-sw.dart...	18			→	→		(192.168.1.35)	Fa0/1	
procurve2610-sw.dart...	28	default	↔				srw208.dartware.com.	e6	
dell3424-sw.dartware...	e4	default	↔				procurve4104gl.dart...	A1	

The Connections Pane

### Connections Pane Columns

- **Switch and Port** - each row shows two switches and two ports. These switches are known to be connected by the specified ports.
- **VLAN** - The VLAN(s) that are present on the connection between the switches.
- **Fdb** - (Forwarding database)
  - A **two-headed arrow** means that both switches' forwarding databases have entries for each other.
  - A **single-headed arrow** points toward the switch that is in the other switch's Fdb; there is no corresponding entry in the reverse direction.
- **CDP and LLDP** - (Cisco Discovery Protocol and Link Layer Discovery Protocol)
  - A **two-headed arrow** indicates that both switches hear the other's protocol advertisements.
  - A **single-headed arrow** points to the switch that receives the protocol advertisements from the other.

**Note:** Some CDP/LLDP-aware switches may turn off advertisements on certain ports. This affects the arrows.
- **STP** - (Spanning Tree Protocol)
  - A **single-headed arrow** points away from the root of the spanning tree.
  - A **two-headed arrow** indicates that the path for some spanning trees (such as certain VLANs) goes one way, while the path for other spanning trees goes the other way. If there are loops between these two switches, the port closest to the root may be in a blocking state.

### Using the Connections Pane

- Click a column heading to sort by that column. Click again to reverse the sort.
- Click the sprocket icon at the right end of the column heading bar to choose the columns that appear in the list.

### Understanding Layer 2 Flags

The meanings of flags in the Layer 2 view depend the pane in which they appear.

#### **Flags in Device Filter and Endpoints panes**

In the Filter and Endpoints panes, flags indicate the following:

- ↔ **Switch-to-Switch connection** - Connected to another switch
- ← **Interior device** - The device is attached to a hub or switch that is or connected between ports of two managed switches. The left or right arrow → points away from the spanning tree root.
- ✗ **Down** - This port is not operating.
- 🏡 **Multi-homed device** - A single MAC address has multiple IP addresses. Each IP addresses is shown as a separate row in the Endpoints pane.
- 👻 **Ghost** - Port is not active, and the endpoint (device with this MAC address) has not been seen elsewhere in the network. It was last seen on the indicated switch port.
- ↔ **Not present on Map** - Port is connected to a managed switch, but that switch is not present on a Layer 2-enabled map.
- ← **Fuzzy** - The Layer 2 process cannot determine the exact port where the or device is attached. See [Understanding Fuzzy Devices \(Pg 322\)](#) below.  
→  
or  
↓
- ☒ **Duplicate MAC address detected** - The Layer 2 process has found the same MAC address on two separate switch ports.
- ❗ **IP conflict** - The Layer 2 process has found the same IP address on two separate switch ports.
- 🌐 **Spanning tree root** - This switch is the root of the spanning tree.
- 🔗 **Loop** - a port is connected to another port on the same switch.
- 📶 **Wireless (assigned manually)** - a port or VLAN has been tagged as Wireless. The Wireless flag appears next to the port in the Filters and Endpoints panes. See [Manual Tagging \(Pg 322\)](#) below.
- 🌐 **Virtual machine (assigned manually)** - All NICs from this manufacturer with this OUI (organizationally unique identifier) are virtual machines. The Virtual Machine flag appears next to the OUI and any endpoints that use NICs with that OUI. See [Manual Tagging \(Pg 322\)](#) below.

### ***Flags in the Connections pane***

The following flags may be present in the Flags column of the Connections pane.

- ★ **Confirmed connection** - (will be exported to map).
- ← **Not present on Map** - Port is connected to a device that is not present on or a Layer 2-enabled map.
  -
- ⌚ **Loop** - Indicates a direct port-to-port connection on this switch
  - ↔ Both ends see each other's CDP/LLDP advertisements.
  - ← The left end of the connection sees the right end's CDP/LLDP advertisements.
  - The right end of the connection sees the left end's CDP/LLDP advertisements.
  - Connected to a device that is not present on any map.
- ★ Confirmed connection (will be exported to map).

**STP column:** In the STP column of the Connections Pane, arrows indicate the direction of travel of STP bridge information.

- ← Right switch is the left switch's path to root for one or more of the left switch's spanning trees. (Right switch's port may be in blocking state, if there are loops.)
- Left switch is the right switch's path to root for one or more of the right switches' spanning trees. (Left switch's port may be in blocking state, if there are loops.)
- ↔ Right switch is left switch's path to root for one or more spanning trees and left switch is right switch's path to root for other spanning trees. (Either switch's port may be in blocking state for one or more spanning trees, if there are loops.)

## **Understanding Fuzzy Devices**

A device with a MAC address whose location in the Layer 2 topology cannot be completely determined is considered a “fuzzy” device by InterMapper.

Fuzzy devices are quite common, and can occur for a number of reasons. The Layer 2 engine attempts to collect information from all the switches nearly simultaneously. However, some time can elapse between the times that two switches finishes collecting Layer 2 information. During this time period, a MAC address collected from one switch may “age out” of another switch. Alternatively, a device may connect to the network during Layer 2 collection, so its MAC address is reported in one switch's forwarding tables, but not in the edge switch (due to the difference in scan times for the two switches).

Devices may be classified as fuzzy due to bugs in certain switch models. For example, Help/Systems has a small managed desktop switch that doesn't report its complete forwarding table via SNMP. The extra un-reported devices appear as fuzzy, because the upstream switch reports the MAC address, but the downstream switch never reports them (even though the switch is otherwise perfectly functional.)

Fuzzy devices are distinct from *Interior* devices. A fuzzy device appears to be in the middle of the network (between two switches) because InterMapper doesn't have complete information. An interior device appears to be in the middle of the network because there is actually another switch or hub located there, but it's not part of the Layer 2 information.

## **Manual Tagging**

For certain kinds of connections, you may want to tag a port or endpoint device so you can see easily what kind of device it is.

Here are some tagging options:

- ⌚ Wireless (assigned manually) - Right-click a switch port or VLAN in the Filters pane and select **as Wireless** from the Tag submenu. The Wireless icon appears next to the port or VLAN.
- \_VM Virtual machine (assigned manually) - Right-click a port in the NIC manufacturer's section of the Filters pane (one that is associated with a virtual machine ), and select **as Virtual Machine** from the Tag submenu. The Virtual Machine icon appears next to the OUI and any endpoints that use NICs with that OUI.

## Mapping With Layer 2

You can use Layer 2 to create maps that accurately reflect your network's topology. There are several ways to do this - two methods are detailed here.

### Converting an Existing Map to use Layer 2

For maps with a relatively small number of devices, you can convert the map directly so that it uses Layer 2 features to configure the map. You can also create a new map and use Layer 2 information to add the switches and devices.

#### To convert an existing map to Layer 2:

1. Open the map you want to convert and make it editable.
2. From the Map Settings window's Layer 2 Features pane, select the **Enable Layer 2 features for this map** check box.
3. From the Window menu, choose **Device List**, and choose **Layer 2** from the View menu or click the **Layer 2 View** icon. The Layer 2 window appears, showing your available Layer 2 devices.
4. In the Layer 2 view, click the **Refresh** button at the lower right corner of the window.
5. From the Map Settings window's Layer 2 Features pane, click **Change Now**. Any Layer 2 connections are broken and reconnected using Layer 2 information.
6. Select all devices and choose **Organic** from the Format menu's Arrange submenu. The map now uses Layer 2 information to connect the devices on the map.

#### To create a new map using Layer 2 information:

1. Create a new empty map and make it editable.
2. From the Window menu, choose **Device List**, and choose **Layer 2** from the View menu or click the **Layer 2 View** icon. The Layer 2 window appears, showing your available Layer 2 devices.
3. In the Layer 2 view, click the **Refresh** button at the lower right corner of the window.
4. In the Connections pane, select the lines for the switches you want to map and choose **Copy** from the Edit menu.
5. Paste into your new map. In a few moments the switches appear on your map.
6. From the Map Settings window's Layer 2 Features pane, select the **Enable Layer 2 features for this map** check box.
7. Click **Change Now**. The switches on the map are connected as defined by Layer 2 information. This represents your network's switch backbone.
8. From the Layer 2 window's Endpoints pane, select all endpoints, copy them, and paste them into your map.
9. From the Map Settings window's Layer 2 Features pane, click **Change Now**. The devices are connected as defined by Layer 2 information.
10. Although optional, you may find it helpful to select all devices and choose **Organic** from the Format menu's Arrange submenu.

## InterMapper Reports

### Overview

Use the InterMapper Reports server to create, view, print and save reports that use data collected from InterMapper servers.

InterMapper Reports is a module of [InterMapper DataCenter \(Pg 564\)](#). Use your favorite browser to use InterMapper Reports to create your reports.

**Note:** Before you can use it, you must start the InterMapper Reports Server. This allows InterMapper to send data to the Reports Server where it is collected in a database.

#### To start collecting data:

1. From the Server Settings window, choose **Reports Server**. The Reports Server pane appears.
2. From the Reports Server pane, click **Start**. The Configure button becomes active.

#### To view the Reports Server interface:

- From any InterMapper map, right-click a device and choose **Reports...** from the **Show in** submenu. A browser page launches and the InterMapper Reports window appears.

### Creating A Report

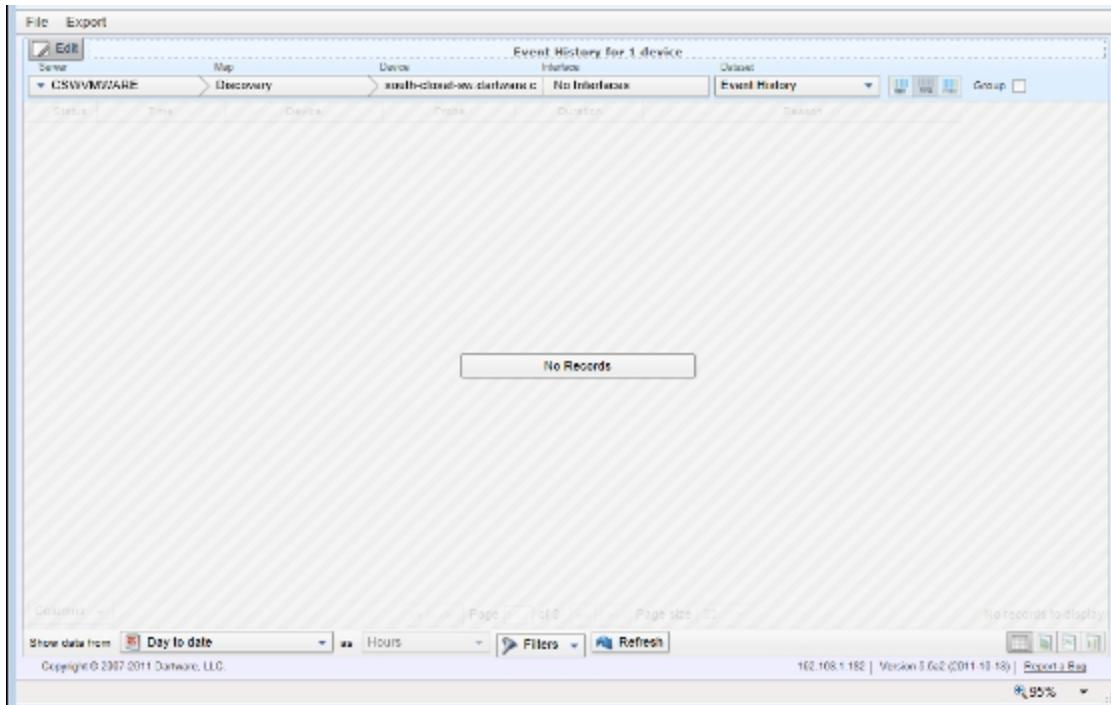
Use the Reports Server web UI to create, save, load, link, or print a report.

You can open the InterMapper Reports window from an InterMapper map.

### Opening the Reports Window

To open the InterMapper Reports window:

1. Select a device in an InterMapper map window.
2. Right-click the device and from the Context menu, choose **Reports**. The InterMapper Reports window appears in a new browser window as shown below.



*InterMapper Reports window in View mode*

Two other ways you can also open the Reports window:

- Use this URL:

[https://\[InterMapper Server address\]:8182/~imreports/](https://[InterMapper Server address]:8182/~imreports/)

- From the Server Settings window, view the Reports Server pane, and click Configure, log in to the InterMapper DataCenter, and click **View Reports** in the InterMapper Reports box.

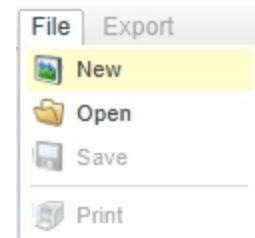
## Creating a New Report

There are several ways to create a report:

- **From the Map Window** - open the Reports window after selecting one or more devices or interfaces.
- **From a template** - a number of pre-configured templates are available.
- **From scratch** - using an empty template. Select your own devices or interfaces, the data you want to show from each, any calculations you want to apply, a report period and interval, and the way in which the data is shown.

### To create a new report from a template:

1. If you haven't stored any reports, you can start with a template.
2. From the Report window's File menu (shown at right,) choose **New**. The Templates list appears, as shown below.
3. Click to choose a template from the left side of the list. A set of parameters for that template appears on the right. You can also click **Saved Reports** to view a list of reports that have already been saved.
4. Choose from the template's available parameters.
5. Click Create Report. The report loads with the selected parameters.



**Create a new report**

Select a report template, then configure its options, or use the button below to create a fresh report.

 <b>Empty Report</b> This report creates a chart of data collected by InterMapper for a set of devices.	Devices <input type="button" value="All Devices"/>
 <b>Chart Data for Devices</b> Chart of data for one or more devices	Dataset <input type="button" value="Availability"/>
 <b>Chart Data for Interfaces</b> Chart of data for one or more interfaces	Time Period <input type="button" value="Previous 24 hours"/>
 <b>Device Overview</b> Overview of recent device activity	How would you like to display the results? Display As <input type="button" value="Line Chart"/>
 <b>Device Status</b> Device status break-down	Keep in mind that the more devices you have selected, and the wider the time period, the longer the report will take to run.
 <b>Event History</b> Recent device status activity	
 <b>Recent Outages</b> Network-wide list of current outages	

*The Templates List*

### Report types

Report templates fall into two general categories:



**Graph** - Can be used with datasets that contain only numeric data. Three display options are available in a Graph report:

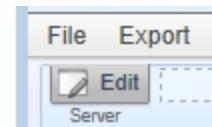
- **Area** - a line chart with the area below the line filled.
- **Line** - a line chart with a dot at each data point.
- **Bar** - a bar chart.



**Table** - a tabular report, containing columns and rows.

### To create a new report from the Empty Report template:

1. If you choose the Empty Report template, you can create a report from scratch. You can also recall an existing report to use as a starting point.
2. Click **Edit**, located just below the File and Export menus. The Reports window changes to Edit mode. (The **Edit** button toggles the report in and out of Edit mode.)



### Editing a Report

The image below shows the controls you can use to fine-tune your report definition.



InterMapper Reports window in Edit mode

Once in Edit mode, you need to answer some or all of these questions (in the areas shown above), depending on your requirements for this report:

- **Which devices?** Select the devices you want to include in the report. Select from the available **Servers**, **Maps** and **Devices**. If network interface data available for any of the selected devices, select one or more Interfaces.
- **Which data?** Choose from available Datasets. A number of datasets, including *Details* and *Event History*, are standard for all devices, other datasets are based on data available from your device selection.

**Note:** Currently, only one dataset can be included in a report.

- **Calculations?** If you have selected a Dataset other than Details and Event History, such as Response Time, you can choose from some basic calculation options. Choose **Min**, **Avg**, or **Max** to specify how the results are displayed.

**Min** shows the only lowest values for the dataset.

**Avg** averages the results (most commonly used).

**Max** shows only the highest values in the dataset.

The Group checkbox allows devices in your selection to be grouped as one dataset in the results.

- **Period of time?** Choose a start date or date range. (Not active when Detail dataset is selected.) For other datasets, common date selections are available. When specifying a date range, the calendar indicates whether data is available from the selected date range (grayed for no data, black for data)
- **Interval?** Specifies data interval, which controls the density of the data over time.

**Note:** Event History and Details datasets do not use Interval.

- **Report Type?** Choose how the dataset results are displayed. By default, a Tabular report (list) is shown. When the selected dataset contains numeric values, you can also choose Area, Line or Bar chart. For Event History and Details, only a tabular view is available.

### **Additional Report-editing Features**

Use a number of other controls to customize your report further:

- Click the **title** to edit it.
- For tabular reports, **click a column heading** to sort by that column; click again to reverse the sort. The sort order is saved with the report.
- To change the order of tabular report columns, **drag a column heading** to move the column to the right or left.
- To save the report, click **Save** from the Report window's File menu, give the report a name, and click **Save Report**.

### **Opening a Saved Report**

You can save any number of reports, then open, view or print them at a later time. For more information, see [Managing and Printing Your Reports \(Pg 340\)](#).

### Selecting Source Data

When creating a report, you first need to choose the devices or interfaces for which data is included in the report.

Use the data source selection bar to select the devices or interfaces for your report.

Server	Map	Device	Interface
InterMapper Server	scan test	192.168.81.1	No Interfaces

#### To select data sources:

- Click anywhere in the source selection bar shown above. A selection tree appears, as shown below.

Server	Map	Device	Interface
InterMapper Server	2 Maps	2 Devices	No Interfaces
<input checked="" type="checkbox"/> Check All <input type="checkbox"/> Uncheck All	<input checked="" type="checkbox"/> Check All <input type="checkbox"/> Uncheck All	<input checked="" type="checkbox"/> Check All <input type="checkbox"/> Uncheck All	<input checked="" type="checkbox"/> Check All <input type="checkbox"/> Uncheck All
<input checked="" type="checkbox"/> InterMapper Server	<input type="checkbox"/> Atlanta-icons <input type="checkbox"/> Backbone <input type="checkbox"/> Central Warehouse #1 <input type="checkbox"/> Central Warehouse #2 <input type="checkbox"/> Central Warehouse #3 <input type="checkbox"/> Central Warehouse #4 <input type="checkbox"/> Central Warehouse #5 <input checked="" type="checkbox"/> Chicago Network	<input type="checkbox"/> /Chicago/Warehouse <input type="checkbox"/> 127.0.0.1 <input checked="" type="checkbox"/> Marketing <input type="checkbox"/> Sales <input type="checkbox"/> Sales <input type="checkbox"/> Shipping	<input type="checkbox"/> 1 - MS TCP Loopback <input type="checkbox"/> 131076 - WAN (PPP) <input type="checkbox"/> 2 - Intel(R) PRO/10
	<input type="checkbox"/> DSLmap		

- Select or clear the check boxes for the devices or interfaces whose source data you want to include in the report.
- Select the **Show deleted devices & interfaces** check box to include devices or interfaces that have been deleted.
- Click the **Select All** or **Unselect All** to select or unselect all devices or interfaces in a column.
- When finished selecting, click the source selection bar. The selection tree disappears, and the selected data appears.

**Note:** If you select a large amount of data over a large time range, it may take a few moments or longer for the data to appear. This depends on a number of variables - the speed of reports server CPU, the amount of data, the time units selected.

## Selecting a Dataset

To create graphs, you need to select a dataset that contains numeric values. The datasets available depend on which devices are selected, the probes used to monitor those devices, what datasets are recorded through those probes, and whether those datasets are being exported to the Reports Server database.

A dataset is available when retention policy for the selected device is not set to **None** and one of the following is true:

- For devices, response time or short-term packet loss are always stored.
- For interfaces, incoming or outgoing bytes/second are always stored.
- If the dataset is specified in the probe to be 'autorecord' .
- If a chart was created from the dataset by clicking it in the Status window or dragging it from the Status window to an existing chart.

### To select a dataset:

- From the Dataset dropdown menu, near the right of the device selection controls, choose a dataset. Assuming you are still in Table view, a list of values appears.

Interface	Dataset
No Interfaces	Availability (%)
Availability (%)	General
Latest Response time (ms)	Reports
Maximum Response time (ms)	InterMapper
Packet loss (%)	
Response time (ms)	
Response time :units(msec)	
Short-term packet loss (%)	

## Selecting Data Grouping



### Grouping by time

In most cases, the selected time scale causes each data point to represent a group of raw samples. Use the data grouping buttons to specify how you want the group of samples represented by a graph data point to be displayed.

### To select data grouping for each time period:

- Click **Min** to display the minimum value from the group of samples during a data point's time period.
- Click **Avg** to take the average value from the group of samples during a data point's time period.
- Click **Max** to display the maximum value from the group of samples during a data point's time period.

### Grouping by device or interface

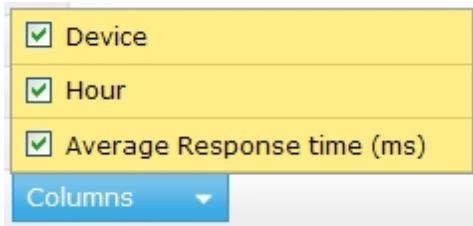
When multiple devices or interfaces are selected, each device or interface's dataset appears as a line or bar on the graph. The Group check box allows you to group the datasets from multiple devices or interfaces into a single dataset that shows the minimum, average or maximum value for all devices in the group over the selected time period.

To view devices or interfaces as one dataset:

- Select the **Group** check box.

### Selecting Columns (Table view)

In Table view, regardless of the selected dataset, use the **Columns** selector to choose the columns to show in the report.



### Using the Page Controls

Use the page controls to choose the page of data you want to view.



- Click the left and right arrow buttons to move to the start or end of the report or to move to the previous or next page.
- Type in a page number to move to that page.
- Use the dropdown selector to specify the number of results are shown on a page.

### Selecting a Data Range



You can limit the amount of data from the dataset that is displayed in the report. In selecting a data range, you select data over a time range, and control the density of that data over the specified range. You do this using the **Show Data From** controls at the bottom of the window. Select a range of data by date, and specify the units to use (hours, days, weeks, months, etc.). Learn more about data range selection options in Data Range Options, below.

## Data Range Options

### Previous

Select a data in a range of time previous to today.

A screenshot of a software interface for selecting a date range. On the left, a vertical list of options includes 'Previous', '... to Date', 'Specific date', 'All dates before', 'All dates after', and 'Date range'. The 'Previous' option is highlighted with a yellow background. At the bottom of this list is a button labeled 'Previous 7 Days'. To the right of this list is a vertical column of time units: '24 hours', '7 days', '30 days', and '365 days'. Below these is a dropdown menu set to 'Hours'. At the bottom right are 'Filters' and a 'Previous 7 Days' button.

### ...to Date

Select all data from beginning of the most recent day, week, month, or year.

The time units vary with your selection.

A screenshot of a software interface for selecting a date range. On the left, a vertical list of options includes 'Previous', '... to Date', 'Specific date', 'All dates before', 'All dates after', and 'Date range'. The '... to Date' option is highlighted with a yellow background. At the bottom of this list is a button labeled 'Previous 7 Days'. To the right of this list is a vertical column of time units: 'Day', 'Week', 'Month', and 'Year'. Below these is a dropdown menu set to 'Hours'. At the bottom right are 'Filters' and a 'Previous 7 Days' button.

### Specific date

Select data for a specific date.

A screenshot of a software interface for selecting a date range. On the left, a vertical list of options includes 'Previous', '... to Date', 'Specific date', 'All dates before', 'All dates after', and 'Date range'. The 'Specific date' option is highlighted with a yellow background. To the right is a calendar for December 2010, showing the days from 1 to 31. The 6th of December is highlighted with a yellow background. At the bottom of the list is a button labeled 'Previous 7 Days'. To the right of this list is a vertical column of time units: 'Hours'. Below these is a 'Filter' button. At the bottom right are 'Filters' and a 'Previous 7 Days' button.

### All dates before

Select all data before the specified date.

A screenshot of a software interface for selecting a date range. On the left, a vertical list of options includes 'Previous', '... to Date', 'Specific date', 'All dates before', 'All dates after', and 'Date range'. The 'All dates before' option is highlighted with a yellow background. To the right is a calendar for December 2010, showing the days from 1 to 31. The 6th of December is highlighted with a yellow background. At the bottom of the list is a button labeled 'Previous 7 Days'. To the right of this list is a vertical column of time units: 'Hours'. Below these is a 'Filter' button. At the bottom right are 'Filters' and a 'Previous 7 Days' button.

### All dates after

Select all data after the specified date.

A screenshot of a software interface for selecting a date range. On the left, a vertical list of options includes 'Previous', '... to Date', 'Specific date', 'All dates before', 'All dates after', and 'Date range'. The 'All dates after' option is highlighted with a yellow background. To the right is a calendar for December 2010, showing the days from 1 to 31. The 6th of December is highlighted with a yellow background. At the bottom of the list is a button labeled 'Previous 7 Days'. To the right of this list is a vertical column of time units: 'Hours'. Below these is a 'Filter' button. At the bottom right are 'Filters' and a 'Previous 7 Days' button.

### Date Range

Select data from the specified range of dates.



### Specifying Time Units

In addition to selecting a range of data over time, you can specify the units used to display the data.

Of course, the data units selected affect the time it takes to display the report. (Displaying data every 5 minutes over a year, for example, represents a large amount of data.)



## Creating and Using Data Filters

You can limit the amount of data, or select specific subsets within a dataset, using Filters.

### To create a filter:

- Click the Filters button. A new filter control appears.

### Filter Options

Filters generally have three parts:

- Data field** - the default value is Any Field.
- Comparison operator** - the default value is Matches.
- Comparison value** - no default value

The available values for comparison operators depend on the type of data field selected.

#### Data field options

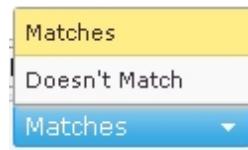
This menu lists all the available fields in the dataset.



#### Comparison operators

(non-numeric fields)

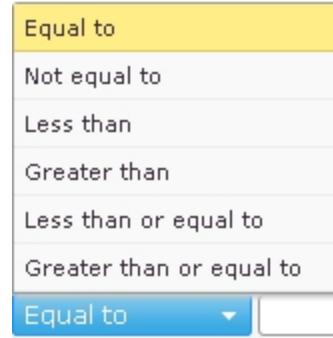
When comparing values in non-numeric fields, a simple boolean comparison operator is available.



#### Comparison operators

(numeric fields)

When comparing numeric values, a number of comparison operators are available.



### Multi-part Filters

You can create filters with more than one set of filter criteria.



#### To add a filter to an existing filter set:



- Click the Plus button.

#### To remove a filter from an existing filter set:



- Click the X button.

## Choosing a Report Style

Four report styles available:

- **Table** - a list-style report with rows and columns.
- **Area** - a line chart with the area below the line filled.
- **Line** - a line chart.
- **Bar** - a standard bar chart.

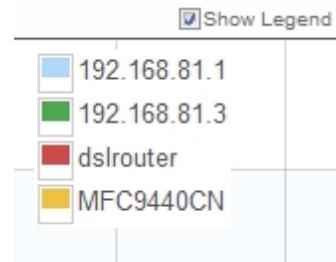
### To choose a report style:

- Click one of the report style tabs in the lower right of the window to choose a report style.

**Note:** Area, Line, and Bar styles are available only for datasets with numeric values.

### Showing or Hiding the Legend

For Area, Line, and Bar styles, select or clear the **Show Legend** check box to show or hide the legend, as shown at right.



### Viewing Data Point Values

In Area, Line and Bar styles, mouse over a data point to see its value.



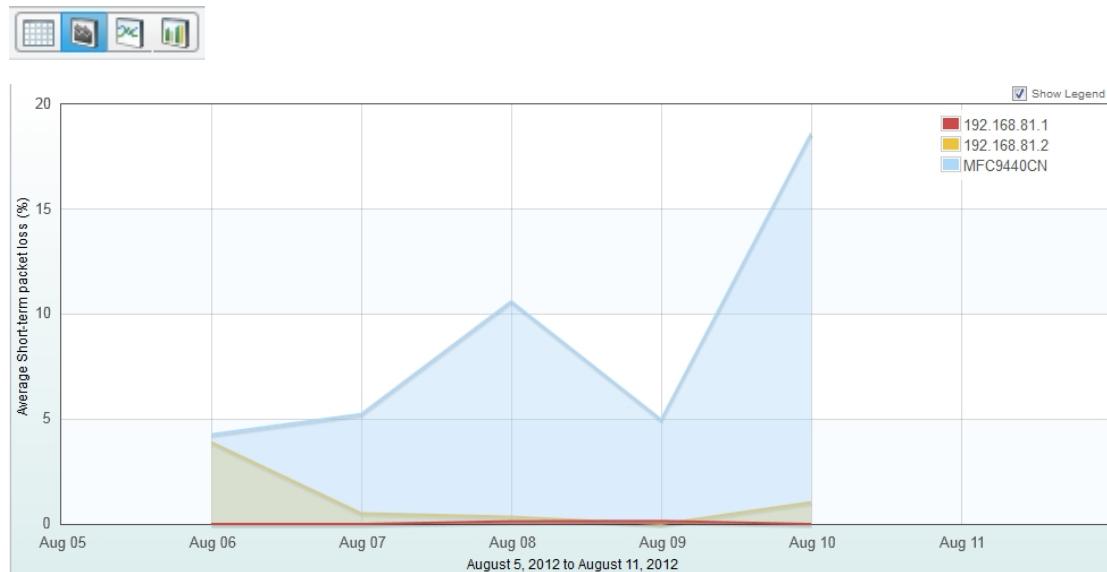
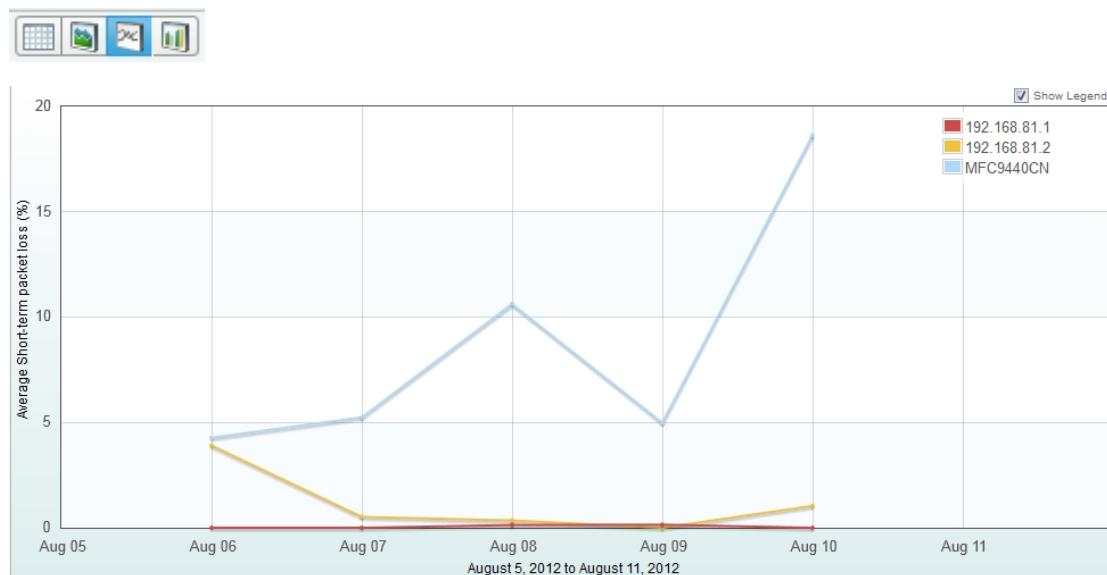
### Table Report



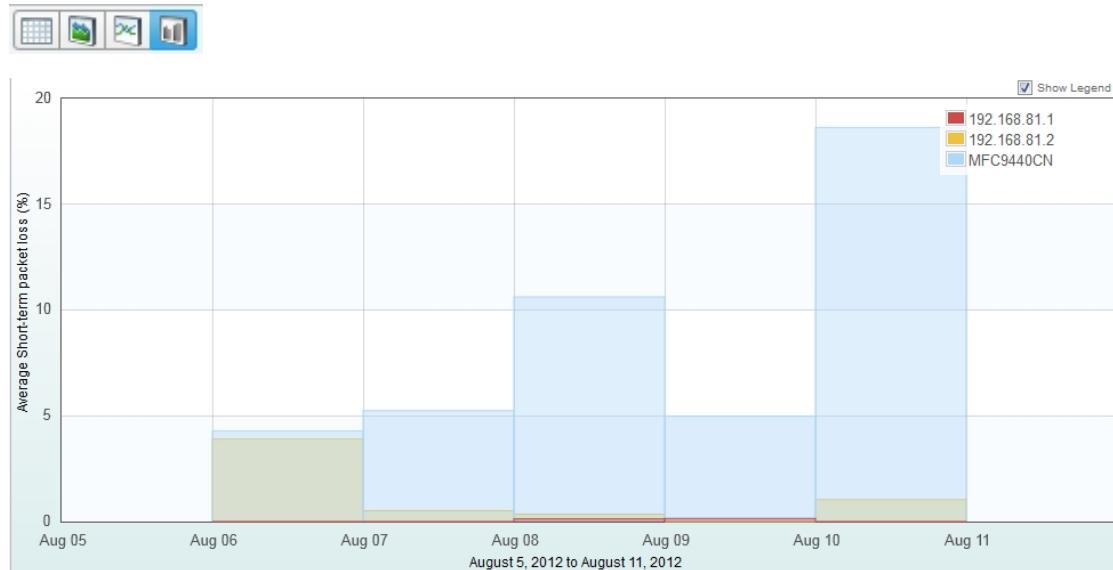
## Chapter 11: InterMapper Reports

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	Map	Device	Days	Average Short-term packet loss (%)
1	My Network	192.168.81.1	2012-08-06 00:00:00	0.00
2	My Network	192.168.81.1	2012-08-07 00:00:00	0.00
3	My Network	192.168.81.1	2012-08-08 00:00:00	0.13
4	My Network	192.168.81.1	2012-08-09 00:00:00	0.15
5	My Network	192.168.81.1	2012-08-10 00:00:00	0.00
6	My Network	192.168.81.2	2012-08-06 00:00:00	3.90
7	My Network	192.168.81.2	2012-08-07 00:00:00	0.52
8	My Network	192.168.81.2	2012-08-08 00:00:00	0.35
9	My Network	192.168.81.2	2012-08-09 00:00:00	0.00
10	My Network	192.168.81.2	2012-08-10 00:00:00	1.04
11	My Network	MFC9440CN	2012-08-06 00:00:00	4.28
12	My Network	MFC9440CN	2012-08-07 00:00:00	5.24
13	My Network	MFC9440CN	2012-08-08 00:00:00	10.62
14	My Network	MFC9440CN	2012-08-09 00:00:00	4.99
15	My Network	MFC9440CN	2012-08-10 00:00:00	18.63

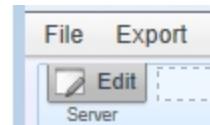
**Area Report****Line Report**

### Column Report

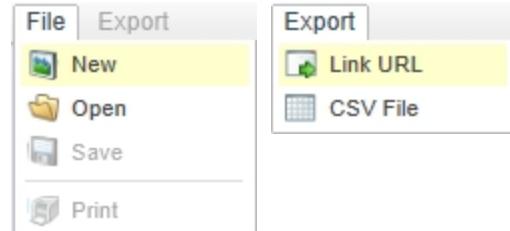


## Managing and Printing Your Reports

Use the Edit button to switch between Edit and View modes.



Use the File and Export menus to create new reports, to Load, Save, to get a Link URL for distribution or to Export a report to a CSV file.

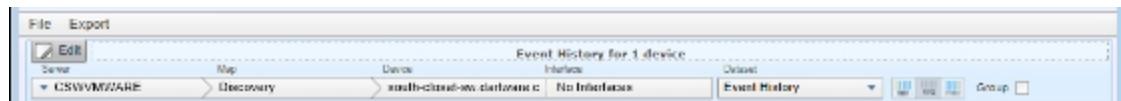


### Switching to Edit Mode

To edit a report, you must be in Edit mode.

#### To switch to Edit mode:

- Click the **Edit** button. The Edit controls appear as shown below. Click again to switch back to View mode.



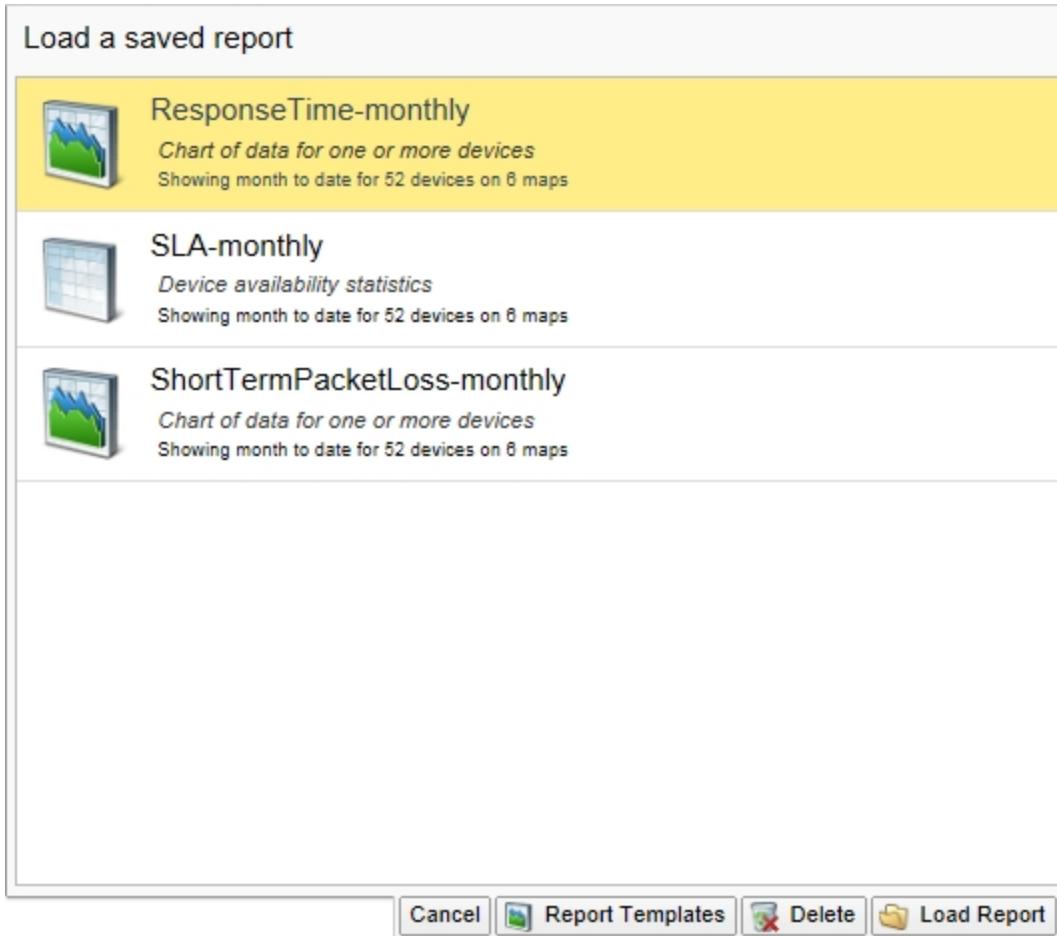
*Reports window in Edit mode*

### Loading a Saved Report

You can save any number of reports, then open, view or print them at a later time.

#### To open a saved report:

- From the Report window's File menu, choose **Open**. A list of saved reports appears, as shown below. Each report shows a summary of selected parameters.
- Click the report you want to load, then click **Load Report**. To create a new report instead, click **Report Templates** to view available templates.



*The Saved Reports list*

### Deleting a Saved Report

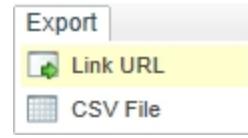
You can delete a saved report from the Saved Reports list.

To delete a saved report:

1. From the Report window's File menu, choose **Open**. A list of saved reports appears, as shown above.
2. Click the report you want to delete, then click **Delete**. A Confirm window appears.
3. Click **OK**. The selected report is removed from the list.

## Exporting and Linking to a Report

Use the Report window's Export menu to obtain a URL for distribution, or to export the report data in a CSV file.



### To get the URL to a report:

1. After viewing the report, choose **Link URL** from the Report window's Export menu. The Link URL box appears as shown.



2. Copy the URL and paste it into an email, document, or other container you want to use to distribute it.
3. Click **Cancel** to close the Link URL box.
4. To protect the URL from being changed, select **Lock against changes**.

### To export a CSV file:

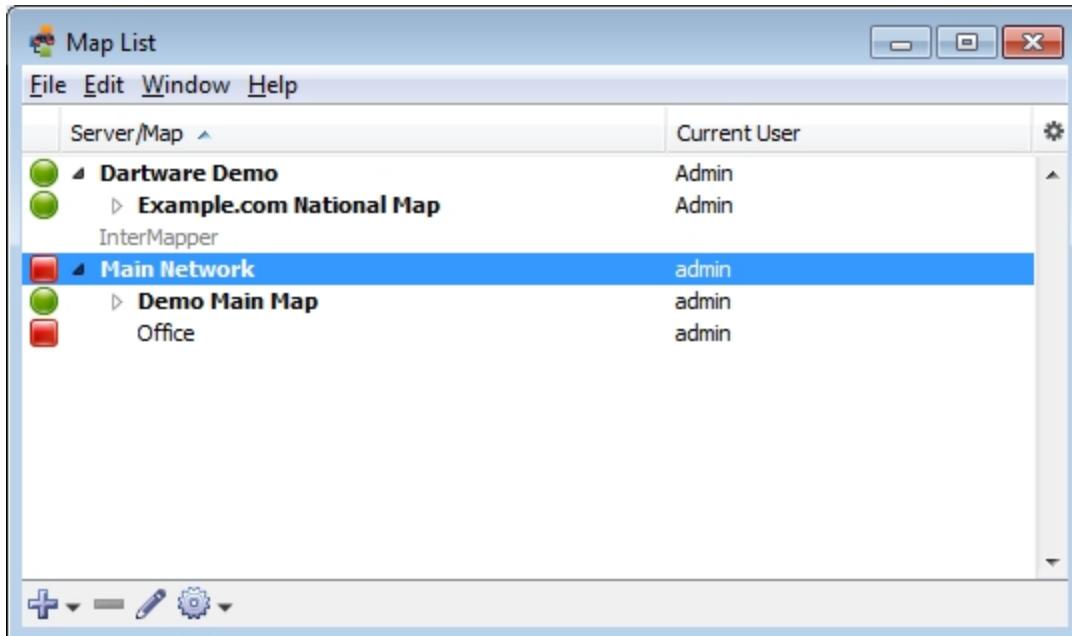
1. After viewing the report, choose **CSV File** from the Report window's Export menu. The result depends on your browser, but a file save action is initiated.
2. Choose a location for the file, and click **Save** (again, the actual name depends on your browser.) A CSV file is saved to the specified location.

# Chapter 12

---

## Using InterMapper RemoteAccess

*InterMapper* can make its maps available to people who are away from the server. They can use a program called [InterMapper RemoteAccess](#) to view and configure the server.



*InterMapper RemoteAccess's Map List window*

InterMapper RemoteAccess is capable of configuring every aspect of InterMapper. For more information about enabling the Remote server, and a description of how to set up access permissions per-map or by IP address, see [The Remote Server \(Pg 254\)](#).

InterMapper RemoteAccess is also accessible through a [command-line interface](#).

**Note to Windows users:** By default, XP, Vista, and Windows 7 have significant firewalling turned on. You need to create exceptions ("poke holes") in the firewall in order to use the remote server, web server, telnet server, or DataCenter server as well as to monitor SNMP traps. For detailed information, see [Using InterMapper with Windows XP SP2 and Vista](#) in the InterMapper Knowledgebase.

## Command and Menu Reference

This chapter describes each of the menu commands in detail. Each topic listed below contains a summary of the commands available from each menu.

### **File Menu (Pg 345)**

Use the File menu to execute commands for opening, closing, and saving maps, for printing windows, and for quitting InterMapper. You can also import and export maps from the File menu.

### **Edit Menu (Pg 350)**

Use the Edit menu to execute commands for copying and pasting data as well as commands for selecting and hiding items in maps.

### **View Menu (Pg 354)**

Use the View menu to change the way in which you view a map. The View menu is available only from a map window.

### **Monitor Menu (Pg 357)**

Use the Monitor menu to re-probe one or more devices on a map, to edit information about one or more devices, and to open various windows related to map items. The Monitor menu is available only from a map window.

### **Insert Menu (Pg 371)**

Use the Insert menu to insert devices, networks, links, text blocks or icons, and to group or un-group probes. You can also initiate the Auto-discovery process or scan a network, or set a benchmark for use with geographic coordinates. The Insert menu is enabled only when the Map Editor is active and when you are viewing a map window.

### **Format Menu (Pg 378)**

Use the Format menu to format and arrange items on the map. The Format menu is enabled only when you are viewing a map window, the Map Editor is active, and you have one or more map items selected. The Format menu is available only from a map window.

### **Window Menu (Pg 391)**

Use the Window menu to execute commands for controlling the view of the current map, for viewing Log files, and for bringing open windows to the front.

### **Help Menu (Pg 396)**

Use the Help menu to view the on-line help system, to view information about InterMapper, and to report bugs or send screenshots to Help/Systems.

### **InterMapper and IM RemoteAccess Menus (Pg 400)**

Macintosh OSX adds an InterMapper menu or IM RemoteAccess menu. These menus contain menu items that normally appear in other menus on other platforms.

### **Context Menus (Pg 401)**

Context menus are implemented through the InterMapper user interface. These menus allow you to choose options that are available only for and related to specific objects in the window.

### **Keyboard Shortcuts (Pg 402)**

Certain menu items have keyboard shortcuts. The topics listed above contain the keyboard shortcuts available in the listed menus. For more information on keyboard shortcuts and how they relate to different platforms, see [Keyboard Shortcuts \(Pg 402\)](#).

## File Menu

Use the File menu to create new maps, open existing maps, and to save maps that you have edited. You can also import and export maps, and can set up and print maps. The table below shows the commands available from the File menu, and which commands are available from the Map or Map List window.

**Note:** Use shortcuts with Control key (Windows) or Command key (Macintosh.)

**IMRA** = Map List window, InterMapper RemoteAccess

**IM** = Map List window, InterMapper

**Map** = Map window

Command	Description
<a href="#"><b>New Map (Pg 347)</b></a>	Creates a new map.
<a href="#"><b>Open Recent (submenu) (Pg 347)</b></a>	Choose a recently-opened map from this submenu.
<a href="#"><b>Close (Pg 347)</b></a>	Closes the current window.
<a href="#"><b>Backup... (Pg 347)</b></a>	Backs up the current map.
<a href="#"><b>Restore... (Pg 348)</b></a>	Restores the current map from a backup.
<a href="#"><b>Rename... (Pg 348)</b></a>	Renames the selected map.
<a href="#"><b>Duplicate... (Pg 348)</b></a>	Makes a copy of the selected map.
<a href="#"><b>Disable... (Pg 348)</b></a>	If you have administrator privileges, use this command to disable the current map (Map Window) or the selected map (Map List window.)
<a href="#"><b>Import (submenu) (Pg 348)</b></a>	Choose from these submenu commands: <ul style="list-style-type: none"><li>• <b>Map...</b> - Copies a map file saved on the InterMapper RemoteAccess machine to the InterMapper server and makes it available. (Use the Export... command to save the file on the InterMapper RemoteAccess machine.)</li><li>• <b>Data File...</b> - Creates maps or updates devices from a tab-delimited import file. For more information, see <a href="#">Importing Data Into Maps (Pg 588)</a>.</li><li>• <b>Probe...</b> - Imports custom probe files to your server.</li><li>• <b>MIB...</b> - Imports an SNMP MIB file for a specific device or family of devices.</li></ul>
<a href="#"><b>Export (submenu) (Pg 349)</b></a>	Choose from these submenu commands: <ul style="list-style-type: none"><li>• <b>Map...</b> - Save a copy of a server's map to the InterMapper RemoteAccess machine.</li><li>• <b>Data File...</b> - Save a file containing selected data from a map in Tab-delimited, CSV, HTML, or XML format.</li><li>• <b>Image...</b> - Save a PNG image of the selected map.</li></ul>

<b>Server (submenu)</b>	Choose from these submenu commands:
	<ul style="list-style-type: none"><li>• <b>Log In...</b> - Log into an InterMapper server.</li><li>• <b>Log Out</b> - Log out of an InterMapper server.</li><li>• <b>Info</b> - View (<b>IM</b>) and change (<b>IMRA</b>) server name, address and port info.</li></ul>
<a href="#"><b>Page Setup... (Pg 349)</b></a>	Opens the standard Page Setup dialog. ( <b>Map</b> )
<a href="#"><b>Print... (Pg 349)</b></a>	Prints the current window on the currently selected printer. ( <b>Map</b> )
<b>Print Single Page...</b>	Prints a single page of a map in the current view. ( <b>Map</b> )
<a href="#"><b>Exit/Quit (Pg 349)</b></a>	Exits the application.

**Note:** On Macintosh, this command is available from the [InterMapper or IM RemoteAccess menu](#).

**New Map**

Creates a new empty map. See the [Autodiscovery \(Pg 373\)](#) menu command for details about creating a map automatically.

**Open Recent (submenu)**

Choose a recently-opened map from a submenu.

**Close**

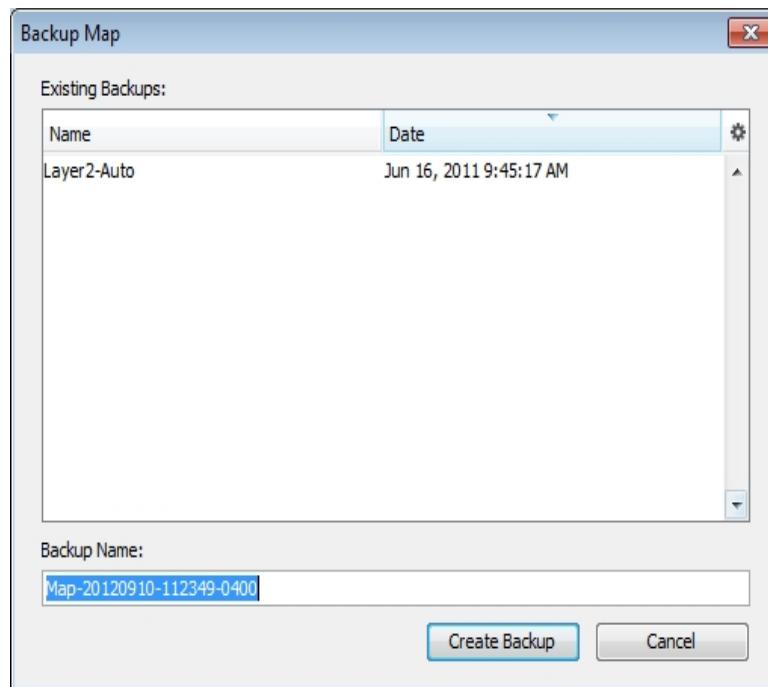
Closes the current window.

**Note:** Closing a map window does not stop the map's devices from being polled or from sending notifications. To prevent a map from being polled, disable the map in the Enabled Maps section of the [Server Settings window \(Pg 249\)](#).

**Backup...**

Makes a snapshot backup of the current map.

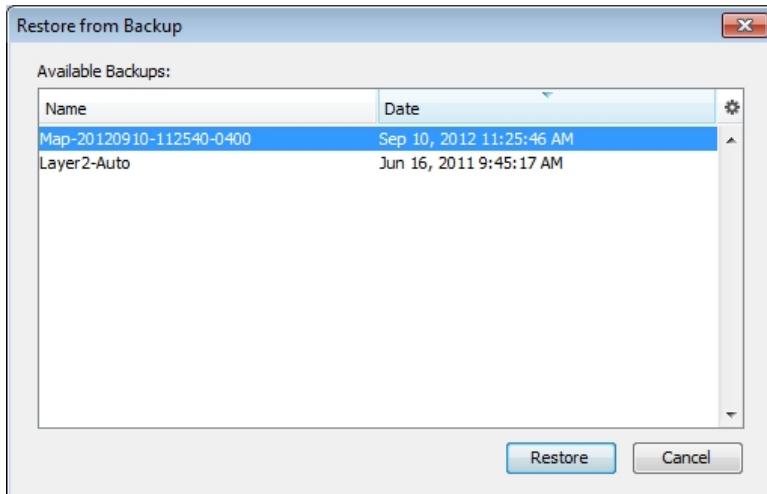
The Backup Map window shows a list of previous backups of the selected map. Enter a name for the backup or accept the default name, then click **OK**.



### Restore...

Restores from a previous backup of a map.

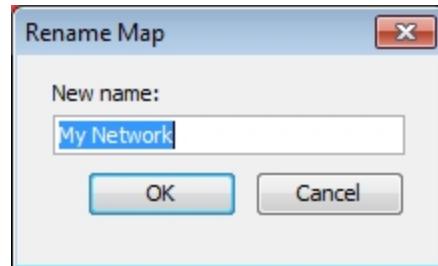
The Restore Map window shows a list of previous backups. Click the backup you want to restore, then click **OK**.



### Rename...

Renames the selected map.

Enter a new name for the selected map, then click **OK**.



### Duplicate...

Makes a copy of the selected map.

### Disable...

If you have administrator privileges, use this command to disable the current map (Map Window) or the selected map (Map List window.) A confirmation dialog appears.

### Import (submenu)

Use the Import submenu to choose from the available Import commands:

#### **Data File...**

Use the **Import > Map...** command to import a map from a tab-delimited, comma-delimited, or XML file. For more information, see [Importing Data Into Maps \(Pg 588\)](#).

#### **InterMapper Map...**

Copies a map file saved on the InterMapper RemoteAccess machine to the InterMapper server and makes it available. (Use the Export... command to save the file on the InterMapper RemoteAccess machine.)

**Probes...**

Imports custom probe files to your server. For more information, see the InterMapper [Developer Guide](#).

**MIB...**

Imports an SNMP MIB file for a specific device or family of devices. You can use the MIB file information to enhance the formatting of the displayed data. For example, certain views (especially in log files and the SNMP Table views) use the MIB data to display numeric values as the human-readable strings.

**Export Map...**

Use the Export Map... command to save a copy of your map on your local machine or network drive. This is an easy way to copy a map from one server to another. After you export the map file, you can then import it to a different server. You can also export a tab-delimited file for use in a spreadsheet or database.

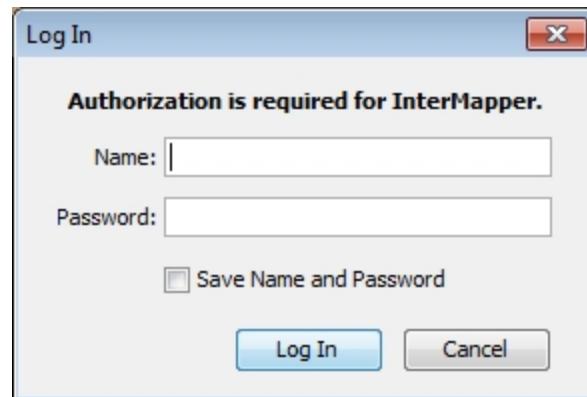
For more information, see [Exporting Data From Maps \(Pg 586\)](#).

**Server (submenu)****Log In...**

In the Map List window, click the server you want to log into, then choose **Log In...** from the File menu. An authentication window appears:

Enter a **Name** and **Password**. If you want to save the Name and Password, click to select **Save Name and Password**.

**Note:** SASL authentication is used for logins.

**Log Out**

In the Map List window, click a map on the server you want to log out from, then choose **Log Out**. You are disconnected from the selected server.

**Note:** Open windows for any maps on the selected server remain open after you log out, but the maps are dimmed to indicate that they are no longer active.

**Page Setup...**

Opens a standard Page Setup dialog.

**Print...**

Prints the current window on the currently selected printer. This operation uses as many pages as necessary to print the entire map or window contents.

**Exit/Quit**

Exits the application.

## Edit Menu

The Edit menu contains standard editing commands, as well as various commands for selecting and finding items.

Menu Command	Description
<a href="#"><u>Undo (Pg 351)</u></a>	(Map Window only) Most operations in <i>InterMapper</i> can be undone. Undo is multiple levels.
<a href="#"><u>Redo (Pg 351)</u></a>	(Map Window only) Available after you execute the Undo command. Restores the state of the map before the Undo command was executed.
<a href="#"><u>Revert... (Pg 351)</u></a>	(Map Window only) Restores the state of the map as it was when you last opened it for editing.
<a href="#"><u>Cut (Pg 351)</u></a>	Cut the selected items to the clipboard.
<a href="#"><u>Copy (Pg 351)</u></a>	Copy the selected items to the clipboard.
<a href="#"><u>Paste (Pg 351)</u></a>	Paste the contents of the clipboard to the current window.
<a href="#"><u>Delete (Pg 351)</u></a>	Removes the selected items from the map. <b>Caution:</b> This operation cannot be undone.
<a href="#"><u>Select (submenu) (Pg 351)</u></a>	Choose from a variety of commands to select objects in a variety of ways. (Map Window only)
<a href="#"><u>Select All (Pg 352)</u></a>	(Map List Window only) Select all maps and servers.
<a href="#"><u>Find (submenu) (Pg 352)</u></a>	<ul style="list-style-type: none"><li>• <a href="#"><u>Find (Pg 352)</u></a> - Opens the Find window. Enter a text string to search for.</li><li>• <a href="#"><u>Find Next (Pg 352)</u></a> - Search for the next occurrence of the last defined text string.</li><li>• <a href="#"><u>Find Device... (Pg 352)</u></a> - Search for a device in a map on a connected server.</li></ul>
<a href="#"><u>Map Settings... (Pg 352)</u></a>	Opens the Map Settings window.
<a href="#"><u>Server Settings... (Pg 353)</u></a>	Opens the Server Settings window.
<a href="#"><u>Preferences... (Pg 353)</u></a>	Opens the Preferences window for the InterMapper client application or InterMapper RemoteAccess client application.  <b>Note:</b> On Macintosh, this command is available from the <a href="#"><u>InterMapper or IM RemoteAccess menu</u></a> .

**Undo**

Reverses the previous operation. Most operations in *InterMapper* can be undone. Undo is multiple levels.

**Redo**

Re-performs the previous undo operation. Any operation that has been undone can be redone.

**Note:** The Undo/Redo function is sequential; if you undo multiple operations, then perform a different operation, all the operations you undid are gone.

**Revert**

Restores the state of the current map to its last state when it was last enabled for editing.

**Cut**

Cuts the selected items to the clipboard.

**Copy**

Copies the selected items to the clipboard.

**Paste**

Pastes the contents of the clipboard to the current window.

**Delete**

Removes the selected items from the current window.

**Select (submenu)**

Choose any of these options from the **Select** submenu.

- **Select All** - Selects all map items.
- **Select Adjacent** - Selects all map objects connected to the current selection.  
The first time you choose the command, all leaves are selected (a leaf is an object that has no other connections.) Choose the command a second time to select all other objects connected to the selected object. Continue choosing the command to continue expanding the selection, first selecting the leaves, then the others objects

**Note:** If you select a device connected to a network, then choose **Select Adjacent**, the network is selected, but none of the other devices connected to the network is selected. To select a network and its adjacent devices, select the network first, then choose **Select Adjacent**.

- **All devices** - Select all devices, but not links or networks
- **DOWN devices** - Select only the devices that are currently marked as down.
- **UP devices** - Select only the devices that are currently marked as up.
- **All networks** - Select all networks, but not the attached devices.
- **DOWN Interfaces** - Select all interfaces currently marked as down.

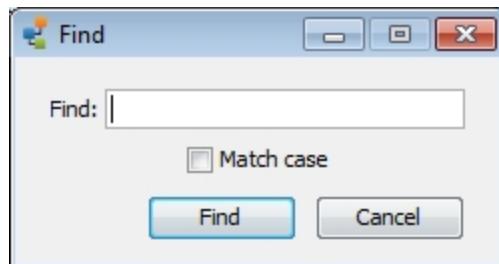
- **Networks with...** - Select all networks with the specified number of attached devices.
- **Unselected** - Invert the selection. Un-selects all selected items; selects all un-selected items.

### Select All

(Map List Window) Selects all maps and servers.

### Find...

Find the first object containing the specified text in the current map. The device is highlighted when it is found.



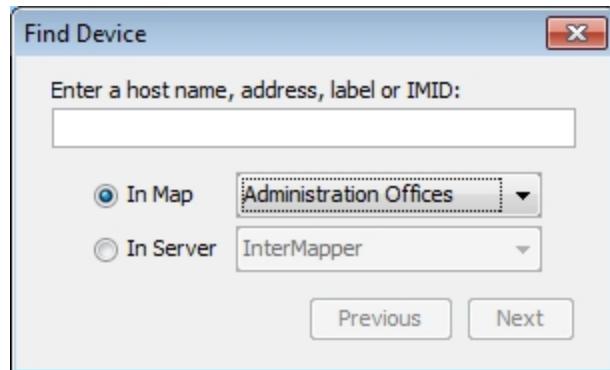
The Find window

### Find Next

Finds the next item in the current map that matches the previously specified text string.

### Find Device...

Find the a device on the specified map or server. You can enter a host name, address, or IMID. This could be useful to help you determine, for example, the device from which a dataset in the database came.



The Find Device window

### Map Settings...

Use the Map Settings... command to view and edit an individual map's color settings, specify a background image, and view and edit the list of default notifiers for the map. See [Map Settings \(Pg 84\)](#) for more information. This command is available only in Edit mode.

**Server Settings...**

Use the Server Settings command to open the Server Settings window. Use the Server Settings window to view server information, and to view and edit all server preferences and settings. You can control the settings of the built-in Web, InterMapper RemoteAccess, and Telnet servers. See [Server Settings \(Pg 222\)](#) for more information.

**Preferences...**

Use the Preferences... command to open the Preferences window to set preferences for the InterMapper client application or for InterMapper RemoteAccess. These settings affect only the copy of the application you are running.

## View Menu

Use the View menu in the Map window to specify how you want to look at a map. The view menu is available only from the map window.

<b>Menu Command</b>	<b>Description</b>
<a href="#"><b>Map (Pg 354)</b></a>	View as a map, with graphic objects representing devices, networks and links.
<a href="#"><b>List (Pg 354)</b></a>	View as a list of devices, networks, and links.
<a href="#"><b>Notifiers (Pg 354)</b></a>	View as a list of devices, networks and links, each showing the states that will sent notifications.
<a href="#"><b>Charts (Pg 355)</b></a>	View a list of charts associated with the map.
<a href="#"><b>Datasets (Pg 355)</b></a>	Select from a list of devices to view a list of datasets available for those devices.
<a href="#"><b>Actual Size (Pg 355)</b></a>	In Map view, set the zoom level to 100%.
<a href="#"><b>Zoom In (Pg 355)</b></a>	In Map view, zoom in.
<a href="#"><b>Zoom Out (Pg 355)</b></a>	In Map view, zoom out.
<a href="#"><b>Sort (submenu) (Pg 355)</b></a>	In any list view, choose from a list of columns to sort the list by.  <b>Note:</b> You can also sort the list by clicking a column heading. Click again to reverse the sort.
<a href="#"><b>Columns (submenu) (Pg 355)</b></a>	Choose the columns you want to show in any list view.
<a href="#"><b>Filter (submenu) (Pg 355)</b></a>	Choose to view only those objects with the selected state.
<a href="#"><b>Expand All (Pg 355)</b></a>	In List view, expands all hierarchical items in the Map and Device List windows.
<a href="#"><b>Collapse All (Pg 355)</b></a>	In List view, collapses all hierarchical items in the Map and Device List windows.
<a href="#"><b>Show/Hide</b></a>	(Map List Window only)
<a href="#"><b>Toolbar (Pg 355)</b></a>	Choose to show or hide the toolbar.
<a href="#"><b>Edit Map (Pg 356)</b></a>	Toggles between Map Edit mode and Monitor mode.

### Map

*Keyboard Shortcut:* Ctrl+1

View as a map, with graphic objects representing devices, networks and links.

### List

*Keyboard Shortcut:* Ctrl+2

View as a list of devices, networks, and links.

### Notifiers

*Keyboard Shortcut:* Ctrl+3

View as a list of devices, networks and links, each showing the states that will send notifications.

### **Charts**

*Keyboard Shortcut:* Ctrl+5

View a list of charts associated with the map.

### **Datasets**

*Keyboard Shortcut:* Ctrl+6

Select from a list of devices to view a list of datasets available for those devices.

### **Actual Size**

*Keyboard Shortcut:* Ctrl+0

In Map view, set the zoom level to 100%.

### **Zoom In**

*Keyboard Shortcut:* Ctrl+Up Arrow

### **Zoom Out**

*Keyboard Shortcut:* Ctrl+Down Arrow

### **Sort (submenu)**

From the **Sort** submenu, choose a column by which you want to sort the list. Choose it again to reverse the sort order. Not available in Map view.

**Note:** You can also click the column heading to sort by that column, and click it again to reverse the sort order.

### **Columns**

From the **Columns** submenu, select or clear the check mark for a column to show or hide the column. Not available in Map view.

### **Filter (submenu)**

Choose to view only those objects with the selected state. Filter devices with the selected state to view only those that are acknowledged or unacknowledged.

### **Expand All**

Expands all hierarchical items in the Map List or Device List window.

### **Collapse All**

Collapses all hierarchical items in the Map List or Device List window.

### **Show/Hide Toolbar**

Choose to show or hide the toolbar.

### **Edit Map**

Select this menu item, click the lock icon at the upper left of the map, or press the **Tab** key.

Toggles the map between *Editing mode* (where the map may be rearranged, edited, and changed) and *Monitoring mode* (where the map is uneditable, but displays the current state of the network.) The menu item has a check mark when map editing is enabled.

**Note:** Many users can use InterMapper RemoteAccess to connect to an InterMapper server at the same time. At any given time, however, only one user may edit a map. If you try to change a map to Edit mode while it is being edited by another user, a message appears. You can choose to interrupt the other user's editing session, at which time you gain the right to edit the map.

## Monitor Menu

Use the Monitor menu to re-probe one or more devices on a map, to edit information about one or more devices, and to open various windows related to map items. The Monitor menu is available only from a Map window.

Menu Command	Description
<a href="#"><u>Reprobe/Reprobe Selection (Pg 359)</u></a>	Re-poll the selected device (or devices). If no device is selected, re-poll all devices on the map.
<a href="#"><u>Acknowledge (Pg 359)</u></a>	Use this command to acknowledge a failure. This stops an icon's flashing, and deactivates recurring notifications.
<a href="#"><u>Un-Acknowledge (Pg 360)</u></a>	Use this command to restore the flashing icon for a device that has been acknowledged in error, or which needs further attention, and to reactivate recurring notifications.
<a href="#"><u>Info Window (Pg 360)</u></a>	Opens the Info Window for the selected device or network.
<a href="#"><u>Status Window (Pg 361)</u></a>	Opens the Status window for the selected device, network, or link.
<a href="#"><u>Interfaces Window (Pg 362)</u></a>	Opens the Interfaces window for the selected device.
<a href="#"><u>Notifiers Window (Pg 362)</u></a>	Opens the Notifiers window, and shows a list of notifiers for the selected device.
<a href="#"><u>SNMPWalk... (Pg 363)</u></a>	Opens the SNMPWalk dialog.
<a href="#"><u>Flows Window (Pg 364)</u></a>	Opens the Flows Window if you have installed the InterMapper Flows add-on.
<a href="#"><u>Show in Layer 2 (Pg 314)</u></a>	Opens the Device List window in Layer 2 view, and shows connections to the selected device.
<a href="#"><u>Reports... (Pg 364)</u></a>	Opens the Reports window in your browser.
<a href="#"><u>Set Info &gt; Set Comment... (Pg 366)</u></a>	Enter a comment about the selected device(s).
<a href="#"><u>Set Info &gt; Set Community... (Pg 366)</u></a>	Set the SNMP community string for the selected devices.
<a href="#"><u>Set Info &gt; Set Data Retention... (Pg 366)</u></a>	Select a Data Retention policy to use when storing data to the InterMapper Database.
<a href="#"><u>Set Info &gt; Set Double-click (submenu) (Pg 370)</u></a>	Define the action to be taken when you double-click the selected device.

<a href="#"><b><u>Set Info &gt; Set Kind...</u></b></a> <a href="#"><b>(Pg 367)</b></a>	Set the device kind you want to use when storing data to the InterMapper Database.
<a href="#"><b><u>Set Info &gt; Set Latitude &amp; Longitude...</u></b></a> <a href="#"><b>(Pg 367)</b></a>	Set the latitude and longitude for the selected devices.
<a href="#"><b><u>Set Poll Interval... (Pg 367)</u></b></a>	Set the poll interval for the selected devices.
<a href="#"><b><u>Set Info &gt; Set Probe...</u></b></a> <a href="#"><b>(Pg 368)</b></a>	Set the probe to be used with the selected devices.
<a href="#"><b><u>Set Info &gt; Set Thresholds... (Pg 369)</u></b></a>	Set the criteria for sending notifications that a device is down, in alarm, or in warning. These settings apply to all devices on the map.
<a href="#"><b><u>Set Info &gt; Set Vantage Point (Pg 369)</u></b></a>	Set the selected device as the vantage point from which InterMapper views all other devices on the map.
<a href="#"><b><u>Reset Short-term Packet Loss (Pg 370)</u></b></a>	Resets the accumulated value of short-term packet loss.
<a href="#"><b><u>Helper Apps (submenu) (Pg 370)</u></b></a>	Launch a helper application or customize the list of applications.

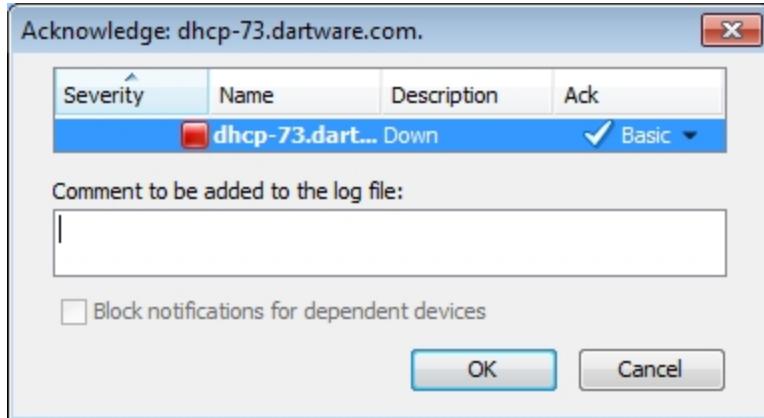
## Reprobe/Reprobe Selection

Re-poll the selected device(s). This is useful for retrieving the status of a device or detecting that it has returned to service.

- **If a single device is selected**, it is polled as soon as possible.
- **If many devices are selected**, they are moved to the head of the poll queue so they will be polled as soon as possible.
- **If no devices are selected**, all devices in the map are moved to the head of the poll queue, and are polled as soon as possible.

## Acknowledge

When



*The Acknowledge Message Window. Data typed here is entered into the InterMapper log file, as well as appearing in the device's Information window.*

I-

InterMapper detects a problem with a device, the device's icon changes to yellow, orange, or red. This serves to attract attention to the failure, but can be distracting after corrective action has been initiated. It also masks further failures: if several items on a map are already in alarm, it's hard to notice new problems.

Use the Acknowledgement command to indicate that the network administrator is aware of a problem, and may have initiated corrective action. Acknowledging an alarm turns the device's icon blue, and also stops repeated notifications for that device.

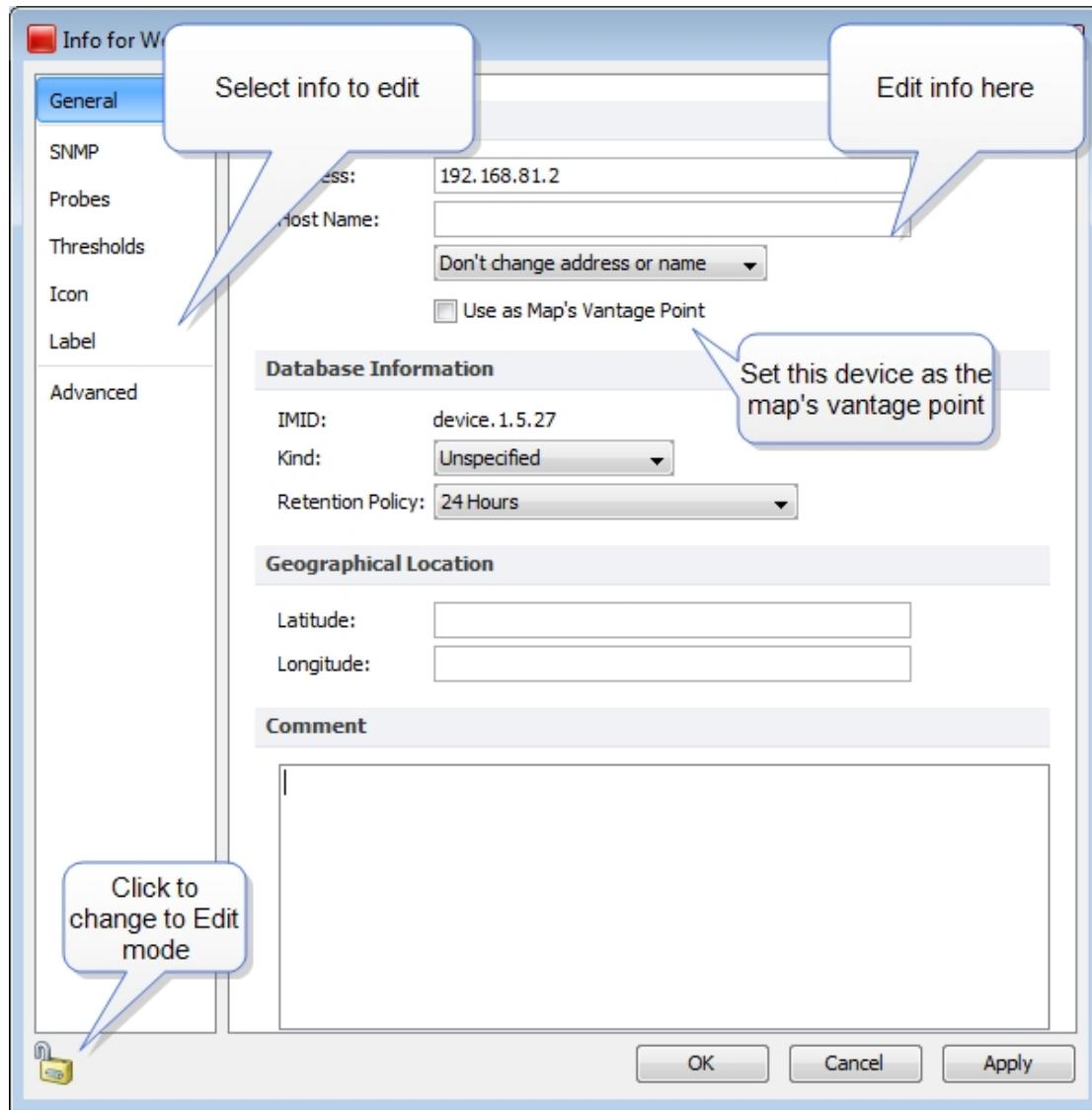
For a complete description of the Acknowledgements window, see [Acknowledging Device Problems \(Pg 182\)](#).

**Note:** Another feature - dependencies - is useful for controlling the number of notifications you receive when there are failures of central equipment. See [Using Notification Dependencies \(Pg 128\)](#) for more information.

## Un-Acknowledge

Use this command to restore the flashing icon for a device that has been acknowledged in error, or which needs further attention. Un-acknowledging a device reactivates recurring notifications.

### Info Window



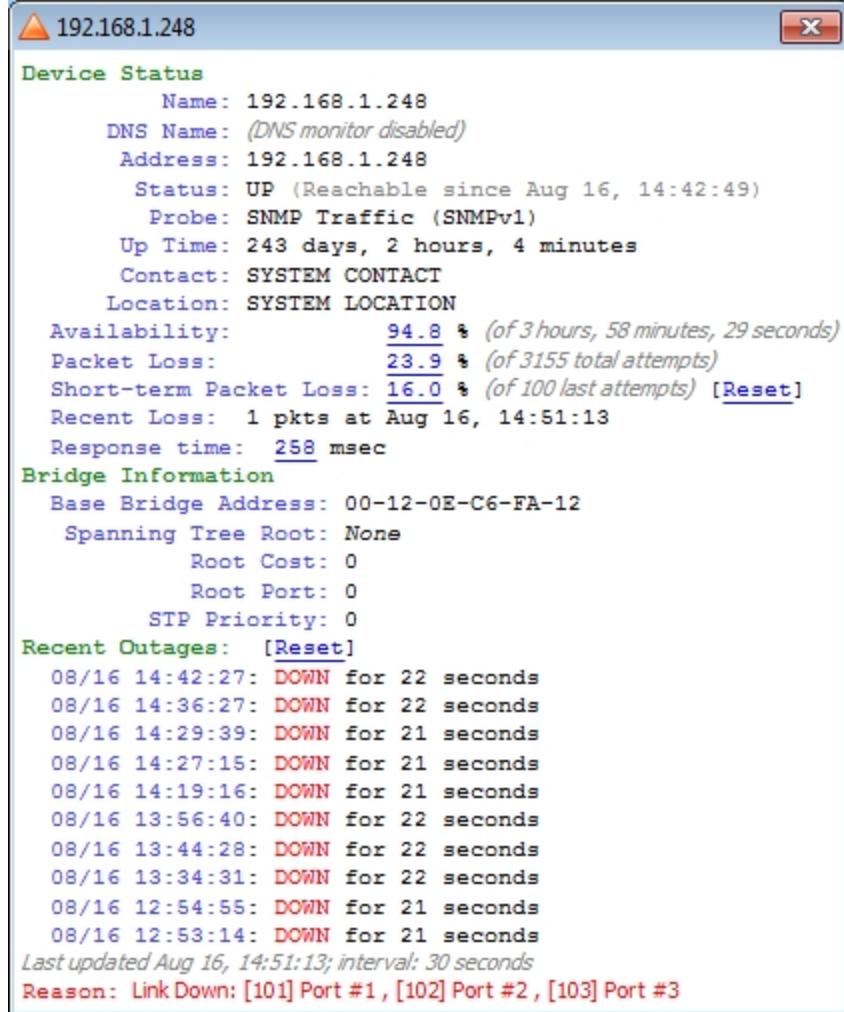
Use the [Info window](#) (Pg 165) command to view information about the selected device or network.

- Click the lock icon to change to Edit mode.
- Click a button at left to view that Info pane.

## Status Window

Open the [Status window \(Pg 165\)](#) for the selected device. This command is active in Map Edit mode, which is useful for creating charts.

The example below shows a Device Status window. Status windows are also available for networks and links. For examples, see [Status windows \(Pg 165\)](#).



*Status window*

## Interfaces Window

Open the [Interfaces window](#) (Pg 175) for the selected device.

ifAlias	Name	Description	Type	TX Speed	RX Speed	VLAN	Index	Status
1	1	ethernet...	100 M	-	1	1	1	Green
2	2	ethernet...	100 M	-	2	2	2	Green
3	3	ethernet...	100 M	-	3	3	3	Green
4	4	ethernet...	100 M	-	2	4	4	Green
5	5	ethernet...	100 M	-	4	5	5	Green
6	6	ethernet...	100 M	-	2	6	6	Green
7	7	ethernet...	100 M	-	1	7	7	Green
8	8	ethernet...	100 M	-	1	8	8	Green
9	9	ethernet...	100 M	-	1	9	9	Green
10	10	ethernet...	100 M	-	4	10	10	Red
11	11	ethernet...	10 M	-	1	11	11	Green
12	12	ethernet...	100 M	-	600	12	12	Red
13	13	ethernet...	100 M	-	1	13	13	Green
14	14	ethernet...	100 M	-	1	14	14	Green

Display unnumbered interfaces    Ignore interface discards      58 interfaces  
 Allow Periodic Reprobe       Ignore interface errors

*Interfaces window*

## Notifiers Window

Open the Notifiers window for the selected device.

Notifier Name	Down	Up	Critical	Alarm	Warn	OK	Trap	Delay	Repeat	Count	...
Day Sounds	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	▲				
Alternate Sounds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
Command Line Notifier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
Email Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
Email-escalate group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
Group Notifier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
Night Sounds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
SMS - Escalate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
SMS - Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
SMS - Weekend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
SMS - Weekend Escalate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
Syslog Notifier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
Trap Notifier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	
WinPopup Notifier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None ▾	Never ▾	-	

**Edit Notifiers...**

*Notifiers window*

## SNMPWalk

Use the SNMPWalk command to execute an SNMPWalk on the specified SNMP-enabled device. Enter a numeric or textual OID.

The window below shows the output of an SNMPWalk command with ifTable as the specified OID.



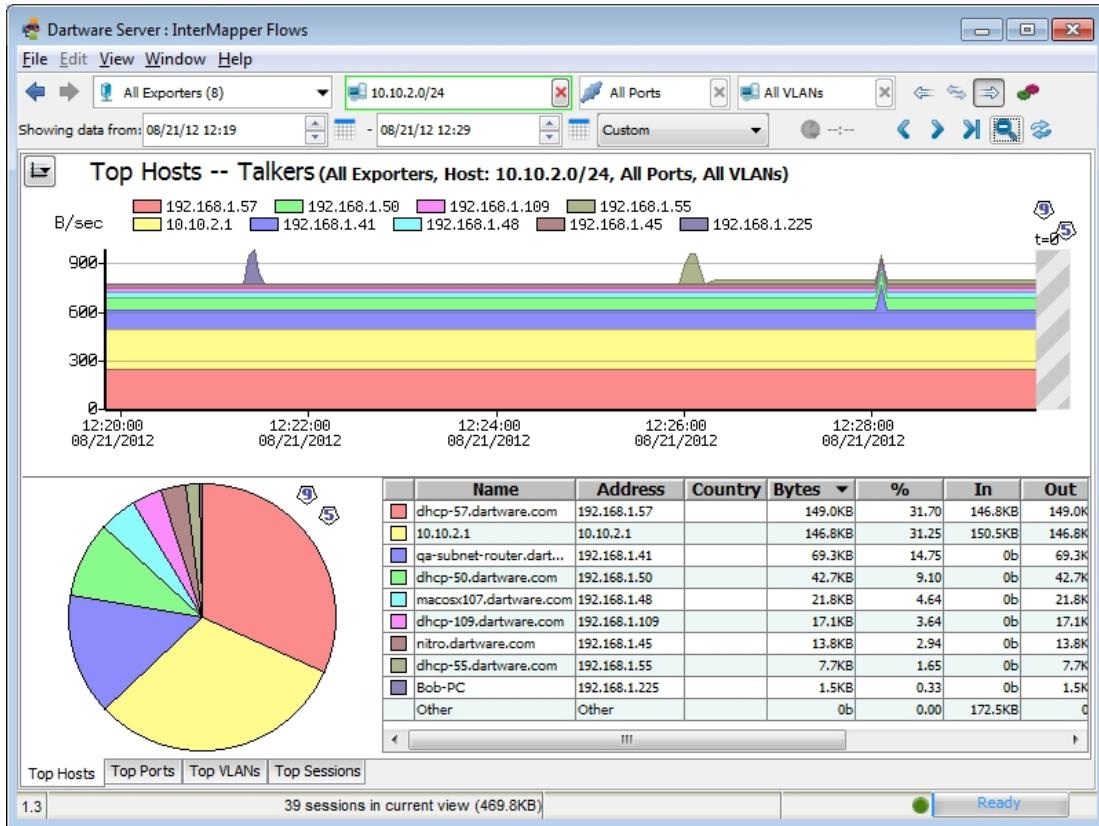
*The SNMPWalk dialog*

The screenshot shows a table titled 'ifTable at 192.168.81.102'. The table displays 44 rows of network interface statistics. The columns are labeled: OID, Name, Type, and Value. The table includes several entries from the RFC1213-MIB, such as ifIndex, ifDescr, ifType, ifMtu, ifSpeed, ifPhysAddress, ifAdminStatus, ifOperStatus, and ifLastChange. The 'Value' column contains various data types like Integer, OctetString, Gauge, and Timeticks, along with their corresponding numerical values.

OID	Name	Type	Value
1.3.6.1.2.1.2.2.1.1.1	RFC1213-MIB::ifIndex.1	Integer	1
1.3.6.1.2.1.2.2.1.1.2	RFC1213-MIB::ifIndex.2	Integer	2
1.3.6.1.2.1.2.2.1.2.1	RFC1213-MIB::ifDescr.1	OctetS...	NC-6500h
1.3.6.1.2.1.2.2.1.2.2	RFC1213-MIB::ifDescr.2	OctetS...	SoftwareLoopBack
1.3.6.1.2.1.2.2.1.3.1	RFC1213-MIB::ifType.1	Integer	7
1.3.6.1.2.1.2.2.1.3.2	RFC1213-MIB::ifType.2	Integer	24
1.3.6.1.2.1.2.2.1.4.1	RFC1213-MIB::ifMtu.1	Integer	1500
1.3.6.1.2.1.2.2.1.4.2	RFC1213-MIB::ifMtu.2	Integer	1500
1.3.6.1.2.1.2.2.1.5.1	RFC1213-MIB::ifSpeed.1	Gauge	10000000
1.3.6.1.2.1.2.2.1.5.2	RFC1213-MIB::ifSpeed.2	Gauge	0
1.3.6.1.2.1.2.2.1.6.1	RFC1213-MIB::ifPhysAddress.1	OctetS...	
1.3.6.1.2.1.2.2.1.6.2	RFC1213-MIB::ifPhysAddress.2	OctetS...	
1.3.6.1.2.1.2.2.1.7.1	RFC1213-MIB::ifAdminStatus.1	Integer	1
1.3.6.1.2.1.2.2.1.7.2	RFC1213-MIB::ifAdminStatus.2	Integer	1
1.3.6.1.2.1.2.2.1.8.1	RFC1213-MIB::ifOperStatus.1	Integer	1
1.3.6.1.2.1.2.2.1.8.2	RFC1213-MIB::ifOperStatus.2	Integer	1
1.3.6.1.2.1.2.2.1.9.1	RFC1213-MIB::ifLastChange.1	Timeticks	490
1.3.6.1.2.1.2.2.1.9.2	RFC1213-MIB::ifLastChange.2	Timeticks	0
1.3.6.1.2.1.2.2.1.10.1	RFC1213-MIB::ifInOctets.1	Counter	70754371
1.3.6.1.2.1.2.2.1.10.2	RFC1213-MIB::ifInOctets.2	Counter	0
1.3.6.1.2.1.2.2.1.11.1	RFC1213-MIB::ifInUcastPkts.1	Counter	63900
1.3.6.1.2.1.2.2.1.11.2	RFC1213-MIB::ifInUcastPkts.2	Counter	0
1.3.6.1.2.1.2.2.1.12.1	RFC1213-MIB::ifInNUcastPkts.1	Counter	190013
1.3.6.1.2.1.2.2.1.12.2	RFC1213-MIB::ifInNUcastPkts.2	Counter	0
1.3.6.1.2.1.2.2.1.13.1	RFC1213-MIB::ifInDiscards.1	Counter	0
1.3.6.1.2.1.2.2.1.13.2	RFC1213-MIB::ifInDiscards.2	Counter	0
1.3.6.1.2.1.2.2.1.14.1	RFC1213-MIB::ifInErrors.1	Counter	0

44 rows

## Flows Window



If you have installed the InterMapper Flows add-on, opens the Flows Window, which shows InterMapper Flows information. For documentation about InterMapper Flows, please see [InterMapper Flows \(Pg 285\)](#).

## Show in Layer 2

Use the Show in Layer 2 command to open the Device List window in Layer 2 view, and view the connections to the selected devices.

## Reports...

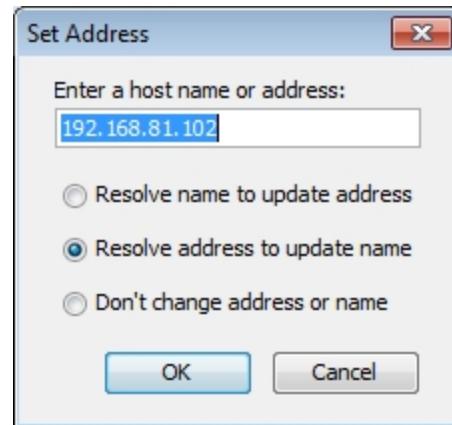
Use the Reports command to open the Reports UI in a browser window. Use the Reports window to create, load, edit, and save reports.

Set Address...

**Enter a host name or address** - Enter a DNS name or IP address here. InterMapper uses this address to probe the device.

**Resolve Name to Update Address** -  
InterMapper queries the DNS for the given name, and uses the result to change the address it uses to poll the device.

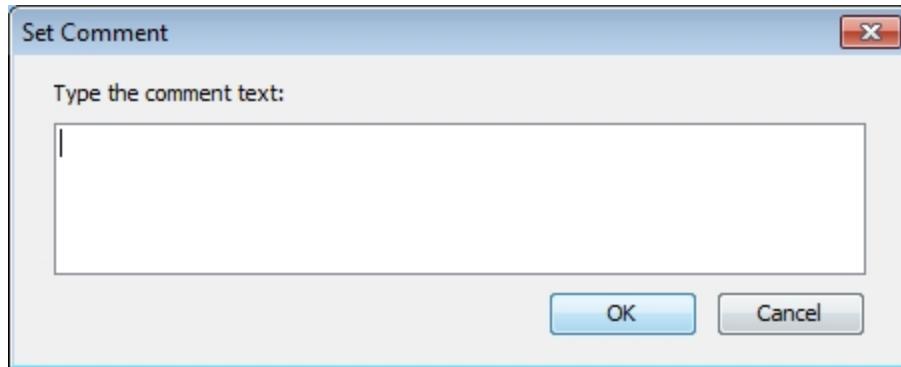
**Resolve Address to Update Name** -  
keeps the specified IP address fixed, but may update the name from the DNS server if one is found.



**Set Comment...**

The comment is seen in the device's status window. Sets the comment for all the selected devices.

(See the Device Status window for details on the comment field.)

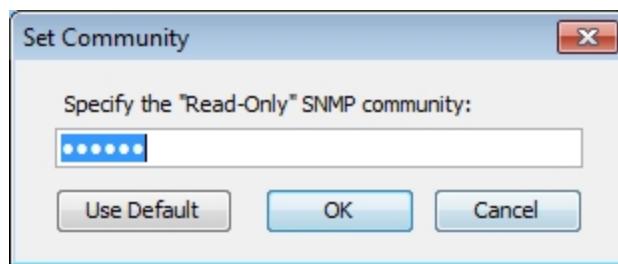


This information is saved as part of the map. Use the Comment field to save the model and serial number for a device, telephone numbers, circuit numbers, or other information related to the item.

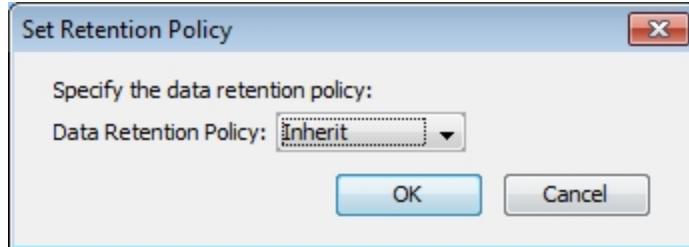
**Set Community...**

Sets the [read-only community string \(Pg 674\)](#) for all selected devices.

The default community string for most SNMP devices is "public".

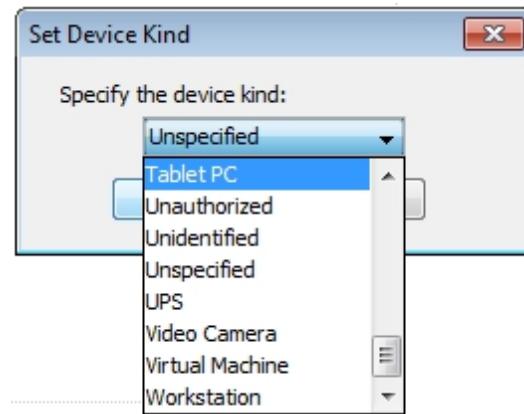
**Set Data Retention...**

Selects the Data Retention Policy to use when storing data to the InterMapper Database. Data Retention Policies are defined using the InterMapper Database Settings page of the DataCenter Administration Panel.



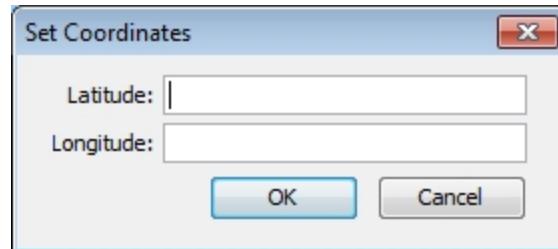
### Set Kind

For each device whose data is stored in the InterMapper Database, you can set a device kind. This can be useful during data reporting or analysis. Use the Set Device Kind dialog to choose the device kind you want to store with the device data.



### Set Latitude & Longitude

Enter valid latitude and longitude values in the text boxes and click **OK**. The device is moved to the appropriate location in the map, based on existing benchmarks.



### Set Poll Interval

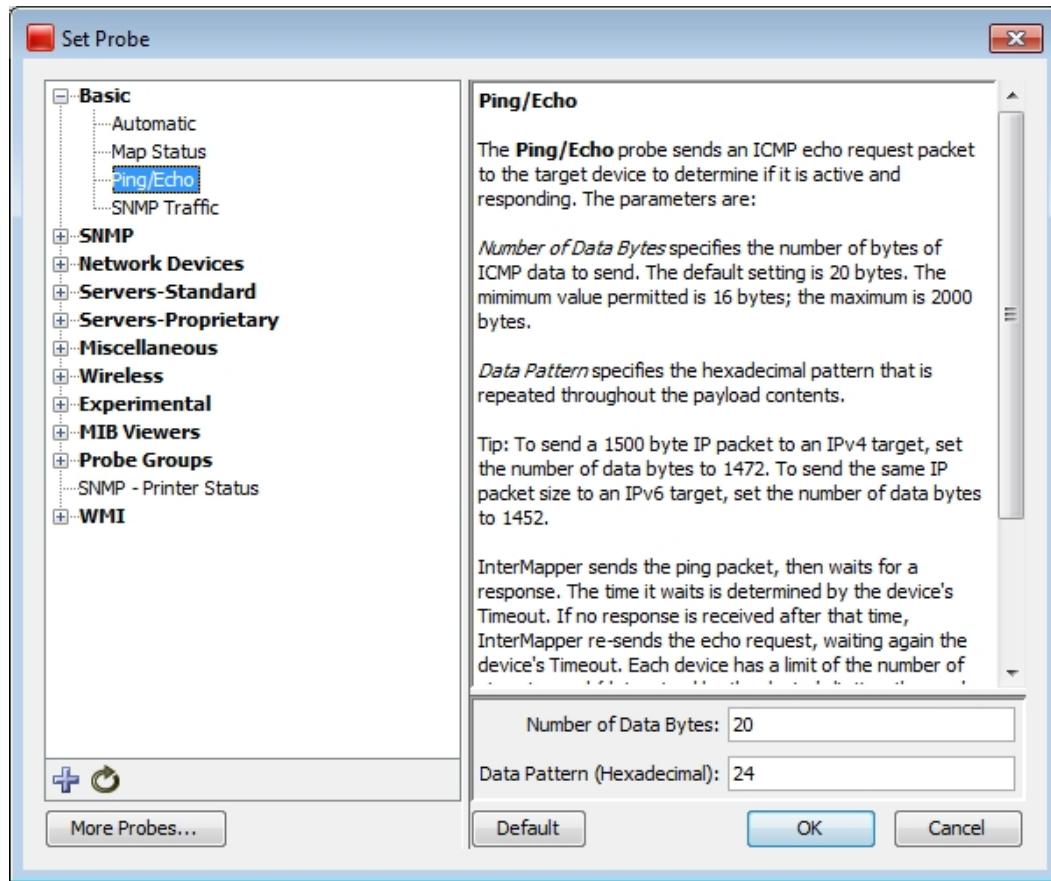
Choose from this dropdown menu to set the poll interval for selected devices. This interval is independent of and takes priority over the map's poll interval.

If the device's poll interval is set to "Default", the map's poll interval is used.

If a map is set to "No polling" the device poll intervals are ignored, and no devices are polled for that map.



### Set Probe...

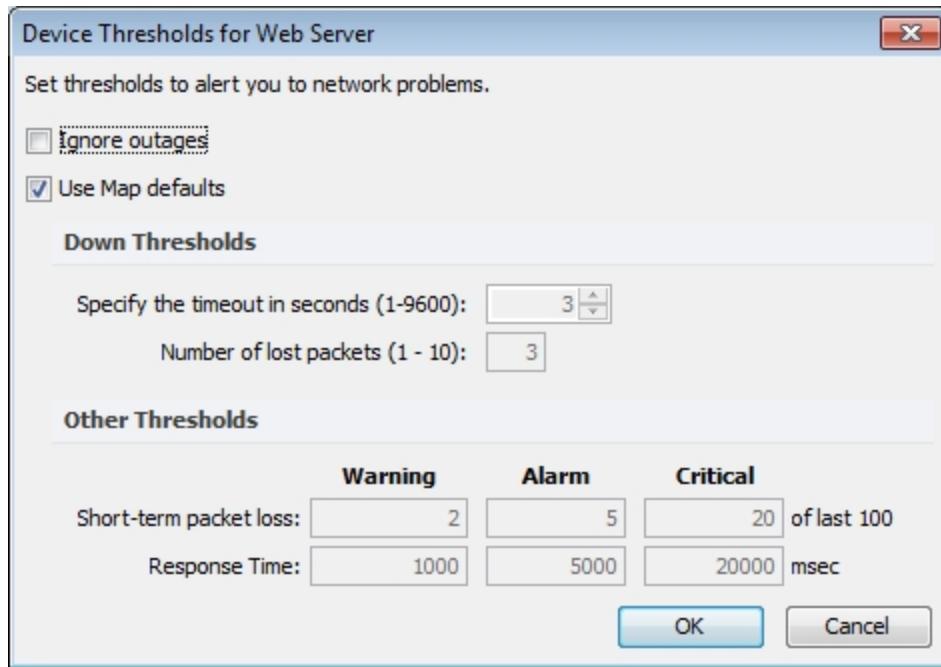


Opens the Probe Picker window.

Sets the probe used to query the selected device and the probe's parameters, if applicable. See [Probe Reference \(Pg 405\)](#) for details on the available InterMapper probes. See Custom Probes for information on creating your own InterMapper probes.

- Click plus (+) in the left pane to expand a probe group.
- Click minus (-) in the left pane to collapse a probe group.
- Click a probe in the left pane to choose the probe. Information about the probe and controls for setting any available parameters appear in the right frame.
- Click **Default** to set the probe back to default setting for that probe type.

## Set Thresholds



*Device Threshold window.*

Set the criteria for sending a notification that a device is *down*, in an *alarm* state, or in a *warning* state. These settings apply to all the devices on the map.

- **Down:** This is the most serious condition. It means the device is no longer responding to probes. Specify the number of packets that may be lost before declaring the device down.
- **Critical:** This is the most serious condition in which responses are still being received. Specify the number of interface errors (per minute) allowed before marking the device as critical.
- **Alarm:** This is next most serious condition. Specify the number of interface errors (per minute) allowed before marking the device in alarm.
- **Warning:** The least serious error state. Specify the number of interface errors (per minute) allowed before showing the device in warning.

## Set Vantage Point

Set the selected device as the Vantage Point from which InterMapper views all other devices on the map. If a device (such as a router or switch) between the Vantage Point and other devices fails, notifications are sent only for the failed device. The other devices are in the "shadow" of the failed device, and appear dimmed on the map.

The Vantage Point specifies InterMapper's virtual point of presence - as if the InterMapper server were directly connected to that item. When the Vantage Point is set on a device, a star appears next to the icon, as shown.

The Vantage Point is used in conjunction with InterMapper's Notification Dependencies, which suppress notifications for devices that are assumed to be down because some other failure hides or shadows them. For full details, see [Notification Dependencies \(Pg 128\)](#).

### **Reset Short-term Packet Loss**

InterMapper counts the number of dropped packets out of the last 100. This applies to all packets sent to the device (networks and links are not involved).

The Short-term packet loss is displayed in the device's Status Window as a percentage of the number of dropped packets in the last 100. Use this command to reset the current value to zero.

### **Helper Apps**

Select a device, then choose from this submenu to launch a helper application, or choose customize to configure your helper applications.

### **Set Double-click**

Select one or more map items, then choose from this submenu to specify what action is taken when any of the items is double-clicked. Use double-click actions to launch an Helper Application, URL, or Menu item.

For more information on Double-Click actions, see [Using Double-Click Actions \(Pg 81\)](#).

## Insert Menu

Use the Insert menu to insert devices, networks, links, and blocks of text to your map, and to initiate the Auto-discovery and network-scanning processes.

The Insert menu is available only in the Map window, and is active only when the Map Editor is on.

Menu Command	Description
<a href="#"><b>Device...</b> (Pg 371)</a>	Add one or more devices to a map.
<a href="#"><b>Network...</b> (Pg 372)</a>	Add a network (oval) to the map.
<a href="#"><b>Link</b> (Pg 373)</a>	Connect two devices with a link.
<a href="#"><b>Auto-Discover...</b> (Pg 373)</a>	Scan a network to find network devices such as routers, hosts, switches, hubs, servers, workstations, and place them on the map. Specify a starting address and the kinds of devices InterMapper finds and limit the breadth of the search.
<a href="#"><b>Scan Networks...</b> (Pg 374)</a>	Scan a network to find network devices such as routers, hosts, switches, hubs, servers, workstations, and place them on the map. Limit the types of devices InterMapper looks for. This command is available only when a network is selected, but the Filter dialog is also available from the Automatic Device Discovery dialog.
<a href="#"><b>Empty Probe Group...</b> (Pg 376)</a>	Insert one or more empty probe groups in the map.
<a href="#"><b>Text...</b> (Pg 376)</a>	Adds an object to the map containing the specified text.
<a href="#"><b>Icon...</b> (Pg 376)</a>	Insert an icon into a map.
<a href="#"><b>Map Benchmark</b> (Pg 376)</a>	Insert a benchmark to define the latitude and longitude of a point on the map.
<a href="#"><b>Group</b> (Pg 377)</a>	Group two or more selected devices into a probe group. Devices must have the same IP address.
<a href="#"><b>Un-Group</b> (Pg 377)</a>	Remove all probes from the selected probe group, and create a single device for each probe.

### Device...

Add a new device to a map.

*InterMapper* links the newly-added device(s) to networks already in the map. This example shows the **Add Devices** window.

#### To add a device:

1. Enter the one or more device names or addresses into the window.

Enter the names manually or paste from some other source. The names must be separated with commas or whitespace (spaces, tabs, or returns). The list of host names or IP addresses can be copied from a text file, from a traceroute program, or from other source of names and/or addresses. To resolve a domain name to an IPv6 address, enclose it in [square brackets] as shown in the example.

2. Select a probe type.

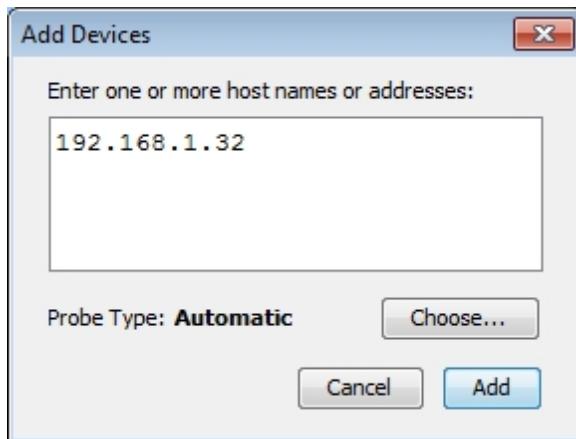
**Automatic** uses SNMP or ICMP Echo for IP devices.

You can also choose from a list of probes for web servers, mail servers, or any of the other probes shown in the dropdown menu. See [Probe Reference \(Pg 404\)](#) for a complete list of the built-in probes.

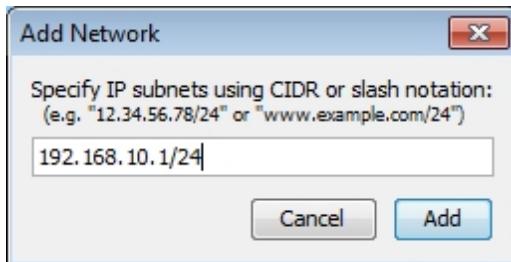
3. Enter a port number (if applicable to the probe).
4. Enter an SNMP Community string (if applicable).
5. Click **OK**.

### Network...

Add a network (oval) to the map. This is useful when *InterMapper* does not automatically detect the network because no SNMP-speaking devices are present.



Add Device(s) window.



Add Network... window. Enter an IP address range.

The window shown appears. Enter the IP address. (For a discussion of how IP network information is represented, along with a discussion of the "/24" etc notation, see [Subnet Mask FAQ. \(Pg 670\)](#) )

After you click **OK**, you will see a new network oval on the map representing that subnet. You can connect devices to this network by dragging their links as described in [Adding and Removing Links \(Pg 67\)](#).

## Link

Use the Link command to add a link manually where none exists. This can be useful when a link is not added during the auto-discovery process, or when you want to use links to specify that certain devices are dependent upon other devices. For more information on dependencies, see [Using Notification Dependencies \(Pg 128\)](#).

### To add a link manually:

1. Select two devices or networks. (The menu command is available only when two items are selected.) You can use Shift-click, Control-click, or you can click and drag to draw a box around the items you want to select.
2. From the Insert menu, choose **Link**. A link appears between the selected items. The link is permanently attached, and remains connected when you move the items.

### To remove a manually-added link:

- Right-click the link and choose **Remove**. The link is removed.

### Auto-Discover...

Use the Auto-Discover command to open the Automatic Device Discovery window. Using this command you can automatically find network devices such as routers, hosts, switches, hubs, servers, workstations, and place them on the map. Specify the kinds of devices InterMapper finds and the breadth of its search.

InterMapper uses a *starting address* and then scans for additional devices. By default, InterMapper starts with its router's address or its own [IP address \(Pg 669\)](#). You may, however, enter a different address or [DNS name \(Pg 673\)](#) or [WINS name \(Pg 678\)](#) (preceded by "\\") as a starting point. If InterMapper finds SNMP-speaking routers with connections on other networks, it searches those networks, hop-by-hop, finding more devices (and possibly more routers) until the specified hop limit is reached.

The **Autodiscovery** window shown above allows you to specify the starting address as well as specifying other options for the autodiscovery process.

**Enter a starting host name, IP address, or IP subnet** - Enter the name or address of a device that InterMapper should use to begin the autodiscovery process.

**Specify a SNMP Community** - Enter an *additional* SNMP Read-only community string to be used to interrogate all devices. (InterMapper always attempts to read SNMP information using the default 'public' community string. For more information, see [SNMP Frequently-asked Questions \(Pg 674\)](#).)

**Stay within \_\_ hops of starting device** - Stops autodiscovery after InterMapper has searched the specified number of hops from the starting device.

**Scan for devices on all networks** - See [Scan Network... \(Pg 374\)](#) below.

**Edit Filters...** - Click this button to open the Network Scanning window. See [Scan Network... \(Pg 374\)](#) below.

**Automatically Layout** - Select this box to have the map laid out automatically (using the Organic layout.)



The Automatic Device Discovery window.

## Scan Networks...

The auto-discovery process also allows you to select which kinds of devices are to be added to the map. InterMapper applies a set of *filters* to the discovered devices. Only those that match the checked filters will be added to the map.

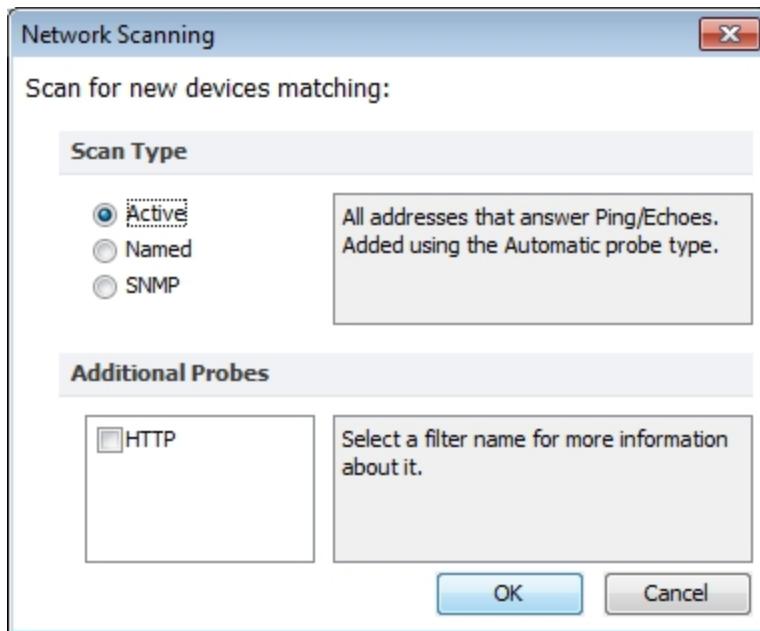
Click the **Edit Filter...** button, shown in the Automatic Device Discovery window above, or choose **Scan Networks...**

from the Insert menu to open the **Network Scanning** window

Choose from these options:

- **Active** forces a complete IP address scan for each network. InterMapper sends an ICMP Ping request to each IP address in the subnet range.
- **Named** Each IP address in the subnet is looked up in the DNS. If a corresponding name is present, the device is added to the map
- **SNMP** InterMapper sends a SNMP GetRequest to each address in the range. Devices that respond are added to the map.
- **Additional Probes** With the **HTTP** box selected, an HTTP probe is added if an HTTP response is received, and the device becomes a probe group.

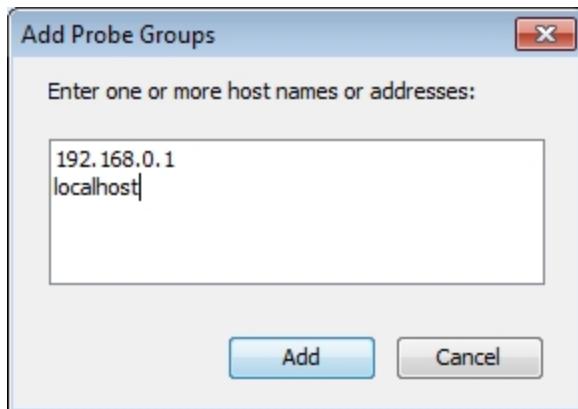
**Note:** It is possible to choose options that result in InterMapper's attempting to discover everything on a network. On a small or medium-sized network, this might be a reasonable approach. On large networks, InterMapper may discover far too many devices to make a workable map.



The Network Scanning dialog. Check a box to seek the associated device.

### Empty Probe Group...

Enter one or more addresses or domain names in the Add Probe Groups text box and click **Add**. An empty probe group is added for each name or address.

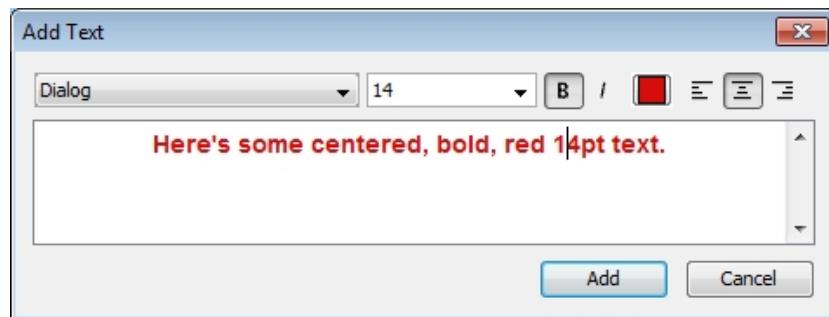


### Text...

Use the **Text...** command to place a block of text on a map at the location you choose.

#### To add a text object to a map:

1. From the Insert menu, choose **Text....** The Add Text window appears.
2. Enter the text you want to add to your map.
3. Use the formatting controls to format the text.
4. Click **OK**. A text object appears on the map.
5. Drag the text object to move it to the desired location.



*Add Text window. Enter text in the text box.*

*Use the text formatting controls to format the text.*

### Icon...

Use the **Icon** command to add an icon to a map. An icon inserted using this method is not associated with any device or network; it is simply a graphic element added to the map.

To add an icon to a map:

1. With the map editable, choose **Icon...** from the Insert menu. The Select an Icon window appears.
2. Choose an icon, and click **OK**. The icon appears in the map.

### Map Benchmark

Use the **Map Benchmark** command to define the latitude and longitude of a point on a map. This is useful if you are placing devices on the map using geographic

coordinates. Each device is located on the map in relation to the map's benchmarks.

### **Group**

Use the Group command to create a probe group, a single device containing multiple probes. In order for the command to work, all selected devices must use the same IP address.

#### **To create a probe group:**

1. Select the devices you want to group. All selected devices must have the same IP address.
2. From the Insert menu, choose **Group**. The selected devices are "collapsed" into a single device, containing a probe for each selected device.

**Note:** A probe group counts as one device against your device count.

### **Un-Group**

Use the Un-Group command to "explode" a probe group into individual devices.

#### **To un-group a probe group:**

1. Select the group you want to un-group.
2. From the Insert menu, choose **Un-Group**. The probe group is replaced by individual devices, each configured with one of the probes from the original group.

**Note:** Each device counts as one device against your device count.

## Format Menu

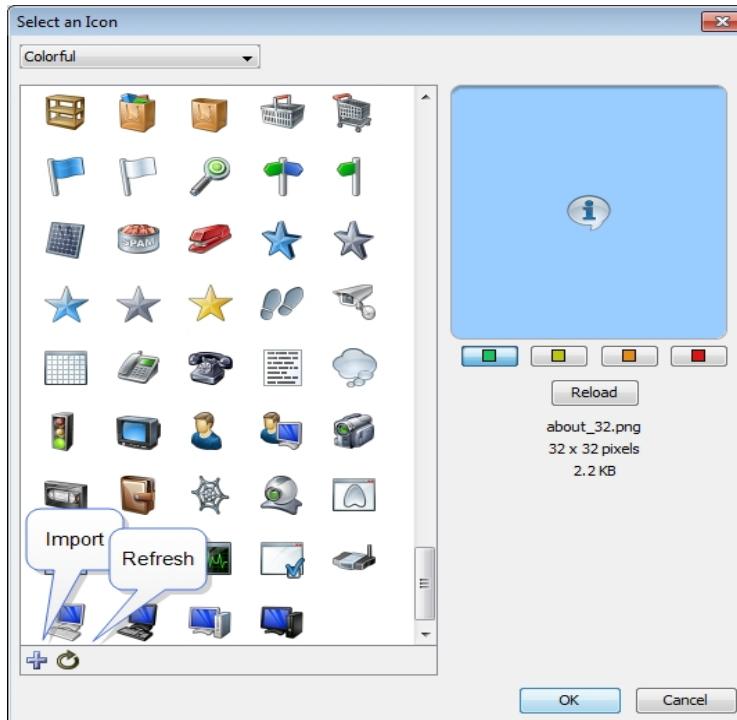
The **Format** menu contains commands that affect the appearance of individual items in the map. Items can be either devices (routers, servers, hosts, etc.) or networks (drawn as ovals, by default.)

Menu Command	Description
<a href="#"><u>Icon...</u> (Pg 379)</a>	Choose an icon for the selected items.
<a href="#"><u>Label...</u> (Pg 381)</a>	Modifies the label of one or more items from the map. Devices and networks have text labels that identify the item. These labels may be generated automatically from information gathered from the device, or contain static text that you enter.
<a href="#"><u>Label Position (submenu)</u> (Pg 385)</a>	Change the position of the label relative to an item.
<a href="#"><u>Align...</u> (Pg 386)</a>	Align the selected objects to each other.
<a href="#"><u>Rotate...</u> (Pg 386)</a>	Rotate the positions of the selected objects in relation to each other.
<a href="#"><u>Scale...</u> (Pg 387)</a>	Scale the positions of the selected items in relation to each other.
<a href="#"><u>Arrange (submenu)</u> (Pg 387)</a>	Rearrange the selected items into a cycle, bus, or star.
<a href="#"><u>Context menu</u> (Pg 390)</a>	Set the Font, Size, and Style of the selected devices from the context menu

## Icon

Use the **Icon** command to select an icon for a device or network as it appears on your map. The Select an Icon window appears.

- Click an icon from those displayed in the left box. It appears in preview box on the right.
- Click **OK** to assign the icon to the selected devices or networks.
- From the drop-down menu at the top of the window, choose a group of icons. The Built-in Shapes are shown below.
- Click **Import...** to import an image as an icon.
- When viewing groups of icons other than Built-in Shapes, click Reload to refresh the icon list in the left box.
- Drag an image to the window to import it as an icon.
- Drag a folder of images to the window to import the contents as a new icon group.

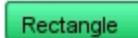


For more information, see [Custom Icons \(Pg 96\)](#).

### **Built-in Shapes**

Use the icons in the **Built-in Shapes** icon group.

**Note:** Except for the **Wire** icon, all Built-in Shapes stretch to enclose the specified label text.



#### **Rectangle and Oval**

Rectangles and Ovals contain the text label within them.

Rectangle is the default shape for a device. Oval is the default shape for a network.



#### **Wire**

The Wire item is drawn as a straight line. Connections to the wire are drawn at right angles to the wire if possible.

- Drag the ends of the wire to resize it or change its orientation (angle).
- Choose from the **Label Position** submenu to position the label at one of nine positions.



#### **Cloud**

Cloud items contain the text label within them.



#### **Text**

The font, style, and color are controlled by the other choices in the Format menu. The border of the item appears only when the item is selected.



#### **Icon**

Choose from a set of default icons or create your own. See [Custom Icons \(Pg 96\)](#) to learn more about adding icons to *InterMapper's* set.

## Label

Each item in your map has a label. Use the **Label...** command from the Format menu to edit labels for the selected items.

### Default Labels

- **Device** - its Smart Name.
- **Network**- IP address or range.

### The Edit Device Label window

The example below shows the window for editing an item's label.

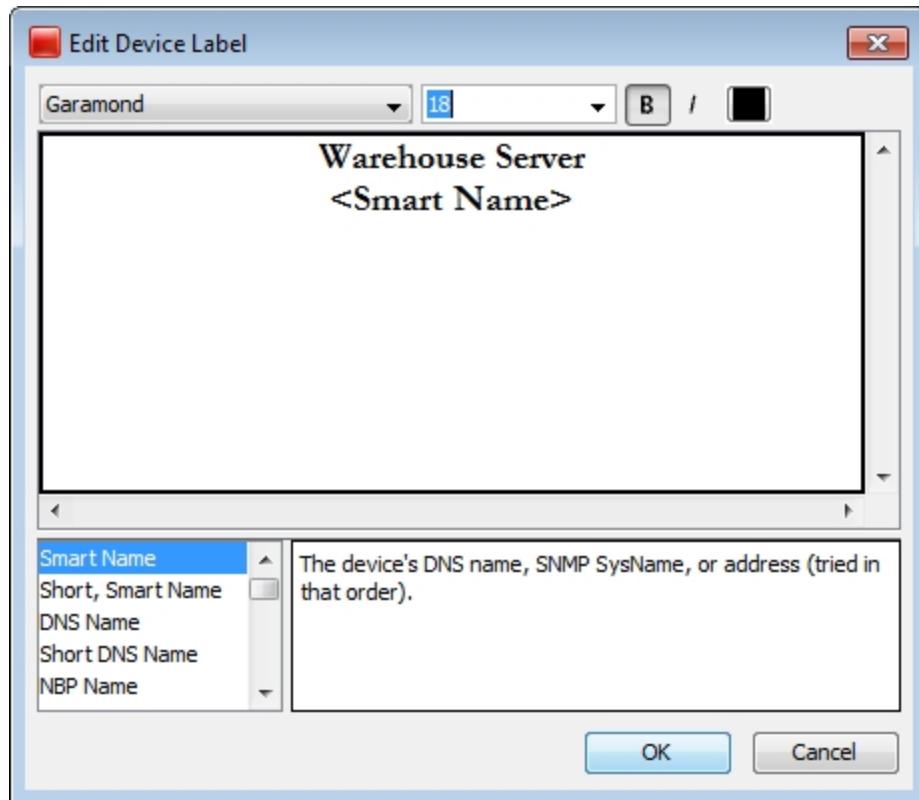
- **Top pane** - lists the label as it will be displayed.  
The entries in <...> are *variables* which are filled in with the values from the particular device or network.  
Press **Enter** to move text or variables to a new line.
- **Lower-left pane** - displays a list of variables that may be used in the top pane; the lower-right pane shows the definition of each variable

### To insert a variable into the item's label:

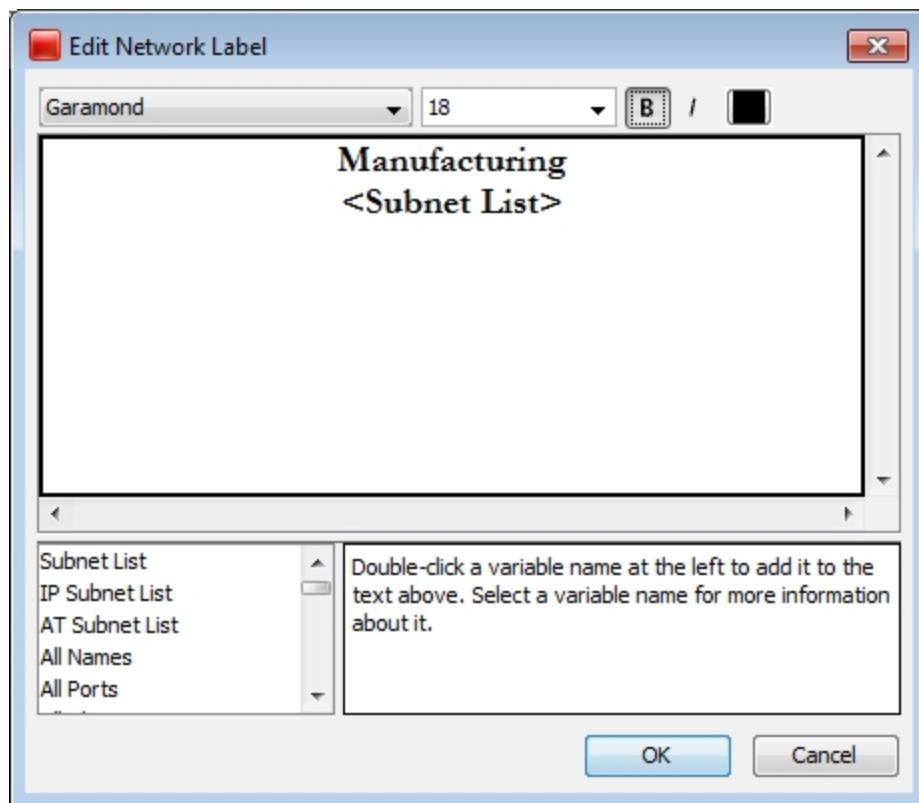
In the top pane, place your cursor where you want to place the variable.

In the Lower-left pane, double-click variable you want to insert. The variable appears in the top pane, enclosed in <...>.

*Tip:* To move text or a variable to a new line, place the cursor where you want the new line to start and press **Enter**.



*Editing a Device label.*



*Editing a Network Label.*

***Label Variables***

Use label variables to help you see the item information you consider most important.

**Device Variables**

<b>Smart Name (default)</b>	The device's DNS name, SNMP SysName, or IP address, tried in that order.
<b>Short, Smart Name</b>	The leftmost part (up to the first ".") of the device's Smart Name (except for IP addresses).
<b>DNS Name</b>	The full DNS name for the device (not the sysName or IP Address).
<b>Short DNS Name</b>	The first part of the device's DNS Name.
<b>NBP Name</b>	The device's Name Binding Protocol name.
<b>SNMP SysName</b>	The name of the device as reported by the 'sysName' variable.
<b>SNMP SysDescr</b>	The hardware and software information reported in the 'sysDescr' variable.
<b>SNMP SysContact</b>	The contact person as reported by the 'sysContact' variable.
<b>SNMP SysLocation</b>	The location of the device as reported by the 'sysLocation' variable.
<b>SNMP EnterpriseID</b>	The enterprise ID of the device as reported by the 'EnterpriseID' variable.
<b>SNMP EntSerialNum</b>	The serial number of the device as reported by the 'EntSerialNum' variable.
<b>SNMP EntMfgName</b>	The manufacturer name of the device as reported by the 'EntMfgName' variable.
<b>SNMP EntModelName</b>	The model name of the device as reported by the 'EntModelName' variable.
<b>Address</b>	The network address of the device.
<b>MAC Address</b>	The MAC address of the device
<b>Probe Type</b>	The probe type used to test the device.
<b>Comment</b>	The comments associated with the device in its "Get Info" window.
<b>TCP Port</b>	The TCP port number that is being monitored, if the device is using a TCP-based probe type.
<b>WINS/NetBIOS Name</b>	The device's WINS/NetBIOS name.

**Network Variables**

<b>Subnet List (default)</b>	A list of the subnets on the network.
<b>IP Subnet List</b>	A list of IP subnets on the network.
<b>AT Subnet List</b>	A list of AppleTalk subnets on the network.
<b>All Names</b>	List of interface names (for devices that have them), one per line. Devices that do not use SNMPv2c or SNMPv3 will not be shown.
<b>All Ports</b>	List of the device's ifIndex attached to the network, one per line.
<b>All Aliases</b>	List of interface aliases (for devices that have them), one per line. Devices that do not use SNMPv2c or SNMPv3 will not be shown.
<b>All Descriptions</b>	List of port descriptions attached to the network, one per line.
<b>All Device- Names</b>	List of 'device-label: interface-name' attached to the network, one per line. Devices that do not use SNMPv2c or SNMPv3 will not be shown.
<b>All Device- Ports</b>	List of 'device-label: ifIndex' attached to the network, one per line.
<b>All Device- Aliases</b>	List of 'device-label: interface-alias' attached to the network, one per line. Devices that do not use SNMPv2c or SNMPv3 will not be shown.
<b>All Device- Descriptions</b>	List of 'device-label: port-description' attached to the network, one per line.
<b>Switch Names</b>	List of only switch's interface names (for devices that have them), one per line. Devices that do not use SNMPv2c or SNMPv3 will not be shown.
<b>Switch Ports</b>	List of only switch's ifIndex attached to the network, one per line.
<b>Switch Aliases</b>	List of only switch's interface alias (for devices that have them), one per line. Devices that do not use SNMPv2c or SNMPv3 will not be shown.
<b>Switch Descriptions</b>	List of only switch's port descriptions attached to the network, one per line.
<b>Switch Device- Names</b>	List of only switch's 'device-label: interface-name' attached to the network, one per line. Devices that do not use SNMPv2c or SNMPv3 will not be shown.

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<b>Switch Device-Ports</b>	List of only switch's 'device-label: ifIndex' attached to the network, one per line.
<b>Switch Device-Aliases</b>	List of only switch's 'device-label: interface-alias' attached to the network, one per line. Devices that do not use SNMPv2c or SNMPv3 will not be shown.
<b>Switch Device-Descriptions</b>	List of only switch's 'device-label: port-description' attached to the network, one per line.
<b>Port Address</b>	List of all numbered interfaces, one per line.
<b>IP 3rd Octet</b>	List of IP subnets on the network, one per line. Subnets are identified by their 3rd octet only.
<b>VLAN</b>	List of VLAN IDs on the network, one per line.
<b>Port List</b>	List of 'device-label: ifIndex' attached to the network, one per line.
<b>Interface Name</b>	List of the interface names (for devices that have them), one per line. Devices that do not use SNMPv2c or SNMPv3 are not shown.
<b>Port Number</b>	List of device's ifIndex attached to the network, one per line.
<b>Interface Alias</b>	List of interface alias (for devices that have them), one per line. Devices that do not use SNMPv2c or SNMPv3 are not shown.
<b>Port Name</b>	List of port descriptions attached to the network, one per line.

### Label Position

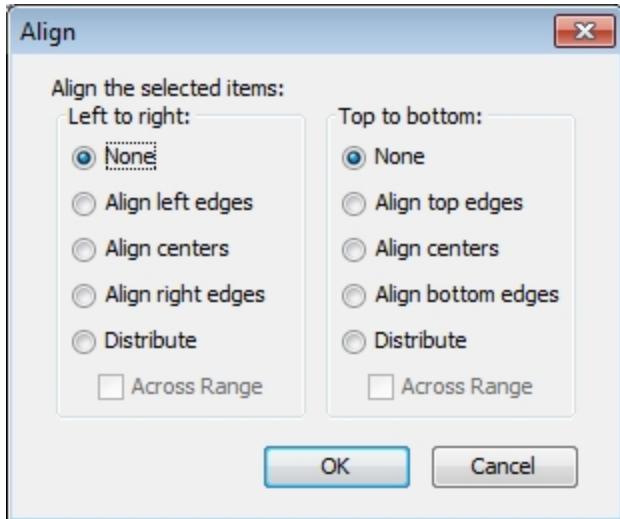
Choose from these nine positions:

- Top Left, Top, Top Right
- Left, Center, Right
- Bottom Left, Bottom, and Bottom Right

**Note:** The label position affects only *Wire* and *Icon* shapes.

### Align

Align the selected items relative to each other. The **Align ...** buttons work like other drawing programs.



*Changing alignment of selected items in a map.*

1. Select the items you want to align.
2. From the Format menu, choose **Align...**. The Set Alignment dialog appears.
3. Choose horizontal (left to right) and vertical (top to bottom) alignment options and click **OK**. The selected items are aligned as specified.

#### Distribute:

The Distribute option spaces the devices evenly.

Check the **Across range** box to distribute the items evenly in the space that the items occupy.

Clear the **Across range** box to draw the items with a small amount of space between the icons.

The example at left shows the options for aligning items.

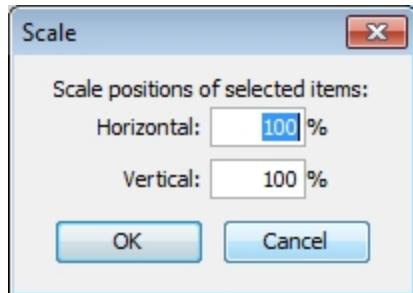
### Rotate



Rotate the positions (but not the text or icons) of the selected items as a group. Items are rotated clockwise by the number of degrees specified. The example at left shows the window for rotating items.

*Rotate the selected items (but not their icons or text labels) by the specified number of degrees.*

## Scale



Change the relative spacing of the selected items. This is useful after arranging items in a star to increase or decrease the diameter of the circle. The example at left shows the interface.

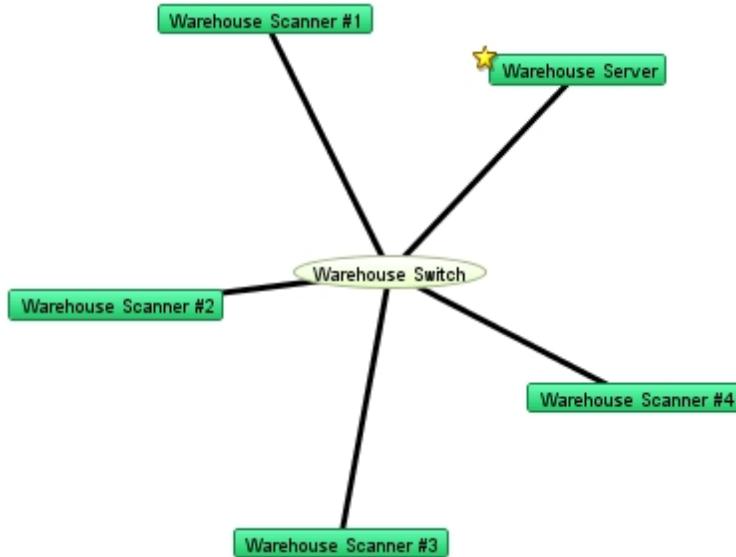
*Scaling item positions. Specify the amount (percentage) to change the positions both vertically and horizontally.*

## Arrange (submenu)

If no objects are selected, Organic and Tree commands work on all objects on a map. For Star and Bus, you must select at least one object. For Cycle, you must select at least two objects. All commands will work on two or more objects.

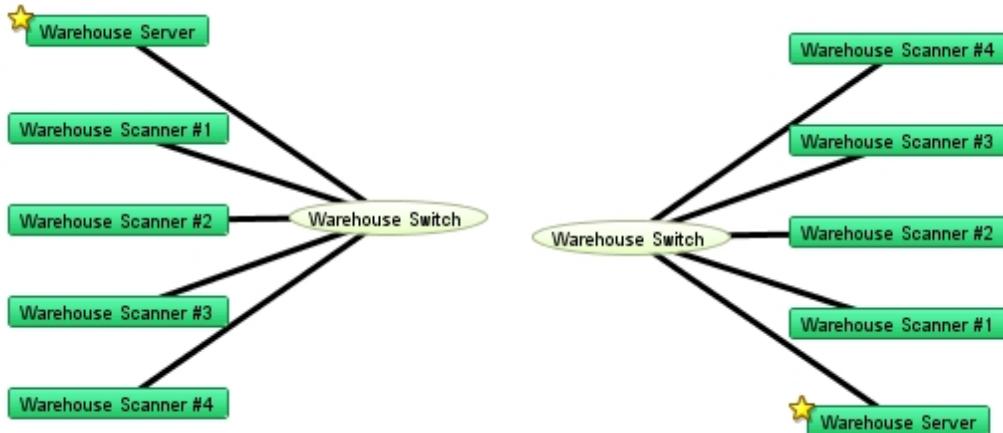
### Organic

Arrange items with a minimum number of crossed links and overlaid objects.



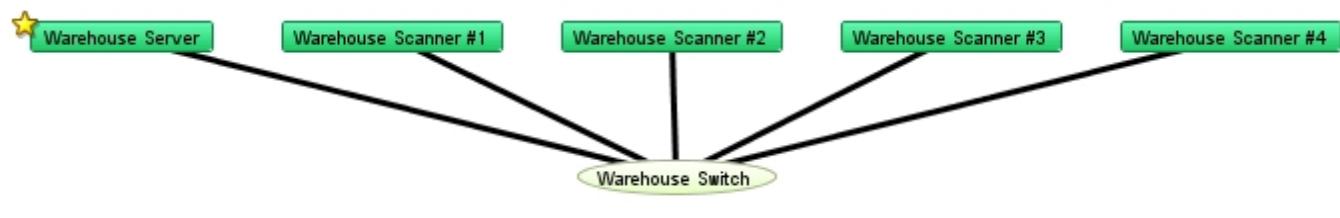
### Tree

Arrange items in a tree structure. Choose which direction the branches of the tree should go.



**Tree - left**

**Tree - right**



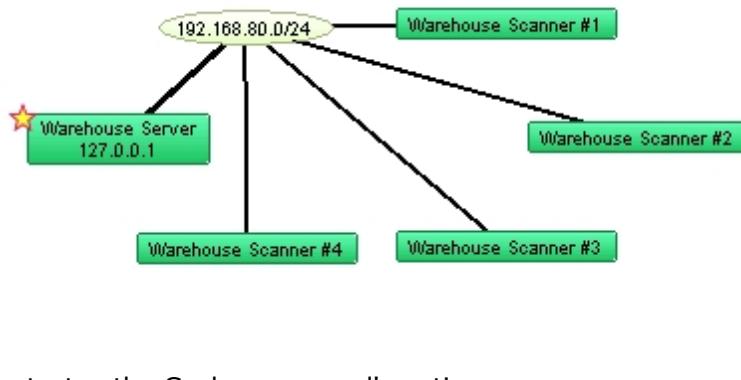
**Tree - up**



**Tree - down**

### Cycle

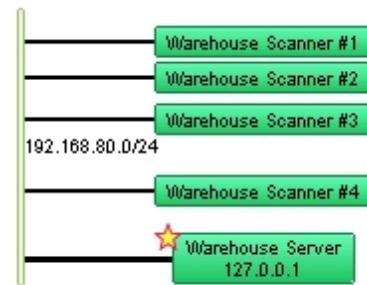
Move the selected items into an oval around the edge of the window. This allows you to see the interconnections between the devices of your network more easily. The Cycle example in [Using the Arrange Commands \(Pg 113\)](#) illustrates the Cycle command's action.



### Bus

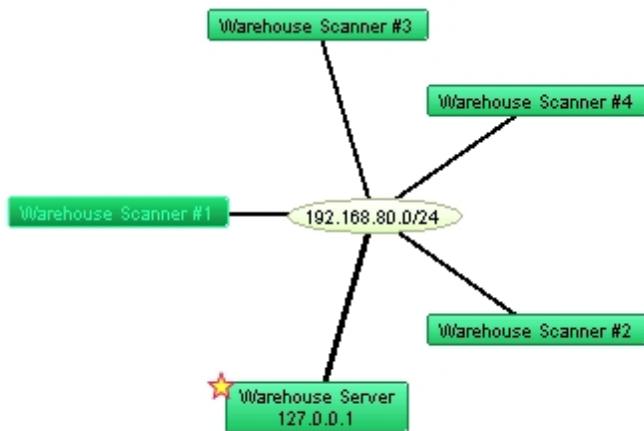
Arrange items into a vertical column, changing the item that connects them into a vertical *bus* shape. This might represent a group of devices connected by an Ethernet or other broadcast medium. The Bus example in [Using the Arrange Commands \(Pg 111\)](#) illustrates the Bus command's action.

**Note:** The **Bus** command affects only items that are connected to networks.



### **Star**

Arrange items so they surround a network or device that connects them. The devices will be spaced equally around the circumference of a circle. The Star example in [Using the Arrange Commands \(Pg 111\)](#) illustrates the Star command's action.



### **Features available only from the Context Menu**

#### **Font, Size, and Style**

You can change the attributes for each label in your map.

- Choose from Font, Size or Style from the context menu to change the label's font, font size, and font style.

**Note:** The Font, Size, and Style attributes affect all labels in the selected objects. The Color attribute affects the text color only when the shape is set to Text. These functions are also available from the Edit Device Label... dialog.

## Window Menu

The Window menu lists all open maps at the bottom of the menu. You can also change certain aspects of window appearance, and can access other InterMapper windows.

Menu Command	Description
<a href="#"><u>Minimize (Pg 392)</u></a>	Minimize the frontmost window.
<a href="#"><u>Zoom (Pg 392)</u></a>	Choose the Zoom command to expand (or contract) the frontmost window to the size necessary to show all devices, or to the maximum size of its current screen, if all items cannot be shown at the same time. If the Toolbar is shown, the minimum window width is the width of the toolbar.
<a href="#"><u>Send to Back (Pg 392)</u></a>	Send the front-most window to the back.
<a href="#"><u>Slideshow... (Pg 392)</u></a>	Rotate between open map windows.
<a href="#"><u>Logs (Pg 393)</u></a>	Choose from a submenu of log files to view a history of events, outages, the Debug log, or custom logs you set up yourself.
<a href="#"><u>Charts (submenu) (Pg 394)</u></a>	Choose from a submenu of defined charts.  <b>Note:</b> In the Charts window, a <b>Show Chart</b> context menu item has the same effect.
<a href="#"><u>Map List (Pg 394)</u></a>	Open the Map List window, or bring it to the front.
<a href="#"><u>Device List (Pg 395)</u></a>	Open the Device List window.

### Minimize

Minimizes the frontmost InterMapper window.

### Zoom

Choose the **Zoom** command to expand the frontmost window to the largest size necessary to show all devices, or to the maximum size of its current screen, if all items cannot be shown at the same time.

- Choose **Zoom** again to return the window to its original size.

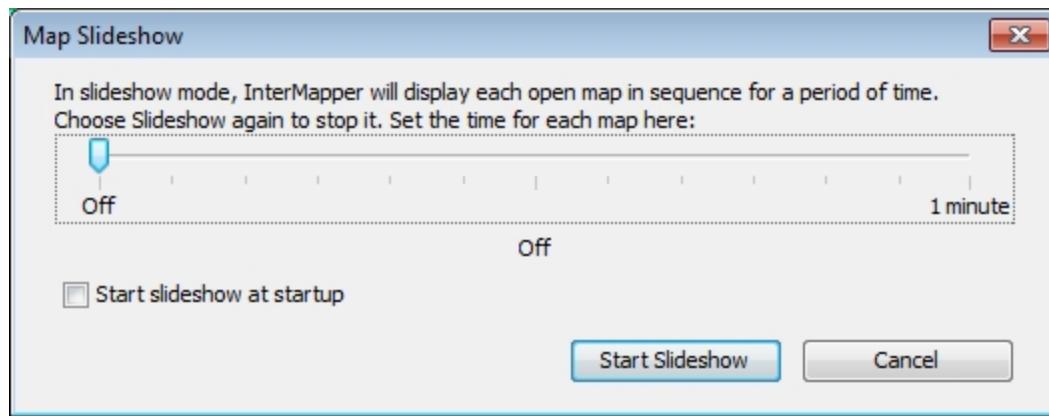
### Send to Back

Use the **Send to Back** command to send the front-most window to the back.

Floating windows associated with that window, such as Status windows, are hidden.

### Slideshow...

Use the **Slideshow...** command to rotate the open map windows at a specified rate.

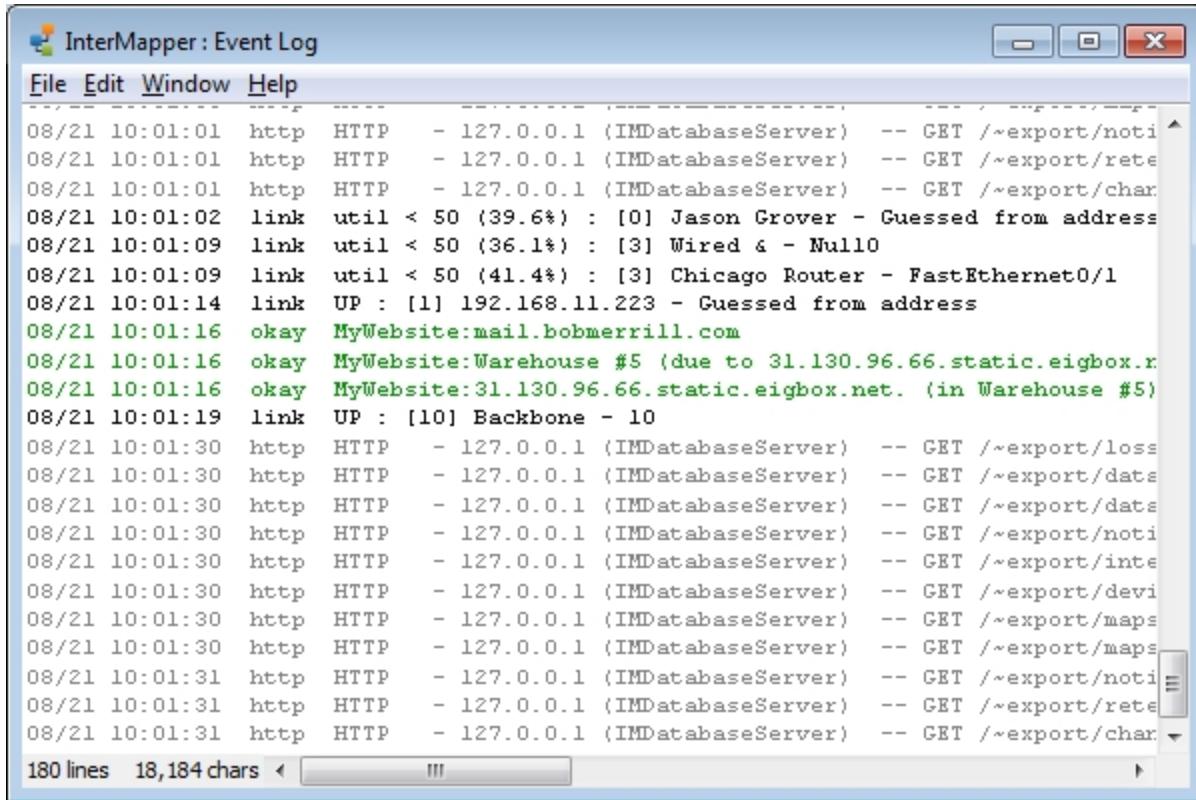


- From the Window menu, choose **Slideshow...**, and choose the amount of time each map should be shown.
- Choose **Slideshow** again to stop the slide show.

## Logs

Use the **Logs** selection from the Window menu to choose from a submenu of log files. You can view a history of events, outages, connections to the web and remote servers, or custom logs you set up yourself.

Here is a typical Event Log window.



The screenshot shows a Windows-style application window titled "InterMapper : Event Log". The window has a menu bar with "File", "Edit", "Window", and "Help". The main area is a scrollable text list of log entries. The entries are timestamped and show various network-related events. At the bottom left, it says "180 lines 18,184 chars".

```

08/21 10:01:01 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/noti
08/21 10:01:01 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/rete
08/21 10:01:01 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/char
08/21 10:01:02 link util < 50 (39.6%) : [0] Jason Grover - Guessed from address
08/21 10:01:09 link util < 50 (36.1%) : [3] Wired & - Null0
08/21 10:01:09 link util < 50 (41.4%) : [3] Chicago Router - FastEthernet0/1
08/21 10:01:14 link UP : [1] 192.168.11.223 - Guessed from address
08/21 10:01:16 okay MyWebsite:mail.bobmerrill.com
08/21 10:01:16 okay MyWebsite:Warehouse #5 (due to 31.130.96.66.static.eigbox.r
08/21 10:01:16 okay MyWebsite:31.130.96.66.static.eigbox.net. (in Warehouse #5)
08/21 10:01:19 link UP : [10] Backbone - 10
08/21 10:01:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/loss
08/21 10:01:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/data
08/21 10:01:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/data
08/21 10:01:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/noti
08/21 10:01:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/inte
08/21 10:01:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/devi
08/21 10:01:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/maps
08/21 10:01:30 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/maps
08/21 10:01:31 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/noti
08/21 10:01:31 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/rete
08/21 10:01:31 http HTTP - 127.0.0.1 (IMDatabaseServer) -- GET /~export/char

```

Event Log window.

Each time a device changes state, an entry is made in an event log window. In addition, *InterMapper* logs messages for the following events:

- Acknowledgements (including the text entered by the operator)
- Maps opening and closing
- Program startup
- DNS errors
- Errors when sending a notification
- Receipt of an SNMP trap

For more information, see the Overview of [Information and Log Windows \(Pg 207\)](#).

### Charts

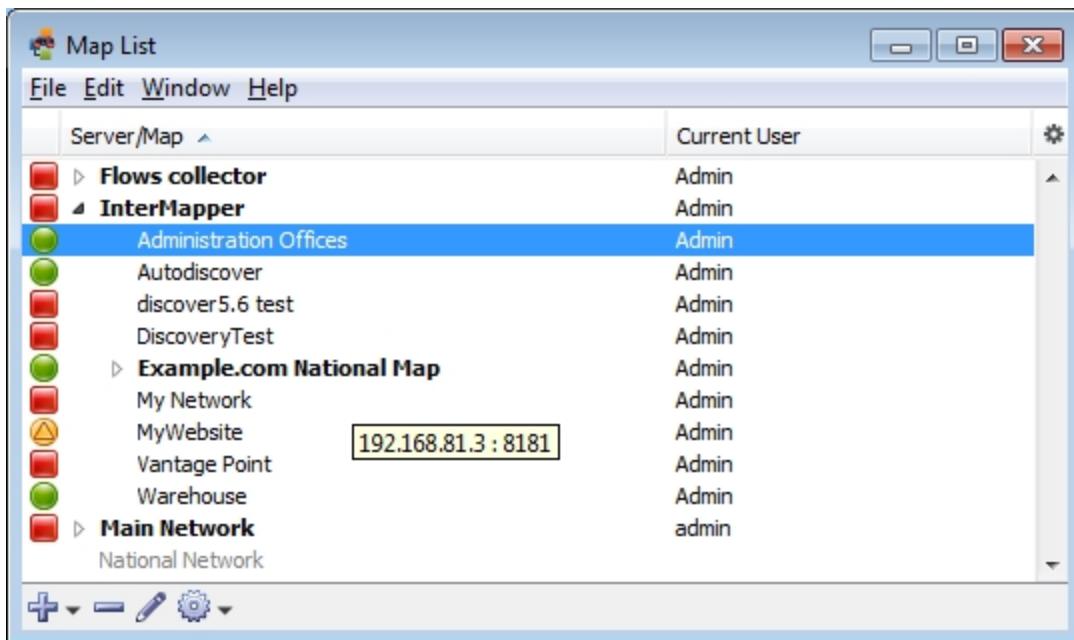


Choose from a submenu listing all available charts for the current map window

- Select and clear the check mark on individual charts from the submenu to show or hide them.
- Choose **Show Charts** to show all charts.
- Choose **Hide Charts** to hide all charts.

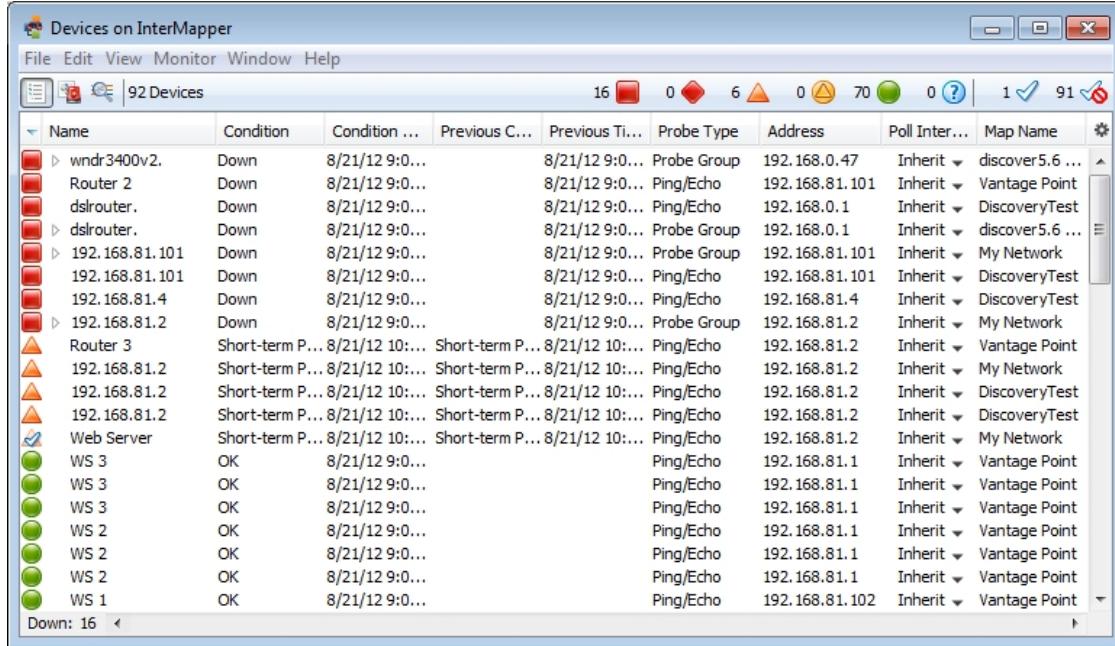
### Map List

Use the Map List command to open the Map List window or bring it to the front.



## Device List

Use the **Device List** command to view the Device List window, which shows a global device list. InterMapper keeps a server-wide list of all the devices that are being monitored on all enabled maps that the current logged-in user can see.



The screenshot shows the 'Devices on InterMapper' window with the title bar 'Devices on InterMapper'. The menu bar includes File, Edit, View, Monitor, Window, and Help. The toolbar has icons for New Map, Open Map, Save Map, and others. A status bar at the bottom shows '16' red squares, '0' red diamonds, '6' orange triangles, '0' yellow circles, '70' green circles, '0' blue question marks, '1' blue checkmarks, and '91' red crossed-out checkmarks. The main area displays a table of 92 devices. The columns are: Name, Condition, Condition ..., Previous C..., Previous Ti..., Probe Type, Address, Poll Inter..., and Map Name. The table lists various devices with their status (e.g., Down, OK), last probe time, probe type (e.g., Probe Group, Ping/Echo), address, poll interval, and map name. Some entries have a small icon next to them (e.g., a red square for down, a green circle for OK). The bottom left of the table shows 'Down: 16'.

Name	Condition	Condition ...	Previous C...	Previous Ti...	Probe Type	Address	Poll Inter...	Map Name
wndr3400v2.	Down	8/21/12 9:0...		8/21/12 9:0...	Probe Group	192.168.0.47	Inherit	discover5.6 ...
Router 2	Down	8/21/12 9:0...		8/21/12 9:0...	Ping/Echo	192.168.81.101	Inherit	Vantage Point
dslrouter.	Down	8/21/12 9:0...		8/21/12 9:0...	Ping/Echo	192.168.0.1	Inherit	DiscoveryTest
dslrouter.	Down	8/21/12 9:0...		8/21/12 9:0...	Probe Group	192.168.0.1	Inherit	discover5.6 ...
192.168.81.101	Down	8/21/12 9:0...		8/21/12 9:0...	Probe Group	192.168.81.101	Inherit	My Network
192.168.81.101	Down	8/21/12 9:0...		8/21/12 9:0...	Ping/Echo	192.168.81.101	Inherit	DiscoveryTest
192.168.81.4	Down	8/21/12 9:0...		8/21/12 9:0...	Ping/Echo	192.168.81.4	Inherit	DiscoveryTest
192.168.81.2	Down	8/21/12 9:0...		8/21/12 9:0...	Probe Group	192.168.81.2	Inherit	My Network
Router 3	Short-term P...	8/21/12 10:...	Short-term P...	8/21/12 10:...	Ping/Echo	192.168.81.2	Inherit	Vantage Point
192.168.81.2	Short-term P...	8/21/12 10:...	Short-term P...	8/21/12 10:...	Ping/Echo	192.168.81.2	Inherit	My Network
192.168.81.2	Short-term P...	8/21/12 10:...	Short-term P...	8/21/12 10:...	Ping/Echo	192.168.81.2	Inherit	DiscoveryTest
192.168.81.2	Short-term P...	8/21/12 10:...	Short-term P...	8/21/12 10:...	Ping/Echo	192.168.81.2	Inherit	DiscoveryTest
Web Server	Short-term P...	8/21/12 10:...	Short-term P...	8/21/12 10:...	Ping/Echo	192.168.81.2	Inherit	My Network
WS 3	OK	8/21/12 9:0...			Ping/Echo	192.168.81.1	Inherit	Vantage Point
WS 3	OK	8/21/12 9:0...			Ping/Echo	192.168.81.1	Inherit	Vantage Point
WS 3	OK	8/21/12 9:0...			Ping/Echo	192.168.81.1	Inherit	Vantage Point
WS 2	OK	8/21/12 9:0...			Ping/Echo	192.168.81.1	Inherit	Vantage Point
WS 2	OK	8/21/12 9:0...			Ping/Echo	192.168.81.1	Inherit	Vantage Point
WS 2	OK	8/21/12 9:0...			Ping/Echo	192.168.81.1	Inherit	Vantage Point
WS 1	OK	8/21/12 9:0...			Ping/Echo	192.168.81.102	Inherit	Vantage Point

*The Device list window.*

For more information, see [The Device List Window](#).

## Help Menu

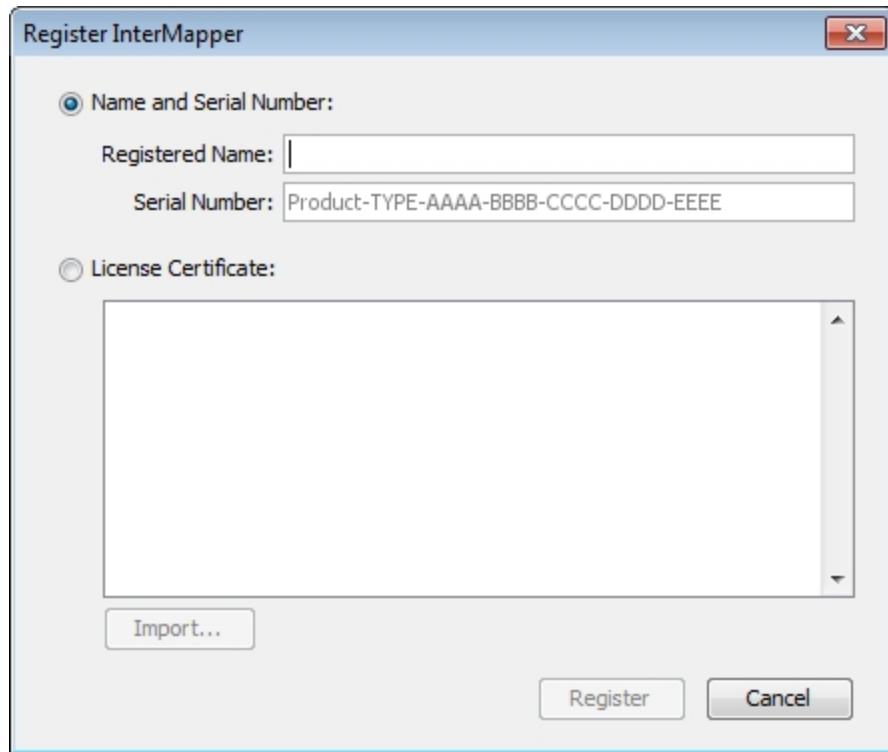
Use the Help menu to view the on-line help system.

Menu Command	Description
<b>About InterMapper</b>	Opens the InterMapper software information page.  <b>Note:</b> On Macintosh, this command is available from the <a href="#">InterMapper or IM RemoteAccess menu</a> .
<a href="#"><b>Register InterMapper..., Register InterMapper RemoteAccess (Pg 397)</b></a>	Opens the InterMapper or InterMapper RemoteAccess registration window.
<b>InterMapper Help, InterMapper RemoteAccess Help</b>	Opens the InterMapper help system.
<a href="#"><b>Send Feedback... (Pg 190)</b></a>	Opens the Send Feedback window.
<a href="#"><b>Send a Screenshot... (Pg 190)</b></a>	Opens the Send Feedback window with a screenshot attached.
<a href="#"><b>Diagnostics (submenu) (Pg 397)</b></a>	Choose from a number of diagnostic commands, described below.

### About InterMapper

Opens the InterMapper software information page. View information about the software and its contributors, as well as viewing information about memory use, platform, operating system and current Java version.

## Register InterMapper, Register InterMapper RemoteAccess

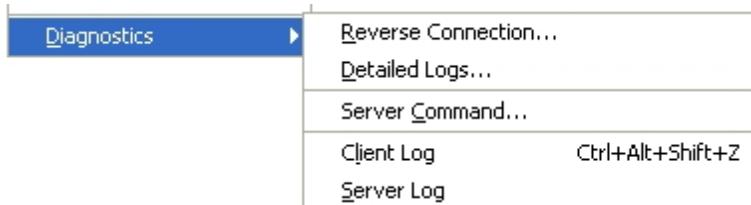


(InterMapper Only)

Opens the Register InterMapper (or InterMapper RemoteAccess) window. This is the same window displayed when you click Add... from the Registration pane, found in the Server Information section of the Server Settings window.

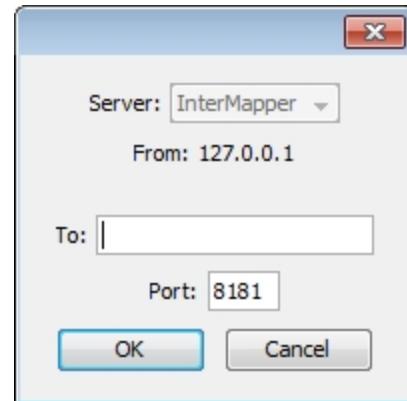
### Diagnostics (submenu)

Use the diagnostics menu to create a Reverse Connection to a server for troubleshooting, to view Detailed Logs, to execute a server command, or to view the Client or Server log.



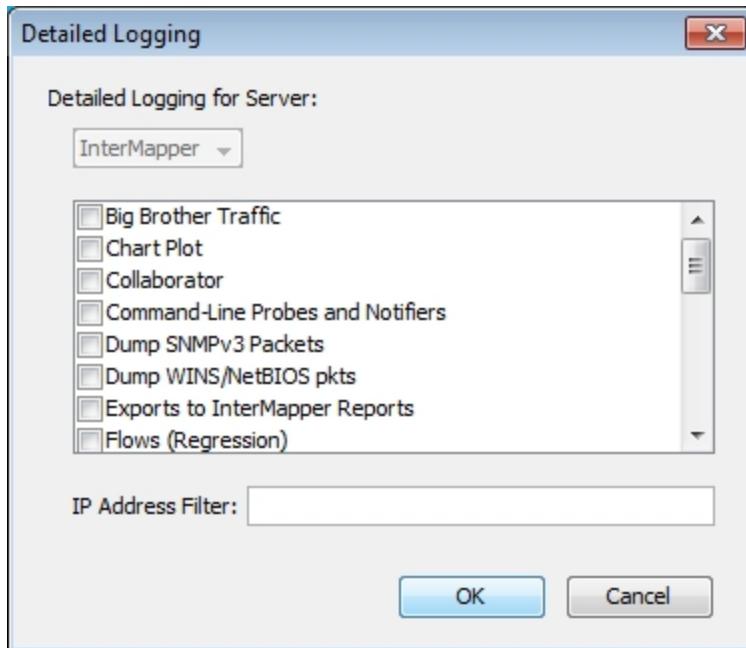
### ***Reverse Connection...***

Use the Reverse Connection command to initiate a reverse connection from your InterMapper server to a copy of InterMapper RemoteAccess client for troubleshooting purposes. This is frequently used to allow tech support personnel to view a customer's server. Using a reverse connection, the customer can instruct their server to connect out to another InterMapper RemoteAccess without changing any firewall configurations.



### ***Detailed Logs...***

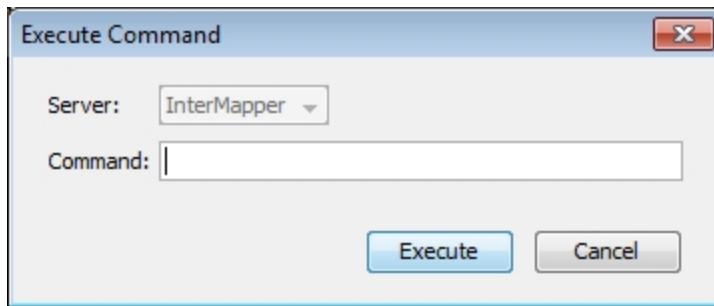
Use the Detailed Logs command to toggle detailed logging for a variety of different InterMapper events. Choose the type of event for which you want detailed logging to be displayed. The detailed information is sent to the server's Debug Log file. Enter an IP address in the Filter field to limit the logged information to a particular IP address.



When detailed logging is on, a significant quantity of data can be logged in a relatively short period. To conserve server disk space, use this feature only when needed for troubleshooting.

### ***Server Command...***

InterMapper RemoteAccess can instruct a server to execute certain commands, and to display the output in the Debug Log file. The major command is ***snmpwalk***; it and other commands are described in the [Developer Guide](#).



### ***Client Log***

Use this command to open the Client Log window, which contains the messages sent between the client and the InterMapper server. This information can often be useful for debugging InterMapper problems.

### ***Server Log***

Use this command to open the Debug log file for the server. It can also be opened from the Window>Logs>Debug menu.

## InterMapper Menus

Macintosh OSX adds an InterMapper menu or IM RemoteAccess menu. These menus contain menu items that normally appear in other menus on other platforms.



*InterMapper menu*



*InterMapper RemoteAccess menu*

The **About**, **Preferences...**, and **Quit** menu items appear in these menus on Macintosh systems.

For information on these features, see the menu reference topics as follows:

- About InterMapper, About IM RemoteAccess: [Help menu](#)
- Preferences: [Edit menu](#)
- Quit: [File menu](#)

## Context Menus

Use a context menu to choose options available for a particular device, network, link, map, window or other screen object. The options available in a context menu change depending on the object you are using to activate the context menu.

### To execute a command from a context menu:

1. ***Right/Ctrl-click*** the object for which you want to activate the context menu.  
The context menu appears.
2. Click to choose a command from the context menu. Commands appropriate to the selected object and current context appear.

## Keyboard Shortcuts

InterMapper runs on multiple platforms. Since different platforms have different modifier keys, (keys that change the function or meaning of another key) the keyboard shortcuts vary slightly from one platform to another.

### General Rules

The primary difference is between Macintosh and Windows machines. Use the following rules, depending on your platform:

#### To choose a menu item using the keyboard:

**Macintosh:** *Commandkey*

**Windows, Unix, Linux:** *Control* key

#### To choose an item from a context menu:

**Macintosh:** *Control-click* (hold **Control**, click with the mouse)

**Windows, Unix, Linux:** *Right-click*

### Finding Menu Item Shortcuts

Each menu item that has a shortcut shows the key required for the shortcut in the menu.

### Keyboard Navigation

You can use the keyboard to speed up a number of operations. See [Keyboard Navigation \(Pg 403\)](#) for a complete set of navigation keystrokes.

### Other Shortcuts

A number of other shortcuts are available to help you work efficiently. See [Quick Reference - Editing Your Map \(Pg 92\)](#) for additional selection and scrolling techniques.

## Keyboard Navigation

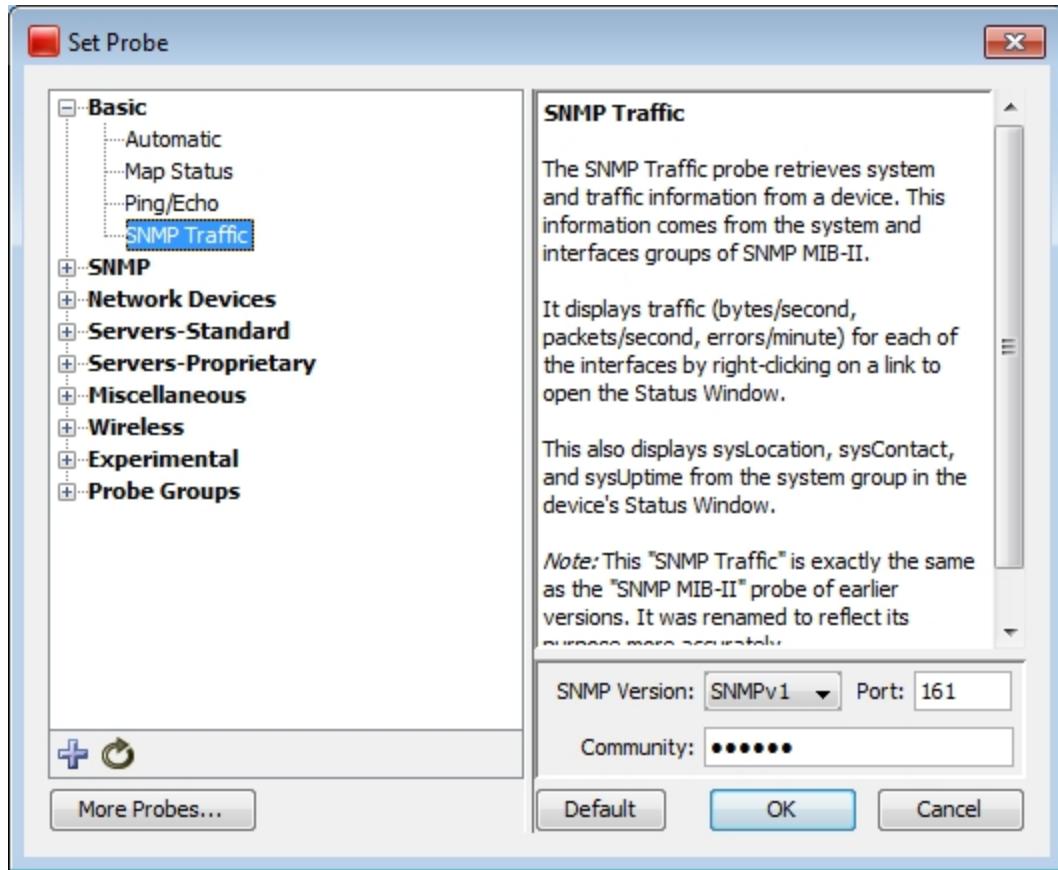
				Scroll the view
(in Browse mode)				
				Micro-adjust the position of the selected item
(in Edit mode)				
				Scroll the view in Edit mode.
<b>Alt or Option &lt;arrow key&gt;</b>				
<b>(in Edit mode)</b>				
Home				Scroll to Upper Left
End				Scroll to Lower Right
Page Up				Scroll one page up
Page Down				Scroll one page down
Tab				Toggle between Browse and Edit Mode
Cmd/Ctrl + Click				Center map
Cmd/Ctrl + Drag				Scroll map in any direction
Cmd/Ctrl + Scroll Wheel				Zoom in or out dynamically
Cmd/Ctrl + Option + Drag				Zoom in on selected rectangle
Cmd/Ctrl + Up				Zoom In
Cmd/Ctrl + Down				Zoom Out
Cmd/Ctrl +				View Icons
Cmd/Ctrl +				View List
Cmd/Ctrl +				View Notifiers
Cmd/Ctrl +				View Charts
Cmd/Ctrl +				Zoom In
(Numeric Keypad)				
Cmd/Ctrl +				Zoom Out
(Numeric Keypad)				

# Chapter 13

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## Probe Reference

Use the Probe Picker window to choose the probe you want to use to query the device.



Set Probe Window

### Using the Probe Selection Window

- Click plus (+) in the left pane to expand a probe group.
- Click minus (-) in the left pane to collapse a probe group.
- Click a probe in the left pane to choose the probe. Information about the probe and controls for setting any available parameters appear in the right frame.
- Click **Default** to set the probe back to default setting for that probe type.

### About the Probes

InterMapper comes with a large number of built-in probes. For a full index and detailed descriptions of built-in probes, see the [Probe Index \(Pg 407\)](#).

- [Basic Probes \(Pg 413\)](#) - use the Basic probes to cover the majority of your needs for probing devices.
- [SNMP Probes \(Pg 416\)](#) - use the SNMP probes to perform a wide variety of queries on SNMP devices.
- [Network Devices \(Pg 431\)](#) - Use the network device probes to query network devices, such as routers, switches and UPS units.
- [Servers-Standard \(Pg 466\)](#) - use these probes to query various devices using one of many Standard protocols.
- [Servers-Proprietary \(Pg 445\)](#) - use these probes to query various devices using one of many Proprietary protocols.
- [Miscellaneous Probes \(Pg 426\)](#) - use these probes for a variety of uses. You can find the Demo, Non-Polling, and TCP Check probes. You can also find the Legacy probes (included to support older maps) and the template for developing Nagios and Command-line probes.
- [Wireless Probes \(Pg 511\)](#) - Use these probes to get vendor-specific information from a number of wireless devices.
- [WMI Probes \(Pg 497\)](#) - If InterMapper is installed on a Windows machine, use these probes to get detailed information from Windows workstations through the Windows Management Instrumentation (WMI) interface.

### Packet-based probes

Probes such as "Ping/Echo", "SNMP MIB-II", "NNTP" and "RADIUS" send UDP packets to the device being tested and await a correctly formatted response.

- For more information on packet-based probes, see [About Packet-based Probes \(Pg 547\)](#) and [Network Device Probes \(Pg 431\)](#).

### Probe timeout period

The timeout period for waiting is configured by choosing **Set Timeout** from the Set Probe Info submenu. If no response is received within the timeout period, InterMapper tries again by sending another request packet. This process is repeated until either a response is received, or the number of requests sent exceeds the "Number of Lost Packets" threshold set for the map (a default of 3).

### Response packet integrity

All packet-based probes check the integrity of the response they receive, and some can set the status of the device (*Alarm*, *Warning*, or *OK*) based on the severity of a problem.

### TCP-based probes

Probes like "HTTP", "SMTP", and "LDAP" and others test the ability of a server to accept a TCP connection on a specific listening port, and to respond to a scripted interchange.

- For more information on TCP-based probes see [Server Probes - Standard \(Pg 466\)](#).

### **What happens in a TCP-based interchange**

1. InterMapper first attempts to connect to the specified port at the device's address.
2. If this connection attempt fails, InterMapper shows the device in the DOWN state.

If InterMapper successfully connects to the listening port, InterMapper sends protocol-specific commands through the TCP connection to test the server's responses and compare them to expected values.

3. InterMapper changes the status of the device (e.g. ALARM, WARNING, OKAY, DOWN) if an error condition is detected, or if the execution of InterMapper's probe is interrupted for any reason.
4. If InterMapper doesn't receive a proper response for 60 seconds, or if the TCP connection is lost while waiting for a response, the InterMapper probe will set status of the device to the proper condition.

### **Miscellaneous Probes**

InterMapper has several "miscellaneous probes", described briefly below. They are described in detail in [Miscellaneous Probes \(Pg 426\)](#).

- **Demo probe** - Use this probe to create demonstration maps, which simulate a network and its activity.
- **Legacy probes** - These probes that have been superceded by other probes. They are included to support older maps.
- **Nagios** - Use the Nagios probe type to select plugins from the Nagios monitoring system. InterMapper can use these plugins to test devices. For more details, see the Nagios Plugins page in the [Developer Guide](#).
- **Non-polling probe** - Choose this probe so that the selected device is not probed.
- **Prototype SNMP probe** - Use this probe as the basis for creating custom SNMP probes.
- **TCP Check probe** - Use this probe to monitor the number of TCP connections to an SNMP-enabled device and to send an alarm when a specified number of connections is exceeded.

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- [Network Devices > Cisco > Cisco Aironet \(Pg 1\)](#)
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## Basic

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### Basic > Automatic

#### *Automatic*

This probe checks whether the device responds to SNMP. If it doesn't, the probe is set to Ping/Echo.

#### **How it works:**

InterMapper sends a SNMP GetNextRequest for the sysName, sysObjectID, and sysServices OIDs (1.3.6.1.2.1.1.5.5, 1.3.6.1.2.1.1.5.2, and 1.3.6.1.2.1.1.5.7, respectively) using the specified SNMP Read-only community string. Upon receiving a valid SNMP response, InterMapper sets the device's probe to SNMP. If not, the Ping/Echo probe is used.

#### **Parameters**

None.

*Filename: com.dartware.automatic*

*Version: 1.7*

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### Basic > Map Status

#### *Map Status*

This probe allows InterMapper to monitor the state of a map running on an InterMapper server. InterMapper periodically queries the specified map, and sets the device status to the status of the "worst" item on that map. Double-click the device to view specified map.

The easiest way to use this probe is to drag a map from the Map List onto another editable map. You can also create a device using the DNS Name or IP address of the InterMapper server containing the map, or "localhost" for a local map. Then set the following:

#### **Parameters**

*Map Name* - The name of the map on the remote server.

*Username* - A user name that has read-permission on the map.

*Password* - The password for the specified user.

*Filename: com.dartware.map.status*

*Version: 1.8*

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## **Basic > Ping/Echo**

### **Ping/Echo**

This probe sends an ICMP echo request packet to the target device to determine if it is active and responding.

**Tip:** To send a 1500-byte IP packet to an IPv4 target, set the number of data bytes to 1472. To send the same IP packet size to an IPv6 target, set the number of data bytes to 1452.

InterMapper sends the ping packet, then waits for a response. The device's specified Timeout value is used to determined the amount of time the probe waits for a response. If no response is received within the specified time, InterMapper re-sends the echo request, waiting again the device's Timeout. When the probe reaches the device's limit of the number of pings to send (as determined by the device or map's limit), without receiving a response, the device status is set to DOWN.

By default, the number of echo requests is three, and the default timeout is three seconds. Thus it can take up to nine seconds to set a device status to DOWN.

### **Parameters**

*Number of Data Bytes* - The number of bytes of ICMP data to send. By default, 20 bytes of data is sent. The mimimum value is 16 bytes; the maximum is 2000 bytes.

*Data Pattern* - The hexadecimal pattern repeated throughout the payload contents.

*Filename: com.dartware.ping*

*Version: 2.0*

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## **Basic > SNMP Traffic**

### **SNMP Traffic**

This probe retrieves system and traffic information from an SNMP-enabled device. This information comes from the system and interfaces groups of SNMP MIB-II.

It shows traffic (bytes/second, packets/second, errors/minute) for each interface. Right-click a link to open the interface's Status Window.

The probe also shows sysLocation, sysContact, and sysUptime from the system group in the device's Status Window.

**Note:** This is exactly the same probe as the "SNMP MIB-II" probe found in earlier versions of InterMapper. It was renamed to reflect its purpose more accurately.

### **Parameters**

None.

*Filename:* com.dartware.snmp

*Version:* 1.7

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## SNMP

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- [SNMP > Comparison \(Pg 1\)](#)
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### **SNMP > Basic OID**

#### ***Basic OID***

This probe lets you monitor a single, user-defined MIB variable.

#### **Parameters**

*Object Name* - optional - The name of the value that you want to monitor. This parameter value is used only for display in the popup window and chart legend.

*Object ID* - The object identifier (OID) of the value that you want to monitor. To retrieve the value of a MIB variable that is not in a table, the OID must end with ".0" (e.g. "1.3.6.1.2.1.1.1.0").

This probe retrieves a lot of SNMP information from the device, including the MIB-II system group and the interfaces table. If you just want to monitor a single SNMP variable, use the SNMP/Single OID probe.

*Filename:* com.dartware.snmp.basic

*Version:* 0.7

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### **SNMP > Comparison**

#### ***Comparison***

This probe retrieves a single SNMP MIB variable, compares it to a specified value, and uses the result to set the device's status. It also displays the value in the Status Window.

#### **Parameters**

*Variable* - the MIB name or OID to retrieve. If you have imported the MIB for this device, enter the symbolic name for this value. Otherwise, enter its OID.

*Test* - Choose whether to set the status to ALARM if the device is **Equal** or **NotEqual** to the *Value* parameter.

*Value* - The value to compare against.

*Severity* - The status to use if the comparison fails.

*Legend* - A text string used to identify the variable in the status window and any strip charts. If left blank, the variable's name or OID is used.

*Units* - optional - A text string that is displayed next to the value in the Status Window, intended for use as a unit of measure (packets/sec, degrees, etc.)

*Tag* - A short text string that identifies a particular class of dataset. Tags are used to correlate different variables from different probes that describe the same type of data, such as CPU% or temperature.

*Filename:* com.dartware.snmp.oidcomparison.txt

*Version:* 1.10

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### SNMP > High Threshold

#### **High Threshold**

This probe retrieves a single SNMP MIB variable and compares it to the specified thresholds below. If the value goes above any of the specified thresholds, the device changes to the specified state.

#### **Parameters**

*Variable* - the MIB name or OID to retrieve. If you have imported the MIB for this device, enter the symbolic name for this value. Otherwise, enter its OID.

*Critical, Alarm, and Warning* - the threshold to be used for comparison for each severity. Thresholds may be positive or negative numbers.

*Legend* - a text string used to identify the variable in the status window and in strip charts. If left blank, the variable's name or OID is used.

*Units* - a text string displayed next to the variable's value in the Status Window. Usually used for units of measure (packets/sec, degrees, etc.)

*Tag* - A short text string that identifies a particular class of dataset. Tags are used to correlate different variables from different probes that describe the same type of data, such as CPU% or temperature.

*Filename:* com.dartware.snmp.oidhigh.txt

*Version:* 1.5

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## **SNMP > Low Threshold**

### ***Low Threshold***

This probe retrieves a single SNMP MIB variable and compares it to the specified thresholds below. If the value goes below any of the specified thresholds, the device changes to the specified state.

#### **Parameters**

*Variable* - the MIB name or OID to retrieve. If you have imported the MIB for this device, enter the symbolic name for this value. Otherwise, enter its OID.

*Critical, Alarm, and Warning* - the threshold to be used for comparison for each severity. Thresholds may be positive or negative numbers.

*Legend* - a text string used to identify the variable in the status window and in strip charts. If left blank, the variable's name or OID is used.

*Units* - a text string displayed next to the variable's value in the Status Window. Usually used for units of measure (packets/sec, degrees, etc.)

*Tag* - A short text string that identifies a particular class of dataset. Tags are used to correlate different variables from different probes that describe the same type of data, such as CPU% or temperature.

*Filename:* com.dartware.snmp.oidlow.txt

*Version:* 1.5

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## **SNMP > Range Threshold**

### ***Range Threshold***

This probe retrieves a single SNMP MIB variable and compares it to the specified thresholds. If the value goes outside the specified range, the device changes to the corresponding state.

#### **Parameters**

*Variable* - the MIB name or OID to retrieve. If you have imported the MIB for this device, enter the symbolic name for this value. Otherwise, enter its OID.

*Critical, Alarm, and Warning* - the threshold to be used for comparison for each severity. Thresholds may be positive or negative numbers.

*Legend* - a text string used to identify the variable in the status window and in strip charts. If left blank, the variable's name or OID is used.

*Units* - a text string displayed next to the variable's value in the Status Window. Usually used for units of measure (packets/sec, degrees, etc.)

*Tag* - A short text string that identifies a particular class of dataset. Tags are used to correlate different variables from different probes that describe the same type of data, such as CPU% or temperature.

*Filename:* com.dartware.snmp.oidrange.txt

*Version:* 1.6

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## **SNMP > Restricted Interface**

### ***Restricted Interface***

This probe is identical to the Basic SNMP Traffic probe, except that it restricts the visible interfaces to those that match the specified *Interface Description*.

### **Parameters**

*Interface Description* - specifies the interfaces to display. Any interface with a value of ifDescr that matches this pattern is visible on the map. Non-matching interfaces are hidden.

*Filename:* com.dartware.snmp.restrictedint.txt

*Version:* 0.1

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## **SNMP > Single OID Viewer**

### ***Single OID Viewer***

This probe retrieves a single SNMP MIB variable and displays it in the device's Status Window.

### **Parameters**

*Variable* - the MIB name or OID to retrieve. If you have imported the MIB for this device, enter the symbolic name for this value. Otherwise, enter its OID.

*Legend* - a text string used to identify the variable in the status window and in strip charts. If left blank, the variable's name or OID is used.

*Units* - a text string displayed next to the variable's value in the Status Window. Usually used for units of measure (packets/sec, degrees, etc.)

*Tag* - A short text string that identifies a particular class of dataset. Tags are used to correlate different variables from different probes that describe the same type of data, such as CPU% or temperature.

*Filename:* com.dartware.snmp.oidsingle.txt

*Version:* 1.4

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## SNMP > SNMP High PPS

### **SNMP - High PPS**

This probe monitors the ifInPackets and ifOutPackets statistics of the specified device interface, and sets the state of the device to **Alarm** or **Warning** when the packet rate (in packets/second) exceeds specified thresholds. It sets the state to **Down** if the interface's *ifOperStatus* is not equal to 1 (Up).

#### **Parameters**

*Port Number* - the ifIndex of the port to monitor.

*Warn Threshold* and *Alarm Threshold* - threshold values in packets-per-second.

*Filename:* com.dartware.snmp.pps.txt

*Version:* 0.5

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## SNMP > SNMP High Traffic

### **SNMP - High Traffic**

This probe monitors the ifInOctets and ifOutOctets traffic statistics of a particular interface on the device, and sets the device to **Alarm** or **Warning** when the traffic exceeds specified thresholds. It sets the device's state to **Down** if the interface's *ifOperStatus* is not equal to 1 (up).

#### **Parameters**

*Port Number* - The ifIndex of the port to monitor.

*Warn Threshold* and *Alarm Threshold* - Thresholds in bytes per second.

*Filename: com.dartware.snmp.traffic.txt*

*Version: 0.3*

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## **SNMP > SNMP High Util**

### ***SNMP - High Util***

This probe monitors the *utilization* of ifInOctets and ifOutOctets traffic statistics of a particular interface on the device, and sets the device to **Alarm** or **Warning** when the traffic exceeds specified utilization thresholds. It sets the device's state to **Down** if the interface's ifOperStatus is not equal to 1 (up)

#### **Parameters**

*Port Number* - The ifIndex of the port to monitor.

*Warn Threshold* and *Alarm Threshold* - Threshold, specified as a percentage of bandwidth utilization.

*Filename: com.dartware.snmp.traffic-util.txt*

*Version: 0.2*

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## **SNMP > String Comparison**

### ***String Comparison***

This probe retrieves a single SNMP MIB variable, compares it to a specified value, and sets the device's severity based on the comparison. It also displays the value in the Status Window.

#### **Parameters**

*Variable* - the MIB name or OID to retrieve. If you have imported the MIB for this device, enter the symbolic name for this value. Otherwise, enter its OID.

*Test* - choose whether the device is equal to the *Value* parameter or not.

*Value* - the value to compare with the MIB variable's value.

*Severity* - choose severity level to use if the value does not match the specified value.

*Legend* - a text string used to identify the variable in the status window and in strip charts. If left blank, the variable's name or OID is used.

*Units* - a text string displayed next to the variable's value in the Status Window. Usually used for units of measure (packets/sec, degrees, etc.)

*Tag* - A short text string that identifies a particular class of dataset. Tags are used to correlate different variables from different probes that describe the same type of data, such as CPU% or temperature.

*Filename: com.dartware.snmp.oidstrcomparison.txt*

*Version: 1.8*

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## **SNMP > Table Viewer**

### **Table Viewer**

This probe shows the contents of several useful tables from common SNMP MIBs. It retrieves its data by walking the SNMP data values in the tables.

- **ifTable** - The "Interfaces" table gives information about the physical and logical interfaces of the device. It shows the following columns: *ifIndex*, *ifDescr*, *ifType*, *ifSpeed*, *ifPhysAddress*, *ifOperStatus*, and *ifAdminStatus*. It is defined in MIB-II (RFC-1213) and updated in the IF-MIB.
- **ifXTable** - The "Extended Interfaces" table defined in IF-MIB. It adds the *ifName* and *ifAlias* fields/columns to those shown in *ifTable* above.
- **Traffic Counters** - Shows traffic counters *ifInOctets* and *ifOutOctets* from the MIB-II ifTable, and the *ifHCInOctets* and *ifHCOutOctets* from the IF-MIB. To determine the traffic rate, refresh the window and compare two separate readings. The difference divided by the time between the refreshes (in seconds) is the number of bytes/second.
- **tcpConnTable** - Shows information about any present connections: Variables include *tcpConnLocalAddress*, *tcpConnLocalPort*, *tcpConnRemAddress*, and *tcpConnRemPort*. It is defined in MIB-II.
- **udpTable** - Shows information about any present UDP listeners: Variables include *udpLocalAddress*, *udpLocalPort*. It is defined in MIB-II.
- **ipAddrTable** - Shows the IP address/mask/broadcast address for each interface. Includes *ipAdEntAddr*, *ipAdEntIfIndex*, *ipAdEntNetMask*, *ipAdEntBcastAddr*, and *ipAdEntReasmMaxSize*. It is defined in RFC-1213, and updated in the IP-MIB.
- **ipRouteTable** - This table (currently deprecated) comes from RFC-1213 (MIB-II).
- **ipCidrRouteTable** and **ipForwardTable** - These tables come from the IP-FORWARD-MIB, and show information about CIDR multi-path IP Routes. Note: the

`ipForwardTable` obsoletes the `ipRouteTable` of MIB-II, and is in turn obsoleted by the `ipCidrRouteTable`.

- **ipNetToMediaTable** - The "Net Address-to-Media Address" table (also known as the "ARP Table") shows these fields/columns: `ipNetToMediaIfIndex`, `ipNetToMediaNetAddress`, `ipNetToMediaPhysAddress`, and `ipNetToMediaType`. It is defined in RFC-1213.
- **dot1dTpFdbTable** - The "Bridge MIB" (RFC1493) shows the forwarding database for transparent bridges.

A link to each table appears in the Status Window. Click the link to see the contents of the table on the selected device.

This probe requires that you first import these MIBs: [RFC1213-MIB \(MIB-II\)](#), [Bridge MIB \(rfc1493\)](#), [IP-MIB \(rfc2011\)](#), [IF-MIB \(rfc2863\)](#), and [IP-FORWARD-MIB \(rfc2096\)](#). These are all bundled together in a [single zip archive](#).

### Parameters

None.

*Filename:* com.dartware.snmp.tableviewer.txt

*Version:* 1.8

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## SNMP > Trap Viewer

### Trap Viewer

This probe listens for trap packets and displays the contents of a trap in the Status Window. It does not actively poll the device, and takes no action based on the contents of the trap.

All variables parsed from the trap packet appear in the device's Status Window. You can use this probe as a prototype for making your own trap probes.

### How the Trap Viewer Probe Works

When a trap arrives, the probe parses the trap to retrieve the values from the trap's header, along with the first ten items in its Varbind List. Each value is assigned to a variable for use by the probe; each is also shown in the Status Window.

To see how this probe works, you can configure your equipment to send traps to InterMapper, or use the net-snmp **snmptrap** command. Either way, the Status Window shows the values present in any traps that arrive.

For more information on the **snmptrap** command, see the net-snmp documentation for the [trap tutorial](#) and the [snmptrap command](#). The remainder of this note shows how to send a trap with variables from the Dartware MIB:

---

*SNMPv1 Traps*

- a) Add a device to a map with the IP address 192.168.56.78
- b) Set it to use this probe
- c) Issue the snmptrap command below from the command line  
(it should all be on one line):

```
snmptrap -v 1 -c commString localhost
1.3.6.1.4.1.6306 192.168.56.78 6 123 4567890
1.3.6.1.4.1.6306.2.1.1.0 s "05/08 23:26:35"
1.3.6.1.4.1.6306.2.1.2.0 s Critical
1.3.6.1.4.1.6306.2.1.3.0 s "Big Router"
1.3.6.1.4.1.6306.2.1.4.0 s "Critical: High Traffic"
1.3.6.1.4.1.6306.2.1.5.0 s "127.0.0.1"
1.3.6.1.4.1.6306.2.1.6.0 s "SNMP Traffic Probe"
```

*SNMPv2c Traps*

- a) Add a device to the map with an IP address of *localhost*
- b) Set it to use this probe
- c) Issue the snmptrap command below from the command line  
(it should all be on one line)

```
snmptrap -v 2c -c commString localhost
4567890 1.3.6.1.4.1.6306
1.3.6.1.4.1.6306 192.168.56.78 6 123 4567890
1.3.6.1.4.1.6306.2.1.1.0 s "05/08 13:26:35"
1.3.6.1.4.1.6306.2.1.2.0 s Critical
1.3.6.1.4.1.6306.2.1.3.0 s "Big Router"
1.3.6.1.4.1.6306.2.1.4.0 s "Critical: High Traffic"
1.3.6.1.4.1.6306.2.1.5.0 s "127.0.0.1"
1.3.6.1.4.1.6306.2.1.6.0 s "SNMP Traffic Probe"
```

**Notes:**

- This probe file contains the lines above in a single-line format suitable for copying and pasting.
- The parameters in this probe are unused, but could be used to set thresholds for various alarms.

## Parameters

*MinValue* - Unused

*MaxValue* - Unused

*Filename*: *com.dartware.snmp.trapdisplay.txt*

*Version*: 2.2

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## Miscellaneous

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### Miscellaneous > Demo Probe

#### Demo Probe

Use this probe to build a demo map. The probe generates random data for the traffic on all its links, giving you something to look at. All data are chartable, and can be used to demonstrate strip charts or data collection.

The probe also toggles the device state between UP/OK and Down when you reprobe the device manually. This makes it easy to see what happens when a device goes down, especially for manual dependencies.

For simple maps, the parameters can be set to zero. To create complicated, heavily-interconnected demonstration maps, try setting the *Link Count* and *Loop %* parameters to 10 and 50, respectively.

#### Parameters

*Link Count* - sets the number of interfaces to create when adding the device to the map.

*Loop %* - sets the percentage of links that should connect themselves to subnets already present on the map.

*Filename:* com.dartware.demo

*Version:* 1.6

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### Miscellaneous > Legacy > Basic OID (v2c)

#### Basic OID (v2c)

This is a legacy probe, provided for compatibility with InterMapper Traditional and older versions of InterMapper (< 4.4). Use the Basic OID probe, setting the SNMP version to SNMP v2.

This probe lets you monitor a single, user-defined MIB variable. It uses SNMPv2c.

### Parameters

*Object Name* - optional - The name of the value that you want to monitor. It appears in the Status window and in a chart legend.

*Object ID* - The object identifier (OID) of the value that you want to monitor. To retrieve the value of a MIB variable that is not in a table, the OID must end with ".0" (e.g. "1.3.6.1.2.1.1.1.0").

*Filename:* com.dartware.snmpv2c.basic

*Version:* 1.5

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## Miscellaneous > Legacy > Cisco (v2c)

### Cisco (v2c)

This is a legacy probe, provided for compatibility with InterMapper Traditional and older versions of InterMapper (< 4.4). Use the Cisco - Process and Memory Pool probe instead and set the probe's SNMP version to SNMP v2 in the Probe Info window.

This probe monitors the CPU and Memory utilization of a Cisco router using SNMPv2c.

### Parameters

*CPU Busy - Alarm* - specifies the **Alarm** threshold for CPU utilization as a percentage. If the average CPU usage over a 1 minute interval exceeds this threshold, the device is set to *Alarm* state.

*CPU Busy - Warning* - specifies the **Warning** threshold for CPU utilization. If the average CPU usage over a 1 minute interval exceeds this threshold, the device is set to *Warning* state.

*Low Memory - Alarm* - specifies the **Alarm** threshold for the amount of free memory remaining (in bytes). If the free memory drops below this threshold, the device is set to *Alarm* state.

*Low Memory - Warning* - specifies the **Warning** threshold for the amount of free memory remaining (in bytes). If the free memory drops below this threshold, the device is set to *Warning* state.

*Filename:* com.dartware.snmpv2c.cisco

*Version:* 1.10

[Back to Top](#)**Miscellaneous > Legacy > SNMP v2c*****SNMP v2c***

This is a legacy probe, provided for compatibility with InterMapper Traditional and older versions of InterMapper (< 4.4). Use the SNMP MIB-II probe, setting the SNMP version to SNMP v2.

The SNMP v2c probe retrieves MIB-II information from the device. This includes *sysLocation*, *sysContact*, and *sysUptime* from the system group, and traffic (bytes/second, packets/second, errors/minute) for each interface.

It uses the 64-bit counters for interface traffic statistics. This provides accurate information (without rollover) on very high speed links.

**Parameters**

None.

*Filename:* com.dartware.snmpv2c

*Version:* 1.6

[Back to Top](#)**Miscellaneous > Nagios > Nagios Plugin*****Nagios Plugin***

This probe lets you specify a Nagios plugin. InterMapper invokes the plugin and uses the exit value to set the condition of the device. It uses the performance data returned by the plugin to create a nice display of chartable data.

*Plugin* - Should contain the same command line (including arguments) you would use to test the plugin manually.

Note: If you enter \${ADDRESS} it is replaced with the device's IP address; \${PORT} is replaced by the port specified for the probe.

This probe expects the plugin to be located in the InterMapper Settings/Tools directory.

Nagios and the Nagios logo are registered trademarks of Ethan Galstad. For more information, see <http://www.nagios.org>

**Parameters**

*Plugin* - enter the Nagios command string. You can use the \${ADDRESS} and \${PORT}, as mentioned above.

*Filename: com.dartware.nagios.template*

*Version: 1.7*

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## Miscellaneous > Non Polling

### **Non-Polling**

This probe does not cause any action to occur. It can be used as a placeholder for a device; it does not count against the InterMapper device count.

### **Parameters**

None.

*Filename: com.dartware.nonpolling*

*Version: 1.5*

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## Miscellaneous > Prototype SNMP Probe

### **Prototype SNMP Probe**

This probe demonstrates an InterMapper SNMP probe. Many of these features are described in *Creating Your Own Probes*, in the [Developer Guide](#). If you have questions about this probe, [please contact us](#).

This probe probably isn't useful for production work, but provides examples of techniques available in custom SNMP probes.

The probe demonstrates how to retrieve SNMP values from a device by specifying their OIDs and how to display those values in the device's Status Window.

The probe also provides thresholds that set the device into **Alarm** or **Warning** state.

In this example, the device goes into **Alarm** or **Warning** state if it has been rebooted recently (controlled by the *RebootAlarm* and *RebootWarn* parameters - two and three minutes, by default) or if there aren't as many interfaces in the ifTable as specified (in the *ExpectedInterfaces* parameter.)

### **Parameters**

*RebootAlarm* - set the device to **Alarm** if the sysUptime is less than the specified value in minutes.

*RebootWarn* - set the device to **Warning** if the sysUptime is less than the specified value in minutes.

---

*ExpectedInterfaces* - set the device to **Warning** if the the ifNumber is greater than or equal to this value.

This probe also demonstrates:

- **CALCULATION variables** - converts from centi-seconds (hundredths of a second) to seconds.
- **Formatting of the Status Window** - in the <snmp-device-display> section.
- IMML also allows you to create a link to a URL, using the \U2=http://xxxx\ notation shown in the <snmp-device-display> section.

*Filename: com.dartware.snmp.prototype.txt*

*Version: 1.2*

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## Miscellaneous > TCP Check

### *TCP Check*

This probe generates an alarm if the count of TCP connections exceeds a specified number. It can be used to detect people telnetting into a box that shouldn't have connections, such as a router that might be attacked from outside your network).

It retrieves the device's *tcpCurrEstab* variable and compares it. If the number of established TCP connections exceeds the value specified in *Allowed TCP Connections*, the device is set to **Alarm** state.

### **Parameters**

*Allowed TCP Connections* - The maximum number of TCP connections allowed.

*Filename: com.dartware.snmp.tcpcheck*

*Version: 1.5*

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## Network Devices

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- [Network Devices > Cisco > Cisco IP SLA Jitter \(Pg 1\)](#)
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### Network Devices > Apple > Apple AirPort (Extreme)

#### *Apple AirPort (Extreme)*

This probe monitors the custom MIB in an Apple AirPort Extreme Base Station. This probe monitors the number of clients using the base station, and lists each with its signal strength.

The first version of AirPort Extreme was round; subsequent versions are square. There is one important difference between them:

- The original round version does not return complete information to clients using the community string "public". To retrieve complete information from the original round version, you must set the community string to the AirPort Extreme's password.
- Subsequent versions have a settable SNMP community string. To use this probe on these versions, you must supply the SNMP community string as set in the AirPort Extreme.

#### **Parameters**

None.

*Filename: com.dartware.snmp.airport.ext*

*Version: 1.5*

[Back to Top](#)**Network Devices > Apple > Apple AirPort (Graphite)*****Apple AirPort (Graphite)***

This probe monitors the custom MIB in an Apple AirPort Base Station (v1 = Graphite) using SNMPv1. This probe monitors the number of clients using the base station and lists each one with its signal strength.

**Parameters**

*Read/Write Community* - Use the AirPort Base Stations's password.

An SNMP set-request is sent, instructing the AirPort Base Station to discover its clients periodically and test the signal strength of each.

*Filename:* com.dartware.snmp.airport

*Version:* 1.7

[Back to Top](#)**Network Devices > Cisco > Cisco IP SLA Jitter*****Cisco - IP SLA Jitter***

This probe extracts jitter test data from a Cisco IP SLA agent that is running on a Cisco router or switch. Typically these jitter tests are used to measure jitter, latency, and packet loss for VoIP and video conferencing applications.

**Parameters**

*SNMP Index* - The value used when configuring the IP SLA agent in the Cisco switch or router using the "ip sla monitor" command (see example below). This value identifies the jitter test, and is the SNMP index used by Intermapper to probe the device. To probe for different instances of jitter tests on a single Cisco switch or router, create separate devices on your Intermapper map, each using a different SNMP Index.

*Latency Alarm Threshold* - The ALARM threshold for latency in milliseconds. If Average Latency value exceeds this threshold, the device enters ALARM state.

*Latency Warning Threshold* The WARNING threshold for latency in milliseconds. If the Average Latency value exceeds this threshold, the device enters WARNING state.

*Jitter Alarm Threshold* - The ALARM threshold for Jitter. If the Average Jitter value exceeds this threshold, the device enters ALARM state.

*Jitter Warning Threshold* - The WARNING threshold for Jitter. If the Average Jitter value exceeds this threshold, the device enters WARNING state.

*Packet Loss Alarm Threshold* - The ALARM threshold for Packet Loss. If the Percent Packet Loss value exceeds this threshold, the device enters ALARM state.

### **Example**

Example IOS commands for configuring an IP SLA jitter test to run on a Cisco router or switch:

```
ip sla monitor 250
type jitter dest-ipaddr w.w.w.w dest-port 50505 source-ipaddr
x.x.x.x num-packets 2000 interval 20
request-data-size 256
owner yyyy
tag zzzz
exit
```

In the above example specifies "250" as the SNMP index. This can be any value as long as it is unique. "w.w.w.w" is the IP address of the remote IP SLA responder. "x.x.x.x" is the local IP address of this IP SLA agent. "yyyy" is any text information identifying the owner of the test (e.g., name of network service provider). "zzzz" is any text information identifying this particular test.

To schedule the IP SLA test to run forever:

```
ip sla monitor schedule 66 life forever start-time now
```

To start the IP SLA responder on the remote IP SLA responder:

```
ip sla monitor responder
```

In the above IOS commands, the jitter test does not specify a codec type, so ICPIF and MOS scores are not available. If the test is modified to include a codec type then minor revisions are required to this SNMP probe. Also, some routers and switches may not support the MIB variables for ICPIF and MOS scores - this depends on the IOS train.

More information about configuring Cisco IP SLA is available on the [www.cisco.com](http://www.cisco.com) site.

*Filename:* com.dartware.snmp.cisco-ip-sla.txt

*Version:* 2.3

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**Network Devices > Cisco > Cisco N5000 with FEX Traffic*****Cisco - N5000 with FEX Traffic***

This probe provides Basic SNMP Traffic probe functionality for the Nexus 5000 with Fiber Extender (FEX). The standard SNMP Traffic probe does not show the Fiber Extender's interfaces, so this probe incorporates special logic to retrieve that information.

This probe requires InterMapper Server version 5.6.6 or newer, which uses the special logic described above; otherwise, the speeds displayed for high speed interfaces are not shown correctly.

**Parameters**

None.

*Filename: com.dartware.snmp.cisco.n5kfex.traffic.txt*

*Version: 1.0*

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**Network Devices > Cisco > Cisco Old CPU MIB*****Cisco - Old CPU MIB***

This probe monitors the CPU and Memory utilization of a Cisco router.

**Parameters**

*CPU Busy - Alarm* - The ALARM threshold for CPU utilization in Per Cent. If the average CPU usage over a 1 minute interval exceeds this threshold, the device enters ALARM state.

*CPU Busy - Warning* - The WARNING threshold for CPU utilization in Per Cent. If the average CPU usage over a 1 minute interval exceeds this threshold, the device enters WARNING state.

*Low Memory - Alarm* - The ALARM threshold for the amount of free memory remaining (in bytes). If free memory drops below this threshold, the device enters ALARM state.

*Low Memory - Warning* - The WARNING threshold for the amount of free memory remaining (in bytes). If free memory drops below this threshold, the device enters WARNING state.

*Filename: com.dartware.snmp.cisco*

*Version: 1.8*

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## **Network Devices > Cisco > Cisco Process and Memory Pool**

### ***Cisco - Process and Memory Pool***

This probe monitors the CPU and Memory utilization in a Cisco router. It uses variables from CISCO-MEMORY-POOL-MIB and CISCO-PROCESS-MIB.

#### **Parameters**

*CPU Busy - Alarm* - The ALARM threshold for CPU utilization in Per Cent. If the average CPU usage over a 1 minute interval exceeds this threshold, the device enters ALARM state.

*CPU Busy - Warning* - The WARNING threshold for CPU utilization in Per Cent. If the average CPU usage over a 1 minute interval exceeds this threshold, the device enters WARNING state.

*Low Memory - Alarm* - The ALARM threshold for the amount of free memory remaining (in bytes). If the free memory drops below this threshold, the device enters ALARM state.

*Low Memory - Warning* - The WARNING threshold for the amount of free memory remaining (in bytes). If the free memory drops below this threshold, the device enters WARNING state.

*Filename: com.dartware.snmp.ciscone新mib*

*Version: 1.8*

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## **Network Devices > Cisco > Cisco Aironet**

### ***Cisco Aironet***

This probe uses SNMPv1 to monitor the custom MIB in a Cisco Aironet Wireless Access Point. It monitors the number of clients using the base station and lists each client with its signal strength.

The alarm and warning thresholds must be greater than zero, or they are ignored.

#### **Parameters**

*Number of Active Stations alarm* - Set the threshold at which the device goes into ALARM state.

*Number of Active Stations warning* - Set the threshold at which the device goes into WARNING state.

*Filename: com.dartware.snmp.aironet*

*Version: 1.5*

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**Network Devices > Juniper > Netscreen VPN****Netscreen VPN**

This probe monitors the status of VPN Tunnels in a Netscreen Firewall. It uses the `nsVpnMonTable` to monitor the Netscreen's active tunnels. Each active tunnel is treated and mapped as a separate interface.

Some statistics may be available only if the monitoring status for the tunnel as reported by `nsVpnMonMonState` is on.

**Parameters**

None.

*Filename: com.dartware.snmp.netscreen.txt*

*Version: 1.1*

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**Network Devices > KarlNet Wireless****KarlNet Wireless**

This probe monitors the custom MIB in a KarlNet Wiress Base Station using SNMPv1. It monitors the number of clients using the base station and lists each, along with its signal strength.

This probe sends SNMP set-requests to the KarlNet Base Station, causing it to discover and test the signal strength of each client. For the set-requests to work, enter the read/write community string for the base station.

**Parameters**

*Read/Write Community* - SNMP Read/Write community string.

*Filename: com.dartware.snmp.karlnet*

*Version: 1.5*

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**Network Devices > UPS > APC UPS AP961x****APC UPS - AP961x****A. Probed MIB(s)**

*This probe works best with devices which have implemented the listed MIB(s).*

(1 of 2) **APC UPS MIB** [...  
enterprises.apc.products.hardware.ups / ...  
1.3.6.1.4.1.318.1.1.1]

(2 of 2) **APC Environmental Monitoring MIB** [...  
enterprises.apc.products.hardware.environmentalMonitor / ...  
1.3.6.1.4.1.318.1.1.10]

### **B. Displayed Values**

UPS: model, firmware, status, (*battery*: capacity, time remaining, temperature, replacement status), (*output*: load percent, volts, amps, frequency), (*input*: volts, voltage range over last minute, frequency, last input failure).

Environmental Monitor: probe name, number of probes, current temperature & humidity, high & low threshold configurations.

### **C. Alarms**

(1 of 3) If unit goes onto battery or goes off-line.

(2 of 3) If battery needs replacement.

(3 of 3) If the UPS' internal temperature/humidity threshold is exceeded (must also be enabled).

### **D. Warnings**

(1 of 1) If unit goes onto "Smart Trim" or "Smart Boost"

### **Parameters**

None.

*Filename:* com.dartware.ups.apc-ap961x.txt

*Version:* 3.4

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## **Network Devices > UPS > APC UPS**

### **APC UPS**

#### **A. Probed MIB(s)**

*This probe works best with devices which have implemented the listed MIB(s).*

(1 of 1) **APC UPS MIB** [...  
enterprises.apc.products.hardware.ups / ...  
1.3.6.1.4.1.318.1.1.1]

#### **B. Displayed Values**

UPS: model, firmware, status, (*battery*: capacity, time remaining, temperature, replacement status), (*output*: load percent, volts, amps, frequency), (*input*: volts, voltage range over last minute, frequency, last input failure).

#### **C. Alarms**

(1 of 3) If unit goes onto battery or goes off-line.

(2 of 3) If battery needs replacement.

(3 of 3) If the battery temperature exceeds user-specified thresholds (see "Parameters" below).

#### D. Warnings

(1 of 2) If unit goes onto "Smart Trim" or "Smart Boost"

(2 of 2) If the battery temperature exceeds user-specified thresholds (see "Parameters" below).

#### Parameters

(1 of 5) *Units of Temperature (C / F)*: Determines how the following thresholds are interpreted.

(2 of 5) *Alarm Threshold - Low Temp*: Threshold for alarm state (see above).

(3 of 5) *Warning Threshold - Low Temp*: Threshold for alarm state (see above).

(4 of 5) *Warning Threshold - High Temp*: Threshold for warning state (see above).

(5 of 5) *Alarm Threshold - High Temp*: Threshold for warning state (see above).

*Filename: com.dartware.ups.apc.txt*

*Version: 3.4*

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### Network Devices > UPS > BestPower UPS

#### BestPower UPS

##### A. Probed MIB(s)

*This probe works best with devices which have implemented the listed MIB(s).*

(1 of 1) **BestPower MIB** [... enterprises.bestPower.bestLink / ... 1.2947.1]

##### B. Displayed Values

vendor, model, firmware version, VA Rating, time on battery, time remaining, (*input & output*: voltage, current, frequency), output power, internal temperature.

##### C. Alarms & Warnings

(1 of 2) Warning: If UPS loses AC power.

(2 of 2) Alarm: If minutes of battery life remaining is less than specified threshold.

## Parameters

(1 of 1) **BatteryRemainingAlarm**: Threshold for alarm state (see above).

*Filename: com.dartware.ups.bestpower.txt*

*Version: 2.10*

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## Network Devices > UPS > Exide UPS

### *Exide UPS*

#### A. Probed MIB(s)

*This probe works best with devices which have implemented the listed MIB(s).*

(1 of 2) **UPS MIB (RFC 1628)** [... mib-2.upsMIB / ... 1.33]

(2 of 2) **Exide XUPS MIB** [... enterprises.powerware / ... 1.534]

#### B. Displayed Values

vendor, model, software version, firmware version, output source, battery status, battery voltage, battery current, (*three input lines*: Hz, volts, amps, kWatts), (*three output lines*: Hz, volts, amps, kWatts, output load percent)

#### C. Alarms

(1 of 1) If the device is reporting any alarms. (The UPS MIB includes a comprehensive list of alarms).

## Parameters

None.

*Filename: shef.ac.uk.ups.exide.txt*

*Version: 2.11*

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## Network Devices > UPS > Liebert UPS OpenComms

### *Liebert UPS - OpenComms*

#### A. Probed MIB(s)

*This probe works best with devices which have implemented the listed MIB(s).*

(1 of 2) **UPS MIB (RFC 1628)** [... mib-2.upsMIB / ... 1.33]

(2 of 2) **Liebert Global Products MIB** [... enterprises.emerson.liebertCorp.liebertGlobalProducts / ... 1.476.1.42]

**B. Displayed Values**

vendor, model, software version, firmware version, output source, battery status, battery voltage, battery current, (*three input lines*: Hz, volts, amps, kWatts), (*three output lines*: Hz, volts, amps, kWatts, output load percent); (*temperatures*: battery, ambient)

**C. Alarms**

(1 of 1) If the device is reporting any alarms. (The UPS MIB includes a comprehensive list of alarms).

**Parameters**

None.

*Filename: com.dartware.ups.liebert-opencomms.txt*

*Version: 2.12*

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**Network Devices > UPS > Liebert UPS Series 300****Liebert UPS - Series 300****A. Probed MIB(s)**

*This probe works best with devices which have implemented the listed MIB(s).*

(1 of 1) **LIEBERT-SERIES-300-UPS-MIB** [...]  
enterprises.emerson.liebertCorp.liebertUps.luExtensions.luCore / ... 1.476.1.1.1.1] and [... luExtensions.luUPStationS / ... 1.2]

**B. Displayed Values**

vendor, model, software version, firmware version, output load (%), battery voltage, battery current, (*three input, output, and bypass phases*: voltage, current), (*frequencies*: input, output, bypass)

**C. Alarms**

(1 of 1) If the device is reporting any alarms. (The MIB includes a comprehensive list of alarms).

*Filename: com.dartware.ups.liebert-series300.txt*

*Version: 2.6*

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## **Network Devices > UPS > Liebert UPS**

### **Liebert UPS**

*NOTE: This probe is meant to aid Dartware's development of probes for the Liebert product line.*

- 1) Check other probes to see if one exists for your Liebert UPS device.
- 2) If not, select this probe.
- 3) Open the status window and "Copy All" (right/option click on the window)
- 4) "Paste" into an email and [send the info to us](#).
- 5) We'll try to develop a probe for your device as soon as possible.

### **A. Probed MIB(s)**

*This probe works best with devices which have implemented the listed MIB(s).*

(1 of 1) **Liebert UPS MIB** [...  
enterprises.emerson.liebertCorp.liebertUps / ... 1.476.1.1]

### **B. Displayed Values**

MIB, vendor, model, & software version

### **Parameters**

None.

*Filename: com.dartware.ups.liebert-ups.txt*

*Version: 2.6*

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## **Network Devices > UPS > Standard UPS (RFC1628)**

### **Standard UPS (RFC1628)**

### **A. Probed MIB(s)**

*This probe works best with devices which have implemented the listed MIB(s).*

(1 of 1) **UPS MIB (RFC 1628)** [... mib-2.upsMIB / ... 1.33]

### **B. Displayed Values**

vendor, model, software version, firmware version, output source, battery status, battery voltage, battery current, (*three input lines: Hz, volts, amps, kWatts*), (*three output lines: Hz, volts, amps, kWatts, output load percent*)

### **C. Alarms**

(1 of 1) Alarm: If the device is reporting any alarms. (The UPS MIB includes a comprehensive list of alarms).

(2 of 2) Alarm: If the battery temp exceeds a user-defined threshold.

### **Parameters**

*UserHighBatteryTemperatureAlarm* - Threshold for alarm state (see above). This alarm is disabled when the threshold is set to "0" (default).

*Filename:* com.dartware.ups.standard.txt

*Version:* 3.4

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## **Network Devices > UPS > TrippLite UPS**

### ***TrippLite UPS***

#### **A. Probed MIB(s)**

*This probe works best with devices which have implemented the listed MIB(s).*

(1 of 2) **UPS MIB (RFC 1628)** [... mib-2.upsMIB / ... 1.33]

(2 of 2) **TrippUPS MIB** [... enterprises.tripplite.tripplite.tripplite.ups / 1.850.0.3]

#### **B. Displayed Values**

vendor, model, software version, firmware version, output source, battery status, battery voltage, battery current, (*three input lines*: Hz, volts, amps, kWatts), (*three output lines*: Hz, volts, amps, kWatts, output load percent); ambient temperature, ambient humidity

#### **C. Alarms**

(1 of 1) If the device is reporting any alarms. (The UPS MIB includes a comprehensive list of alarms).

### **Parameters**

None.

*Filename:* com.dartware.ups.tripplite.txt

*Version:* 2.11

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## **Network Devices > UPS > Victron UPS**

### ***Victron UPS***

This probe monitors important values in the Victron UPS.

### **Parameters**

*UPS Battery Status - Alarm* - ALARM threshold for Battery Status.

- If the value is 2, the UPS working normally.
- If the value is 1, the UPS is on bypass, the device enters Alarm state.

*UPS Battery Remaining - Warning* - WARNING threshold for the estimated battery time remaining. If the Battery Remaining is less than this threshold, the device is set to **Warning**.

*UPS Battery low Voltage - Warning* - WARNING threshold for the min. battery voltage. If the Battery voltage is less than this threshold, the device is set to **Warning**.

*Low Input Voltage line [1,2, or 3] - Alarm* - ALARM threshold for the minimum specified input voltage on phase 1, 2, or 3. If the input voltage drops below this threshold, the device is set to **Alarm**.

*Low Output Voltage line [1,2, or 3] - Alarm* - ALARM threshold for the minimum specified output voltage on phase 1, 2, or 3. If the output voltage drops below this threshold, the device is set to **Alarm**.

*Filename: de.medianet.freinet.ups.victron.txt*

*Version: 2.9*

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## Probe Groups

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### Probe Groups > Probe Group

#### ***Probe Group***

This probe creates an empty probe group. Once you have created a device using this probe, you can select the new probe group device and other devices and choose Insert->Group to place those devices into the single probe group.

Find out more about probe groups in the User Guide at

<http://intermapper.com/go.php?to=intermapper.probegroups>.

#### **Parameters**

None.

*Filename:* com.dartware.probegroup.txt

*Version:* 0.3

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## Servers-Proprietary

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### Servers Proprietary > 4D Server

#### **4D Server**

This probe attempts to connect to a 4D server listening on port 19813. If the response contains the *database name*, the probe exits with OKAY status; if not, the result is WARN. If no response arrives within *timeout*, the probe exits with a WARN status.

#### **Parameters**

*database name* - The name of the database to query.

*timeout* - Number of seconds to wait for response.

*Filename: com.dartware.tcp.4D*

*Version: 1.5*

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## Servers Proprietary > Apache >

This probe monitors an Apache Web Server with the Apache Status module enabled (mod\_status). The Apache Status module allows a server administrator to find out how well an Apache server is performing. This probe reads output of provided by the Status module that presents the current server statistics, using the ?auto parameter.

To enable status reports for this probe, add this code to the httpd.conf file on the target server:

```
<Location /server-status>  
  SetHandler server-status  
  Order Deny,Allow  
  Deny from all  
  Allow from InterMapper-Address  
</Location>
```

This probe supports the Apache ExtendedStatus directive, if enabled.

### Parameters

*Host Name* - Name of the host server

*URL Path* - Path to the server status page

*User ID* - Server administrator username

*Password* - Administrator password

*Filename: com.dartware.tcp.apache.txt*

*Version: 1.0*

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## Servers Proprietary > Apple > AppleShareIP

### AppleShareIP

The file-sharing protocol used by Apple computers over TCP/IP. The default TCP port number for AppleShareIP connections is port 548.

This TCP probe connects to the AppleShareIP port and issues a "Get Server Info" request. If the the probe does not receive the expected response, the device's status is set to **Down**.

This probe sends a request; it does not actually create an AppleShare session.

### **Parameters**

None.

*Filename: com.dartware.tcp.appleshareip*

*Version: 1.5*

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## **Servers Proprietary > Apple > OS X Server > AFP**

### **AFP**

This TCP probe queries a [Mac OS X Server](#) installation for various details about its Apple File Sharing using the Server Admin port and protocol.

A request for status information is made via an HTTPS post to the Server Admin port. The server responds with XML data that is then parsed by the probe.

*User* is the name of a user with admin privileges on the specified server.

*Password* is the password for the admin user specified in *User*.

*Note: The implementation of this probe uses OpenSSL on MacOS X.*

*Filename: com.dartware.tcp.osxserver.afp.txt*

*Version: 1.0*

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## **Servers Proprietary > Apple > OS X Server > FTP**

### **FTP**

This TCP probe queries a [Mac OS X Server](#) installation for various details about its FTP Server using the Server Admin port and protocol.

A request for status information is made via an HTTPS post to the Server Admin port. The server responds with XML data that is then parsed by the probe.

*User* is the name of any user on the specified server. An admin user is not required.

*Password* is the password for the user specified in *User*.

*Note: The implementation of this probe uses OpenSSL on MacOS X.*

*Filename: com.dartware.tcp.osxserver.ftp.txt*

*Version: 1.0*

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## **Servers Proprietary > Apple > OS X Server > Info**

### ***Info***

This TCP probe queries a [Mac OS X Server](#) installation for various details using the Server Admin port and protocol.

A request for status information is made via an HTTPS post to the Server Admin port. The server responds with XML data that is then parsed by the probe.

*User* is the name of any user on the specified server. An admin user is not required.

*Password* is the password for the user specified in *User*.

*Note: The implementation of this probe uses OpenSSL on MacOS X.*

*Filename: com.dartware.tcp.osxserver.info.txt*

*Version: 1.0*

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## **Servers Proprietary > Apple > OS X Server > NAT**

### ***NAT***

This TCP probe queries a [Mac OS X Server](#) installation for various details about its NAT service using the Server Admin port and protocol.

A request for status information is made via an HTTPS post to the Server Admin port. The server responds with XML data that is then parsed by the probe.

*User* is the name of any user on the specified server. An admin user is not required.

*Password* is the password for the user specified in *User*.

*Note: The implementation of this probe uses OpenSSL on MacOS X.*

*Filename: com.dartware.tcp.osxserver.nat.txt*

*Version: 1.0*

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**Servers Proprietary > Apple > OS X Server > Print**

***Print***

This TCP probe queries a [Mac OS X Server](#) installation for various details about its Print Server using the Server Admin port and protocol.

A request for status information is made via an HTTPS post to the Server Admin port. The server responds with XML data that is then parsed by the probe.

*User* is the name of any user on the specified server. An admin user is not required.

*Password* is the password for the user specified in *User*.

*Note:* The implementation of this probe uses OpenSSL on MacOS X.

*Filename:* com.dartware.tcp.osxserver.print.txt

*Version:* 1.0

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**Servers Proprietary > Apple > OS X Server > QTSS**

***QTSS***

This TCP probe queries a [Mac OS X Server](#) installation for various details about its QuickTime Streaming Server using the Server Admin port and protocol.

A request for status information is made via an HTTPS post to the Server Admin port. The server responds with XML data that is then parsed by the probe.

*User* is the name of any user on the specified server. An admin user is not required.

*Password* is the password for the user specified in *User*.

*Note:* The implementation of this probe uses OpenSSL on MacOS X.

*Filename:* com.dartware.tcp.osxserver.qtss.txt

*Version:* 1.0

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**Servers Proprietary > Apple > OS X Server > Web**

***Web***

This TCP probe queries a [Mac OS X Server](#) installation for various details about its Web Server using the Server Admin port and protocol.

A request for status information is made via an HTTPS post to the Server Admin port. The server responds with XML data that is then parsed by the probe.

*User* is the name of any user on the specified server. An admin user is not required.

*Password* is the password for the user specified in *User*.

*Note:* The implementation of this probe uses OpenSSL on MacOS X.

*Filename:* com.dartware.tcp.osxserver.web.txt

*Version:* 1.0

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## Servers Proprietary > Apple > RTMP

### RTMP

This probe sends an AppleTalk RTMP RDR Request query of type 3, and waits for a RTMP response.

### Parameters

None.

*Filename:* com.dartware.rtmp

*Version:* 1.5

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## Servers Proprietary > Apple > Xserve > Xserve G4

### Xserve G4

This TCP probe queries an Xserve G4 for various details using the Server Monitor port and protocol.

**This probe will monitor Xserve G4s running Mac OS X 10.3.9 and earlier. For Xserves running 10.4 or later, please choose the Xserve Tiger probe.**

A request for status information is made via an HTTPS post to the Server Monitor port. The server responds with XML data that is then parsed by the probe.

*User* is the name of any user on the specified server.

*Password* is the password for the user specified in *User*.

*OS Version* specifies the version of Mac OS X Server that is running on the Xserve.

The remaining options allow you to display or ignore the corresponding data. These options correspond to the tabs in the Server Monitor application on Mac OS X Server.

*Info* is general information about the server, such as amount of RAM and OS name and version.

*Drives* is information about the various drives installed on the server. This information includes the manufacturer, model, and capacity of each drive.

*Power* is information pertaining to the power supply.

*Network* information includes the hardware address, IP address, traffic information, and type of each interface.

*Temperature* is the ambient temperature of the server.

*Blowers* is information on the speed of the server's cooling fans.

*Security* monitors the state of the security lock and the enclosure.

*Note:* The implementation of this probe uses OpenSSL on MacOSX.

*Filename:* com.dartware.tcp.xserve.details

*Version:* 1.0

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## Servers Proprietary > Apple > Xserve > Xserve G5

### Xserve G5

This TCP probe queries an [Xserve G5](#) for various details using the Server Monitor port and protocol.

A request for status information is made via an HTTPS post to the Server Monitor port. The server responds with XML data that is then parsed by the probe.

*User* is the name of any user on the specified server.

*Password* is the password for the user specified in *User*.

The remaining options allow you to display or ignore the corresponding data. These options correspond to the tabs in the Server Monitor application on Mac OS X Server.

*Info* is general information about the server, such as amount of RAM and OS name and version.

*Drives* is information about the various drives installed on the server. This information includes the manufacturer, model, and capacity of each drive.

*Power* is information pertaining to the power supply.

*Network* information includes the hardware address, IP address, traffic information, and type of each interface.

*Temperature* is the ambient temperature of the server.

*Blowers* is information on the speed of the server's cooling fans.

*Security* monitors the state of the security lock and the enclosure.

*Note:* The implementation of this probe uses OpenSSL on MacOSX.

*Filename:* com.dartware.tcp.xserve.g5.txt

*Version:* 1.0

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## Servers Proprietary > Apple > Xserve > Xserve RAID

### Xserve RAID

This TCP probe queries an [Xserve RAID](#) for various details using the RAID Admin port and protocol.

Status information is requested from the Xserve RAID via a series of HTTP POSTs. The server responds with XML data that is then parsed by the probe.

*Password* is the monitoring password used for RAID Admin.

*Filename:* com.dartware.tcp.xserve.raid.txt

*Version:* 1.0

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## Servers Proprietary > Apple > Xserve > Xserve Tiger (PPC)

### Xserve Tiger (PPC)

This probe queries an [Xserve](#) running Mac OS X 10.4 using the Server Monitor port and protocol. Because of this, the probe requires an administrators name and password in order to access the information. Due to significant hardware differences, there are separate probes for G4 Xserves, G5 Xserves, and Intel Xserves.

Apple has pre-configured several thresholds for various properties, such as temperatures, blower speeds, and power supply values. The Server Monitor protocol specifies when any of these thresholds are exceeded and the error message and status will be reflected by this probe.

A request for status information is made via an HTTPS POST to the Server Monitor port. The server responds with XML data that is then parsed by the probe.

*User* is the name of any user on the specified server.

*Password* is the password for the user specified in *User*.

The remaining options allow you to display or ignore the corresponding data. These options correspond to the tabs in the Server Monitor application on Mac OS X Server.

*Info* is general information about the server, such as number of CPUs, amount of RAM, and OS name and version.

*Drives* is information about the various drives installed on the server such as the manufacturer, model, capacity, and SMART messages for each drive.

*Power* includes myriad measurements including CPU power and current, and power supply voltages.

*Network* information includes the hardware address, IP address, traffic information, and type of each interface.

*Temperature* lists several temperatures in the enclosure.

*Blowers* is information on the speed of the server's cooling fans.

*Security* monitors the state of the security lock and the enclosure.

*Note:* The implementation of this probe uses OpenSSL on MacOSX.

*Filename:* com.dartware.tcp.xserve.tiger.txt

*Version:* 1.0

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## Servers Proprietary > Barracuda > Barracuda HTTP

### Barracuda HTTP

This TCP probe queries a [Barracuda Spam Firewall](#) for various performance statistics.

The BASIC->Status page of the Administrators interface is retrieved via HTTP.

#### Parameters

*User* - Firewall administrator name.

*Password* - Firewall administrator password.

---

*Port* - Firewall's Web Interface HTTP Port as set on the BASIC->Administration page.

### Thresholds

Set thresholds as follows:

*In/Out Queue Size* - The returned value should normally be less than 100. An In or Out Queue value that consistently exceeds 100 for more than 30 minutes **may** indicate a problem that needs attention.

**Note:** The returned value may rise temporarily, then go back down after 10 or 15 minutes.

- For the Inbound Queue, this is normal behavior, but can also be the result of an orchestrated attack. The Barracuda attempts to read as many messages as it can, which results in a slower processing rate, which in turn increases the number of messages in the queue.
- For the Outbound Queue, an increase usually indicates that the destination server is unavailable or the local DNS is not functioning properly.

Recommended settings:

- A value exceeding 100 for more than 15 minutes should result in a **Warning**.
- A value exceeding 500 for more than 30 minutes should result in an **Alarm**.

*Average Latency* - The average time, in seconds, to receive, process and deliver the last 30 messages. The value should normally be below 50 seconds. If the latency consistently exceeds 50 seconds for more than 30 minutes **may** indicate a problem that needs attention. Sometimes the value will rise temporarily and then go back down after 10 or 15 minutes. This is normal behavior.

Recommended settings:

- A value exceeding 50 seconds for more than 15 minutes should result in a **Warning**.
- A value exceeding 150 seconds for more than 30 minutes should result in an **Alarm**.

*Last Message* - The time, in minutes, since the last message was received. For a busy machine, this value should normally be less than 5 minutes. A value consistently exceeding 20 minutes for more than 30 minutes **may** indicate a problem that needs attention. Sometimes the value will rise temporarily and

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then go back down after 2 or 3 minutes. This is normal behavior.

Recommended settings:

- A value exceeding 15 minutes should result in a **Warning**.
- A value exceeding 30 minutes should result in an **Alarm**.

*CPU 1/CPU 2 Fan Speed* - Should be between 3,000 and 5,000 (RPM)

Recommended settings:

- A value for either CPU fan that falls below 2500 should result in a **Warning**.
- A value for either CPU fan that falls below 500 should result in an **Alarm**.

*Firmware Storage* - Typical value (in percent) is 60 - 80%. A value above 80% usually means that a debug file needs to be deleted. This can be done on a non-emergency basis.

Recommended settings:

- A value above 80% should result in a **Warning**.
- A value above 90% should result in an **Alarm**.

*Mail/Log Storage* - - Typical value (in percent) is 1 - 70%.

Recommended settings:

- A value above 70% should result in a **Warning**.
- A value above 80% should result in an **Alarm**.

*System Load* - The system's load (in percent.) During normal operation, this value can vary wildly, anywhere between 1 and 100%. A value that remains at 100% for more than 2 hours **may** indicate a problem that needs attention. The value may rise temporarily, then go back down after 2 or 3 minutes. This is normal behavior.

Recommended settings:

- A value above 80% for more than 1 hour should result in a **Warning**.
- A value above 90% for more than 3 hours should result in an **Alarm**.

*CPU Temperature* - Should be between 40 and 70 degrees C

Recommended settings:

- A value above 70 degrees C for more than 30 minutes should result in a **Warning**.

- A value above 80 degrees C for more than 1 hour should result in an **Alarm**.

*Filename: com.dartware.tcp.barracuda.http.txt*

*Version: 3.1*

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## Servers Proprietary > Barracuda > Barracuda HTTPS

### Barracuda HTTPS

This TCP probe queries a [Barracuda Spam Firewall](#) for various performance statistics.

The BASIC->Status page of the Administrators interface is retrieved via HTTPS.

### Parameters

*User* - Firewall administrator name.

*Password* - Firewall administrator password.

*Port* - Firewall's Web Interface HTTP Port as set on the BASIC->Administration page.

### Thresholds

Set thresholds as follows:

*In/Out Queue Size* - The returned value should normally be less than 100. An In or Out Queue value that consistently exceeds 100 for more than 30 minutes **may** indicate a problem that needs attention.

**Note:** The returned value may rise temporarily, then go back down after 10 or 15 minutes.

- For the Inbound Queue, this is normal behavior, but can also be the result of an orchestrated attack. The Barracuda attempts to read as many messages as it can, which results in a slower processing rate, which in turn increases the number of messages in the queue.
- For the Outbound Queue, an increase usually indicates that the destination server is unavailable or the local DNS is not functioning properly.

Recommended settings:

- A value exceeding 100 for more than 15 minutes should result in a **Warning**.
- A value exceeding 500 for more than 30 minutes should result in an **Alarm**.

*Average Latency* - The average time, in seconds, to receive, process and deliver the last 30 messages. The value should normally be below 50 seconds. If the latency consistently exceeds 50 seconds for more than 30 minutes **may** indicate a problem that needs attention. Sometimes the value will rise temporarily and then go back down after 10 or 15 minutes. This is normal behavior.

Recommended settings:

- A value exceeding 50 seconds for more than 15 minutes should result in a **Warning**.
- A value exceeding 150 seconds for more than 30 minutes should result in an **Alarm**.

*Last Message* - The time, in minutes, since the last message was received. For a busy machine, this value should normally be less than 5 minutes. A value consistently exceeding 20 minutes for more than 30 minutes **may** indicate a problem that needs attention. Sometimes the value will rise temporarily and then go back down after 2 or 3 minutes. This is normal behavior.

Recommended settings:

- A value exceeding 15 minutes should result in a **Warning**.
- A value exceeding 30 minutes should result in an **Alarm**.

*CPU 1/CPU 2 Fan Speed* - Should be between 3,000 and 5,000 (RPM)

Recommended settings:

- A value for either CPU fan that falls below 2500 should result in a **Warning**.
- A value for either CPU fan that falls below 500 should result in an **Alarm**.

*Firmware Storage* - Typical value (in percent) is 60 - 80%. A value above 80% usually means that a debug file needs to be deleted. This can be done on a non-emergency basis.

Recommended settings:

- A value above 80% should result in a **Warning**.
- A value above 90% should result in an **Alarm**.

*Mail/Log Storage* - - Typical value (in percent) is 1 - 70%.

Recommended settings:

- A value above 70% should result in a **Warning**.
- A value above 80% should result in an **Alarm**.

*System Load* - The system's load (in percent.) During normal operation, this value can vary wildly, anywhere between 1 and 100%. A value that remains at 100% for more than 2 hours **may** indicate a problem that needs attention. The value may rise temporarily, then go back down after 2 or 3 minutes. This is normal behavior.

Recommended settings:

- A value above 80% for more than 1 hour should result in a **Warning**.
- A value above 90% for more than 3 hours should result in an **Alarm**.

*CPU Temperature* - Should be between 40 and 70 degrees C

Recommended settings:

- A value above 70 degrees C for more than 30 minutes should result in a **Warning**.
- A value above 80 degrees C for more than 1 hour should result in an **Alarm**.

*Filename:* com.dartware.tcp.barracuda.https.txt

*Version:* 3.1

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## Servers Proprietary > Big Brother Probe

### ***Big Brother Probe***

This probe lets you use InterMapper as a Big Brother "BBDISPLAY" to collect information sent by Big Brother clients.

#### **Parameters**

*Purple Time* - sets the number of minutes to wait without a report before indicating a problem. In an actual Big Brother server, this is thirty minutes; Big Brother shows a device as purple if it goes this long without a report from the device. This probe shows it as DOWN.

*Filename:* com.dartware.bigbrother

*Version:* 1.6

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## Servers Proprietary > BlitzWatch

### ***BlitzWatch***

This probe monitors the performance of a BlitzMail server.

BlitzMail is a TCP/IP-based client-server electronic mail system developed at Dartmouth College. In the BlitzMail

system, all mail and mail preferences are stored on one or more BlitzMail servers, giving a user access to email from anywhere.

This probe provides a simple view into the current state of a single BlitzMail server, showing simultaneous user count, CPU utilization, and disk transfer statistics.

### **Parameters**

None.

*Filename: com.dartware.blitzwatch*

*Version: 1.5*

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## **Servers Proprietary > Citrix Server**

### *Citrix Server*

This probe connects to a Citrix server, using default port 1494. It checks for the presence of the string "ICA" in the response, which indicates that the Citrix server is running.

This probe sets the device to **Alarm** if:

- a disconnect is received unexpectedly.
- doesn't receive a response within 30 seconds after connecting
- the response doesn't contain the string "ICA"

### **Parameters**

None.

*Filename: com.dartware.tcp.citrix.txt*

*Version: 1.1*

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## **Servers Proprietary > Dartware > DataCenter > IMAuth**

### *IMAuth*

This TCP probe queries an [InterMapper DataCenter](#) server to verify that IMAuth is configured and running on that server. This only works with InterMapper DataCenter 5.1 or later.

### **Parameters**

*User* - the DataCenter admin user's name.

*Password* - the DataCenter admin user's password.

*Port* - the port the DataCenter server listens on.

*Filename: com.dartware.tcp.imauth*

*Version: 0.3*

[Back to Top](#)**Servers Proprietary > Dartware > DataCenter > IMDatabase*****IMDatabase***

This TCP probe queries an [InterMapper DataCenter](#) server to verify that IMDatabase is configured and running on that server. This will only work when run against InterMapper DataCenter 5.1 or later.

**Parameters**

*User* - the DataCenter admin user's name.

*Password* - the DataCenter admin user's password.

*Port* - the port the DataCenter server listens on.

*Filename:* com.dartware.tcp.imdatabase

*Version:* 0.3

[Back to Top](#)**Servers Proprietary > DND Protocol*****DND Protocol***

The protocol used to lookup directory entries and validation information in a DND server. The [DND](#) is a centralized authentication/directory service developed at Dartmouth College. The default TCP port number for DND connections is port 902.

**Parameters**

*Name* - the name to look up in the DND.

*Filename:* com.dartware.tcp.dnd

*Version:* 1.6

[Back to Top](#)**Servers Proprietary > FileMaker Pro*****FileMaker Pro***

This probe attempts to connect to a Filemaker Pro database server. By default, the port is 5003. If successful, device status is set to **Okay**.

**Parameters**

None.

*Filename:* com.dartware.tcp.filemaker

*Version:* 1.6

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## Servers Proprietary > FirstClass Server

### *FirstClass Server*

This probe connects to a FirstClass mail server. It sends two carriage returns, and expects to receive the specified banner; the default contains "FirstClass System". By default, it listens on port 510.

#### **Parameters**

*Banner* - Expected text string.

*Port* - Port to send on.

*Filename:* com.dartware.tcp.firstclass

*Version:* 1.6

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## Servers Proprietary > KeyServer

### *KeyServer*

This probe tests the operation of Sassafras Software's KeyServer via TCP/IP. [KeyServer](#) is a software license management tool for Windows, Macintosh and thin-client based computers.

The probe sends a proprietary status request to the KeyServer -- a full description is available from [Sassafras Software](#). By default, the server accepts UDP requests on port 19283.

*KeyServer* is a registered trademark of Sassafras Software.

#### **Parameters**

None.

*Filename:* com.dartware.keyserver

*Version:* 1.6

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## Servers Proprietary > Lotus Notes

### *Lotus Notes*

Lotus Notes uses Port 1352 for its Remote Procedure Call and Notes Replication.

This probe simply establishes a connection to the indicated port, which presumably is a Lotus Notes server. If the connection is successful, the device's status is set to OK; otherwise, its status is DOWN.

*Filename:* com.dartware.tcp.lotusnotes

*Version:* 1.4

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**Servers Proprietary > MeetingMaker*****MeetingMaker***

The MeetingMaker server listens on port 649. This probe attempts to connect and exits with OKAY status if it succeeds.

*Filename: com.dartware.tcp.meetingmaker*

*Version: 1.4*

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**Servers Proprietary > Microsoft > DHCP Lease Check*****DHCP Lease Check***

This probe monitors the count of free DHCP leases on a Microsoft DHCP server. If the count goes below the specified thresholds, the device enters ALARM or WARNING state.

The check is specific to a scope.

**Parameters**

*Scope* - The DHCP scope to check (e.g., "192.168.1.0").

*Free Lease Warning* - The number of remaining leases at which the device enters WARNING state.

*Free Lease Alarm* - The number of free leases remaining at which the device enters ALARM state.

*Free Lease Critical* - The number of free leases remaining at which the device enters CRITICAL state.

*View the DHCP scope table* - Click to view a list of available scopes, along with information about in-use lease, free lease, and pending offers.

*Filename: com.dartware.snmp.dhcpcheck.txt*

*Version: 0.3*

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**Servers Proprietary > Microsoft > NT Services*****NT Services***

This probe monitors the state of one or more services on a Windows-based machine, Windows NT 4.0 and newer.

InterMapper uses the Service Control Manager (SCM) to retrieve the information about the specified services. This probe works only if the InterMapper server is running on a Windows computer.

**Parameters**

*Services to Monitor* - The list of services to be monitored. In the status window, services with green icons are currently running; those with red icons are stopped.

InterMapper monitors services whose boxes are checked. For a single machine, choose from all the services on the machine. For multiple machines, choose from those services common to all of the machines.

*Username* - The name of an administrative user on the machine being probed. InterMapper uses this username to log into the target machine to query the Service Control Manager.

*Password* - The password for the specified user.

If *Username* and *Password* are left blank, the user credentials under which InterMapper is running will be used.

**Note:** In order for this probe to operate, InterMapper must be running as an administrative user, or you must supply an administrator username and password for in the NT Services panel in Server Settings. This allows InterMapper to elevate its privileges temporarily.

*Filename:* com.dartware.ntsvcs.std

*Version:* 1.8

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## Servers Proprietary > Microsoft > SQL Server Query

### **SQL Server Query**

This probe establishes an ADO (ActiveX Data Object) connection to a Microsoft SQL Server running on the target host. It issues the specified query and displays the returned fields. If no records are returned, the device status is set to *Critical*.

### **Parameters**

*Query* - contains the SQL query to send. It should be enclosed in double-quotes. Using the "TOP" keyword in your query improve the response to the query. You may want to specify specific columns in your query and include a "WHERE" or an "ORDER BY" clause.

*Rows and Columns* - let you limit the output of your query. Enter the number of "Columns" and the number of "Rows" records of the query you want to view.

*Instance* - specifies the SQL Server instance on the target host the query is sent to. If you wish to query the default server instance, leave this field blank.

*Database* - specifies the database on the target instance to query.

*User* - can be an SQL Server user on the target host, or may take the form of "domain\user" for a domain login. Leave it blank to use integrated authentication. The specified user must have dbreader privileges to the database.

*Timeout (sec)* - allows you to override the device's specified timeout.

InterMapper invokes the `sql_query.vbs` script, included with this probe.

*Filename:* `com.dartware.cmd.sql_query.txt`

*Version:* 1.3

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## Servers Proprietary > Nagios NRPE

### Nagios NRPE

The NRPE ("Nagios Remote Plugin Executor") protocol defines a way to execute Nagios plugins on remote machines. After you install a Nagios NRPE daemon and one or more Nagios plugins on a remote machine, InterMapper uses the following procedure to retrieve the status of that machine.

- Establish an encrypted SSL/TLS connection to the remote NRPE daemon
- Request that a specific Nagios plugin be executed
- Receive the response from the plugin
- Parse the response and display the state of that machine.

The NRPE daemon uses a configuration file (`nrpe.cfg`) that has command definition entries in this form:

```
command[check_swap]
=/usr/local/nagios/libexec/check_swap -w 20% -c 10%
```

When the NRPE daemon receives a request to run the "check\_swap" plugin, it issues the command above.

The *Nagios Plugin* parameter tells which plugin to execute. It must match one of the command definitions in the `nrpe.cfg` file, e.g., the text within square brackets [...]. To test the connection from InterMapper to the NRPE daemon, set *Nagios Plugin* to the value "`_NRPE_CHECK`".

For information about installing an NRPE daemon, see the [NRPE Documentation](#) (at <http://nagios.sourceforge.net/docs/nrpe/NRPE.pdf>), especially the section on Remote Host Configuration. Nagios and the

Nagios logo are registered trademarks of Ethan Galstad. For more information, see <http://www.nagios.org>.

*Filename: com.dartware.tcp.nrpe.txt*

*Version: 1.2*

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## Servers-Standard

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## Servers Standard > Basic TCP (Blocked)

### ***Basic TCP (Blocked)***

This basic TCP probe tests that a TCP port is **not** accepting connections. This probe may be used to test that a firewall is working properly, or that a particular TCP service is never operating on an important machine.

If the specified port accepts the TCP connection, the device state is set to the selected state. Otherwise, the device status is set to **OKAY**.

#### **Parameters**

*Failure Status* - The device status upon successful connection.  
The default state is **DOWN**.

*Filename:* com.dartware.tcp.blocked

*Version:* 1.5

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## Servers Standard > Basic TCP

### ***Basic TCP***

This basic TCP probe tests whether a TCP port accepts connections. If the specified port fails to accept the TCP connection within sixty seconds, the device state is set to **Down**.

#### **Parameters**

None.

*Filename:* com.dartware.tcp.basic

*Version:* 1.5

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## Servers Standard > Custom TCP

### ***Custom TCP***

This probe sends the specified string over a TCP connection, and sets the status of the device based on the response. Six parameters control the operation of this probe:

#### **Parameters**

*String to send* - The initial string sent to the device via TCP.  
This could be a command which indicates what to test, or a

combination of a command and a password. The string is sent on its own line, terminated by a CR-LF.

*Seconds to wait* - The number of seconds to wait for a response. If no response is received within the specified number of seconds, the device's status is set to **Down**.

*OK Response* - The substring to match the device's "ok response". If it matches the first line received, the device is reported to have a status of OK.

*WARN Response* - The substring to match the device's **Warning** response.

*ALRM Response* - The substring to match the device's **Alarm** response.

*CRIT Response* - The substring to match the device's **Critical** response.

*DOWN Response* - The substring to match the device's **Down** response.

If InterMapper cannot connect to the specified TCP port, the device's status is set to **Down**.

*Filename:* com.dartware.tcp.custom

*Version:* 1.9

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## Servers Standard > CVS Server

### CVS Server

This probe tests a CVS server by connecting to the specified port and authentication strings as shown below. By default, the port is 2401.

```
BEGIN AUTH REQUEST<lf>
CVSROOT_Path<lf>
Username<lf>
Scrambled_password<lf>
END AUTH REQUEST<lf>\p\
```

If the response is "I LOVE YOU", then the authentication succeeded.

If the response is "I HATE YOU", then either the authentication failed or the path to CVSROOT is incorrect.

### Parameters

*CVSROOT\_path* - Path to the CVS server

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*Username* - Username for the CVS server

*Password* - User's password

*Filename:* com.dartware.tcp.cvs

*Version:* 1.6

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## Servers Standard > **DHCPv4/BOOTP**

### **DHCPv4/BOOTP**

DHCP is the protocol used by IP clients to obtain an IPv4 address and other parameters for using TCP/IP. Depending on your setup, this probe may work only if your computer is already using an IP address acquired using BOOTP or DHCP.

**Note:** On Mac OS X, this probe will only work if no DHCP, Bootp, or PPP interfaces are enabled.

The probe sends DHCP-INFORM requests to test the DHCP mechanism for an IP subnet.

### **Parameters**

*BOOTP Relay Address* - the IP address to which all DHCP requests are addressed. Normal BOOTP/DHCP requests are broadcast to the local subnet (255.255.255.255), where they are picked up by the BOOTP agent in a router and relayed to the BOOTP/DHCP server. If this parameter is left blank, InterMapper sends the DHCP requests directly to the device's IP address.

*DHCP Client ID* - an optional parameter included with the DHCP-INFORM request that can be used to identify the DHCP client as InterMapper. If this parameter is blank, InterMapper does not include the DHCP Client ID option in its DHCP probe.

*DHCP Subnet Mask* - an optional parameter that specifies the expected value of the subnet mask returned by the DHCP server. If this parameter is blank, InterMapper accepts any subnet mask value.

*DHCP Router Address* - an optional parameter that specifies the expected value of the router address returned by the DHCP server. If this parameter is blank, InterMapper accepts any router address value.

*DHCP Message Type* - the type of DHCP message to send. Typically, you should use DHCP-INFORM, since this type will not cause the DHCP server to allocate an IP address. A DHCP server may respond to a DHCP-DISCOVER request by leasing an IP address which will never be used.

*Hardware Address* - an optional parameter that specifies the MAC address of the network interface used to send the DHCP request.

*Request Seconds* - an optional parameter that specifies the number of seconds to claim we have been sending DHCP requests. Certain DHCP servers (such as the one supplied with OS X 10.5 with the default settings) do not respond until the client claims to have been trying for at least 10 seconds.

*Filename:* com.dartware.dhcp.txt

*Version:* 2.0

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## Servers Standard > Domain Name (DNS) > DNS: (A) Address

### DNS: (A) Address

DNS is the protocol used by TCP/IP network clients to translate Internet names into IP addresses, as defined in [RFC 1034](#) and [RFC 1035](#). This probe sends a DNS request to look up the IP address for a specified domain name.

### Parameters

*Domain Name* - the fully qualified domain name you are attempting to resolve.

*IP Address* - optional parameter specifies an IP address the domain name should resolve to. If this parameter is not blank, InterMapper reports the status specified in *Failure Status* if one of the returned IP addresses doesn't match this address.

*Recursion Desired* - If the target DNS server cannot resolve the given domain name, and this parameter is **True**, the DNS server may query an authoritative DNS server. To prevent this behavior, use the default setting of **False**.

*Failure Status* - the device status InterMapper should report when the IP address in a DNS response doesn't match the specified *IP Address* parameter. By default, an IP address mismatch sets the device to Alarm. (Down is reserved for complete lack of response by the DNS server.)

*Filename:* com.dartware.dns

*Version:* 1.8

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**Servers Standard > Domain Name (DNS) > DNS: (MX) Mail Server**

**DNS: (MX) Mail Server**

The protocol used by TCP/IP network clients to translate Internet names into Mail servers, as defined in [RFC 1034](#) and [RFC 1035](#). This probe sends a DNS request to look up the mail server for a specified domain name.

**Parameters**

*Domain Name* - the fully qualified domain name to be resolved.

*Mail Server* - optional - specify a mail server the domain name should resolve to. If this parameter is non-empty, and one of the returned mail servers doesn't match the one provided, a status as specified in *Failure Status* is returned.

*Recursion Desired* - If the target DNS server cannot resolve the given domain name, and this parameter is **True**, the DNS server may query an authoritative DNS server. To prevent this behavior, use the default setting of **False**.

*Failure Status* - specifies the device status returned when the DNS response returns a mail server that doesn't match the specified *Mail Server*. You can choose **Down**, **Alarm** or **Warning**. By default, mail server mismatches return an **Alarm** condition; **Down** is reserved for when the DNS server fails to respond at all.

*Filename:* com.dartware.dns.mx

*Version:* 1.1

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**Servers Standard > Domain Name (DNS) > DNS: (NS) Name Server**

**DNS: (NS) Name Server**

The protocol used by TCP/IP network clients to translate Internet names into name servers, as defined in [RFC 1034](#) and [RFC 1035](#). This probe sends a DNS request to look up the name server for a specified domain name. CNAME records are accepted if no NS records are present in the response.

**Parameters**

*Domain Name* - the fully qualified domain name to be resolved.

*Name Server* - optional - specify the name server the domain name should resolve to. If this parameter is non-empty, and one of the returned name servers doesn't match the one provided, a status as specified in *Failure Status* is returned.

*Recursion Desired* - If the target DNS server cannot resolve the given domain name, and this parameter is **True**, the DNS server may query an authoritative DNS server. To prevent this behavior, use the default setting of **False**.

*Failure Status* - specifies the device status returned when the DNS response returns a name server that doesn't match the specified *Name Server*. You can choose **Down**, **Alarm** or **Warning**. By default, name server mismatches return an **Alarm** condition; **Down** is reserved for when the DNS server fails to respond at all.

*Filename:* com.dartware.dns.ns

*Version:* 1.1

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## Servers Standard > Domain Name (DNS) > DNS: (PTR) Reverse Lookup

### DNS: (PTR) Reverse Lookup

The protocol used by TCP/IP network clients to translate IP addresses into Internet names, as defined in [RFC 1034](#) and [RFC 1035](#). This probe sends a DNS request to look up the domain name for a specified IP address. Both PTR and CNAME records are accepted in the response.

#### Parameters

*IP Address* - the fully qualified IP address to be resolved.

*Domain Name* - optional - specify a domain name the IP address should resolve to. If this parameter is non-empty, and one of the returned domain names doesn't match the one provided, a status as specified in *Failure Status* is returned.

*Recursion Desired* - If the target DNS server cannot resolve the given domain name, and this parameter is **True**, the DNS server may query an authoritative DNS server. To prevent this behavior, use the default setting of **False**.

*Failure Status* - specifies the device status returned when the DNS response returns a domain name that doesn't match the specified *Domain Name*. You can choose **Down**, **Alarm** or **Warning**. By default, mail server mismatches return an **Alarm** condition; **Down** is reserved for when the DNS server fails to respond at all.

*Filename:* com.dartware.dns.ptr

*Version:* 1.1

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## **Servers Standard > Domain Name (DNS) > DNS: (TXT) Text Record**

### **DNS: (TXT) Text Record**

The protocol used by TCP/IP network clients to translate Internet names into Text records, as defined in [RFC 1034](#) and [RFC 1035](#). This probe sends a DNS request to look up the text record for a specified domain name.

### **Parameters**

*Domain Name* - the fully qualified domain name to be resolved.

*Text Substring* - optional - specify a substring of a text record the domain name should resolve to. If this parameter is non-empty, and one of the returned text records doesn't contain the substring provided, the device's condition is set as specified in *Failure Status*.

*Recursion Desired* - If the target DNS server cannot resolve the given domain name, and this parameter is **True**, the DNS server may query an authoritative DNS server. To prevent this behavior, use the default setting of **False**.

*Failure Status* - specifies the device status returned when the DNS response text record in a DNS response doesn't contain the specified *Text Substring*. You can choose **Down**, **Alarm** or **Warning**. By default, mail server mismatches return an **Alarm** condition; **Down** is reserved for when the DNS server fails to respond at all.

*Filename*: com.dartware.dns.txt

*Version*: 1.1

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## **Servers Standard > FTP > FTP (Login)**

### **FTP (Login)**

The standard protocol for transferring files on TCP/IP internets, as defined in [RFC 959](#). The default TCP port number for FTP control connections is port 21.

This TCP probe connects to the FTP server's control port (21). It then logs in using the specified User ID and Password and issues a NOOP command. If the connection is successful, the probe issues the QUIT command and sets the status to **Okay**.

### **Parameters**

*User ID* - the account name used to login to the FTP server.

*Password* - the account password used to verify the User ID's identity.

**Note:** If the probe queries the FTP server often, and at regular intervals, the FTP server's log files contain a succession of "Login" and "Logout" log lines.

*Filename: com.dartware.tcp.ftp.login*

*Version: 1.8*

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## Servers Standard > FTP > FTP (No Login)

### **FTP (No Login)**

The standard protocol for transferring files on TCP/IP internets, as defined in [RFC 959](#). The default TCP port number for FTP control connections is port 21.

This TCP script connects to the FTP server's control port (21). It then issues a NOOP command without logging in. If the connection is successful, the probe issues the QUIT command and sets the status to **Okay**.

**Note:** Use this script if you are going to be probing the FTP server frequently. Unlike the FTP (login) probe, this probe does generate numerous entries in your FTP logs.

### **Parameters**

None.

*Filename: com.dartware.tcp.ftp.nologin*

*Version: 1.8*

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## Servers Standard > Gopher

### **Gopher**

The document search and retrieval protocol described in [RFC 1436](#). The default TCP port number for Gopher connections is port 70.

This script connects to a Gopher server and sends the specified *Selector string*. By default, the *Selector string* is empty; the Gopher server returns top level information as a sequence of lines. This script simply checks that data is returned by the gopher server; it does not validate the data's contents.

### **Parameters**

*Selector string* - the string sent to the Gopher server. By default, this string is empty.

*Filename: com.dartware.tcp.gopher*

*Version: 1.6*

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## Servers Standard > Host Resources

### **Host Resources**

This probe uses SNMP to monitor elements of the Host Resources MIB of the target device.

### **Parameters**

*Processor Load Alarm %* - Specifies the threshold, as a percentage of processor load, to enter ALARM state.

*Processor Load Warning %* - Specifies the threshold, as a percentage of processor load, to enter state.

*Disk Usage Alarm %* - Specifies the threshold, as a percentage of disk usage, to enter ALARM state.

*Disk Usage Warning %* - Specifies the threshold, as a percentage of disk usage, to enter WARNING state.

*Memory Usage Alarm %* - Specifies the threshold, as a percentage of memory usage, to enter ALARM state.

*Memory Usage Warning %* - Specifies the threshold, as a percentage of memory usage, to enter WARNING state.

*One-minute Load Average Alarm* - Specifies the one-minute load average value to enter ALARM state.

*One-minute Load Average Warning* - Specifies the one-minute load average value to enter WARNING state.

*Five-minute Load Average Alarm* - Specifies the five-minute load average value to enter ALARM state.

*Five-minute Load Average Warning* - Specifies the five-minute load average value to enter WARNING state.

*Fifteen-minute Load Average Alarm* - Specifies the fifteen-minute load average value to enter ALARM state.

*Fifteen-minute Load Average Warning* - Specifies the fifteen-minute load average value to enter WARNING state.

*Ignore storage table indices* After the device is polled, select the storage table entries you want to ignore. The selected entries do not cause alarms or warnings and are not be displayed in the Status window.

*Filename:* com.dartware.snmp.hrmib

*Version:* 1.12

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**Servers Standard > HTTP & HTTPS > HTTP (Follow Redirects)*****HTTP (Follow Redirects)***

The protocol used to transfer web pages on the World Wide Web, defined in [RFC 2068](#) and [RFC 1945](#). The default TCP port number for HTTP connections is port 80.

This TCP probe lets you download a specific web page and scan it for a specific string of HTML. This probe will follow a limited number of page redirects to the same HTTP server.

**Parameters**

*Host Name* - the domain name of the web server (Example: "www.intermapper.com"). This can be derived from the host name part of the URL that you want to test. You must enter a valid *Host Name* to test a web server that implements a virtual host. Add only an IP address or domain name; do not add "http://".

*URL Path* - the full path of the desired file on the web server (Example: "/index.html"). The first character must be a '/'.

*String to verify* - a string to verify in the server's response. For example, if you are retrieving a web page, you could search for "<HTML" or "<P>" to verify that the data is HTML. If the string is not found, the device goes into **Alarm**.

*User ID* - the user name typed into the web browser's password dialog. Leave this blank unless you want to test a web page that requires authentication.

*Password* - the password for the web browser's dialog. Leave this blank unless you want to test a web page that requires authentication.

*Redirect Limit* is the maximum number of redirects to follow.

*Filename:* com.dartware.tcp.http.follow

*Version:* 1.2

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**Servers Standard > HTTP & HTTPS > HTTP (Post)*****HTTP (Post)***

The protocol used to transfer web pages on the World Wide Web, defined in [RFC 2068](#) and [RFC 1945](#). The default TCP port number for HTTP connections is port 80.

This TCP probe lets you post form results to a specific web CGI.

**Parameters**

*Host Name* - the domain name of the web server (e.g. "www.intermapper.com"). This can be derived from the host name part of the URL that you want to test.

*URL Path* - the full path to the desired CGI on the web server (e.g. "/index.cgi"). The first character must be a '/'.

*Form Data* - the encoded data sent in the body of the POST message.

*String to verify* - a string expected to find in HTTP server's response. For example, if you post form data that is designed to generate an error, you might search for "sorry" or "could not be processed" to verify that the CGI is properly rejecting the data. If this string is not found, the device will go into alarm.

*Filename:* com.dartware.tcp.http.cgi.post

*Version:* 2.7

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## Servers Standard > HTTP & HTTPS > HTTP (Proxy)

### HTTP (Proxy)

The protocol used to transfer web pages on the World Wide Web, defined in [RFC 2068](#) and [RFC 1945](#). The default TCP port number for HTTP connections is port 80.

This TCP probe lets you test that a web server can be accessed using a remote proxy server as an intermediary. For example, this probe can check if your web server is accessible from some remote location on the Internet (e.g. www.proxymate.com).

### Parameters

*URL* is the full URL to the desired page on the web server, including the "http://" scheme (e.g. "http://www.intermapper.com")

*Proxy User ID* is your user ID for the proxy server. Leave this field blank if no authentication is required to use the proxy server.

*Proxy Password* is your password for the proxy server. Leave this field blank if no authentication is required to use the proxy server.

*String to verify* is a string to verify in the data returned by the HTTP server. For example, if you are retrieving a web page, you might search for "<HTML" or "<P>" to verify that the data is HTML. If this string is not found, the device will go into alarm.

*User Agent* is the string that identifies this InterMapper client probe to the proxy web server. Some proxy servers block traffic at the proxy based on the User-Agent identity. This parameter lets you optionally override InterMapper's default User-Agent setting. If you leave this parameter blank, InterMapper sends a User-Agent string of "InterMapper/version", where version is the current version number of InterMapper.

*Filename:* com.dartware.tcp.http.proxy

*Version:* 2.7

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## Servers Standard > HTTP & HTTPS > HTTP (Redirect)

### HTTP (Redirect)

The protocol used to transfer web pages on the World Wide Web, defined in [RFC 2068](#) and [RFC 1945](#). The default TCP port number for HTTP connections is port 80.

This TCP probe lets you test that a web server is redirecting certain URL's to a specific URL.

#### Parameters

*Host Name* is the domain name of the web server (e.g. "www.intermapper.com"). This can be derived from the host name part of the URL that you want to test.

*URL Path* is the full path of the desired file on the web server (e.g. "/index.html"). The first character must be a '/'.

*Redirect URL* is the complete URL that the given URL Path is redirected to. The URL should begin with "http://".

*User ID* is the user name typed into the web browser's password dialog. The default is to leave this blank. You should set this parameter if you want to test a web page that requires authentication.

*Password* is the password for the web browser's dialog. The default is to leave this blank. You should set this parameter if you want to test a web page that requires authentication.

*Filename:* com.dartware.tcp.http.redirect

*Version:* 1.13

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**Servers Standard > HTTP & HTTPS > HTTP**

**HTTP**

The protocol used to transfer web pages on the World Wide Web, defined in [RFC 2068](#) and [RFC 1945](#). The default TCP port number for HTTP connections is port 80.

This TCP probe lets you download a specific web page and scan it for a specific string of HTML.

**Parameters**

*Host Name* - the domain name of the web server (e.g. "www.intermapper.com"). This can be derived from the host name part of the URL that you want to test. You must enter a valid "Host Name" to test web servers which implement virtual hosts. Only add an IP address or domain name; do not add "http://".

*URL Path* - - the full path of the desired file on the web server (e.g. "/index.html"). The first character must be a '/'.

*String to verify* - the string to verify in the data returned by the HTTP server. For example, if you are retrieving a web page, you might search for "<HTML" or "<P>" to verify that the data is HTML. If this string is not found, the device will go into alarm.

*User ID* - the user name typed into the web browser's password dialog. The default is to leave this blank. You should set this parameter if you want to test a web page that requires authentication.

*Password* - the password for the web browser's dialog. The default is to leave this blank. You should set this parameter if you want to test a web page that requires authentication.

*Filename:* com.dartware.tcp.http

*Version:* 2.11

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**Servers Standard > HTTP & HTTPS > HTTPS (Follow Redirects)**

**HTTPS (Follow Redirects)**

The protocol used to transfer web pages on the World Wide Web, defined in [RFC 2068](#) and [RFC 1945](#). The default TCP port number for HTTP connections is port 80.

This TCP probe lets you download a specific web page and scan it for a specific string of HTML. This probe will follow a limited number of page redirects to the same HTTP server.

**Parameters**

*Host Name* - the domain name of the web server (Example: "www.intermapper.com"). This can be derived from the host name part of the URL that you want to test. You must enter a valid *Host Name* to test a web server that implements a virtual host. Add only an IP address or domain name; do not add "http://".

*URL Path* - the full path of the desired file on the web server (Example: "/index.html"). The first character must be a '/'.

*String to verify* - a string to verify in the server's response. For example, if you are retrieving a web page, you could search for "<HTML" or "<P>" to verify that the data is HTML. If the string is not found, the device goes into **Alarm**.

*User ID* - the user name typed into the web browser's password dialog. Leave this blank unless you want to test a web page that requires authentication.

*Password* - the password for the web browser's dialog. Leave this blank unless you want to test a web page that requires authentication.

*Redirect Limit* - the maximum number of redirects to follow.

*Filename:* com.dartware.tcp.https.follow

*Version:* 1.1

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## Servers Standard > HTTP & HTTPS > HTTPS (Post)

### HTTPS (Post)

The protocol used for secure transfer of web pages on the World Wide Web. The default TCP port number for HTTPS connections is port 443.

This TCP probe lets you post form results to a specific web CGI over a secure connection.

### Parameters

*Host Name* - the domain name of the web server (Example: "www.intermapper.com"). This can be derived from the host name part of the URL that you want to test. You must enter a valid *Host Name* to test a web server that implements a virtual host. Add only an IP address or domain name; do not add "http://".

*URL Path* - the full path of the desired file on the web server (Example: "/index.html"). The first character must be a '/'.

*Form Data* - the encoded data sent in the body of the POST message.

*String to verify* - a string to verify in the server's response. For example, if you post form data that is designed to generate an error response, you might search for "sorry" or "could not be processed" to verify that the CGI is properly rejecting the data. If the string is not found, the device goes into **Alarm**.

**Note:** The implementation of this probe uses OpenSSL on MacOSX.

*Filename:* com.dartware.tcp.https.cgi.post

*Version:* 1.13

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## Servers Standard > HTTP & HTTPS > HTTPS (Redirect)

### **HTTPS (Redirect)**

The protocol used to transfer web pages on the World Wide Web, defined in [RFC 2068](#) and [RFC 1945](#). The default TCP port number for HTTP connections is port 80.

This TCP probe lets you test that a web server is redirecting certain URL's to a specific URL.

### **Parameters**

*Host Name* - the domain name of the web server (Example: "www.intermapper.com"). This can be derived from the host name part of the URL that you want to test. You must enter a valid *Host Name* to test a web server that implements a virtual host. Add only an IP address or domain name; do not add "http://".

*URL Path* - the full path of the desired file on the web server (Example: "/index.html"). The first character must be a '/'.

*Redirect URL* - the complete URL that the given URL Path is redirected to. The URL should begin with "http://".

*User ID* - the user name typed into the web browser's password dialog. The default is to leave this blank. You should set this parameter if you want to test a web page that requires authentication.

*Password* - the password for the web browser's dialog. Leave this blank unless you want to test a web page that requires authentication.

*Filename:* com.dartware.tcp.https.redirect.txt

*Version:* 1.4

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**Servers Standard > HTTP & HTTPS > HTTPS (SSLv3)****HTTPS (SSLv3)**

The protocol used for secure transfer of web pages on the World Wide Web. The default TCP port number for HTTP connections is port 443.

This probe establishes a secure connection to a web server, downloads a specific web page, and scans it for a specific string of HTML. Unlike the default HTTPS probe, this probe does not attempt to auto-negotiate a TLSv1 connection, making it compatible with some older application servers.

**Parameters**

*Host Name* - the domain name of the web server (Example: "www.intermapper.com"). This can be derived from the host name part of the URL that you want to test. You must enter a valid *Host Name* to test a web server that implements a virtual host. Add only an IP address or domain name; do not add "http://".

*URL Path* - the full path of the desired file on the web server (Example: "/index.html"). The first character must be a '/'.

*String to verify* - a string to verify in the server's response. For example, if you are retrieving a web page, you could search for "<HTML" or "<P>" to verify that the data is HTML. If the string is not found, the device goes into **Alarm**.

**Note:** The implementation of this probe uses OpenSSL on Mac OSX.

*Filename:* com.dartware.tcp.https.notls.txt

*Version:* 1.3

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**Servers Standard > HTTP & HTTPS > HTTPS****HTTPS**

The protocol used for secure transfer of web pages on the World Wide Web. The default TCP port number for HTTP connections is port 443.

This probe establishes a secure connection to a web server, downloads a specific web page, and scans it for a specific string of HTML.

**Parameters**

*Host Name* is the domain name of the web server (e.g. "www.dartware.org"). This can be derived from the host name

part of the URL that you want to test. You must enter a valid "Host Name" to test web servers which implement virtual hosts.

*URL Path* is the full path of the desired file on the web server (e.g. "/index.html"). The first character must be a '/'.

*String to verify* is a string to verify in the data returned by the HTTP server. For example, if you are retrieving a web page, you might search for "<HTML" or "<P>" to verify that the data is HTML. If this string is not found, the device will go into alarm.

*Note:* The implementation of this probe uses OpenSSL on MacOSX.

*Filename:* com.dartware.tcp.https

*Version:* 2.7

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## Servers Standard > IPMI v2.0

### **IPMI v2.0**

This probe implements version 2.0 of the Intelligent Platform Management Interface (IPMI) over a LAN. It sends UDP-based RMCP+ packets to a Baseboard Management Controller (BMC) located within a server or workstation. The BMC is hardware which permits network-based management of the computer even when it is turned off, i.e. "lights-out management".

### **Parameters**

*User* - required - An administrator-level user name to the BMC.

*Password* - required - The password for the specified user.

*Dialect* - The variant of the IPMI protocol. There are subtle differences in implementations of IPMI in various products.

- To use this probe with an Apple XServer 2008 or earlier, set the "Dialect" parameter to "XServer".
- For Dell Servers, the Apple XServer 2009, and any other product set the "Dialect" parameter to "Other".

This probe supports one-key, non-anonymous logins only. Internally, it uses RAKP-HMAC-SHA1 and AES-CBS-128 for authentication and confidentiality, respectively. The firewall configuration of the BMC must permit UDP packets from InterMapper.

*Filename:* com.dartware.ipmi.txt

*Version:* 1.1

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**Servers Standard > IRC*****IRC***

This probe tests whether InterMapper can register a connection with an IRC server. This probe establishes a connection to the IRC server and issues the "PASS", "NICK", and "USER" commands. It verifies that the IRC server returns a particular string, in its welcome message, for example.

**Parameters**

*Password* - the connection password, passed to the IRC host using the "PASS" command.

*Nickname* - gives the connection a nickname. Passed using the "NICK" command.

*Username* - the username, hostname,servername and realname of the new user. Typically, the hostname and servername are ignored for client connections. The realname must be prefixed with a ':'.

*String to verify* - a string to verify in the IRC server's response. For example, you might check for a string returned in the IRC server's welcome message.

*Filename:* com.dartware.tcp.irc

*Version:* 1.6

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**Servers Standard > LDAP > LDAP SSL*****LDAP-SSL***

The protocol used to access directories supporting the X.500 models, as described in [RFC 2251](#).

This probe connects to the LDAP server and binds using the designated *Bind Name*. If a *Bind Password* is provided, this password is sent as clear text to authenticate the probe.

Once logged in, the probe sends a SearchRequest for *Field to Match* searching for an equality match of *Name to Lookup*, and counts the number of LDAP records returned.

If the *Search Base* field is specified, this value is used as the base of the search. Otherwise, the *Bind Name* is used for the Base DN.

*Filename:* com.dartware.tcp.ldap.ssl.txt

*Version:* 1.9

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**Servers Standard > LDAP > LDAP**

**LDAP**

The protocol used to access directories supporting the X.500 models, as described in [RFC 2251](#).

This probe connects to the LDAP server and binds using the designated *Bind Name*. If a *Bind Password* is provided, it is sent as clear text to authenticate the probe.

Once logged in, the probe sends a SearchRequest for *Field to Match* searching for an equality match of *Name to Lookup*, and counts the number of LDAP records returned.

If the *Search Base* field is specified, this value is used as the base of the search. Otherwise, the *Bind Name* is used for the Base DN.

**Parameters**

*Bind Name* and *Bind Password* - used to connect to the LDAP server.

*Name to Lookup* - string to use in the SearchRequest.

*Search Base* - optional base for the search.

*Field to Match*[*cn,sn,uid*] - enter one of the listed fields to check for a match.

*Minimum No. of Results* - enter an expected minimum number of records returned.

*Filename:* com.dartware.tcp.ldap.txt

*Version:* 1.9

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**Servers Standard > LPR**

**LPR**

The print server protocol used to print over a TCP/IP network, as defined in [RFC 1179](#). The default TCP port number for LPR connections is port 515.

*Filename:* com.dartware.tcp.lpr

*Version:* 1.7

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**Servers Standard > Mail > IMAP4 SSL*****IMAP4-SSL***

The protocol used for accessing and manipulating email messages on a server, as defined in [RFC 2060](#). This probe tests a secure connection to the IMAP server. The default TCP port number for secure IMAP connections is port 993.

This TCP script connects to the IMAP4 server and issues a CAPABILITY command, a NOOP command, and finally terminates with a LOGOUT command. The script checks the server's response to the CAPABILITY command to verify that the server supports IMAP4 or IMAP4rev1.

**Parameters**

None.

*Filename: com.dartware.tcp imap4.ssl*

*Version: 1.7*

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**Servers Standard > Mail > IMAP4*****IMAP4***

The protocol used for accessing and manipulating email messages on a server, as defined in [RFC 2060](#). The default TCP port number for IMAP4 connections is port 143.

This TCP script connects to the IMAP4 server and issues a CAPABILITY command, a NOOP command, and finally terminates with a LOGOUT command. The script checks the server's response to the CAPABILITY command to verify that the server supports IMAP4 or IMAP4rev1.

**Parameters**

None.

*Filename: com.dartware.tcp imap4*

*Version: 1.7*

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**Servers Standard > Mail > POP3 SSL*****POP3-SSL***

The protocol used to access email messages from a central maildrop server, as defined in [RFC 1939](#). The default TCP port number for POP3-SSL connections is port 995.

If the "User Name" parameter is left empty, this probe verifies that the server send "+OK" as its initial greeting, then immediately sends the QUIT command.

If a "User Name" parameter is specified, this probe will attempt login to the POP3 server using the specified password. If the probe fails to authenticate, the device will be marked in "warning".

By default, this probe will use the APOP command to authenticate the user if the the APOP command is supported by the server. To authenticate via USER and PASS commands for a particular user, set the "Use APOP if supported" parameter to False.

- The "Use APOP if supported" option has no effect if APOP is not supported by the server.

*Filename: com.dartware.tcp.pop3.ssl*

*Version: 2.6*

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## Servers Standard > Mail > POP3

### **POP3**

The protocol used to access email messages from a central maildrop server, as defined in [RFC 1939](#). The default TCP port number for POP3 connections is port 110.

If the "User Name" parameter is left empty, this probe verifies that the server send "+OK" as its initial greeting, then immediately sends the QUIT command.

If a "User Name" parameter is specified, this probe will attempt login to the POP3 server using the specified password. If the probe fails to authenticate, the device will be marked in "warning".

By default, this probe will use the APOP command to authenticate the user if the the APOP command is supported by the server. To authenticate via USER and PASS commands for a particular user, set the "Use APOP if supported" parameter to False.

- The "Use APOP if supported" option has no effect if APOP is not supported by the server.

*Filename: com.dartware.tcp.pop3*

*Version: 2.6*

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**Servers Standard > Mail > Roundtrip IMAP*****Roundtrip-IMAP***

This probe tests an IMAP server and measures the time it takes to send a message (via SMTP) and retrieve it (via IMAP). It sends a short message to the specified SMTP server, and continually attempts to retrieve the message via IMAP from the device being tested. The probe alerts if the server fails to respond properly or the round-trip time exceeds the specified timeout.

**Parameters**

*SMTP Server* - The server to receive the SMTP message. If left blank, the device being tested is used as the target.

*SMTP User* and *SMTP Password* - optional - The user name and password to be used when sending the message. Leave blank if not required.

*Email To* - The e-mail address to which the message is sent.

*Email From* - The From: address in the message.

*IMAP User* and *IMAP Password* - The user name and password used to log into the IMAP server to retrieve the message.

*Timeout* - Measured in seconds.

*Filename:* com.dartware.email imap.txt

*Version:* 1.3

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**Servers Standard > Mail > Roundtrip POP*****Roundtrip-POP***

This probe tests a POP server and measures the time it takes to send a message (via SMTP) and retrieve it (via POP). It sends a short message to the specified SMTP server, and continually attempts to retrieve the message via POP from the device being tested. The probe alerts if the server fails to respond properly or the round-trip time exceeds the specified timeout.

**Parameters**

*SMTP Server* - The server to receive the SMTP message. If left blank, the device being tested is used as the target..

*SMTP User* and *SMTP Password* - optional - The user name and password to be used for sending the message. Leave blank if not required.

*Email To* - The e-mail address to which the message is sent.

*Email From* - The From: address in the message.

*POP User* and *POP Password* - The user name and password used to log into the POP server to retrieve the message.

*Timeout* - Measured in seconds.

*Filename:* com.dartware.email.pop.txt

*Version:* 1.3

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## Servers Standard > Mail > SMTP TLS

### **SMTP-TLS**

The standard protocol used to transfer electronic mail on the Internet, as defined in [RFC 821](#). This probe tests a secure connection to the SMTP server. The default TCP port number for secure SMTP connections is port 25.

This probe tries to verify that a specified email address exists on the SMTP server, using the VRFY command. It connects to the SMTP server, introduces itself using the HELO command, then issues a VRFY command for the specified email address. When it has received a response, the script sends the QUIT command before closing its connection to the server.

*Email Address* is the name or email address that we are attempting to verify.

*Filename:* com.dartware.tcp.smtp.tls

*Version:* 1.8

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## Servers Standard > Mail > SMTP

### **SMTP**

The standard protocol used to transfer electronic mail on the Internet, as defined in [RFC 821](#). The default TCP port number for SMTP connections is port 25.

This probe tries to verify that a specified email address exists on the SMTP server, using the VRFY command. It connects to the SMTP server, introduces itself using the HELO command, then issues a VRFY command for the specified email address. When it has received a response, the script sends the QUIT command before closing its connection to the server.

*Email Address* is the name or email address that we are attempting to verify.

*Filename: com.dartware.tcp.smtp*

*Version: 2.0*

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## Servers Standard > Multimedia > Multicast Listener

### ***Multicast Listener***

This probe lets you listen for UDP packets directed to a specific UDP port. If you specify a multicast IP address, InterMapper will listen for packets directed to that multicast address. This probe will change the device status to the DOWN if a packet isn't received within specified number of seconds (the default is 10 seconds).

The Multicast Listener probe can be used to verify that a multicast source is broadcasting, for example, a live QuickTime broadcaster.

This probe does not inject any traffic into the network; it is passive only.

*Multicast IP Address* is the optional multicast IP address to listen on.

*Seconds to wait* is the maximum number of seconds to wait between packets. If a packet is not received within the specified number of seconds, the device's status is set to DOWN. The "Seconds to wait" timer is reset every time a packet is received.

*Verify Source Address* lets you specify whether the probe should only count packets from the IP address of the targeted device.

*Filename: com.dartware.udplistener*

*Version: 2.0*

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## Servers Standard > Multimedia > RTSP

### ***RTSP***

The protocol used to control real-time streams, defined in [RFC 2326](#) and [RFC 1889](#). The default TCP port number for RTSP connections is port 554.

This TCP probe lets you check that the server is up and responding.

The specifics of the commands that the probe must send to the server vary somewhat depending upon the version of RFC2326 that the server implements. If the server you're monitoring

implements RFC2326bis-02 or later, then set **RFC2326bis-02 or later** to "Yes". If you're not sure, leave it set to "No". If the device goes into warning with the reason set to "[RTSP] Unexpected response to PLAY command. (RTSP/1.0 460 Only Aggregate Option Allowed)", then set it to "Yes".

*Filename: com.dartware.tcp.rtsp*

*Version: 2.1*

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## Servers Standard > Network Time

### **Network Time**

The protocol used to synchronize time between computers, defined in [RFC 1119](#).

This probe sends a client-mode current-time request to the NTP server. By default, NTP requests are sent to UDP port 123.

### **Parameters**

None.

*Filename: com.dartware.ntp*

*Version: 1.5*

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## Servers Standard > NNTP

### **NNTP**

The protocol used to read network news on TCP/IP Internets, as defined in [RFC 977](#). The default TCP port number for NNTP connections is port 119.

This script connects to the news server and uses the GROUP command to ask for information about a specific newsgroup name. The script then issues the QUIT command to tell the server it is closing the connection.

*Newsgroup* is the name of the newsgroup that you want to verify.

*Filename: com.dartware.tcp.nntp*

*Version: 1.6*

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## Servers Standard > RADIUS

### **RADIUS**

The protocol used by remote access servers to authenticate dial-in users, as defined in [RFC 2138](#). This probe tests a RADIUS server by sending an Access-Request packet to

authenticate a specific user name and password. Before you can use this probe with a particular RADIUS server, you must add the InterMapper computer's IP address to the RADIUS server and choose a "shared secret" for it. The "shared secret" is used by the RADIUS protocol to encrypt passwords in RADIUS requests. A RADIUS server does not answer access-requests from a client it doesn't recognize.

The official port number for RADIUS is 1812. Some RADIUS servers, however, use port number 1645 for historical reasons.

### **Parameters**

*Shared Secret* - InterMapper's unique password into the RADIUS server. Since it is used for authentication, the same value must be configured in the RADIUS server as well.

*User Name* - The user name to be used for InterMapper's authentication.

*Password* - The password for the specified user name. The password is not sent in the clear; it is encrypted using the shared secret.

*Filename:* com.dartware.radius

*Version:* 1.8

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## **Servers Standard > SIP over UDP**

### **SIP over UDP**

The protocol used to set up voice communications for Voice-over-IP (VOIP), as described in [RFC 3261](#). This probe sends a SIP request in a single UDP packet and checks for a valid SIP response.

By default, this probe sends an OPTIONS command to the target device. However, some VOIP systems do not answer un-authenticated OPTIONS requests. For these devices, change the command to REGISTER.

### **Parameters**

*URI* - The SIP uniform resource identifier in the request.

*Command* - The SIP command to send in the request.

*Filename:* com.dartware.sip.txt

*Version:* 1.0

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**Servers Standard > SNPP****SNPP**

This protocol transfers pager information across the Internet, as defined in [RFC 1861](#). The default TCP port number for SMTP connections is port 444.

This SNPP probe verifies that a specified SNPP server is working by connecting to it, then issuing a PAGE <pagerid> command. If it gets back a valid response, code, the probe issues a QUIT command and exits, marking the device in the OK state.

If an "Invalid Pager ID" response comes back, the probe issues a QUIT command and exits, marking the device in the Alarm state.

If no connection was made, or if unexpected responses come back, the device is marked as being down.

*Filename: com.dartware.tcp.snpp*

*Version: 1.5*

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**Servers Standard > SSH****SSH**

The protocol used for secure remote login. The default TCP port number for SSH connections is port 22.

This TCP probe opens a connection to the specified port and looks for the identification string that indicates an SSH server as specified in [RFC 4253](#).

*Filename: com.dartware.tcp.ssh.txt*

*Version: 1.3*

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**Servers Standard > Subversion > SVN (Apache)****SVN (Apache)**

This probe tests a Subversion server running as an Apache module. The subversion module lets Apache function as a WebDAV/DeltaV server. Since the server responds normally to HTTP GET requests, testing whether it is up is the same as performing an HTTP GET request and checking to ensure the location was found.

*Host Name* is the domain name of the subversion server (e.g. "svn.collab.net"). Only add an IP address or domain name; do not add "http://".

*URL Path* is the path to the repository. The first and last characters must be a '/'.

*User ID* is the user name used by the subversion server for authentication, if required.

*Password* is the password used by the subversion server for authentication, if required.

Subversion is a version control system intended as a replacement for CVS. The software is released under an Apache/BSD style open-source license. The project can be found at <http://subversion.tigris.org>.

*Filename:* com.dartware.tcp.svn.apache

*Version:* 1.0

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## Servers Standard > Subversion > SVN (Svnserve)

### SVN (Svnserve)

This probe tests a stand-alone svnserve Subversion server. It connects to the svnserve using its default port 3690. The server returns a response to indicate it is running. If a repository location is specified, the probe then tries to connect to that repository. If a username is specified, the probe will try to authenticate using CRAM-MD5, otherwise it will connect anonymously.

*Repository* is the subversion repository path (e.g. "svn/experimental"). It should not begin with a '/'.

*User ID* is the user name used by the subversion server for authentication, if required.

*Password* is the password used by the subversion server for authentication, if required.

Subversion is a version control system intended as a replacement for CVS. The software is released under an Apache/BSD style open-source license. The project can be found at <http://subversion.tigris.org>.

A description of the custom protocol used by svnserve can be found at

[http://svn.collab.net/repos/svn/trunk/subversion/libsvn\\_ra\\_svn/protocol](http://svn.collab.net/repos/svn/trunk/subversion/libsvn_ra_svn/protocol).

*Filename:* com.dartware.tcp.svn.svnserve

*Version:* 1.0

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## Servers Standard > Telnet

### **Telnet**

The protocol used for terminal-to-terminal communication and distributed computation as described in [RFC 854](#). The default TCP port number for Telnet connections is port 23.

This probe lets you Telnet to a device, login with a name and password, and optionally enter a command. This probe is specifically designed to reject any Telnet options proffered by the Telnet server; the TCP connection always remains in the base "network virtual terminal" state. This probe lets you enter data at up to three prompts.

*Intro String to Match* is a string to match in the welcome banner sent by the Telnet server when you first connect. Leave this parameter blank if you want to match anything in the welcome banner.

*First Prompt* is the string to match in the first prompt. (e.g. "Login:")

*Reply #1* is your reply to the first prompt. (i.e. your response to the "Login:" prompt)

*Second Prompt* is the string to match in the second prompt. (e.g. "Password:") If this parameter is empty, the probe ignores the prompt string and it does not send its reply.

*Reply #2* is your reply to the second prompt. (i.e. your response to the "Password:" prompt.)

*Third Prompt* is the string to match in the third prompt. If this parameter is empty, the probe ignores the prompt string and its reply.

*Reply #3* is your reply to the third prompt.

*Filename:* com.dartware.tcp.telnet

*Version:* 1.7

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## Servers Standard > VNC Server

### **VNC Server**

Attempt to connect to a VNC Server. VNC uses RFB (Remote Frame Buffer) protocol for communication between clients and server. The probe waits to receive a "RFB #####.#####" string. If it arrives, the VNC server is assumed to be up and the probe simply disconnects.

The Virtual Network Computer (VNC) protocol was originally designed at AT&T Labs in Cambridge. There are many

implementations: the developers now support it from the RealVNC site at <http://www.realvnc.com/>.

*Filename: com.dartware.tcp.vnc*

*Version: 1.7*

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## WMI

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### **WMI > WMI CPU Utilization**

#### ***WMI CPU Utilization***

This probe uses WMI to retrieve the percentage of time that a processor uses to execute a non-idle thread on the target host. Specifically, it queries the PercentProcessorTime property of the Win32\_PerfFormattedData\_PerfOS\_Processor class and compares it against the Warning and Critical parameters you set.

The target host must be running Windows XP, Windows Server 2003 or later.

#### **Parameters**

*Single Warning, Single Critical, Total Warning, and Total Critical* - the device's condition is set by comparing each processor against the specified Single percentages, and the total CPU utilization against the specified Total percentages. You can leave any of these values blank.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `cpu_util.vbs` companion script, included with the probe. It uses the script's exit value to set the condition of the device. It uses the performance data returned by the script to create a nice display of chartable data.

*Filename: com.dartware.wmi.cpu\_utilization.txt*

*Version: 1.10*

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## **WMI > WMI Disk Available**

### ***WMI Disk Available***

This probe uses WMI to determine the disk space available on the specified drive(s) on the target host. Specifically, it queries the `Size` and `FreeSpace` properties of the `Win32_LogicalDisk` class, computes percentage free space, and compares it against the specified values. The target host must be running Windows 2000 or later.

#### **Parameters**

*Drive* - May be set to "All" to check disk space on all of the host machine's local hard drives. Enter a list of comma-separated drive names (including the colon). These drives will be listed regardless of whether they are local hard drives. Zero-sized drives, such as an empty cd-rom, are not listed. The first drive with space that is less than the specified values is cited in the reason.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is `localhost`,) leave this parameter blank.

InterMapper invokes the `disk_avail.vbs` companion script included with the probe. It uses the script's exit value to set the condition of the device. It uses the performance data returned by the script to create a nice display of chartable data.

*Filename: com.dartware.wmi.disk\_available.txt*

*Version: 1.9*

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## **WMI > WMI Disk Fragmentation Analysis**

### ***WMI Disk Fragmentation Analysis***

This probe uses WMI to analyze disk fragmentation on a drive on the target host. Specifically, it calls the `DefragAnalysis`

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method of the Win32\_Volume class and reports pertinent statistics from the analysis. If the drive needs to be defragmented, the device is set to **Warning**. The target host must be running Windows Vista, Windows Server 2003 or later.

### **Parameters**

*Drive* - the drive letter assigned to the local disk to be analyzed, including the colon but without backslashes.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `defrag_analysis.vbs` companion script, included with the probe. It uses the script's exit value to set the condition of the device. It uses the performance data returned by the script to create a nice display of chartable data.

*Filename: com.dartware.wmi.defrag\_analysis.txt*

*Version: 1.9*

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## **WMI > WMI Event Log**

### ***WMI Event Log***

This probe uses WMI to retrieve entries from the Event Logs on the target host. Specifically, it queries the Win32\_NTLogEvent class, limiting the search with the parameters you set. If matching events are found, a critical status is returned. The target host must be running Windows 2000 or later.

### **Parameters**

*Log File* - contains a comma-separated list of the logs to be searched. At least one Log File is required.

*Event Codes* - a comma-separated list of event codes to search. To select all codes, leave this parameter blank.

*Event Types* - a comma-separated list; can include event type names or corresponding numerical values. Names and values can be intermixed. Limits the selection to events of the specified types.

*Hours, Minutes, and Seconds* - combine to define how far back in the event log to search. The specified values are subtracted

from the current time and used to select events, based on when they were written to the log.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is `localhost`,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `event_log.vbs` companion script included with this probe.

*Filename: com.dartware.wmi.event\_log.txt*

*Version: 1.11*

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## **WMI > WMI File Check**

### ***WMI File Check***

This probe uses WMI to retrieve information about files on the target host. Specifically, it queries the `CIM_DataFile` class, limiting the search with the parameters you set. The target host must be running Windows 2000 or later.

#### **Parameters**

*Path* - the location of the files to be checked. Include the drive, and enclose the path in double-quotes if it contains spaces.

*File* - the filename and extension of the file you wish to check. The path is prepended to filename during the final query. To check all files that met the specified Size or time criteria, leave this parameter blank. You may also use a list of comma-separated filenames.

Wildcards (\* ?) may be used in the filename. When using wildcards, be sure to specify the *Path* parameter. Otherwise, the query could take an inordinate amount of time. At least one of *File* or *Path* must be set.

*Size* - the minimum filesize in bytes. Any file larger than this value is listed.

*Hours, Minutes and Seconds* - specify how recently the file was changed in order to be listed, based on the file's `LastModified` value. At least one of these parameters must be set.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not

required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `file_chk.vbs` companion script, included with the probe. It lists the files which meet the specified criteria, and uses the exit value to set the condition of the device.

*Filename: com.dartware.wmi.file\_check.txt*

*Version: 1.9*

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## **WMI > WMI Folder Check**

### ***WMI Folder Check***

This probe uses WMI to retrieve information about a folder on the target host. Specifically, it queries the `Win32_Directory` and `CIM_DataFile` classes to walk the directory tree, accumulating file and folder counts and the total of file sizes. It also notes the most recently modified file in the tree. The target host must be running Windows 2000 or later.

#### **Parameters**

*Path* - specifies the folder at the top of the tree you want to check. It should include the drive, and should be enclosed in double-quotes if it contains spaces.

*Warning* and *Critical* - set thresholds for the number of folders, the number of files, and the total of the file sizes.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `folder_chk.vbs` companion script, included with the probe. The script compares the number of files, folders, and the total size against your criteria to set the condition of the device.

*Filename: com.dartware.wmi.folder\_check.txt*

*Version: 1.11*

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## WMI > WMI Free Memory

### ***WMI Free Memory***

This probe uses WMI to retrieve the amount of physical memory available to processes running on the target host, in megabytes. Specifically, it queries the TotalPhysicalMemory property of the Win32\_ComputerSystem class. It also queries the FreePhysicalMemory property of the Win32\_OperatingSystem class and compares it against specified thresholds. The target host must be running Windows 2000 or later.

### **Parameters**

*Warning* and *Critical* - specify thresholds in megabytes for which the device condition is set to the specified state.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `free_mem.vbs` companion script, included with the probe. The script uses the exit value to set the condition of the device. It uses the performance data returned by the script to create a nice display of chartable data.

*Filename:* `com.dartware.wmi.free_memory.txt`

*Version:* 1.8

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## WMI > WMI Installed Software

### ***WMI Installed Software***

This probe uses WMI to retrieve information about software installed on the target host. Specifically, it queries the Win32\_Product class for information about products installed using Windows Installer. It also queries Win32\_OperatingSystem and displays the operating system name, version and service pack level.

The target host must be running Windows XP, Windows Server 2003 or later. On Windows Server 2003, the Win32\_Product class isn't always installed by default. You can install the "WMI Windows Installer Provider" component under "Management and Monitoring Tools" in "Add/Remove Windows Components".

## Parameters

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `installed_software.vbs` companion script included with this probe.

*Filename: com.dartware.wmi.installed\_software.txt*

*Version: 1.5*

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## WMI > WMI Logged on Users

### *WMI Logged-on Users*

This probe uses WMI to retrieve information about users logged on to the target host. Specifically, it queries the LogonType and StartTime properties of the Win32\_LogonSession class, limiting the selection to those in the comma-separated list of numeric Logon Types you set in the Type parameter. It queries instances of the Win32\_LoggedOnUser class, matches the LogonID and extracts the user's name and domain from the path of the Win32\_Account. The target host must be running Windows XP, Windows Server 2003 or later.

## Parameters

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `log_users.vbs` companion script, included with this probe.

*Filename: com.dartware.wmi.logged-on\_users.txt*

*Version: 1.11*

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## WMI > WMI MSEExchange 2007 Hub Transport Server

### ***WMI MSEExchange 2007 Hub Transport Server***

This probe uses WMI to retrieve performance information about the delivery queues on a MS Exchange 2007 Hub Transport Server. Specifically, it queries the Win32\_PerfFormattedData\_MSEExchangeTransportQueues\_MSEExchangeTransportQueues class to collect a variety of queue statistics and then compares them to the criteria you set. The default criteria for warning and critical conditions are taken from the Microsoft TechNet article [Monitoring Hub Transport Servers](#).

#### **Parameters**

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `ex07_transport.vbs` companion script included with this probe. It uses the exit value to set the condition of the device.

*Filename:* `com.dartware.wmi.ex07_transport_server.txt`

*Version:* 1.4

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## WMI > WMI MSEExchange 2007 Mailbox Server

### ***WMI MSEExchange 2007 Mailbox Server***

This probe uses WMI to retrieve performance information about the delivery queues on a MS Exchange 2007 Mailbox Server. Specifically, it queries the Win32\_PerfFormattedData\_MSEExchangeIS\_MSEExchangeIS, Win32\_PerfFormattedData\_MSEExchangeIS\_MSEExchangeISMailbox, Win32\_PerfFormattedData\_MSEExchangeIS\_MSEExchangeISPublic, Win32\_PerfFormattedData\_MSEExchangeSearchIndices\_MSEExchangeSearchIndices classes to collect a variety of statistics and then compares them to the criteria you set. The default criteria for warning and critical conditions are taken from the Microsoft TechNet article [Monitoring Mailbox Servers](#).

#### **Parameters**

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not

required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `ex07_mailbox.vbs` companion script included with this probe. It uses the script's exit value to set the condition of the device.

*Filename:* `com.dartware.wmi.ex07_mailbox_server.txt`

*Version:* 1.4

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## **WMI > WMI Network Utilization**

### ***WMI Network Utilization***

This probe uses WMI to retrieve the network utilization on an interface on the target host. Specifically, it queries the `BytesTotalPersec`, `CurrentBandwidth`, `OutputQueueLength` and `PacketsReceivedErrors` properties of the `Win32_PerfFormattedData_Tcpip_NetworkInterface` class. It compares `OutputQueueLength` against the `Warning` and `Critical` parameters you set. The target host must be running Windows XP, Windows Server 2003 or later.

#### **Parameters**

The interface may be selected by *IP Address*, *MAC Address*, or *Index*. When specifying a MAC address, use colons, hyphens or no separators. The interface name is queried from the `Win32_NetworkAdapterConfiguration` class and used to query data from the `Win32_PerfFormattedData_Tcpip_NetworkInterface` class.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `net_util.vbs` companion script, included with the probe. It uses the script's exit value to set the condition of the device. It uses the performance data returned by the script to create a nice display of chartable data.

*Filename:* `com.dartware.wmi.net_utilization.txt`

*Version:* 1.10

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## WMI > WMI Process Monitor

### ***WMI Process Monitor***

This probe uses WMI to retrieve information about processes running on the target host. Specifically, it queries the PercentProcessorTime property of the Win32\_PerfFormattedData\_PerfProc\_Process class and compares it against the specified parameters. Any of the specified processes not found are listed, and the status is set to Critical. The target host must be running Windows XP, Windows Server 2003 or later.

### **Parameters**

*Process* - a comma-separated list of process names to check. Extensions are not included in the process names. Names containing spaces or other special characters should be enclosed in quotes. If more than one process matches the name, all matching processes are listed.

*Warning* and *Critical* - specify thresholds (in percent) for which the device condition is set to the specified state.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `proc_mon.vbs` companion script, included with the probe. It uses the script's exit value to set the condition of the device. It also uses the performance data returned by the script to create a nice display of chartable data.

*Filename:* `com.dartware.wmi.process_monitor.txt`

*Version:* 1.11

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## WMI > WMI Service Monitor

### ***WMI Service Monitor***

This probe uses WMI to retrieve the state of services running on the target host by querying the Win32\_Service class. Any specified services not found are listed, and the status is set to Critical. The target host must be running Windows 2000 or later.

### **Parameters**

*Service* - a comma-separated list of service names to be checked.

**Note:** Service names should not be confused with the service's Display Name, shown in the Services tool. Check the Properties for the service to find the actual service name. Names containing spaces or other special characters should be enclosed in quotes.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `serv_mon.vbs` companion script, included with the probe. The script's exit value is used to set the condition of the device.

*Filename:* `com.dartware.wmi.service_monitor.txt`

*Version:* 1.12

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## **WMI > WMI SQL Server 2008 Service Monitor**

### ***WMI SQL Server 2008 Service Monitor***

This probe uses WMI to retrieve the state of Microsoft SQL Server 2008 services running on the target host by querying the Win32\_Service class. The states of the selected services are listed, and if any are not running, the status of the device is set to Critical. The target host must be running Windows 2000 or later.

#### **Parameters**

*Services* - select or clear checkboxes to select the services which you want to monitor.

*Instance* - the SQL Server instance you wish to monitor on the target host. To monitor the default instance, leave this parameter blank.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `sql2k8_serv_mon.vbs` companion script, included with this probe. It uses the script's exit value to set the condition of the device.

*Filename: com.dartware.wmi.sql2k8\_service\_monitor.txt  
Version: 1.4*

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## **WMI > WMI System Accessibility**

### ***WMI System Accessibility***

This probe uses WMI to test accessibility of a target device from the monitored host. Specifically, it uses the `Win32_PingStatus` class to test the connectivity and returns a chartable response time. If the target cannot be pinged, the status is set to critical and a discontinuity is inserted in the chart data. The target host must be running Windows XP, Windows Server 2003 or later.

Additional information about the monitored host is queried from the `Win32_NetworkAdapterConfiguration` and `Win32_NTDomain` classes and displayed in the status window.

### **Parameters**

`User` - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

`Timeout (sec)` - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `sys_access.vbs` companion script, included with the probe. It uses the script's exit value to set the condition of the device. It also uses the performance data returned by the script to create a nice display of chartable data.

*Filename: com.dartware.wmi.system\_accessibility.txt  
Version: 1.9*

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## **WMI > WMI System Information**

### ***WMI System Information***

This probe uses WMI to collect a variety of information about the monitored host including hardware and operating system details. The target host must be running Windows 2000 or later.

## Parameters

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `system_info.vbs` companion script, included with the probe.

*Filename: com.dartware.wmi.system\_infomation.txt*

*Version: 1.8*

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## WMI > WMI Top Processes

### *WMI Top Processes*

This probe uses WMI to retrieve information about CPU utilization and processes running on the target host.

Specifically, it queries the `PercentProcessorTime` property of the `Win32_PerfFormattedData_PerfOS_Processor` class and compares it against the specified thresholds. It queries the `PercentProcessorTime` property of the `Win32_PerfFormattedData_PerfProc_Process` class and lists up to five processes using the most CPU time. Because there is a time lapse between collecting the CPU data and the process data, the reported values do not add up exactly. The target host must be running Windows XP, Windows Server 2003 or later.

## Parameters

*Warning* and *Critical* - set a value in percent to use as the threshold to set the device to this condition.

*User* - may be a local user on the target host, or can take the form `domain\user` for a domain login. If authentication is not required (such as when the target is localhost,) leave this parameter blank.

*Timeout (sec)* - the number of seconds to wait before assuming the host is not available.

InterMapper invokes the `top_cpu.vbs` companion script, included with the probe. The probe uses script's the exit value to set the condition of the device. It also uses the performance data returned by the script to create a nice display of chartable data.

*Filename: com.dartware.wmi.top\_process.txt*

*Version: 1.10*

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## **Wireless > Alvarion > Alvarion B 14 & B 28 (BU)**

### ***Alvarion B-14 & B-28 (BU)***

This probe monitors an [Alvarion](#) B-14 or B-28 base unit (BU). It retrieves and displays the radio band, operating frequency, and slave association. It will go into an alarm when no slave is associated, and when the operating frequency doesn't match the configured frequency. Traffic information is available for the ethernet and radio interfaces. (To show the ethernet interface, we recommend using the "Display unnumbered interfaces" behavior.)

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.alvarion.b14.master.txt*

*Version: 0.4*

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**Wireless > Alvarion > Alvarion B 14 & B 28 (RB)**

***Alvarion B-14 & B-28 (RB)***

This probe monitors an [Alvarion](#) B-14 or B-28 remote bridge (RB) unit. It retrieves and displays the radio band, operating frequency, average received signal to noise ratio, and the MAC address of the associated base unit (BU). It will go into alarm or warning states based on user-defined parameters for a low signal to noise ratio or high traffic on a specified interface.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.alvarion.b14.slave.txt*

*Version: 0.4*

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**Wireless > Alvarion > BreezeACCESS (AU)**

***BreezeACCESS (AU)***

This probe monitors a BreezeCom or [Alvarion](#) BreezeACCESS 2.4 Ghz or 900 MHz access unit (AU). It retrieves and displays the operating radio band of the unit, and the number of client associations since the last reset. Traffic information is available for the ethernet and radio interfaces. (To show the ethernet interface, we recommend using the "Display unnumbered interfaces" behavior.)

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.alvarionbaau.txt*

*Version: 1.6*

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**Wireless > Alvarion > BreezeACCESS (SU)**

***BreezeACCESS (SU)***

This probe monitors a BreezeCom or [Alvarion](#) BreezeACCESS 2.4 Ghz or 900 MHz subscriber unit (SU). It retrieves and displays the radio band, average power (in dBm or RSSI), and the MAC address of the associated AU. For a 900 MHz unit, it will also display the radio frequency. The probe will go into alarm or warning states based on user-definable parameters for low signal power or high incoming traffic on a specified interface.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.alvarionbasu.txt*

*Version: 1.6*

[Back to Top](#)**Wireless > Alvarion > BreezeACCESS LB*****BreezeACCESS LB***

This probe is meant to probe an [Alvarion](#) BreezeACCESS LB radio, acting as either AP or an SU. It retrieves and displays a number traffic and radio related variables. It will go into alarm or warning states based on user-defined parameters.

This probe is part of the InterMapper Wireless Add-on pack, and requires InterMapper 4.2 or later.

*Filename: com.dartware.wrls.alvarionbalb.txt*

*Version: 0.15*

[Back to Top](#)**Wireless > Alvarion > BreezeACCESS VL (AU)*****BreezeACCESS VL (AU)***

This probe monitors an [Alvarion](#) BreezeACCESS VL access unit (AU). It retrieves and displays the radio band, operating frequency, and number of clients. It will go into an alarm or warning based on user defined parameters for high and low numbers of clients (SUs), and when the operating frequency doesn't match the configured frequency. Traffic information is available for the ethernet and radio interfaces. (To show the ethernet interface, we recommend using the "Display unnumbered interfaces" behavior.)

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.alvarionbavlau.txt*

*Version: 1.6*

[Back to Top](#)**Wireless > Alvarion > BreezeACCESS VL (SU)*****BreezeACCESS VL (SU)***

This probe monitors an [Alvarion](#) BreezeACCESS VL subscriber unit (SU). It retrieves and displays the radio band, operating frequency, average received signal to noise ratio, and the MAC address of the associated access unit (AU). It will go into alarm or warning states based on user-defined parameters for a low signal to noise ratio or high traffic on a specified interface.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.alvarionbavlsu.txt*

*Version: 1.6*

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## **Wireless > Atmel > Atmel AT76C510**

### ***Atmel AT76C510***

This probe monitors devices based on the Atmel AT76C510 chip. Please refer to your device's technical specification to find out the chip type. Sample devices based on AT76C510 chip are as follows: Belkin F5D6130, D-Link DWL 900AP (rev. 1), Netgear ME102, and Linksys WAP11 (ver < 2).

It retrieves and displays information from the AT76C510 MIB using SNMP v1. Depending on the device's operating mode this probe will display different information.

If device is operating as a wireless client or a wireless repeater, the probe will display information about the connection to the parent access point (ESSID, SSID, channel, RSSI, link quality).

If the device is operating as a wireless bridge (either point-to-point or point-to-multipoint), the probe will display the list of authorized MAC addresses.

If the operating mode is a wireless repeater or access point, the probe will monitor the number of clients and list each one with its RSSI/link quality.

It retrieves and displays a number of traffic (bytes received/transmitted) and physical variables (name, MAC address, firmware revision).

This probe may not return complete information to SNMPv1 clients using the community string "public". To fully utilize this probe, you must set the community string to the one with the correct permissions.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.AT76C510.txt*

*Version: 1.4*

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## **Wireless > Basic > IEEE 802.11**

### ***IEEE 802.11***

This probe monitors 802.11 counters from a wireless device that supports the IEEE802dot11-MIB.

### **Parameters**

*Interface index* - enter an interface for the wireless device.

*Tx Failed frames/sec, Tx Retry frames/sec, Rx FCS err fragments/sec, and ACK failures/sec* - enter thresholds for **Warning** and **Alarmp**.

*Filename: com.dartware.wrls.80211counters.txt*

*Version: 0.1*

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## Wireless > Basic > SNMP for Wireless

### ***SNMP for Wireless***

(Previously titled "Wireless - Generic (SNMP MIB-II)")

This is a general probe for monitoring wireless gear for which there is no specific InterMapper probe, but that supports SNMP MIB-2. This probe will gather general traffic information, network connections, etc. It also adds an alarm when traffic on a user-selected interface reaches specified levels.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.generic.txt*

*Version: 1.3*

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## Wireless > Canopy > Canopy (AP)

### ***Canopy (AP)***

This probe monitors a Canopy wireless access point (AP), including basic information, traffic information, and the number of clients associated. It places the device into alarm or warning when the number of clients exceeds the user-defined thresholds.

The default poll interval for this probe is 5 minutes. The default poll interval is an automatic safeguard; polling more frequently has been shown to adversely affect the device.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.canopyap.txt*

*Version: 1.8*

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## Wireless > Canopy > Canopy (SM)

### ***Canopy (SM)***

This probe monitors a Canopy wireless service module (SM).

This probe retrieves and displays a number of variables. It will place the device in alarm or warning states based on user-defined thresholds for high re-registration count, low RSSI, high Jitter, long Round Trip delay, and low Power Level, and give an alarm if the unit is not registered.

Note that the 2x jitter thresholds will only be used when the SM is operating in 2x/2x mode.

To disable any of the thresholds, set their values to 0.

The default poll interval for this probe is 5 minutes. The default poll interval is an automatic safeguard; polling more frequently has been shown to adversely affect the device.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.canopysm.builtin.txt*

*Version: 1.5*

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### **Wireless > Canopy > Canopy Backhaul (45 Mbps/FW 5830)**

#### ***Canopy Backhaul (45 Mbps/FW 5830)***

This probe monitors a Canopy 45Mbps Backhaul radio with firmware 5830 or older, acting as a master or slave.

It monitors and displays a variety of information, including mode and association, range, active channels, transmit and receive modulation and speed mode, current and maximum transmit power, receive power, vector error, link loss, and signal-to-noise ratio. It will go into alarm and warning states based on user-specified levels for the modulation/speed mode, received power, vector error, link loss, and signal-to-noise ratio.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.4 or later.

*Filename: com.dartware.wrls.canopy.backhaul45old.txt*

*Version: 1.6*

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### **Wireless > Canopy > Canopy Backhaul (60 Mbp/FW 5840)**

#### ***Canopy Backhaul (60 Mbp/FW 5840)***

This probe monitors a Canopy 60Mbps Backhaul radio with firmware 5840 or later, acting as a master or slave.

It monitors and displays a variety of information, including mode and association, range, active channels, transmit and

receive modulation and speed mode, current and maximum transmit power, receive power, vector error, and link loss. It will go into alarm and warning states based on user-specified levels for the modulation/speed mode, received power, vector error, and link loss.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.canopy.backhaul45.txt*

*Version: 1.8*

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### **Wireless > Canopy > Canopy Backhaul (Master)**

#### ***Canopy Backhaul (Master)***

This probe monitors a Canopy wireless backhaul master unit, including wireless network and link information. It will give a warning if no slave is associated.

The default poll interval for this probe is 5 minutes. The default poll interval is an automatic safeguard; polling more frequently has been shown to adversely affect the device.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.canopybhm.txt*

*Version: 1.3*

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### **Wireless > Canopy > Canopy Backhaul (Slave)**

#### ***Canopy Backhaul (Slave)***

This probe monitors a Canopy wireless backhaul slave unit. It retrieves and displays a number of variables. It will place the device in alarm or warning states based on user-defined thresholds for low RSSI, high Jitter, long Round Trip delay, and low Power Level, and give an alarm if the unit is not registered.

The default poll interval for this probe is 5 minutes. The default poll interval is an automatic safeguard; polling more frequently has been shown to adversely affect the device.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.canopybhs.txt*

*Version: 1.3*

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**Wireless > Canopy > Canopy CMM Micro**

***Canopy CMM-Micro***

This probe monitors a Canopy CMM-Micro. The device only supports basic SNMP v2c MIBs, no device-specific enterprise information is available.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.canopy.cmmmicro.txt*

*Version: 0.4*

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**Wireless > CB3 > CB3 Bridge**

***CB3 Bridge***

This TCP probe queries a CB3 wireless bridge via a HTTP GET request.

*User* is the username to use when logging in.

*Password* is the password for the User specified above.

*Port* is the CB3's web interface HTTP port.

*Quality Warning* is the value (as a percentage) that the communications quality must fall below for the device to go into the WARN state.

*Quality Alarm* is the value (as a percentage) that the communications quality must fall below for the device to go into the ALARM state.

*Filename: com.dartware.wrls.cb3.old.txt*

*Version: 1.1*

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**Wireless > CB3 > CB3 Deluxe Bridge**

***CB3 Deluxe Bridge***

This TCP probe queries a CB3 Deluxe wireless bridge via a HTTP GET request.

*User* is the username to use when logging in.

*Password* is the password for the User specified above.

*Port* is the CB3's web interface HTTP port.

*Quality Warning* is the value (as a percentage) that the communications quality must fall below for the device to go into the WARN state.

*Quality Alarm* is the value (as a percentage) that the communications quality must fall below for the device to go into the ALARM state.

*Filename:* com.dartware.wrls.cb3.txt

*Version:* 1.4

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### **Wireless > Inscape Data > AirEther AB54 Series AP (AP Mode)**

#### **AirEther AB54 Series AP (AP Mode)**

This probe monitors [Inscape Data](#)'s AB54, AB54E, AB54E Pro Multifunctional AP in Access Point Mode.

*User* is the name of the administrator.

*Password* is the password for the administrator.

*Port* is the Web interface's HTTP port.

*Filename:* com.dartware.wrls.inscape.ab54.ap.txt

*Version:* 1.0

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### **Wireless > Inscape Data > AirEther AB54 Series AP (Bridge Mode)**

#### **AirEther AB54 Series AP (Bridge Mode)**

This probe monitors [Inscape Data](#)'s AB54, AB54E, AB54E Pro Multifunctional AP in Point to Point or Point to Multipoint Bridge Mode.

*User* is the name of the administrator.

*Password* is the password for the administrator.

*Port* is the Web interface's HTTP port.

*Filename:* com.dartware.wrls.inscape.ab54.bridge.txt

*Version:* 1.0

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### **Wireless > Inscape Data > AirEther AB54 Series AP (Client Mode)**

#### **AirEther AB54 Series AP (Client Mode)**

This probe monitors [Inscape Data](#)'s AB54, AB54E, and AB54E Pro Multifunctional AP in Client Mode.

*User* is the name of the administrator.

*Password* is the password for the administrator.

*Signal Strength Warning* is the warning threshold for low signal strength %.

*Signal Strength Alarm* is the alarm threshold for low signal strength %.

*Link Quality Warning* is the warning threshold for low link quality %.

*Link Quality Alarm* is the alarm threshold for low link quality %.

*Expected BSSID* is the expected BSSID. This value will be ignored if blank.

*Port* is the Web interface's HTTP port.

*Filename:* com.dartware.wrls.inscape.ab54.client.txt

*Version:* 1.0

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## **Wireless > Inscape Data > AirEther AB54 Series AP (Repeater Mode)**

### ***AirEther AB54 Series AP (Repeater Mode)***

This probe monitors [Inscape Data](#)'s AB54, AB54E, AB54E Pro Multifunctional AP in Repeater Mode.

*User* is the name of the administrator.

*Password* is the password for the administrator.

*Port* is the Web interface's HTTP port.

*Filename:* com.dartware.wrls.inscape.ab54.repeater.txt

*Version:* 1.0

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## **Wireless > Inscape Data > AirEther CB54 Series Client**

### ***AirEther CB54 Series Client***

This probe monitors [Inscape Data](#)'s CB54, CB54E, and CB5418 wireless client device.

*User* is the name of the administrator.

*Password* is the password for the administrator.

*Signal Strength Warning* is the warning threshold for low signal strength %.

*Signal Strength Alarm* is the alarm threshold for low signal strength %.

*Link Quality Warning* is the warning threshold for low link quality %.

*Link Quality Alarm* is the alarm threshold for low link quality %.

*Expected BSSID* is the expected BSSID. This value will be ignored if blank.

*Port* is the Web interface's HTTP port.

*Filename:* com.dartware.wrls.inscape.cb54.client.txt

*Version:* 1.0

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## Wireless > MikroTik > MT Radio Uplink

### ***MT Radio Uplink***

This probe monitors a MikroTik router and its radio uplink interface. For the AP it monitors general SNMP interface and traffic information, as well as device utilization (CPU, Disk, Memory loads). For the radio uplink interface it monitors name & ssid, frequency, tx/rx rates, strength, and BSSID.

You must manually specify the OID index of the wireless uplink interface. Using Telnet: 1) Login, 2) Enter "interface wireless print oid", 3) The interface index is the last digit of the OIDs, 4) Type this number into the "Wireless Interface" field below.

This probe will raise an alarm in the following situations:

- High Use -- for CPU, Disk, or Memory loads exceeds 90% (default setting of parameter).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

### **Parameters**

*High Use Threshold* - Percentage of use to trigger alarm

*Wireless Interface* - OID of the wireless uplink interface

*Filename:* com.dartware.wrls.mt-1radio.txt

*Version:* 1.13

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## Wireless > MikroTik > MT Routerboard

### ***MT Routerboard***

This probe monitors a MikroTik Routerboard (wireless access point). It monitors the general SNMP interface and traffic information, device utilization (CPU Load, Disk use, and Memory use in percent), and the device's "health" (internal voltages and temperatures).

This probe will raise an alarm in the following situations:

- High Use -- CPU Load, Disk use, or Memory use exceeding 90%.
- Unsafe Temperatures -- Safe ranges of -20°C to 50°C for Board & Sensor temps., -20°C to 70°C for CPU temp.
- Unsafe Voltages -- Safe deviation of -/+ 5% for 12V & 5V, +/- 3% for 3.3V and Core Voltage (either 1.8V or 2.0V).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

### **Parameters**

*High Use Threshold* - Percentage of use to trigger alarm

*High and Low Temperature thresholds* - Enter temperature values (C) to trigger alarms, or keep the default values.

*High & Low voltage thresholds* - enter voltage values to trigger alarms, or keep the default values.

*Filename:* com.dartware.wrls.mt-routerboard.txt

*Version:* 1.5

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## **Wireless > MikroTik > MT Software Only**

### **MT Software Only**

This probe monitors any device that uses MikroTik software (a wireless access point), but does not monitor its wireless interfaces. It monitors general SNMP interface and traffic information and device utilization: CPU Load, Disk use, and Memory use (in percent).

This probe will raise an alarm in the following situations:

- High Use -- CPU Load, Disk use, or Memory use exceeds 90%.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

### **Parameters**

*High Use Threshold* - Percentage of use to trigger alarm

*Filename:* com.dartware.wrls.mt-0radio.txt

*Version:* 1.4

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## **Wireless > MikroTik > WDS Bridge**

### **WDS Bridge**

This probe monitors a MikroTik router in WDS Bridge mode. The probe monitors the Ethernet traffic information, as well as

device utilization (CPU, Disk, Memory loads). The probe also displays the signal strength and tx/rx rates of the wireless link.

You must specify both the MAC address of the other AP, as well as the ifIndex of the wireless interface. The MAC address must be entered as six decimal numbers separated by ":".

To determine the ifIndex of the wireless interface, Telnet to the radio, then:

- 1) Log into the router
- 2) Enter `interface wireless print oid`
- 3) The interface index is the last digit of the OIDs
- 4) Type this number into the "Wireless Interface" field below.

This probe will raise an alarm if the CPU, Disk, or Memory loads exceeds the High Use Threshold.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.mikrotik-wds.txt*

*Version: 1.2*

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## **Wireless > Motorola > PTP 400 Series Bridge**

### ***PTP 400 Series Bridge***

This probe monitors a Motorola PTP400 point-to-point (P2P) Wireless Ethernet Bridge acting as a master or slave.

It monitors and displays a variety of information, including mode and association, range, active channels, transmit and receive modulation mode, current and maximum transmit power, receive power, vector error, and link loss. It will go into alarm and warning states based on user-specified levels for the modulation/speed mode, received power, vector error, and link loss.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.motorola.ptp400.txt*

*Version: 1.1*

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**Wireless > Motorola > PTP 600 Series Bridge**

***PTP 600 Series Bridge***

This probe monitors a Motorola PTP600 point-to-point (P2P) Wireless Ethernet Bridge acting as a master or slave.

It monitors and displays a variety of information, including mode and association, range, active channels, transmit and receive modulation mode, current and maximum transmit power, receive power, vector error, link loss, and signal-to-noise ratio. It will go into alarm and warning states based on user-specified levels for the modulation/speed mode, received power, vector error, link loss, and signal-to-noise ratio.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.4 or later.

*Filename: com.dartware.wrls.motorola.ptp600.txt*

*Version: 0.7*

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**Wireless > Orthogon > Gemini**

***Gemini***

This probe monitors an Orthogon Systems Gemini point-to-point (P2P) Wireless Ethernet Bridge acting as a master or slave.

It monitors and displays a variety of information, including mode and association, range, active channels, transmit and receive modulation mode, current and maximum transmit power, receive power, vector error, and link loss. It will go into alarm and warning states based on user-specified levels for the modulation/speed mode, received power, vector error, and link loss.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.orthogon.gemini.txt*

*Version: 1.7*

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**Wireless > Orthogon > Spectra**

***Spectra***

This probe monitors an Orthogon Systems Spectra point-to-point (P2P) Wireless Ethernet Bridge acting as a master or slave.

It monitors and displays a variety of information, including mode and association, range, active channels, transmit and receive modulation mode, current and maximum transmit power, receive power, vector error, link loss, and signal-to-noise ratio. It will go into alarm and warning states based on user-specified levels for the modulation/speed mode, received power, vector error, link loss, and signal-to-noise ratio.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.4 or later.

*Filename: com.dartware.wrsls.orthogon.spectra.txt*

*Version: 0.7*

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## Wireless > Other > HTTP

### **HTTP**

This probe tests an HTTP server by downloading a specific web page and scanning it for a specific string of HTML.

*URL Path* is the full path of the desired file on the web server (e.g. "/index.html"). The first character must be a '/'.

*String to verify* is a string to verify in the data returned by the HTTP server. For example, if you are retrieving a web page, you might search for "<HTML>" or "<P>" to verify that the data is HTML, or look for a unique string that's only present when the correct page is returned.

*User ID* is the user name typed into the web browser's password dialog. The default is to leave this blank. You should set this parameter if you want to test a web page that requires authentication.

*Password* is the password for the web browser's dialog. The default is to leave this blank. You should set this parameter if you want to test a web page that requires authentication.

*Filename: com.dartware.wrsls.http.txt*

*Version: 1.4*

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## Wireless > Proxim > Proxim AP 2000

### **Proxim AP-2000**

This probe monitors [Proxim](#) AP-2000 access points.

The probe will display the device's general settings, wireless interface RF parameters, security information, and wireless

clients. To show the wireless client list, the device's station statistics monitoring has to be enabled

Some of the alarms/warnings of this probe will not function unless the Proxim device is set to send traps to the InterMapper server. To get the full functionality of this probe, you will need to set your proxim device to send traps to the InterMapper server.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.proximap2000.txt*

*Version: 1.3*

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## **Wireless > Proxim > Proxim AP 4000**

### ***Proxim AP-4000***

This probe monitors [Proxim](#) AP-4000 access points.

The probe will display the device's general settings, wireless interface RF parameters, security information, and wireless clients. To show the wireless client list, the device's station statistics monitoring has to be enabled

Some of the alarms/warnings of this probe will not function unless the Proxim device is set to send traps to the InterMapper server. To get the full functionality of this probe, you will need to set your proxim device to send traps to the InterMapper server.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.proximap4000.txt*

*Version: 1.3*

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## **Wireless > Proxim > Proxim AP 600**

### ***Proxim AP-600***

This probe monitors [Proxim](#) AP-600 access points.

The probe will display the device's general settings, wireless interface RF parameters, security information, and wireless clients. To show the wireless client list, the device's station statistics monitoring has to be enabled

Some of the alarms/warnings of this probe will not function unless the Proxim device is set to send traps to the InterMapper server. To get the full functionality of this probe,

you will need to set your proxim device to send traps to the InterMapper server.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.proximap600.txt*

*Version: 1.3*

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## Wireless > Proxim > Proxim AP 700

### **Proxim AP-700**

This probe monitors [Proxim](#) AP-700 access points.

The probe will display the device's general settings, wireless interface RF parameters, security information, and wireless clients. To show the wireless client list, the device's station statistics monitoring has to be enabled

Some of the alarms/warnings of this probe will not function unless the Proxim device is set to send traps to the InterMapper server. To get the full functionality of this probe, you will need to set your proxim device to send traps to the InterMapper server.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.proximap700.txt*

*Version: 1.3*

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## Wireless > Proxim > Proxim LAN Access Point

### **Proxim LAN Access Point**

This probe monitors [Proxim](#) LAN access points.

The probe will display the device's general settings, wireless interface RF parameters, security information, and wireless clients. To show the wireless client list, the device's station statistics monitoring has to be enabled

Some of the alarms/warnings of this probe will not function unless the Proxim device is set to send traps to the InterMapper server. To get the full functionality of this probe, you will need to set your proxim device to send traps to the InterMapper server.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.proximap.txt*

*Version: 1.3*

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## **Wireless > Proxim > Tsunami GX**

### ***Tsunami GX***

This probe monitors a Proxim Tsunami GX (GX 32 and GX 90).

This probe will raise alarm in InterMapper when the external input status 1 or 2 are in alarm. It also monitors the device's RFU status, IDU and RFU temperatures, RFU status, IDU fan status, IDU synthesizer status, RFU power status, RFU summary/minor relay status, AIS injection status, link status, and the number of errors/sec.

The temperature warning and alarm threshold will only be used if the use custom temperature threshold checkbox is selected.

*Filename: com.dartware.wrls.proximg4.txt*

*Version: 0.3*

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## **Wireless > Proxim > Tsunami MP.11 BSU**

### ***Tsunami MP.11 BSU***

This probe monitors [Proxim](#) Tsunami MP.11 Base Station Unit (BSU). This probe can be used to monitor all MP.11 models, including 2411, 2454-R, 5054, and 5054-R.

Some of the alarms/warnings of this probe will not function unless the Proxim device is set to send traps to the InterMapper server. To get the full functionality of this probe, you will need to set your proxim device to send traps to the InterMapper server.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.proximtmpbsu.txt*

*Version: 1.1*

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## **Wireless > Proxim > Tsunami MP.11 SU**

### ***Tsunami MP.11 SU***

This probe monitors [Proxim](#) Tsunami MP.11 Subscriber Unit (SU/RSU). This probe can be used to monitor all MP.11 models, including 2411, 2454-R, 5054, and 5054-R.

Some of the alarms/warnings of this probe will not function unless the Proxim device is set to send traps to the InterMapper server. To get the full functionality of this probe, you will need to set your proxim device to send traps to the InterMapper server.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.proximtmpsu.txt*

*Version: 1.2*

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## Wireless > Redline > AN50

### **AN50**

This probe is meant to probe a [Redline](#) AN50 point-to-point radio, acting as either a master or slave. It retrieves and displays a number of critical statistics for the radio, and gives alarms if it goes out of user-specified thresholds. The probe retrieves:

**Average RF Rx signal strength** and compares it to the Rx Signal alarm and warning thresholds specified below.

**Average RF SNR** and compares it to the signal to noise ratio alarm and warning thresholds specified below.

**Signaling Burst Rate** The device goes into alarm when the Uncoded Burst Rate is less than the specified code. (Codes are 0=6Mb/s,1=9Mb/s,2=12Mb/s,3=18Mb/s,4=24Mb/s,5=36Mb/s,-6=48Mb/s,7=54Mbs)

**Operating frequency** The device goes into alarm if it's different from the value specified below.

**Radio Link Status** The device goes into alarm if it's not connected.

This probe is part of the InterMapper Wireless Add-on pack, and requires InterMapper 4.2.4 or later.

*Filename: com.dartware.wrls.redlinean50.txt*

*Version: 1.2*

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## Wireless > smartBridges > airBridge

### **airBridge**

This probe monitors a [smartBridges](#) airBridge device. It retrieves and displays a number of traffic (bytes

received/transmitted) and physical variables (name, MAC address).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

Please install InterMapper on a machine where you don't plan to run smartBridges simpleMonitor. To be able to run both InterMapper and smartBridges' simpleMonitor on the same machine, you will need to disable trap processing in InterMapper.

*Filename: com.dartware.wrls.airbridge.txt*

*Version: 1.4*

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### **Wireless > smartBridges > airClient Nexus PRO total**

#### ***airClient Nexus PRO total***

This probe monitors a [smartBridges](#) airClient Nexus PRO total device. It retrieves and displays general device information, remote device information,

wireless statistics information and bridge information (when the device is operating as a bridge).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.airclientnexuspro.txt*

*Version: 0.4*

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### **Wireless > smartBridges > airClient Nexus**

#### ***airClient Nexus***

This probe monitors a [smartBridges](#) airClient Nexus device. It retrieves and displays general device information, remote device information,

wireless statistics information and bridge information (when the device is operating as a bridge).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.airclientnexus.txt*

*Version: 0.4*

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**Wireless > smartBridges > airHaul Nexus PRO total*****airHaul Nexus PRO total***

This probe monitors a [smartBridges](#) airHaul Nexus PRO total device. It retrieves and displays general device information, remote device information,

wireless statistics information and bridge information (when the device is operating as a bridge).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.airhaulnexuspro.txt*

*Version: 0.4*

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**Wireless > smartBridges > airHaul Nexus*****airHaul Nexus***

This probe monitors a [smartBridges](#) airHaul Nexus device. It retrieves and displays general device information, remote device information,

wireless statistics information and bridge information (when the device is operating as a bridge).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.airhaulnexus.txt*

*Version: 0.4*

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**Wireless > smartBridges > airHaul2 Nexus PRO*****airHaul2 Nexus PRO***

This probe monitors a [smartBridges](#) airHaul2 Nexus PRO device. It retrieves and displays general device information, remote device information,

wireless statistics information and bridge information (when the device is operating as a bridge).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.airhaul2nexuspro.txt*

*Version: 0.4*

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**Wireless > smartBridges > airPoint Nexus PRO total**

***airPoint Nexus PRO total***

This probe monitors a [smartBridges](#) airPoint Nexus PRO total device. It retrieves and displays general device information, remote device information,

wireless statistics information and bridge information (when the device is operating as a bridge).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.airpointnexuspro.txt*

*Version: 0.4*

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**Wireless > smartBridges > airPoint Nexus**

***airPoint Nexus***

This probe monitors a [smartBridges](#) airPoint Nexus device. It retrieves and displays general device information, remote device information,

wireless statistics information and bridge information (when the device is operating as a bridge).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.airpointnexus.txt*

*Version: 0.4*

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**Wireless > smartBridges > airPoint**

***airPoint***

This probe monitors a [smartBridges](#) airPoint device. It retrieves and displays information from the AT76C510 MIB using SNMP v1. Depending on the bridge's operating mode this probe will display different information.

If device is operating as a wireless client or a wireless repeater, the probe will display information about the connection to the parent access point (ESSID, SSID, channel, RSSI, link quality).

If the device is operating as a wireless bridge (either point-to-point or point-to-multipoint), the probe will display the list of authorized MAC addresses.

If the operating mode is a wireless repeater or access point, the probe will monitor the number of clients and list each one with its RSSI/link quality.

It retrieves and displays a number of traffic (bytes received/transmitted) and physical variables (name, MAC address, firmware revision).

This probe may not return complete information to SNMPv1 clients using the community string "public". To fully utilize this probe, you must set the community string to the one with the correct permissions.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

Please install InterMapper on a machine where you don't plan to run smartBridges simpleMonitor. To be able to run both InterMapper and smartBridges' simpleMonitor on the same machine, you will need to disable trap processing in InterMapper.

*Filename: com.dartware.wrls.airpoint.txt*

*Version: 1.4*

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## **Wireless > smartBridges > airPoint2 Nexus PRO**

### ***airPoint2 Nexus PRO***

This probe monitors a [smartBridges](#) airPoint2 Nexus PRO device. It retrieves and displays general device information, remote device information,

wireless statistics information and bridge information (when the device is operating as a bridge).

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.4 or later.

*Filename: com.dartware.wrls.airpoint2nexuspro.txt*

*Version: 0.4*

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## **Wireless > Trango > Trango M2400S (AP)**

### ***Trango M2400S (AP)***

This probe monitors a [Trango](#) M2400S access point (AP). It retrieves and displays a number of traffic, physical, and radio status variables. It can go into alarm or warning based on user-defined parameters for transmit power, expected antenna mode, and expected channel. (This probe calculates

counters without using sysUpTime, which isn't available. MIB-2 traffic and interface information is also unavailable.)

This probe is part of the InterMapper Wireless Add-on pack, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.trango2400.txt*

*Version: 1.0*

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## **Wireless > Trango > Trango M5800S**

### ***Trango M5800S***

This probe monitors a [Trango](#) 5800S access point, 5800-AP-60, or 5830-AP-60.

It retrieves and displays a number of traffic, physical, and radio status variables. It can go into alarm or warning based on user-defined parameters for transmit power, number of subscriber unit clients, channel number, incoming traffic on the radio interface, and temperature. (This probe calculates counters without using sysUpTime, which isn't available.)

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.trango10.txt*

*Version: 1.3*

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## **Wireless > Trango > Trango M5830S (SU)**

### ***Trango M5830S (SU)***

This probe monitors a [Trango M5830S SU](#) Subscriber Unit.

You must enter the *password* for the subscriber unit to retrieve the information.

*Note:* Occasionally, these Subscriber Units report extremely high data rates. These rates - in the range of millions of kbps - are seen both by this probe and in the Web interface. To keep the strip charts accurate, we recommend you turn off the Auto-adjust feature for the chart.

*Filename: com.dartware.wrls.trango.M5830SSU.txt*

*Version: 1.1*

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## **Wireless > Trango > Trango M5830S**

### ***Trango M5830S***

This probe monitors a [Trango](#) M5830S access point.

It retrieves and displays a number of traffic, physical, and radio status variables. It can go into alarm or warning based on user-defined parameters for transmit power, number of subscriber unit clients, channel number, incoming traffic on the radio interface, and temperature. (This probe calculates counters without using sysUpTime, which isn't available.)

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.trango20.txt*  
*Version: 1.3*

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### **Wireless > Trango > Trango M900S (AP)**

#### ***Trango M900S (AP)***

This probe monitors a [Trango](#) M900S access point (AP). It retrieves and displays a number of traffic, physical, and radio status variables. It can go into alarm or warning based on user-defined parameters for transmit power, expected antenna mode, and expected channel. (This probe calculates counters without using sysUpTime, which isn't available. MIB-2 traffic and interface information is also unavailable.)

This probe is part of the InterMapper Wireless Add-on pack, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.trango900.txt*  
*Version: 1.3*

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### **Wireless > Trango > Trango P5830S (master)**

#### ***Trango P5830S (master)***

This probe monitors a [Trango](#) P5830S master unit.

It retrieves and displays a number of traffic, physical, and radio status variables. It can go into alarm or warning based on user-defined parameters for transmit power, expected active channel number, and temperature. (This probe calculates counters without using sysUpTime, which isn't available.)

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.trangoP5830SMU.txt*  
*Version: 1.4*

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## **Wireless > Trango > Trango P5830S (remote)**

### ***Trango P5830S (remote)***

This probe monitors a [Trango](#) P5830S remote unit with firmware version 1.11 (040930) or later.

It retrieves and displays a number of traffic, physical, and radio status variables. It can go into alarm or warning based on user-defined parameters for transmit power, incoming traffic on the radio interface, and temperature. (This probe calculates counters without using sysUpTime, which isn't available.)

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later. In InterMapper 4.4, please make sure that you use SNMPv1 to query the device.

*Filename: com.dartware.wrls.trangoP5830SRU.txt*

*Version: 1.6*

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## **Wireless > Tranzeo > Sixth Generation AP**

### ***Sixth Generation AP***

This probe monitors the sixth generation Access Point (AP) from [Tranzeo](#). This series includes AP for the following models: 5A, 5Aplus, 6600, 6500, 6000, 4900, CPQ, CPQplus.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later. Tranzeo is a trademark of Tranzeo Wireless Technologies, Inc.

*Filename: com.dartware.wrls.tranzeo.gen6ap.txt*

*Version: 1.0*

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## **Wireless > Tranzeo > Sixth Generation CPE**

### ***Sixth Generation CPE***

This probe monitors the sixth generation Customer Premise Equipment (CPE) from [Tranzeo](#). This series includes models 5A, 5Aplus, 6600, 6500, 6000, 4900, CPQ, CPQplus, running firmware version 2.0.11 or later.

The probe monitors the received signal strength and compares it to the warning and alarm thresholds below.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later. Tranzeo is a trademark of Tranzeo Wireless Technologies, Inc.

*Filename: com.dartware.wrls.tranzeo.gen6cpe.txt*

*Version: 1.1*

[Back to Top](#)**Wireless > Tranzeo > Sixth Generation PxP*****Sixth Generation PxP***

This probe monitors the sixth generation point-to-point (PxP) equipment from [Tranzeo](#). This series includes models 5A, 5Aplus, 6600, 6500, 6000, 4900, CPQ, CPQplus, running firmware version 2.0.11 or later.

The probe monitors the received signal strength and compares it to the warning and alarm thresholds below.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later. Tranzeo is a trademark of Tranzeo Wireless Technologies, Inc.

*Filename: com.dartware.wrls.tranzeo.gen6pxp.txt*

*Version: 1.0*

[Back to Top](#)**Wireless > Tranzeo > Tranzeo (AP)*****Tranzeo (AP)***

This probe monitors a [Tranzeo](#) 1000, 2000, 3000, 400, or 4000-series all in one device used as an Access Point (AP).

It retrieves and displays a number of variables for basic, traffic, and wireless information. It will go into alarm and warning states based on user-defined parameters for Received Signal level, Expected versus actual Station Channel, and incoming traffic on the radio interface, and gives an alarm when the wireless or ethernet links are reported down.

Supported Models: TR-410, TR-420, TR-430, TR-440, TR-450, TR-4115, TR-4215, TR-4315, TR-4415, TR-4118, TR-4218, TR-4318, TR-4418, TR-4500, and TR-4519. This probe will also support TR-1000, TR-1100, TR-1200, TR-1300, TR-2015, TR-2115, TR-2215, TR-2315, TR-3015, TR-3115, TR-3215, TR-3315, TR-2018, TR-2118, TR-2218, and TR-2318 model radios with firmware version 3.4.31.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.tranzeoap.txt*

*Version: 1.2*

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## **Wireless > Tranzeo > Tranzeo (PXP)**

### ***Tranzeo (PXP)***

This probe is meant to probe a [Tranzeo](#) 1000, 2000, 3000, 400, and 4000-series all in one device used as a PXP (bridge), or as an SAI (station) in router mode.

The probe retrieves and displays a number of variables for basic, ethernet, wireless, and bridge information. It will go into alarm and warning states based on user-defined parameters for Received Signal level, Expected versus actual Station Channel, and incoming traffic on the radio interface, as well as into alarm when the wireless or ethernet links are reported down.

Supported Models: TR-410, TR-420, TR-430, TR-440, TR-450, TR-4115, TR-4215, TR-4315, TR-4415, TR-4118, TR-4218, TR-4318, TR-4418, TR-4500, and TR-4519. This probe will also support TR-1000, TR-1100, TR-1200, TR-1300, TR-2015, TR-2115, TR-2215, TR-2315, TR-3015, TR-3115, TR-3215, TR-3315, TR-2018, TR-2118, TR-2218, and TR-2318 model radios with firmware version 3.4.31.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.tranzeopxp.txt*

*Version: 1.2*

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## **Wireless > Tranzeo > Tranzeo (SAI)**

### ***Tranzeo (SAI)***

This probe is meant to probe a [Tranzeo](#) 1000, 2000, 3000, 400, and 4000-series all in one device used as an SAI (station).

The probe retrieves and displays a number of variables for basic, traffic, and wireless information. It will go into alarm and warning states based on user-defined parameters for Received Signal level, Expected versus actual Station Channel, and incoming traffic on the radio interface, as well as into alarm when the wireless or ethernet links are reported down.

Supported Models: TR-410, TR-420, TR-430, TR-440, TR-450, TR-4115, TR-4215, TR-4315, TR-4415, TR-4118, TR-4218, TR-4318, TR-4418, TR-4500, and TR-4519. This probe will also support TR-1000, TR-1100, TR-1200, TR-1300, TR-2015, TR-2115, TR-2215, TR-2315, TR-3015, TR-3115, TR-3215, TR-3315, TR-2018, TR-2118, TR-2218, and TR-2318 model radios with firmware version 3.4.31.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.tranzeosai.txt*  
*Version: 1.2*

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## **Wireless > Tranzeo > Tranzeo 58XX Series Backhaul**

### ***Tranzeo 58XX Series Backhaul***

This probe is meant to monitor a [Tranzeo](#) 58XX Series Backhaul.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.tranzeo.58xx.backhaul.txt*  
*Version: 1.4*

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## **Wireless > Tranzeo > Tranzeo AP 5A (44R)**

### ***Tranzeo AP-5A (44R)***

This probe is meant to monitor a [Tranzeo](#) TR-AP.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.tranzeo.ap.5A.44r.txt*  
*Version: 1.3*

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## **Wireless > Tranzeo > Tranzeo AP 5A**

### ***Tranzeo AP-5A***

This probe is meant to monitor a [Tranzeo](#) TR-AP.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.tranzeo.ap.5A.txt*  
*Version: 1.3*

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## **Wireless > Tranzeo > Tranzeo Classic**

### ***Tranzeo Classic***

This probe is meant to monitor a [Tranzeo](#) Classic.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.tranzeo.classic.txt*

*Version: 1.3*

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### **Wireless > Tranzeo > Tranzeo CPE 200 (1.77.R)**

#### ***Tranzeo CPE-200 (1.77.R)***

This probe is meant to monitor a [Tranzeo](#) TR-CPE.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.tranzeo.cpe.200.177R.txt*

*Version: 1.4*

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### **Wireless > Tranzeo > Tranzeo CPE 200**

#### ***Tranzeo CPE-200***

This probe monitors a [Tranzeo](#) TR-CPE 200. It has thresholds for alarms and warnings if the signal level gets too low.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.tranzeo.cpe.200.txt*

*Version: 1.6*

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### **Wireless > Tranzeo > Tranzeo CPE 5A (44R)**

#### ***Tranzeo CPE-5A (44R)***

This probe is meant to monitor a [Tranzeo](#) TR-CPE.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.tranzeo.cpe.5A.44r.txt*

*Version: 1.4*

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### **Wireless > Tranzeo > Tranzeo CPE 5A**

#### ***Tranzeo CPE-5A***

This probe is meant to monitor a [Tranzeo](#) TR-CPE.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.3 or later.

*Filename: com.dartware.wrls.tranzeo.cpe.5A.txt*

*Version: 1.4*

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**Wireless > Tranzeo > Tranzeo TR CPE*****Tranzeo TR-CPE***

This probe is meant to monitor a [Tranzeo TR-CPE](#).

It will give a warning at a user-definable threshold for low signal, and an alarm when signal strength is "poor". You will need to enter as parameters your web admin username and password, as well as the SSID of the connection you want information on.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.tranzeocpe.txt*

*Version: 1.2*

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**Wireless > WaveRider > CCU*****CCU***

This probe monitors a WaveRider CCU (access point). It retrieves and displays a number of variables for basic, traffic, and wireless information. It will go into alarm and warning states based on user-defined parameters for radio frequency, percentage of payloads not needing a retry, percentage of payloads sent as broadcast, percentage of payloads discarded, percentage of payloads "Rx PER", percentage of payloads with HCRC errors, "Rx No-Match" errors, and high traffic incoming on the wireless interface. It will also go into an alarm based on the global status indicator.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper 4.2.1 or later.

*Filename: com.dartware.wrls.waveriderccu.txt*

*Version: 1.0*

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**Wireless > WaveRider > EUM*****EUM***

This probe monitors a WaveRider EUM (subscriber unit). It retrieves and displays a number of variables for basic, traffic, and wireless information. It will go into alarm and warning states based on user-defined parameters for radio frequency, percentage of payloads not needing a retry, percentage of payloads discarded, RSSI value, signal strength rating, and high traffic incoming on the wireless interface. It will also go into an alarm based on the global status indicator.

This probe is part of the InterMapper Wireless Probe Bundle, and requires InterMapper X.X or later. (Minor error present in this demonstration version. Full functionality expected with IM 4.3.)

*Filename: com.dartware.wrls.waveridereum.txt*

*Version: 1.1*

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## Experimental

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### Experimental > Flow Exporter Status

#### ***Flow Exporter Status***

This probe monitors a Flow Exporter and reports statistics about Flow activity. It does this by retrieving information from the InterMapper Flows server.

The normal state of the device is UP/OKAY. There are two error conditions:

- If the monitored device does not appear to be a Flow Exporter (it is not listed by InterMapper Flows), the status of the device is set to CRITICAL.
- If the InterMapper Flows server has received no flow records during a poll interval, the status of the device is set to DOWN.

#### **Parameters**

None.

*Filename: com.dartware.flow.exporter.txt*

*Version: 1.2*

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### Experimental > InterMapper

#### ***InterMapper***

This probe monitors the status of the InterMapper polling engine. With the default setting, this probe displays the results of 500 loops through the polling engine. To measure activity at a finer-grain, decrease the value of the *Loops* parameter. A value of '1' updates the statistics on every pass through the main run loop.

The "Main Loop" frequency is the number of times that InterMapper performs the main loop each second. The theoretical maximum loop frequency is 66.667 loops per second, based on the current yield value of 15 msec. If it falls below 10 or even 5 loops per second, InterMapper may report false outages.

This probe also reports polling rate as a percentage of the maximum loops per second. This is a measure of how much additional processing occurs per loop. This percentage will never be 100%. It should, however, level out and remain steady over time.

On Unix systems, this probe reports Context Switches Per Loop (CSPL). This is another measure of the overhead of InterMapper's processing as it runs on your system. Fewer context switches per loop is better (ideal = 0), since context switches carry overhead. A server with thousands of devices and hundreds of mays may well have a CSPL greater than 2 during normal operation. (This value is not available on Windows systems, and is always set to -1.)

InterMapper tracks the number of bytes sent out the main UDP polling socket. Bytes/Loop is the average bytes sent per loop, averaged over the last batch of N loops. Bytes Peak is the maximum number of bytes sent in a \*single\* polling loop. (In the current implementation, the peak bytes is checked on every loop, but only resets to 0 when you change the # loops parameter; ie peak bytes is not the peak bytes of the last batch of N loops.)

### **Parameters**

*Loops* - the number of loops to perform before updating statistics.

*Filename:* com.dartware.tcp.intermapper.txt

*Version:* 0.8

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## **Experimental > sFlow v1.2**

### **sFlow v1.2**

This probe's Status Window shows the sFlow version, address, and address type of the sFlow exporter. It uses the [sFlow MIB version 1.2](#), with the Enterprise Number 4300 to retrieve statistics for sFlow versions 2 and 4.

It also shows the sFlowTable, as an on-demand table. It lists all devices receiving the sFlow records. (To view this on-demand table, you must import [the SFLOW-MIB version 1.2](#).)

### **Parameters**

*Version\_HiWarn* - sFlow version expected. If the exporter version does not match this version, the device is set to a **Warning** state.

*Filename:* com.dartware.sflowv1.2.txt

*Version:* 1.2

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[Back to Top](#)**Experimental > sFlow Vers. 1.3****sFlow Vers. 1.3**

This probe's Status Window shows the sFlow version, address, and address type of the sFlow exporter. It uses the [sFlow MIB version 1.3](#), with the Enterprise Number 14706 for sFlow version 5.

It also shows the sFlow Receiver Table as an on-demand table. It lists all devices receiving the sFlow records. (To view this on-demand table, you must import [the SFLOW-MIB version 1.3](#).)

**Parameters**

*sFlow version* - Enter the version of sFlow to use.

*Filename: com.dartware.sflow.v1.3.txt*

*Version: 1.3*

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## About Packet-Based Probes

### Packet-based Test Procedure

Whenever InterMapper tests a packet-based device, it uses the following procedure:

1. InterMapper sends the appropriate probe packet (ping, SNMP get-request, DNS query, etc.)
2. InterMapper waits the timeout interval specified for the particular device.
3. If a response arrives, InterMapper examines its contents and sets the device status based on that response
4. However, if no response arrives, InterMapper sends another probe packet
5. The above procedure is repeated until a response arrives or the specified number of probes has been sent
6. If no response has arrived after the final timeout, InterMapper sets the device status to Down.
7. In any event, the device is scheduled to be tested again at a time set by the map's (or the device's) poll interval.

The default timeout is three seconds, with a default probe count of three seconds. Consequently, InterMapper will take nine seconds to declare a device is down (three probes, waiting three seconds each). Both the timeout and the number of probes can be set for each device.

This often gives rise to 21 second or 51 second outages. What's happening here is that the device fails to respond to one set of probes (for example, after nine seconds), but responds immediately at the next poll 30 or 60 seconds later. This gives an outage duration to be (30-9=21) seconds or (60-9=51) seconds.

### Shared Polling in Ping/Echo and SNMP Probes

You may have created different maps that poll the same device. For Ping/Echo and SNMP probes (built-in or custom), InterMapper polls a device only once if it is considered to be the same device, and shares the response among all the maps that poll that device.

This happens automatically, and there are no user-controllable parameters.

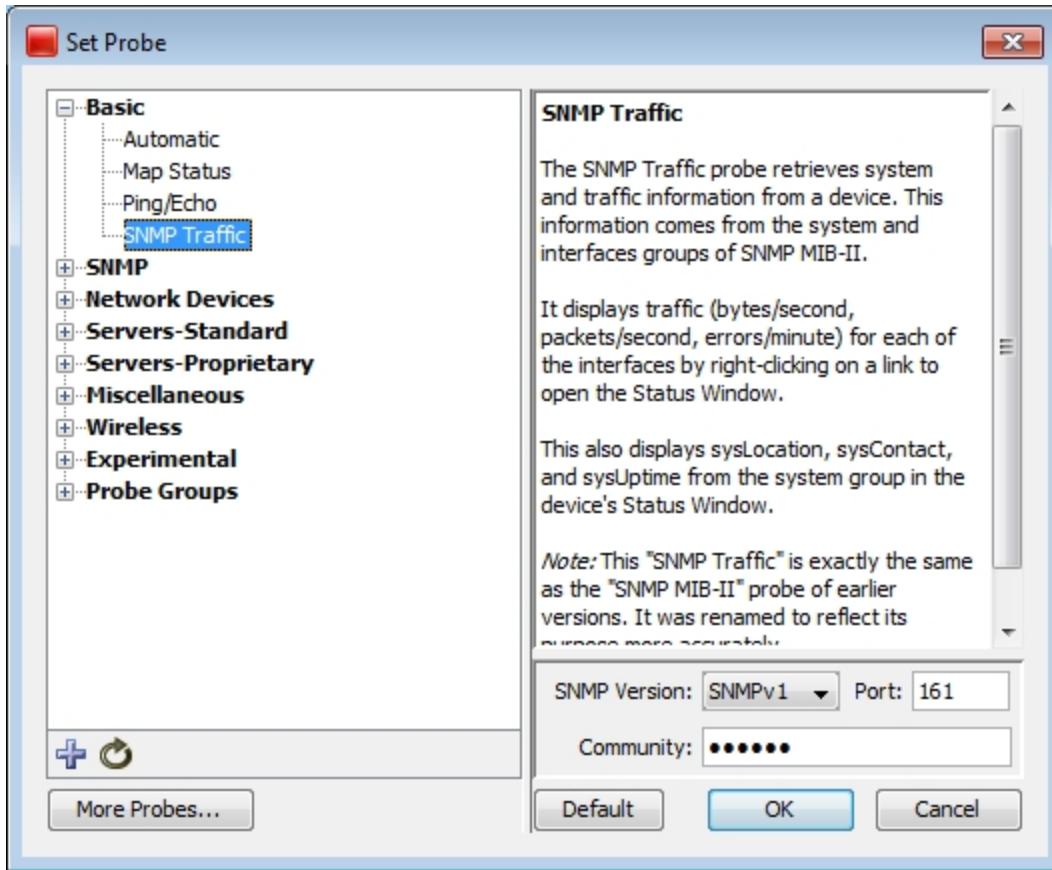
In order for two mapped devices to be considered the same and share the results of a single probe, the following characteristics of the mapped device must be identical:

- Probe Type
- Address
- Port
- Poll Interval
- Timeout
- Max tries
- Display Unnumbered Interfaces, Ignore Discards, Ignore Errors, Allow Periodic Reprobe
- SNMP Version and read-only community string
- Number, name, and value of probe parameters
- SNMPv3 authentication information

For SNMP probes, the following flags in the probe file must be identical. (this is nearly always the case, as it is implied by the probe type, but is still checked explicitly):

- MINIMAL
- NOLINKS
- LINKCRITICAL

## About SNMP Versions



### Using SNMP Version 1, 2c, and 3 in Probes

All SNMP-based probes can use one of version 1, 2c, or 3, at the user's choice. The Probe Configuration window allows you to specify the SNMP version at the same time you set all the other parameters for the probe.

The lower part of the Probe Configuration window displays the SNMP version information. Select the version from the SNMP Version dropdown.

- Selecting SNMPv1 or SNMPv2c will show a field to enter the SNMP Read-only community string.



- Selecting SNMPv3 changes the lower half of the probe configuration window to let you specify all the authentication and privacy parameters. The initial settings show the default settings taken from the Server Settings > SNMP pane. See the [SNMP Preferences \(Pg 227\)](#) page for more details.

SNMP Version:	SNMPv3	Port:	161
Authentication:	MD5		
User Name:			
Privacy:	None		

**Note:** Certain equipment requires SNMPv2 or SNMPv3, and probes can be built to force that selection. If you try to set the SNMP version lower than the probe can support, you will receive an error message.

## Command-Line Probes

Command-line probes execute a command as a command-line on supported platforms. They usually call custom executables on the target machine.

### Command Line Probes

Use the Command Line probe to execute a user-written program or script to test a device. The result code returned from the program sets the device's condition.

When you create a custom command line probe, you usually start with the Nagios Plugin probe.

For more information, see *Command Line Probes* in the [Developer Guide](#).

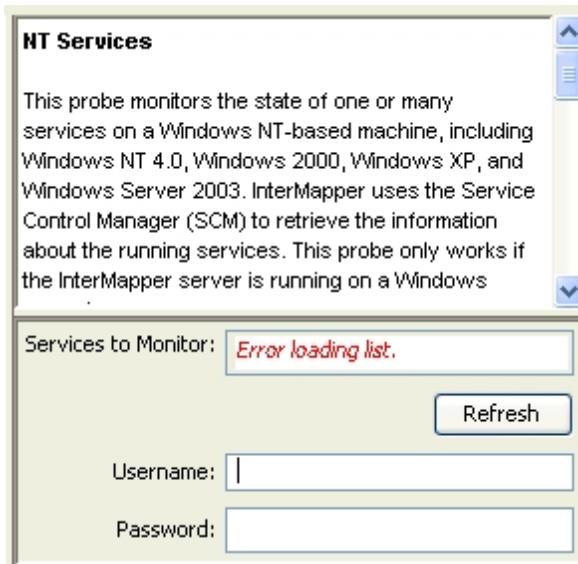
## Monitoring NT Services with the Windows NT Services Probe

InterMapper can monitor and send notifications for NT Services running on another computer. InterMapper uses the Service Control Manager facilities of the underlying Windows host to communicate with a remote computer to track the state of its services.

**Note:** This NT Services monitoring is only available if the InterMapper server is running on a Windows XP, or 2003 computer. You cannot use this facility if you're using a Macintosh or Unix/Linux computer to host the InterMapper server.

The **NT Services** configuration window displays the full list of services that are running on a remote host. You can check off one or many services to monitor; InterMapper will then give an alert if any of them fails. The parameters to the probe are:

- A list of **NT services** on the target machine. This list has red and green marks to indicate whether the service is currently running. Checking the box for the service will cause InterMapper to send an alert if that service ever stops running.
- The **Username** and **Password** required to log onto the target machine.



### Authentication for NT Services Probe

The NT Services probe opens the Service Control Manager (SCM) on the target machine; hence, some authentication is required before this can happen. There are several ways to do this.

1. **Using built-in username and password:** InterMapper has the built-in ability to solicit from you a username and password for authentication. When you choose the NT Services probe, it will prompt you for a username and password before attempting to connect to the target machine. If you have not used one of the methods below, fill in a username and password at that point and click OK. This will be all you need to do for authentication; the username and password will be saved.

**Note:** For this to work, InterMapper must be running as an administrator, as only administrators are empowered to make the required network connections. You can do this in one of two ways:

- The first way is by adjusting the account under which InterMapper is run. InterMapper is normally installed under the LocalSystem account,

which does not have administrator privileges. To change the account under which it runs, follow this procedure: Go into the SCM and stop the InterMapper service if it is running. Right-click and choose "Properties". Choose the "Log On" tab. Under "Log On As...", click the radio button next to "This account:", and click "Browse..." to list the accounts; choose an account with administrator privileges. Fill in the password for the account in "Password:" and "Confirm Password:". Click "OK".

- The second way is to let InterMapper be an administrator when it needs to be by supplying it with an administrator's username and password, so that it can elevate its privileges when it needs to. You can do this using the NT Services item in the Server Settings list. **Note:** In either scheme, the administrator you supply must have been given the "Logon as a service" right in the local security policy of the machine you are monitoring.

2. **The NET USE command:** Another way to authenticate is to use the NET USE command to create a connection between the host machine and the target. For instance, to monitor the services on a host at 192.168.1.140, enter the following:

```
NET USE \\192.168.1.140\ipc$ /USER:Administrator
```

You will be prompted for the password, and the connection will be made. (If you have done this, when prompted for a username and password for NT Services by InterMapper, you can leave them blank and click OK.)

**Note:** You must use the IP address and not the network name for the machine. That is important, as the Windows OS will not see the DNS name or the domain name as being the same as 192.168.1.140 when checking the connections, and will not recognize that there is a connection when InterMapper tries to query the services by IP address, returning an "access denied" error instead.

3. **Synchronizing Users:** A third way to authenticate is to make sure that the user and password under which the InterMapper service is running exists on the target machine as well.

When InterMapper is first installed, it is installed running under the user "LocalSystem", as most services are. It is necessary to create a new user on your machine; let's name it *InterMapper* and give it a password. Make sure it is a member of Administrators. (If you already have a username and password that exist on all machines that are to be targeted by the NT Services probe as well as the InterMapper host and which has Administrator permissions everywhere, you can skip the previous step and substitute it for *InterMapper* in the following.)

Go into the SCM and stop the InterMapper service if it is running. Right-click and choose "Properties". Choose the "Log On" tab. Under "Log On As...", click the radio button next to "This account:", and click "Browse..." to list the accounts; choose *InterMapper*. Fill in the password for the account in "Password:" and "Confirm Password:". Click "OK".

---

On the target machine, create a new user, also named *InterMapper*, with the same password, and also a member of Administrators.

Start InterMapper from the SCM on the original machine. You should now be able to use NT Services probes. (When prompted for a username and password for NT Services by InterMapper, you can leave them blank and click OK.)

#### **A Note About Windows XP Professional**

Windows XP uses a "simple" network scheme by default. In this scheme, all remote connections are mapped to "guest", which has very few permissions, as you might expect. This is the case even if there are other authenticated connections between the two computers. This default configuration prevents InterMapper from opening the SCM on a remote Windows XP machine. Even with correct username and password information, you will get an "access is denied" error.

To turn off this simplified networking: On the remote XP machine, choose Start Menu->My Computer. In the window that opens, choose Tools->Folder Options. Click the View tab. In the Advanced Settings list, scroll to the bottom. Uncheck the box next to "Use simple file sharing (Recommended)". Click Apply or OK. InterMapper should now be able to open the SCM on this machine from afar if you've followed one of the methods above to provide proper authentication.

#### **A Note About Windows XP Home**

The NT services probe does not work with an XP Home computer.

#### **A Note About Windows XP SP2 and Firewalls**

If you have Windows XP SP2 or have installed your own firewall on the target machine, you will need to make sure that there are holes in the firewall for the probe. If you are using a default installation of Windows XP SP2, then in the Windows Firewall settings, there is probably a default exception for File and Printer Sharing. If there is, you can simply check this exception, and you will be done.

If there is not, or if you are using different firewall software, you will need to add exceptions for port 137 (UDP), port 138 (UDP), port 139 (TCP) and port 445 (TCP).

Note that if your host machine is Windows XP SP2 or has a firewall, the same holes need to be open for NT Services probes to work.

## A Note on Error Messages

InterMapper may encounter authentication errors when attempting to connect.

Here is a list of the messages and ways you might work around them:

- **Error attempting to elevate privileges.** InterMapper is not running as an administrator, and thus needs to elevate its privileges in order to be able to execute the NT Services probe. It could not do so. Make sure a correct username and password for the InterMapper host machine have been supplied in the NT Services panel of the Server Settings dialog. Make sure the user given has the right to log on as a service in your Local Security Policy. If host machine is Windows Server 2003 or newer, make sure the user has the right to impersonate another user.
- **Could not establish Windows Networking connection to probe target.** When a username and password have been supplied for the target machine, InterMapper attempts to use them to create a connection between the host and the probe target. This attempt failed for some reason. Will be followed by more specific error information. See below.
- **Could not open SCM on probe target.** InterMapper could not open the Service Control Manager on the target machine. Will be followed by more specific error information. See below.

The following errors might be appended to the messages above:

- **Access is denied.** Make sure InterMapper is running as an administrator, or that an administrator username and password have been provided in the NT Services panel in the Server Settings dialog. Make sure a valid administrator username and password have been supplied for the probe target. If the probe target is running Windows XP, make sure that "Simple Networking" is turned off.
- **The network name cannot be found.** and **The network path was not found.** The device you have specified does not appear to exist on the network. If you are sure that it does, make sure it is a Windows machine with File and Print Sharing turned on, and that any firewall has exceptions for File and Print Sharing.
- **An extended error has occurred.** A network-specific error has occurred. It should be followed by more information about the nature of the error. You may need to consult your network administrator.
- **The specified network password is incorrect.** The password you supplied doesn't match the username.
- **No network provider accepted the given network path.** and **The network is not present or not started.** No network is present, or a component of the network has not been started. Consult your network administrator.
- **The RPC server is unavailable.** Make sure that probe target is a Windows machine with File and Print Sharing turned on, and that any firewall has exceptions for File and Print Sharing.

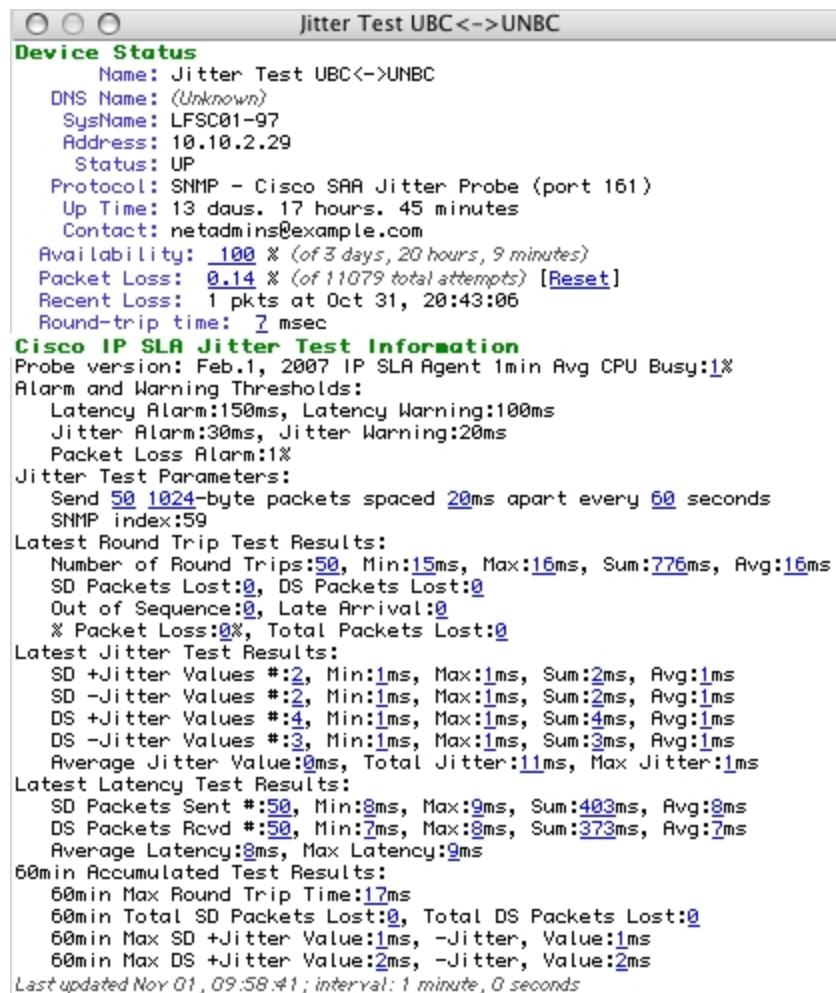
## Cisco IP SLA Probe

IP SLA uses active traffic monitoring - the generation of traffic in a continuous, reliable, and predictable manner - for measuring network performance edge-to-edge over a network. The traffic generated simulates network applications like VoIP and video conferencing, and collects network performance information in real time. The information collected includes data about jitter (interpacket delay variance), latency, and packet loss.

Cisco IP SLA is supported on most IOS-based Cisco routers and switches. IP SLA was previously known as Service Assurance Agent (SAA).

You can easily configure your Cisco routers and switches to be IP SLA agents or IP SLA responders. An agent initiates IP SLA tests to a remote responder. A particular agent can have multiple IP SLA tests running to many remote responders. A particular router or switch can be both an agent and a responder. For each IP SLA test that has been configured the agent collects edge-to-edge network performance information and stores it in the Cisco RTTMON MIB.

### The InterMapper IP SLA Probe



IP SLA Jitter probe output in Status window

The InterMapper Cisco IP SLA Jitter probe uses SNMP to collect the information from the RTTMON MIB in the agent, allowing you to alarm jitter, latency, and packet loss, and to chart these values. You can [download a .zip](#) of the probe.

The InterMapper Cisco *IP SLA Probe* is particularly useful for monitoring and measuring QoS for VoIP and video conferencing applications. However, it is useful in many other contexts including:

- Service level agreement monitoring, measurement, and verification.
- IP network health assessment
- Troubleshooting of network operation

### Documentation

An [IP SLA Probe User Guide](#) describes how to set up the IP SLA testing between two Cisco routers/switches and how to configure the InterMapper probe to monitor the values.

This page shows a sample Status Window for the probe. You can also see a [screenshot with several graphs from a live installation](#).

Extensive documentation about IP SLA and how to configure IP SLA is available on the [Cisco web site](#).

## Big Brother Probes

InterMapper can act as a Big Brother server. [Big Brother](#) is a popular network monitoring tool that allows you to create scripts ("clients") that run on remote systems and send status reports back to the Big Brother server. This allows a network manager to test additional kinds of network devices, either by writing scripts or using some of the many [scripts that are already available](#).

When you specify a device to be tested with a Big Brother probe, InterMapper's built-in Big Brother server listens for messages coming from a Big Brother client on the corresponding machine.

To configure Big Brother probe, you need to set two parameters:

- **Port** - The default port is 1984, but you may choose a different port. If you choose a different port, make sure that the Big Brother client on the corresponding machine is also configured for the same port.
- **Purple Time** - This is the number of minutes to wait without a report before indicating a problem. In an actual Big Brother server, this is thirty minutes; Big Brother shows a device as purple if it goes this long without reports from the device. InterMapper shows it as DOWN (blinking red).

In order for InterMapper to receive Big Brother messages from the remote client, it must be configured correctly. In particular, the client must be configured so that its BBDISPLAY is set to the IP address of the machine where InterMapper is running.

The Big Brother states will be mapped to InterMapper states as shown in the table below:

<b>Big Brother State</b>	<b>InterMapper Status</b>
Okay (green)	Okay (green)
Attention (yellow)	Warning (yellow)
Trouble (red)	Critical (red)

At the moment, the only messages that InterMapper will process and represent are "status" (and "combo") messages.

Note that the Big Brother server for a given port will not start until at least one device has been configured for that port. Similarly, once the last device for that port has been removed, the server for that port will shut down.

For more information about Big Brother, check the Big Brother web site at <http://www.bb4.com/download.html>. "Big Brother System and Network Monitor" is a trademark of BB4 Technologies, Inc. There's a good description of the Big Brother message format at: [http://www.bb4.org/bb/help/help>Status\\_Message\\_Format.htm](http://www.bb4.org/bb/help/help>Status_Message_Format.htm). You can also look through a large set of [Big Brother clients](#) that can be downloaded freely.

## Troubleshooting Network and Server Probes

- [How do I change the protocol that a device is being polled with? \(Pg 559\)](#)
- [What MIB variables does InterMapper poll? \(Pg 559\)](#)
- [How Does InterMapper Compute Traffic Statistics? \(Pg 561\)](#)
- [How Does InterMapper Compute Utilization for a Link? \(Pg 561\)](#)
- [How Does InterMapper Compute Errors for a Link? \(Pg 561\)](#)
- [Why can't I get a DHCP probe on OSX to work? \(Pg 562\)](#)
- [If I look at the traffic on a link, wait five seconds, and look again, the traffic rates are the same. Shouldn't these numbers be updated? \(Pg 563\)](#)
- [How does InterMapper compute byte and packet rates? \(Pg 563\)](#)
- [How does InterMapper compute time intervals? \(Pg 563\)](#)

### **How do I change the protocol that InterMapper polls with?**

1. Click to select the device you want to change.
2. From the Monitor menu, choose **Info Window**
3. Choose a new probe type from the **Probe Type** dropdown menu. If parameters are required, a parameters window appears for the selected probe type.
4. Enter parameters if necessary, and click **OK**. The device is polled using the new probe type.

For more information, see [Status Windows](#) (Pg 165).

### **What MIB variables does InterMapper poll?**

Anytime InterMapper displays traffic for a link, (using the [SNMP Traffic Probe \(Pg 1\)](#), for example) it polls the following variables:

#### **SNMPv1**

When you set the **SNMP Version** to SNMPv1, the following variables are queried:

<b>MIB Variable</b>	<b>OID</b>	<b>SNMP Version</b>
<b>ifInOctets</b>	1.3.6.1.2.1.2.2.1.10	SNMPv1
<b>ifInUcastPkts</b>	1.3.6.1.2.1.2.2.1.11	SNMPv1
<b>ifInNUcastPkts</b>	1.3.6.1.2.1.2.2.1.12	SNMPv1
<b>ifOutOctets</b>	1.3.6.1.2.1.2.2.1.16	SNMPv1
<b>ifOutUcastPkts</b>	1.3.6.1.2.1.2.2.1.17	SNMPv1
<b>ifOutNUcastPkts</b>	1.3.6.1.2.1.2.2.1.18	SNMPv1

InterMapper examines these two variables to decide whether an interface is up or down:

<b>MIB Variable</b>	<b>OID</b>	<b>SNMP Version</b>
<b>ifAdminStatus</b>	1.3.6.1.2.1.2.2.1.7	SNMPv1
<b>ifOperStatus</b>	1.3.6.1.2.1.2.2.1.8	SNMPv1

InterMapper examines these variables to detect error conditions:

MIB Variable	OID	SNMP Version
<b>ifInDiscards</b>	1.3.6.1.2.1.2.2.1.13	SNMPv1
<b>ifInErrors</b>	1.3.6.1.2.1.2.2.1.14	SNMPv1
<b>ifOutDiscards</b>	1.3.6.1.2.1.2.2.1.19	SNMPv1
<b>ifOutErrors</b>	1.3.6.1.2.1.2.2.1.20	SNMPv1
<b>SNMPv2c</b>		

When you set the **SNMP Version** to SNMPv2c, the following variables are queried:

This variable set is used on an initial scan of the device.

MIB Variable	OID	SNMP Version
<b>ifDescr</b>	1.3.6.1.2.1.2.2.1.2	SNMPv1
<b>ifType</b>	1.3.6.1.2.1.2.2.1.3	SNMPv1
<b>ifMTU</b>	1.3.6.1.2.1.2.2.1.4	SNMPv1
<b>ifSpeed</b>	1.3.6.1.2.1.2.2.1.5	SNMPv1
<b>ifPhysAddress</b>	1.3.6.1.2.1.2.2.1.6	SNMPv1
<b>ifAdminStatus</b>	1.3.6.1.2.1.2.2.1.7	SNMPv1
<b>ifOperStatus</b>	1.3.6.1.2.1.2.2.1.8	SNMPv1
<b>ifName</b>	1.3.6.1.2.1.31.1.1.1.1	SNMPv2c
<b>ifHighSpeed</b>	1.3.6.1.2.1.31.1.1.1.15	SNMPv2c
<b>ifPromiscuousMode</b>	1.3.6.1.2.1.31.1.1.1.16	SNMPv2c
<b>ifConnectorPresent</b>	1.3.6.1.2.1.31.1.1.1.17	SNMPv2c
<b>ifAlias</b>	1.3.6.1.2.1.31.1.1.1.18	SNMPv2c

This variable set is polled to display statistics for the device's operation.

MIB Variable	OID	SNMP Version
<b>ifAdminStatus</b>	1.3.6.1.2.1.2.2.1.7	SNMPv1
<b>ifOperStatus</b>	1.3.6.1.2.1.2.2.1.8	SNMPv1
<b>ifLastChange</b>	1.3.6.1.2.1.2.2.1.9	SNMPv1
<b>ifInUcastPkts</b>	1.3.6.1.2.1.2.2.1.11	SNMPv1
<b>ifInErrors</b>	1.3.6.1.2.1.2.2.1.14	SNMPv1
<b>ifInDiscards</b>	1.3.6.1.2.1.2.2.1.13	SNMPv1
<b>ifOutUcastPkts</b>	1.3.6.1.2.1.2.2.1.17	SNMPv1
<b>ifOutErrors</b>	1.3.6.1.2.1.2.2.1.20	SNMPv1
<b>ifOutDiscards</b>	1.3.6.1.2.1.2.2.1.19	SNMPv1
<b>sysUpTime</b>	1.3.6.1.2.1.1.3	SNMPv1
<b>ifHCInOctets</b>	1.3.6.1.2.1.31.1.1.1.6	SNMPv2c

**ifHCOutOctets** 1.3.6.1.2.1.31.1.1.1.10 SNMPv2c  
**ifInMulticastPkts** 1.3.6.1.2.1.31.1.1.1.2 SNMPv2c  
**ifInBroadcastPkts** 1.3.6.1.2.1.31.1.1.1.3 SNMPv2c  
**ifOutMulticastPkts** 1.3.6.1.2.1.31.1.1.1.4 SNMPv2c  
**ifOutBroadcastPkts** 1.3.6.1.2.1.31.1.1.1.5 SNMPv2c

**Note:** In the SNMPv2c , the input and output MulticastPkts and BroadcastPkts MIB variables replace NUCastPkts variables of the SNMPv1 probe, which are deprecated. HCOctets replace the regular Octets counters. Pkts and errors still use the MIB-II 32 bit counters.

### How Does InterMapper Compute Traffic Statistics?

InterMapper uses `ifInOctets` and `ifOutOctets` to compute the Receive and Transmit bytes/second values, respectively.

The Receive and Transmit packets/second numbers are computed using the sum of the (`ifInUcastPkts` + `ifInNUcastPkts`) and (`ifOutUcastPkts` + `ifOutNUcastPkts`) respectively.

### How Does InterMapper Compute Utilization for a Link?

InterMapper queries a device at specified intervals, and requests a number of SNMP MIB variables. To compute utilization, InterMapper does the following:

1. It queries `ifInOctets` (and `ifOutOctets`) and the `sysUpTime` and `ifSpeed` variables.
2. It subtracts the octet counts from successive samples, and divides by the difference in the `sysUpTime` samples to compute a byte/second rate.
3. It divides the result by the `ifSpeed` variable to compute a percentage of the link's capacity/bandwidth. (If the user has overridden the `ifSpeed` variable, InterMapper uses the user-entered value.)
4. If a network is using a shared baseband link (such as Ethernet, wireless, etc.) InterMapper compares the sum of the transmitted and received bytes/second against the link speed to get the utilization.  
If it's a full-duplex link (such as a frame relay, T-1 or T3, ATM, etc.) then InterMapper compares the higher of the transmitted or received data rate against the link speed.

### How Does InterMapper Compute Errors for a Link?

**Q:** A customer writes,

"I see the Received Discards/Minute and Percent Err values for an ATM AAL5 interface are non-zero and I would like to know which variables were used, and what calculation was used to arrive at these numbers.

"We are also graphing the Percent Err: value. This figure is showing errors and my Cisco support folks wanted to know which MIB variables go into the calculation of this percentage and how they are combined to create this number."

**A:** The Percent Err values were computed as follows:

*The one-way percent errors under the Receive section* are computed by totalling { ifInUcastPkts, ifInNUcastPkts, ifInErrors, ifInDiscards } as follows:

```
PERCENT ERROR = totalErrors / totalPkts;
```

where:

```
totalErrors = dErrs + dDis and  
totalPkts = dUcast + dNUcast + totalErrors
```

and:

```
dUcast = ifCurrStats.inUcastPkts - ifPrevStats.inUcastPkts  
dNUcast = ifCurrStats.inNUcastPkts - ifPrevStats.inNUcastPkts  
dErrs = ifCurrStats.inErrors - ifPrevStats.inErrors  
dDis = ifCurrStats.inDiscards - ifPrevStats.inDiscards
```

**Note:** Either of 'dErrs' or 'dDis' may be forced to zero if you have "IgnoreInterface Errors" or "Ignore Interface Discards" checked.

*The one-way percent errors for outgoing traffic* are similarly computed from the { ifOutUcastPkts, ifOutNUcastPkts, ifOutErrors, ifOutDiscards } statistics.

*The two-way Percent error number* (just below Utilization on the Interface information menu) is the probability given both one-way error percentages that a packet will be lost making the round-trip across the link and back. If the probability of successful transmission is T and the probability of successful receipt is R (and assuming the act of transmission and receive are relatively independent), then the probability of a successful round-trip is T \* R. The probability of error is (1 - T\*R).

T and R are computed from the complement of the one-way percent errors above.

### Why can't I get a DHCP probe on OSX to work?

When running InterMapper on Mac OS X, you need to disable DHCP and PPP and assign a manually assigned static address to the computer running InterMapper.

### To disable DHCP and PPP for all interfaces:

1. Open the Network settings in the System Preferences... application.
2. Choose "Network Port Configurations" from the Show: menu.
3. Disable any ports that have been configured to use DHCP or PPP, even if nothing is plugged into them and they aren't currently being used.

4. If DHCP or PPP is enabled on any interface of your machine, the process "configd" will open UDP port 68, and prevent InterMapper from using it. You can use the Terminal application to test if configd has port 68 open. Type 'sudo lsof -i | grep bootpc' and press return. If configd is listed, you still have DHCP running.
5. If InterMapper still marks the device as down after making these changes, you may need to use a DHCP Message Type of "DHCP-Discover" instead of the default "DHCP-Inform". This setting can be toggled in the DHCP/Bootp probe parameters dialog.

**If I look at the traffic on a link, wait five seconds, and look again, the traffic rates are the same. Shouldn't these numbers be updated?**

The traffic statistics are samples: the numbers do not change until after InterMapper probes the device again.

#### **How does InterMapper compute byte and packet rates?**

SNMP only supplies counts of bytes, packets, or errors, etc. that have passed through or occurred in an interface. These counts increment "forever" (or until the counter rolls over to zero like a car's odometer).

During each poll, InterMapper collects the total traffic and computes the difference with the total traffic from the previous poll. It then divides by the amount of time that has passed to compute the rate (per second or per minute).

**Technical note:** Even when a counter rolls over (e.g., from 999 to 000), InterMapper will compute the traffic rates accurately. Let's say the two successive samples are 995 and 003. InterMapper subtracts the previous count (995) from the new count (003), assumes that the "003" is actually "1003", and gets the proper difference of 8. Although the counters in the SNMP MIB variable are binary numbers, the same arithmetic principles hold. Thus InterMapper can compute these rates accurately.

#### **How does InterMapper compute time intervals?**

To compute the elapsed time accurately, InterMapper uses the `sysUpTime` variable of the device as a timestamp to calculate the time that has elapsed between subsequent two polls. The time elapsed should roughly correspond to the poll interval; however, it is possible for polls to be delayed occasionally so using the change in `sysUpTime` to measure the elapsed time is more accurate.

# Chapter 14

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## Using InterMapper DataCenter

### Configuring InterMapper DataCenter

InterMapper DataCenter is installed automatically when you install InterMapper.

**Note:** Unless you want to do one of the following, you do not need to take any of the steps described in this topic:

- If you want to install and run InterMapper DataCenter from another machine.
- If you want to specify an outgoing email server for error and bug reporting.
- If you want to change the logging setup.

To open the InterMapper DataCenter web UI:

- From the Reports Server pane of InterMapper's Server Settings window, click **Configure...**
- Go to this URL:

<https://127.0.0.1:8182/>

**Note:** If this is a fresh installation, InterMapper DataCenter automatically generates an SSL certificate, used to encrypt communication with your browser and the InterMapper server. Because a new certificate is generated for every installation, the certificate cannot be signed by a recognized certificate authority. As a result, your browser may display a message alerting you to an invalid certificate. To avoid seeing the message in the future, choose the option to continue, and tell your browser to add the certificate to its list of trusted certificates. In some browsers, including Firefox, you may need to click a link on the warning page and use a separate pane to add an exception for the certificate.

You can replace the generated certificate with one of your own by visiting the Services List. Click the Change Settings link for the InterMapper DataCenter Daemon, once initial setup is complete.

### Setting the Password for the Admin Account

Before you can use InterMapper DataCenter from another machine, you must set the password for the InterMapper DataCenter admin account.

#### To set the password for the InterMapper DataCenter admin account:

1. Click the **Settings** tab.
2. In the **Username** box, enter a username. The default username is "admin".
3. In the **Password** box, enter a password.
4. In the **Confirm Password** box, re-enter the password.
5. Click **Save Settings** at the bottom of the page.

**Note:** By default, you can log in to InterMapper DataCenter from the machine it is installed on without any authentication. You can choose to force authentication even on the local machine by unchecking the **Skip authentication for local connections** box, and creating a password as described above.

If you are planning to use an existing database, you are now ready to [configure it \(Pg 566\)](#). If you are planning to use [InterMapper Authentication Server \(Pg 574\)](#), you are also ready to configure it now.

### Setting Up InterMapper DataCenter Logging and Event Collection

InterMapper DataCenter can log status information, connection attempts by InterMapper servers, and error information obtained when connecting to directory services. InterMapper DataCenter logs to a file called *log/imdc.log* within the IMDC install folder. For the location of the log file for your platform, see [InterMapper Files and Folders \(Pg 579\)](#).

#### To set the logging level:

1. Click the **Log** button in the upper-left corner of the page. The Log Viewer appears.
2. From the **Logging Level** dropdown menu, choose the level you want to use.
3. Click **Save**. The InterMapper DataCenter installation is complete.

### Setting up InterMapper DataCenter's Error Reporting

InterMapper DataCenter can report problems and send bug reports to InterMapper Support. To do this, you need to specify one or more SMTP hosts and user information.

#### To set up error reporting:

1. In the InterMapper DataCenter section of the InterMapper DataCenter home page, click the **Settings** tab. The DataCenter Settings page appears.
2. In the Primary SMTP section of the Error Reporting section, enter a **Host**, **Port** (if different from the default), a valid **Username** and **Password** for the email account you want to use to send messages, and a **From** address for the messages. Enter (optional) SMTP settings for a secondary SMTP host.
3. To send an E-mail notification when an error occurs in InterMapper DataCenter, click to select the **On errors, send E-mail to** check box.
4. To send an email notification to Help/Systems when an error occurs, click to select the **Automatically E-mail bug reports to Help/Systems** check box.
5. To test your SMTP connection, click **Send Test E-mail**. A test email message is sent to the specified address.

## Using an Existing Database

InterMapper makes it easy to install and run InterMapper Reports Server using the built-in PostgreSQL database. The database is installed, configured, and registered automatically. To use InterMapper Reports Server, you need only to start the server so that InterMapper reports to it.

If you prefer, you can use another instance of a PostgreSQL database, running on the same machine or on another machine. See Configuring the Database below.

### Configuring the Database

***Use this section only if you want to use an existing PostgreSQL database,*** regardless of whether it is running on the same machine as InterMapper or on a different machine.



#### InterMapper Database

Status: **not yet configured**

Click **Configure** to set up the connection to the database.

[Configure](#)

Use the InterMapper Database section of the InterMapper DataCenter Administration Panel to configure the InterMapper Database used by the Reports Server.

### Configuring a New Installation

When configuring a new installation, follow these steps.

- **Step 1: Choose and configure database to connect to**, or use the default Built-in database.
- **Step 2: Register your InterMapper Server** with the InterMapper Reports server.

#### Step 1: Database Configuration

- A. Choose whether to use the Built-in database, or to connect to an existing external (PostgreSQL) database.
- B. If you choose to use the **Built-in** database, an *intermapper* account is created automatically for InterMapper to use, so you can click **Continue** without adding any additional accounts. You have the option to create one or more user accounts when the database is installed.

(You'll need an additional user account if you want to use pgAdmin, Perl, PHP, Crystal Reports, or some other method to retrieve information from InterMapper Reports Server. If you wish, you can add them later.)

- C. If you choose to use an existing database, enter a **Host , Port, Database Name, Database Username, and Database Password** in the appropriate boxes and click **Continue**. You are finished with Step 1.

**Note:** The user you specify must have, at minimum, CREATE, TEMPORARY,

and CONNECT privileges in order for InterMapper to log data to the database.

- D. If you want to add users, click **Add** to add a user. An unnamed user appears in the User List at left.
- E. Enter a user name in the **Username** box.
- F. Enter a password in the **Password** box and in the **Confirm Password** box.
- G. Select or clear the **Write Access** check box to choose whether a user can make changes to tables (as through pgAdmin).
- H. By default, users can access the database only from the same host as it is running on. Select or clear the **Remote Login** check box to choose whether to grant a user access from any machine on the network.
- I. To create more users, repeat steps D through H.

## **Step 2: Register your InterMapper Server with the InterMapper Database server**

- A. If InterMapper Reports detects an InterMapper server running on the same machine, you are given the option to register that server to export data to the InterMapper Reports Server.
  1. Click **Register Server**. The existing server is registered with InterMapper Reports Server, and you are presented with the option of registering additional servers.
  2. Click **Instructions**, and follow the instructions for each InterMapper server you want to register.
  3. Click **Finish**. The InterMapper DataCenter home page appears, showing that the InterMapper Reports Server is running.

If InterMapper Reports Server is installed on a different machine, you'll need to register your InterMapper server(s) manually. Click **Register Server Manually**.

- B. In InterMapper, view the Server Configuration > Reports Server pane of the Server Settings panel, click **Start**. InterMapper begins sending data to InterMapper DataCenter.

## Changing Settings After Installation

InterMapper DataCenter is installed automatically when you install InterMapper. Once you have configured InterMapper Database, you can change settings as needed from the InterMapper DataCenter Administration Panel.

### To change the settings in the InterMapper Database:

- From the InterMapper DataCenter's Home page, click **Change Settings** in the InterMapper Database box. The InterMapper Database Settings Page appears.

### To view the InterMapper Database log:

- In the InterMapper Database section of the DataCenter Administration Panel, click the **Log** tab. The InterMapper Database log page appears.

## About Retention Policies

You can use data retention policies to average raw data, reducing the amount of data stored. Data retention policies control how often and how much data is averaged, and reduced.

A data retention policy can be applied to a specific map, to one or more devices or interfaces on a map, to an individual dataset, or to all maps on an InterMapper Server. Policies also affect the way InterMapper stores chart data.

## Using Data Retention Policies

Use the Retention Policies pane of the Server Preferences section of the Server Settings window to create and edit retention policies that can be used to specify how data is stored for a particular device or map. For more information, see [Retention Policies \(Pg 246\)](#).

## Configuring InterMapper Database Logging Preferences

Use the InterMapper DataCenter's Log tab to view recent log entries, to set the level of logging you want to the InterMapper Database to use, and to set preferences for the Log tab.

### To change the settings of the Service Log File page:

- Make the changes you want, and click **Save Settings**.

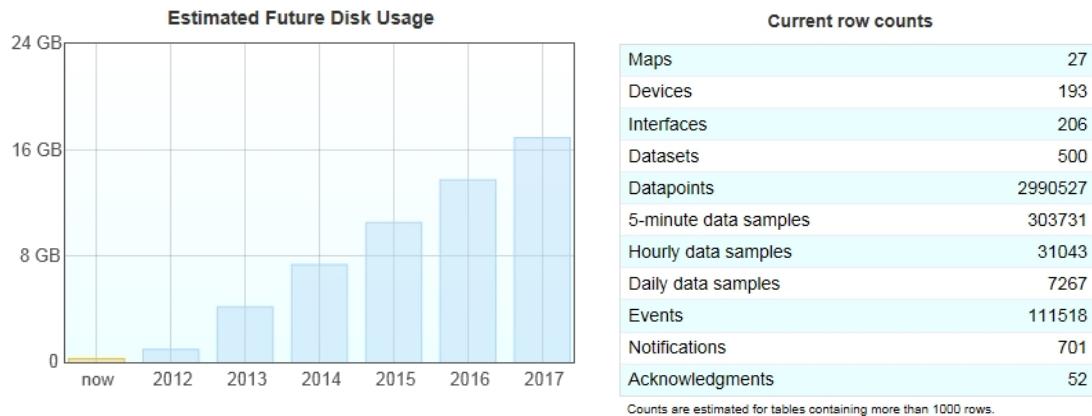
#### *Log levels Explained*

From the Logging Level dropdown menu, choose the logging level you want to use, as follows:

- **Full Debug** - Log minor details such as values read from configuration files and chunks of data arriving as part of directory responses.
- **Connections** (default) - Log authentication attempts, connections by the InterMapper server, and outgoing data.
- **Information** - Log web admin panel logins, changes to configuration and scheduled server tasks.
- **Errors Only** - Log only serious errors, indications of future errors, and possible security problems.

## Reviewing Database Disk Usage

You can view disk usage statistics from the InterMapper Database's Overview page. The following statistics are available:



### How Statistics are Calculated

- Estimated future disk usage is calculated based on the number of devices, datasets, and how retention policies are configured.
- With the exception of **Datapoints**, each row count corresponds to a specific database table, and indicates the number of records in that table. For tables with more than 1000 rows, the value is estimated.
- **Datapoints** is an estimated value.

### To view database disk usage statistics:

- From the InterMapper DataCenter's **Home** tab, click **Overview**. The Overview appears, showing disk usage statistics.

## Configuring Automatic Database Backups

InterMapper Database can automatically create back-ups of its built-in database. Please keep in mind that creating a backup can consume a lot of disk space, and takes time to complete.

### To set up automatic backups:

1. From the InterMapper Database Settings page, click **Automatic Backups**. The Automatic Database Backups page appears.
2. Set the period you want to use for backing up. You do backups daily or weekly.
3. For daily backups, set the time you want the backup to start. For weekly backups, set the day and time.
4. Specify the maximum number of backups you want to store. Once this number of backups is reached, the oldest backup is deleted each time a new one is created.
5. Click **Save Settings**. The backup settings are saved, and backups are created according to the specified schedule.

### *Creating an unscheduled backup*

You can create a backup at any time.

### To create a backup:

- Click **Create Backup**. A new backup file is created immediately. The backup starts immediately. When finished, the backup file is listed in the **Available Backups** box.

### *Restoring a previous backup*

You can restore a previous backup.

1. In the **Available Backups** box, click the backup file you want to restore.
2. Click **Restore**. Data from the selected backup is restored to the InterMapper Database.

### *Viewing backup progress and canceling backups*

When a backup is underway, you can view its progress from the Automatic Database Backups page. You can also cancel a backup while it is underway.

To view backup progress or cancel a backup:

- While the backup is underway, go to the Automatic Database Backups page. The progress bar appears.
- Click **Abort** to cancel the current backup.

## Performing Maintenance Tasks

Use the Maintenance Tasks page to perform these maintenance tasks.

- **Pause Operations** - Sometimes it can be useful to pause import, without stopping the database entirely. This allows you to manually re-cluster or re-index tables, or avoid errors when the InterMapper Server goes down for maintenance. Specify the interval for which you want to pause, then click **Pause Operations**. A Resume Operations button and countdown clock appear. To resume operations at any time, click **Resume Operations**.
- **Data to Delete** - Data retention policies are the recommended way to free disk space on a per-dataset basis. You can also delete data or events across all devices, or you can delete data for deleted devices and interfaces. Please be aware that this operation is permanent and cannot be undone. Specify which data you want to delete (raw data, data samples, events, or date from deleted devices), and a time period over which you want to delete them, then click **Delete**.
- **Apply Retention Policies** and **Reclaim Disk Space**- Retention policies are applied daily, and a maintenance task runs once each week to reclaim unused disk space. You can run both of these tasks manually using these buttons. Both operations can take from a few minutes to a few hours to complete, depending on the size of your database. See [About Automatic Maintenance Tasks](#) below for more information.

### About Automatic Maintenance Tasks

Two tasks are run automatically to clear out data that is beyond its retention policy expiration, and to reclaim unused disk space.

- **Daily task** - runs at 1AM local time each day. It applies retention policies, then uses the PostgreSQL VACUUM command to mark free space for re-use by the database. This is a relatively low-impact process, and does not pause database operations. It does not release disk space for reuse by the operating system.
- **Weekly task** - runs at 1AM local time each Sunday. It uses the PostgreSQL CLUSTER command, and pauses database operations while it runs. This task frees up unused database space, making it available to the operating system.

After you have run one of these tasks, the Disk Usage table shows the freed disk space as available.

## Using the InterMapper Authentication Server

Use the InterMapper Authentication Server to authenticate InterMapper users through an external authentication directory.

### Overview

The InterMapper Authentication Server (IMAAuth) is a component of the InterMapper DataCenter (IMDC) add-on package. It lets an InterMapper server authenticate users against an external authentication directory. IMAAuth supports LDAP, RADIUS, ActiveDirectory, IAS, Kerberos, and DND directories.

IMAAuth acts as an intermediary between an InterMapper server and the directory. If an authentication request comes in from a user whose password is not in InterMapper's local user database, the InterMapper server forwards that request to IMAAuth. IMAAuth translates and passes the request to the directory server, and forwards any responses it receives back to the InterMapper server. In addition, a new user entry is created in the local database, configured for external authentication and assigned to a default group you will have specified for users created this way.

IMAAuth is not a replacement for InterMapper's local user database. You may continue to keep some user passwords in InterMapper's local user database for local authentication while requiring others to be authenticated via IMAAuth. For each user, you must choose one method or the other.

Select the "Use External Authentication" check box in the **Edit User** or **Create User** dialog to indicate that the user should be authenticated via IMAAuth, in which case you should not supply a password. For more information on creating and editing users, see [Users and Groups \(Pg 269\)](#).

### Installing the Authentication server

InterMapper Authentication Server runs as a component of InterMapper DataCenter and is installed automatically when you install InterMapper. On Windows and MacOS X, IMDC is installed automatically alongside InterMapper. On other platforms, you need to download and install IMDC separately.

### Configuring and connecting to your directory

You need to configure the InterMapper Authentication Server to talk to your directory server. This is done from InterMapper DataCenter's web administration page. To do this, start IMAAuth Server as described above, then open a web browser and navigate to: <https://localhost:8182>. You can also click **Configure...** in the Reports Server pane of the Server Settings window.

1. Configure the connection to your authentication directory (LDAP, Radius, ActiveDirectory, Microsoft IAS, Kerberos v5, DND).
2. Configure the connection that an InterMapper server uses to connect to IMAAuth.
3. Configure InterMapper to connect to IMAAuth.

## **Tips and Hints for Various Authentication/Directory Servers**

### **RADIUS / IAS**

IMAAuth acts as a RADIUS client, and so it must be added to the clients section of your RADIUS configuration file or, for Microsoft IAS, the clients section of the IAS configuration pane. You are asked to specify a *secret*, and must then enter exactly the same secret in the IMAAuth RADIUS settings.

### **LDAP**

If you encounter any problems, first try un-checking the *Use SSL* option, or choose *Whenever Necessary* for the *Use Plaintext* option in the IMAAuth LDAP settings. If this works, it means your server wasn't built to include SSL or SASL DIGEST-MD5 password encryption. You'll need to either stay with the lower IMAAuth security settings, or upgrade your LDAP server.

Another thing to look at is the LDAP Base DN specified in the IMAAuth LDAP settings. This tells IMAAuth where in your LDAP directory the user entries are located. This depends on how your directory was set up, but usually takes the form:

`ou=people,dc=example,dc=com`, where example and com correspond to the domain name your directory was set up with. IMAAuth takes the Base DN and attaches the user's name; for example:

`cn=Jane,cn=Smith,ou=people,dc=example,dc=com`.

### **ActiveDirectory**

ActiveDirectory is based on LDAP, but differs slightly in its default configuration. If you are encountering problems with these ActiveDirectory versions, try un-checking the *Use SSL* option or choosing *Whenever Necessary* for the *Use Plaintext* option in the IMAAuth LDAP settings. The Base DN for an ActiveDirectory server will almost always be: `cn=Users,dc=example,dc=com` where *example* and *com* are replaced by the name of the Windows Domain that ActiveDirectory is serving.

Since ActiveDirectory is built around the idea of domains rather than single servers, the username you use to authenticate must have your domain name attached to it. For example, if your normal Windows logon name is *janesmith* and your domain is *example.com*, the username you give when accessing a map with InterMapper or InterMapper RemoteAccess is *janesmith@example.com*.

Almost all ActiveDirectory versions support SSL. If you have provided your own certificate, choosing the *Whenever Necessary* option for the *Use Plaintext* field in the IMAAuth LDAP settings doesn't have much impact on your security. If you really do need the additional encryption, you must perform these steps:

1. Log in to your server as an administrator, and start the *Active Directory Users and Computers* panel.
2. Open the properties for each user who needs to authenticate, and switch to the *Account* tab.
3. Under *Account options*, check the *Store password using reversible encryption* box.

**Note:** Windows cannot apply the change immediately, so you must get that

user to log on to the Windows domain as normal (by signing on to their machine, for example) before the change becomes active.

In this case you might again need to use a different username. Instead of the usual login name, you may need to use the user's full name. For example, instead of *janesmith* you would use *Jane M. Smith*.

When setting up IMAuth, it's a good idea to try the normal login name, the login name with your domain attached, and the user's full name, to see which login your ActiveDirectory server accepts.

### **Kerberos**

For a good introduction to Kerberos, see the following Knowledgebase article:

- [Using Kerberos with InterMapper](#)
- [Supported Kerberos encryption modes](#)

Problems encountered when using Kerberos are usually caused by misconfiguring the InterMapper Authentication Server, or by the values used when creating the `imaauth` service account.

- **Kerberos Domain** - The name, of the Kerberos authentication realm. It is typically all uppercase (Example: `INTERMAPPER.COM`). On Windows, it is almost always the same as the ActiveDirectory domain's name, but upper-cased.
- **KeyServer Address** - The full domain name of the Kerberos key server. On Windows, even on complex networks with multiple ActiveDirectory nodes, only one acts as the Key Distribution Center. The **KeyServer Address** value must match the machine's name *exactly*. For example, if the machine is registered on the network as `ad.intermapper.com`, the **KeyServer Address** must be '`ad.intermapper.com`'; entering the IP address of the machine, or just '`ad`', causes authentication failures.
- **Service Principal** - The service principal name associated with IMAuth on the domain. This is typically the service name (`imaauth`) followed by a forward slash and then the Kerberos key server's full domain name. For example, on Windows, assuming you follow the instructions in the Knowledgebase link above, and created an ActiveDirectory service account called '`imaauth`', the Service Principal value would be '`imaauth/ad.intermapper.com`'. This user account *must also be active* in ActiveDirectory; disabling the account is a common mistake that causes authentication failures.

## Data Collecting and Reporting

Use the InterMapper Reports Server to collect data you can use for analysis and to create custom reports.

InterMapper Reports Server is a module of InterMapper DataCenter. [InterMapper DataCenter \(Pg 564\)](#) is installed automatically when you install InterMapper Server on Windows and Mac OS. It is a separate download on other platforms.

Use the Reports Server panel, available from the Server Configuration section of the Server Settings panel, to start and stop collecting data. You can also configure InterMapper to connect to a remote database server, and specify the intervals at which data is stored. For more information, see [Reports Server \(Pg 257\)](#).

### Collecting Data for a Device or Interface

You can collect data for any device in any map. Use the Set Data Retention command, available from the Monitor menu or the device or interface's **Set Info** context menu to specify how long the data from the device or interface is retained, and at what resolution.

The default server-wide Data Retention Policy is **24 Hours** (except for devices and interfaces associated with charts created in 4.6 or earlier). You can also create and select a different retention policy as the server-wide default policy:

- For all *maps*, choose **Inherit** to use the specified server-wide default policy, as set in the Server Settings window. You can also specify a default Data Retention policy for a map that is different from the server's default policy.
- For all *devices*, choose **Inherit** to use the specified map-wide default policy, as set in the Map Settings window. You can also specify a default Data Retention policy for a device that is different from the map's default policy.
- For all *interfaces*, choose **Inherit** to use the specified device policy, as set in the Device Info window. You can also specify a default Data Retention policy for an interface that is different from the device's policy.
- For devices and interfaces associated with charts created in 4.6, the default Data Retention policy is **IM46Charts**.
- If you do none of the above, the default server-wide policy is applied automatically.

**Note:** Data Retention Policies are applied individually, not in sequence. For example, specifying an hourly data expiration of two days now causes hourly samples to be deleted after two days, instead of two days plus the raw and custom expirations.

## Retention Policies in Status and Info Windows

A device or interface's current Retention Policy is shown in the Status and Info windows. In the Status window, the information appears as follows:

Retention Policy: PolicyName, [Not] Exportable

- **Policy** - the policy name as created in InterMapper Reports Server.
- **Exportable/Not Exportable**
  - **Exportable** appears if the parameters of the policy are such that they cause data to be exported to the database.
  - **Not Exportable** appears if the parameters of the policy are such that they will not cause data to be exported to the database (the None policy, for instance).

## Getting Data From the Database

The Reports Server is the easiest way to get data from the Reports Server database, but you can use your own method for retrieving data from the InterMapper Database using SQL queries. There are several example reports written for Crystal Reports and OpenRPT, as well as several perl scripts available. For more information, see *Retrieving Data From the InterMapper Reports Server* in the Developer Guide.

# Chapter 15

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## InterMapper Files and Folders

InterMapper saves its files in specific folders. In particular, the following file and folders have special locations:

- **The InterMapper application folder** - If applicable, it contains the actual InterMapper Application.
- **The InterMapper RemoteAccess application folder** - If applicable, it contains the actual InterMapper Application.
- **The InterMapper Settings folder** - Contains all InterMapper server settings file as well as several folders containing various information used by InterMapper. For detailed information its contents, see [InterMapper Settings \(Pg 583\)](#).
- **The InterMapper DataCenter folder** - contains the data storage for all installed components of InterMapper DataCenter, as well as a number of other files. For detailed information on the contents of the InterMapper DataCenter folder, see [InterMapper DataCenter Folder \(Pg 585\)](#).
- **The InterMapper Flows folder** - contains data storage for Flows data as well as a number of other files.

## File Locations

The locations of these files and folders differ slightly between operating systems as described below.

### *InterMapper Application Folder*

OS	Location of InterMapper Application files
<i>Windows 64-bit</i>	C:\Program Files (x86)\InterMapper
<i>Windows 32-bit</i>	C:\Program Files\InterMapper
<i>Mac OS X</i>	Binary files (intermapperd, intermapperauthd) are placed in /usr/local/bin, unless a different location was chosen at installation.
<i>Unix, and Linux</i>	Binary files (intermapperd, intermapperauthd) are placed in /usr/local/bin, unless a different location was chosen at installation.

***InterMapper Settings Folder***

For detailed information on the contents of the InterMapper Settings folder, see [InterMapper Settings \(Pg 583\)](#).

<b>OS</b>	<b>Location of InterMapper Settings files</b>
<i>Windows 7 &amp; Vista</i>	C:\ProgramData\InterMapper\InterMapper Settings
<i>Windows XP &amp; Server 2003</i>	C:\Documents and Settings\All Users\Application Data\InterMapper\InterMapper Settings, unless a different location was chosen at installation.
<i>Windows - all</i>	<b>Note:</b> Prior to version 5.5, the InterMapper Settings folder was stored in the InterMapper Application folder. See the <a href="#">table above (Pg 579)</a> for details.
<i>Mac OS X</i>	As specified in /etc/intermapperd.conf (Usually /Library/Application Support/InterMapper Settings/)
<i>Unix and Linux</i>	As specified in intermapperd.conf (Usually /var/local/InterMapper Settings/)

***InterMapper RemoteAccess Application Folder***

<b>OS</b>	<b>Location of InterMapper RemoteAccess files</b>
<i>Windows 64-bit</i>	C:\Program Files (x86)\InterMapper RemoteAccess
<i>Windows 32-bit</i>	C:\Program Files\InterMapper RemoteAccess
<i>Mac OS X</i>	Binaries (intermapperd, intermapperauthd) are placed in /usr/local/bin, unless a different location was chosen at installation. Configuration file (intermapperd.conf) is placed in /etc.
<i>Unix and Linux</i>	Binaries (intermapperd, intermapperauthd) are placed in /usr/local/bin, unless a different location was chosen at installation. Configuration file (intermapperd.conf) is placed in /etc.

***InterMapper DataCenter Folder***

For detailed information on the contents of the InterMapper DataCenter folder, see [InterMapper DataCenter Folder \(Pg 585\)](#).

<b>OS</b>	<b>Location of InterMapper DataCenter files</b>
<i>Windows 64-bit</i>	C:\Program Files (x86)\...
<i>Windows 32-bit</i>	c:\program files\intermapper\dwf
<i>Mac OS X</i>	/usr/local/imdc
<i>Unix, and Linux</i>	/usr/local/imdc

***InterMapper Flows Folder***

<b>OS</b>	<b>Location of InterMapper Flows files</b>
<i>Windows 64-bit</i>	<ul style="list-style-type: none"><li>• (Flows files) C:\Program Files\ns2flows</li><li>• (Database) C:\Program Files\ns2flows\SESSIONDB</li></ul>
<i>Windows 32-bit</i>	<ul style="list-style-type: none"><li>• (Flows files) C:\Program Files\ns2flows</li><li>• (Database) C:\Program Files\ns2flows\SESSIONDB</li></ul>
<i>Mac OS X</i>	<ul style="list-style-type: none"><li>• (Flows configuration files) /Library/Application Support/ns2flows</li><li>• (Database) /Library/Application Support/ns2flows/SESSIONDB</li></ul>
<i>Unix and Linux</i>	<ul style="list-style-type: none"><li>• (Flows files) /opt/ns2flows</li><li>• (Database) /opt/ns2flows/SESSIONDB/</li></ul>

## Making Backups

InterMapper saves its state the *InterMapper Settings* folder.

As described in [InterMapper Files and Folders](#), the InterMapper Settings folder is in different locations, depending on whether it is installed in Windows or Unix/Linux/Mac OS X.

### To backup InterMapper on any of these systems,

- Back up the *InterMapper Settings* folder.

**Note:** When making backups of the InterMapper Settings folder on Windows installations, it is important to stop the InterMapper Server before making a backup, or make sure that your backup mechanism allows files to be accessible by InterMapper simultaneously. Opening certain types of chart or log files can cause them to be inaccessible to InterMapper, causing the InterMapper Server to stop abruptly.

## Retaining Copies of Maps in Older Formats

A new version of InterMapper can use a file data structure which is different from previous versions. To preserve the ability to "go back" to an earlier version, InterMapper creates a copy of the current maps when you install a new version of InterMapper, named with the new version number. This becomes the which contains active maps.

The old maps are moved to a folder named with the previous version number. If you need to revert to an earlier version of InterMapper, you can get your original maps from the folder whose name corresponds with the version you want to run. In subsequent releases, the folder that corresponds to the current version is used automatically.

## The InterMapper Settings Folder

The InterMapper Settings folder contains all the settings, preferences, and configuration of InterMapper. The location of this folder varies, depending on your platform. For more information, see [Files and Folders \(Pg 579\)](#).

The InterMapper Settings folder contains the following items:

- **Certificates folder** - Contains certificates used by secure servers to verify that they are the InterMapper servers they claim to be. Also contains key files and pending certificate signing requests.
- **Chart Data folder** - Contains the saved data of charts. When InterMapper starts up, it reads the data from these files to restore the charts' history.
- **Custom Icons folder** - Contains custom icons you add to maps to enhance InterMapper's built-in icon set. See [Custom Icons \(Pg 96\)](#) for details about making and adding custom icons.
- **InterMapper Logs folder** - Contains text files that log events that InterMapper has detected.
- **InterMapper Prefs file** - Contains the current settings of all InterMapper preferences.
- **Maps folder** - Contains maps saved from InterMapper. All maps in this folder are opened automatically when you start InterMapper.
  - **[Version Number] folder** - For each version of InterMapper that has been installed, (starting with 5.4) a new folder is created for each version. Maps from a previous version are copied into the new folder, which becomes the active maps folder. The folder for each new version contains a Disabled folder and a Deleted folder.
    - **Enabled folder** - Contains maps that have been disabled by removing the check mark in the Map Files panel of the Server Settings window.
    - **Disabled folder** - Contains maps that have been disabled by removing the check mark in the Map Files panel of the Server Settings window.
  - **Deleted folder** - Contains maps that have been removed using the Map Files panel of the Server Settings window.
  - **Backups folder** - Contains backups created using the Backup command.
- **MIB Files folder** - Contains SNMP MIB files that ship with the product, or have been added using the **Import > MIB...** command. InterMapper parses the MIB files in this folder and uses the information to convert between variable names and OIDs.
- **Probes folder** - Contains built-in and custom probes. Probes are text files that add functionality to InterMapper so that it can test new devices. See Customizing InterMapper's Probes for details about creating and customizing probes.

**Note:** Built-in probes are stored in a ZIP archive named `BuiltinProbes.zip`. To view or modify a built-in probe, you'll need to unzip the archive. InterMapper scans the archive as

well as the unzipped contents of the folder. If a built-in probe's filename matches an unzipped version, the probe's version number, then the last-modified date, is used to determine which probe is the most recent. If you are developing or modifying a built-in probe, be sure to advance the version number to be sure that InterMapper uses the modified version.

- **Sounds folder** - Add .aiff, .wav, and other sound files to this folder to make them available for InterMapper notifications. For more information on sounds and how to use them, see [Configuring a Sound Notifier \(Pg 133\)](#)
- **Web Pages folder** - Contains the template and target files that describe the web pages that the InterMapper server displays. See Customizing Web Pages for details about customizing these pages.
- **InterMapper User List folder** - Previous versions of InterMapper kept the user list in a separate file. Now, these user and group settings have been incorporated into the *InterMapper Prefs* file. You may leave this file in place without affecting InterMapper's operation.
- **Tools folder** - Contains executable files (or aliases/links/shortcuts to them) that will be used as command-line probes or notifiers.
- **Fonts folder** - (optional) Contains TrueType fonts used by the web server.

**Note:** On Windows machines, the Windows font directory is also available, giving access to all available TrueType fonts installed on the machine. On Macs, InterMapper looks in */Library/Fonts* and */System/Library/Fonts*, as well as in the */InterMapper Settings/Fonts* folder.

- **Temporary folder** - When files are uploaded, they are initially uploaded and saved into this directory until the upload is complete. At that point, they are moved into a more appropriate directory. If something goes wrong, and an upload is interrupted, a file may remain in the "Temporary" directory.

When you exit InterMapper, it leaves the files in the Temporary directory alone, so debugging information can be collected. When InterMapper starts up, it checks the Temporary directory, and deletes all files in it. Therefore, InterMapper users should not rely on the contents of the Temporary directory remaining long, and should not park files there.

## InterMapper DataCenter Folder

The InterMapper DataCenter folder, named `dwf` on Windows systems and `imdc` on Mac/Linux/Unix systems, contains a number of folders related to InterMapper DataCenter and its components. The folder location depends on the operating system. For more information, see [InterMapper Files and Folders \(Pg 579\)](#).

### Folders common to all platforms

All platforms contain the following folders:

- **config** - Contains the database storage, including configuration information for InterMapper DataCenter and its components.
- **core** - Contains InterMapper-distributed versions of PostgreSQL and Python, as well as license information about third-party products used or distributed.
- **imauth** - Contains python objects, HTML, text, etc., for the InterMapper Auth Server component.
- **imdatabase** - Contains python objects, HTML, text, etc., for the InterMapper Database component.
- **imdc** - Contains python objects, HTML, text, etc., common to all IMDC components and for the InterMapper DataCenter setup, configuration, etc.
- **imreports** - Contains python objects, HTML, text, etc., for the InterMapper Reports component.
- **log** - Contains logs for all InterMapper DataCenter components.

### Platform-specific folders

#### Mac OS

The Mac platform also contains:

**sbin** - This contains a script used by `launchctl` to start and stop the InterMapper DataCenter daemon.

#### Linux/Unix

The Linux/Unix platform also contains:

**sbin** - This contains a script used by the platform's load daemon to start and stop the InterMapper DataCenter daemon, as well as assorted other scripts.

# Chapter 16

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## Importing and Exporting Maps

### Exporting Data From Maps

InterMapper exports data about the devices on its maps. This makes it possible to use the map data in a number of ways, for example:

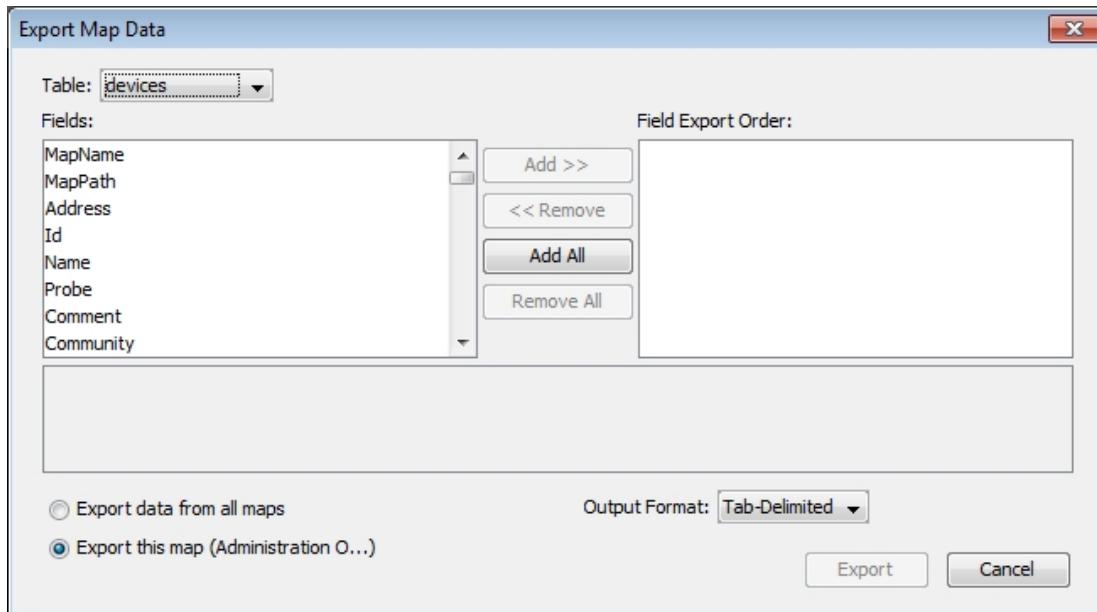
- To review the map's configuration to check for consistency
- To edit the map data using some external tool, and then re-import it (using the [Import Command \(Pg 588\)](#) ) back into the map, updating the affected devices.
- To use the configuration in some down-stream application

You can export data for *all maps*, for *the current map*, or only for *selected items in the current map*.

**Note:** You can automate the exporting of map data by sending commands to InterMapper RemoteAccess through its command-line interface or through the HTTP API. This allows you to interact with InterMapper through your own scripts. For more information, see [Command-line options for RemoteAccess](#), (in this manual) as well as *InterMapper HTTP API* in the [Developer Guide](#).

### Types of data you can export

<b>Map</b>	Save a copy of the map from the server on which it's running to a file on a local computer. A standard File Save dialog appears.
<b>Data file</b>	Save a text file containing information about a map in one of these formats: <ul style="list-style-type: none"><li>• <b>Tab-delimited</b> - creates a text file with all field data separated by tab characters.</li><li>• <b>CSV</b> - creates a text file with all field data separated by commas.</li><li>• <b>HTML</b> - creates a text file containing field data in HTML tables.</li><li>• <b>XML</b> - creates a text file containing field data in XML format.</li></ul>
<b>Image file</b>	A standard File Save dialog appears. Save a PNG image of the current map. A standard File Save dialog appears.



The Export Map Data window.

### To export map data:

1. From the File menu's Export submenu, choose **Data File...** The Export Map Data window appears as shown below.
2. From the **Table** drop-down menu, choose **devices** (device attributes), **vertices** (appearance attributes), **maps**, **notifiers**, **users**, or **schema** (output file attributes).
3. From the **Fields** box, click to choose the fields you want to export. *Shift-click* to select a contiguous series, or *Ctrl-click* to choose non-contiguous fields.
4. Click **Add>>**. The selected fields appear in the **Field Export Order** box. If you want to export all fields, click **Add All**.
5. In the **Field Export Order** box, drag the field names up or down to set the order you want the fields to appear in the export file.
6. Click to choose **Export data from all maps** or **Export this map**.
7. If you want to export data only for the selected items on the map, click **Only export selected items**.
8. From the **Output format** drop-down menu, choose **Tab-delimited**, **CSV**, **HTML**, or **XML**. For information on these formats, see the table above.
9. Click **Export**. A standard File Save dialog appears.
10. Choose a name and location for the export file, and click **Save**. The export file is saved in the specified location.

## Importing Data

InterMapper can import data from a text file to update information about devices on a map, or information about Users or Groups. This is useful for:

- New customers who want to import the devices/probe types from their current monitoring system (or information that's already present in a spreadsheet or other format) into InterMapper.
- Customers who make frequent updates to existing devices on maps.
- Customers who frequently add new devices to maps. They want to enter information about new customers to a database, then export the new device information to a file that can be bulk-imported into InterMapper.
- Customers who want to make systematic changes to their maps. They can export the InterMapper map as, say, tab-delimited data, then edit columns in a spreadsheet/database, then re-import, letting InterMapper merge the new information onto the existing devices. This is useful for wholesale label changes, switching IP addresses, etc.
- Customers who want to import a list of users from another source for authentication purposes.

### To import data:

1. Create an import file as described in [Creating an Import File \(Pg 589\)](#).
2. In the Map List window, click to select the server to which you want to import map data, or open a map on that server.

**Note:** The import file contains the name of the map. If the map does not exist, it is created automatically.

3. From the File menu's **Import...** submenu, choose **Data File...** A standard file dialog appears.
4. Select the file you want to import and click **Open**. If the map data is valid, devices are added or updated on the specified maps as appropriate. If the specified map does not exist, one is created automatically.

**Note:** You can automate the importing of map data by sending commands to InterMapper RemoteAccess through its command-line interface or through the HTTP API. This allows you to interact with InterMapper through your own scripts. For more information, see [Command-line options for RemoteAccess](#), (in this manual) as well as *InterMapper HTTP API* in the [Developer Guide](#).

When importing data in Tab/CSV/XML formats, foreign characters must be presented in the same way as the output of the **Export** command:

- Characters with values less than 255 can be imported directly.
- Character values greater than 255 must be escaped using the standard XML format (&# [character code]).

## Creating An Import File

Since a missing tab can cause errors in an import by causing data to be imported into the wrong fields, creating a file from scratch in a text editor is relatively error-prone. The following methods are recommended for creating import files quickly and accurately:

- [Export a map \(Pg 586\)](#), then edit the file.
- [Use a spreadsheet application \(Pg 590\)](#) such as Excel to create a tab-delimited file.
- Generate a file algorithmically from a database. This may be useful if you plan to update maps regularly.

An import file is text file, formatted as follows:

- **The first line of the file specifies the format of the following lines** - it specifies the file format ("tab" in the example below), the table to be filled ("devices") and the order of the fields. Three fields must be specified: MapName, Address, and Probe; the remaining fields are optional.
- **Remaining lines contain the data for the devices you want to import**
  - Each device occupies a single line, and the data columns are separated by tabs (a "tab-delimited" file.) Each column corresponds to a field in the **fields** specification of Line 1.

### ***Line 1 - specifying the format for the import file data***

The first line of the file determines the method you are going to use for importing, and can provide you with a significant amount of control over how devices are imported. There are two different methods you can use for importing; each uses a different format for the first line of the file:

- **Spreadsheet-style import** - This technique is used only for adding new devices to a map. The first line of the file contains the column names associated with the data in the remaining lines. This is the recommended method. Once you have created this file, it is easy to change the first line to a Directive line.
- **Directive line** - This method gives you a large amount of control over the import process. In addition to inserting new devices, you can update specific attributes of existing devices, change their appearance or location, and delete them. This technique is documented in [Advanced Data Importing \(Pg 600\)](#) in the References section.

### **Notes:**

- For either style of importing, data is set only in those fields whose **Access** value is specified as "READ-WRITE" in the *Device Attributes* and *Vertex Attributes* topics, found in the in [Advanced Data Importing \(Pg 600\)](#) in the References section.
- Text files should be encoded in UTF8 format.
- Characters with values less than 255 can be imported directly.
- Character values greater than 255 must be escaped using the standard XML format (&# [character code]).

### **Spreadsheet-style Import file**

The recommended format for creating an import file is a spreadsheet style format, in which the first line contains tab-separated column names that correspond to the remaining rows:

```
LabelTemplate MapName Address
Machine1 Map1 192.0.0.1
Machine2 Map1 192.0.0.2
```

This is the equivalent of the following directive line, as explained below:

```
# format=tab table=devices fields=LabelTemplate,MapName,Address
insert=LabelTemplate,MapName,Address
Machine1 Map1 192.0.0.1
Machine2 Map1 192.0.0.2
```

#### **Notes:**

- If you have created a spreadsheet-style import file, you can easily change it to a *Directive line-based* file for updating the map.
- You can include columns in your import file from both the Device and Vertices tables. InterMapper automatically applies the Vertex attributes appropriately.

The columns are imported in the order specified. The last value specified takes precedence over previous values in the same line. Because of this, Help/Systems recommends that you use only one the following columns when importing. If more than one of these is specified, and there are conflicts, the last column's values are used:

- **Address**
- **DNSName**
- **IMProbe**

For a complete list of device attributes and corresponding field names, see *Device Attributes* in [Advanced Data Importing \(Pg 600\)](#) in the References section.

#### **The Directive-Line**

Using the Directive Line technique, in addition to inserting new devices, you can update specific attributes of existing devices, change their appearance or location, and delete them. This technique is documented in [Advanced Data Importing \(Pg 600\)](#) in the References section.

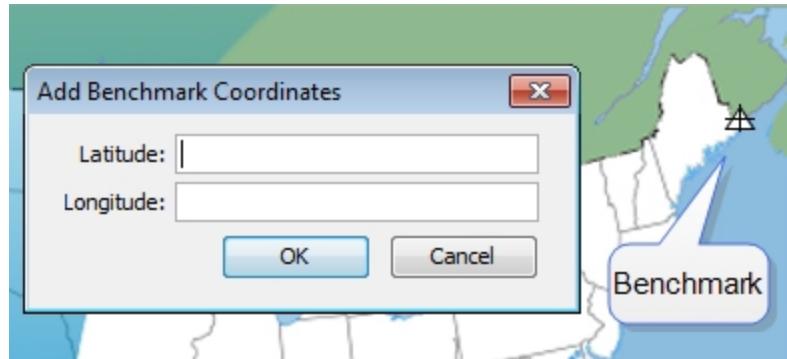
## Using Geographic Coordinates

You can use geographic Latitude and Longitude coordinates to place devices on your map. This can be useful if you have many devices at different locations. The procedure is relatively simple:

1. Create a new map on which you want to place the devices.
2. Obtain a map image you want to use as the background for the map. You can scan your own map to create the image, or get one from one of the sites listed below. InterMapper can import image files in PNG, JPEG, or GIF format.
3. Set the image as the background for your map as described in [Background Images \(Pg 99\)](#).
4. Set *benchmarks* in the map as described below. This sets the relationship between your map image and real geographic coordinates.
5. Create a text file containing a list of your devices with their IP addresses and Latitude and Longitude coordinates. You can specify many other parameters for each device within this file as well. For more information, see [Importing Data Into Maps \(Pg 588\)](#). A sample data file is shown below, containing geographic coordinates.
6. Import the text file. The devices appear at the correct location on the map.

### Setting Benchmarks in Your Map

A *benchmark* is an icon on a map that specifies the latitude and longitude of that point. InterMapper uses the benchmarks to determine the proper location for icons on the map.



#### To place a benchmark on a map:

1. Right-click (CTRL-click) a known location (on for which you know the actual latitude and longitude) in the map's background image and choose **Add benchmark...** The Add Benchmark Coordinates window appears.
2. Enter the latitude and longitude for the point. A small triangular icon appears to represent the benchmark. InterMapper supports multiple formats for latitude and longitude. (See below)
3. Follow steps 1 and 2 to enter a second benchmark to complete the geographic information. Your map is now ready for you to import devices with specified geographic coordinates.

**To remove a benchmark on a map:**

- Right-click (CTRL-click) an existing benchmark, choose **Remove benchmark...** The benchmark disappears from the map.

**To remove both benchmarks from a map:**

- Right-click (CTRL-click) anywhere in the map's background image and choose **Clear benchmarks...** Both benchmarks disappear from the map.

**Accepted Geographic Coordinate Formats**

InterMapper supports a wide variety of formats for entering geographic coordinates. Any coordinate can be entered as follows:

- - Decimal degrees: 43.692 or 72.272
- - Degrees, minutes, seconds: 43:16:34.56
- - Degrees with decimal minutes: 43:23.341
- - Use 'W' and 'S' suffixes as alternatives to negative values.

Sample accepted formats:

- [+|-]dd.dd:mm.mm:ss.ss
- [+|-]dd.dd:mm.mm
- [+|-]dd.dd
- [+|-]dd.dd mm.mm ss.ss
- [+|-]dd.dd mm.mm

Allowable suffixes:

- s, n, e, w, S, N, E, W.

**Acceptable Data Elements (in order)**

- an optional negative sign
- a real number
- anything except letters, digits, -, or .
- a real number
- anything except letters, digits, -, or .
- a real number
- an optional ending directional notation (N, S, E, W, n, s, e, w (depends on the field)) or " (e.g. in the case of 43° 16' 23")

## Importing Devices with Geographic Coordinates

You can create a tab-delimited file with information about the devices to be added to the map. This information can include any of following fields: Name, IP Address, DNS name, port, type of device, SNMP community string, latitude, longitude, and many other fields. Fields left unspecified are filled with default values. For more information, see [Importing Data Into Maps \(Pg 588\)](#).

An import file is formatted as follows:

- **Line 1 specifies the format of the following lines** - it specifies the file format ("tab" in the example below), the table to be filled ("devices") and the order of the fields. Three fields must be specified: MapName, Address, and Probe: the remainder are optional.
- **Remaining lines contain the data for the devices you want to import**
  - Each device occupies a single line, and the data columns are separated by tabs (a "tab-delimited" file.) Each column corresponds to a field in the **fields** specification of Line 1.

In this example import file, there are five fields to import. InterMapper places these items on the map named "MapA", using the address specified to create HTTP probes. They are placed at the indicated latitude and longitude.

```
# format=tab table=devices
fields=MapName,Address,Probe,Latitude,Longitude
MapA    192.168.2.100    http    43.3    -72.0
MapA    192.168.2.101    http    43.9    -72.3
MapA    192.168.2.102    http    43.8    -72.8
MapA    192.168.2.103    http    43.0    -72.4
MapA    192.168.2.104    http    43.2    -72.3
MapA    192.168.2.105    http    43.6    -72.2
```

## Sources of Maps

There are a huge number of mapping services available through the web. Here are several that we have found useful:

<b>Web-based Service</b>	<b>Description</b>
<a href="http://www.Google.com/imghp?hl=en&amp;tab=wi&amp;ie=UTF-8&amp;q="><u>Google Image Search</u></a>	<a href="http://www.Google.com/imghp?hl=en&amp;tab=wi&amp;ie=UTF-8&amp;q=">http://www.Google.com/imghp?hl=en&amp;tab=wi&amp;ie=UTF-8&amp;q=</a> Search their Images section for the word "map" plus the name of the country, province, state, etc. you need. Free.
<a href="http://www.maporama.com"><u>Maporama</u></a>	<a href="http://www.maporama.com">http://www.maporama.com</a> Attractive street maps with different styles and coloring that are good for backgrounds. Large maps available. Free.
<a href="http://www.mapblast.com"><u>Mapblast</u></a>	<a href="http://www.mapblast.com">http://www.mapblast.com</a> Another site showing street maps suitable for backgrounds. Large maps available. Free.
<a href="http://www.nationalatlas.gov"><u>National Atlas</u></a>	<a href="http://www.nationalatlas.gov">http://www.nationalatlas.gov</a> A source of national and state maps. Free.
<a href="http://www.terraserver.com"><u>terraserver.com</u></a>	<a href="http://www.terraserver.com">http://www.terraserver.com</a> Aerial photographs. Clever interactive latitude and longitude indicator using mouse rollover. 1 m/px resolution.
<a href="http://msrmaps.com/"><u>Microsoft Research Maps</u></a>	<a href="http://msrmaps.com/">http://msrmaps.com/</a> USGS Aerial photos, and topo maps to 1 m resolution. Clicking shows latitude and longitude of the clicked point. Also allows large, medium, and small maps. Free.
<a href="http://www.census.gov/geo/www/maps"><u>US Census Bureau</u></a>	<a href="http://www.census.gov/geo/www/maps">http://www.census.gov/geo/www/maps</a> Construct a map from Census data as well as street, political, river/water data. Free.
<a href="http://dir.yahoo.com/Science/Geography/Cartography/Maps/Interactive/"><u>Yahoo! Listing of Map Resources</u></a>	<a href="http://dir.yahoo.com/Science/Geography/Cartography/Maps/Interactive/">http://dir.yahoo.com/Science/Geography/Cartography/Maps/Interactive/</a> Yahoo! Search for interactive maps. Lists many interesting mapping sites. Free.
<a href="http://dmoz.org/Science/Social_Sciences/Geography/Geographic_Information_Systems/"><u>dmoz Open Directory</u></a>	<a href="http://dmoz.org/Science/Social_Sciences/Geography/Geographic_Information_Systems/">http://dmoz.org/Science/Social_Sciences/Geography/Geographic_Information_Systems/</a> Links to many Geographic Information Systems sites. Free.
<a href="http://www.geocode.com/"><u>Geocode.com</u></a>	<a href="http://www.geocode.com/">http://www.geocode.com/</a> An inexpensive geocoding service that converts street addresses to latitude and longitude.
<a href="http://www.cplus.org/rmw/english1.html"><u>Radio Mobile</u></a>	<a href="http://www.cplus.org/rmw/english1.html">http://www.cplus.org/rmw/english1.html</a> Software that predicts the performance of a radio system based on topographic maps. Free.

## Exporting Information to Google Earth

InterMapper exports the following information so that Google Earth can place devices in the proper location. This information is exported as a .KML file compatible with Google Earth.

Each InterMapper map appears as a place in the left pane of Google earth. Items are shown as follows:

- **Devices** are represented by their status badges (green, yellow, orange, red circle icons)
- **Network ovals** are shown as small circles.
- **Links** between devices are shown as lines connecting the icons.
- **A Status window** for each of the above items displayed when you click the item.

To be displayed in Google Earth, a device must have geographic information; devices that do not have geographic information are not displayed at all.

### **Geographic coordinates may be set in two ways:**

- **Explicitly** - by using ***Set Latitude and Longitude...*** for each device. You can set latitude and longitude values for many devices at once by [importing a text file containing the correct information \(Pg 593\)](#).
- **Implicitly** - When benchmarks are placed on a map, the device's latitude and longitude are inferred from the x/y position on the map, relative to the established benchmarks. Use the Insert menu's ***Map Benchmark...*** ([Pg 591](#)) to add benchmarks. Use of benchmarks is inherently less precise than using explicit coordinates.

In the case where both explicitly set coordinates and benchmarks are used, InterMapper uses the explicit coordinates and ignores the benchmarks.

### **How it works**

- **Google Earth requests information from the InterMapper server using HTTP.** Consequently, the InterMapper web server interface must be enabled in the Server Settings.
- **The Google Earth connection uses the same authentication method as the web interface;** you must have appropriate web access permissions for any map you wish to view in Google Earth. (Google Earth will prompt you for the username and password.)
- **Google Earth does not need to be installed on the InterMapper server,** though its machine must have appropriate access permissions established in the InterMapper web server firewall.
- **Google Earth uses a "Network Link"** with a URL that Google Earth uses to request information from InterMapper.

## How to use it

The easiest way to get the URL is through the InterMapper web interface.

1. Download and install Google Earth.
2. From the Server Configuration section of the Server Settings window, click **Web Server**. The Web Server settings pane appears in the right pane.
3. Make sure the web server is running, then click the URL to launch a browser with the InterMapper Web interface.
4. In the InterMapper web interface, click **Map List**. A list of maps on your server appears.
5. Click the link to a map that contains latitude/longitude information, either implicitly or explicitly. The map appears in the browser.
6. At the bottom of the map, click **View this map in Google Earth**. This is a link to the map's .KML file, a data file used by Google Earth. Assuming Google Earth has been installed properly, your browser offers to use Google Earth to open the file.

If everything is set up properly, the status badges for your devices hover over the surface of the Earth in appropriate locations.

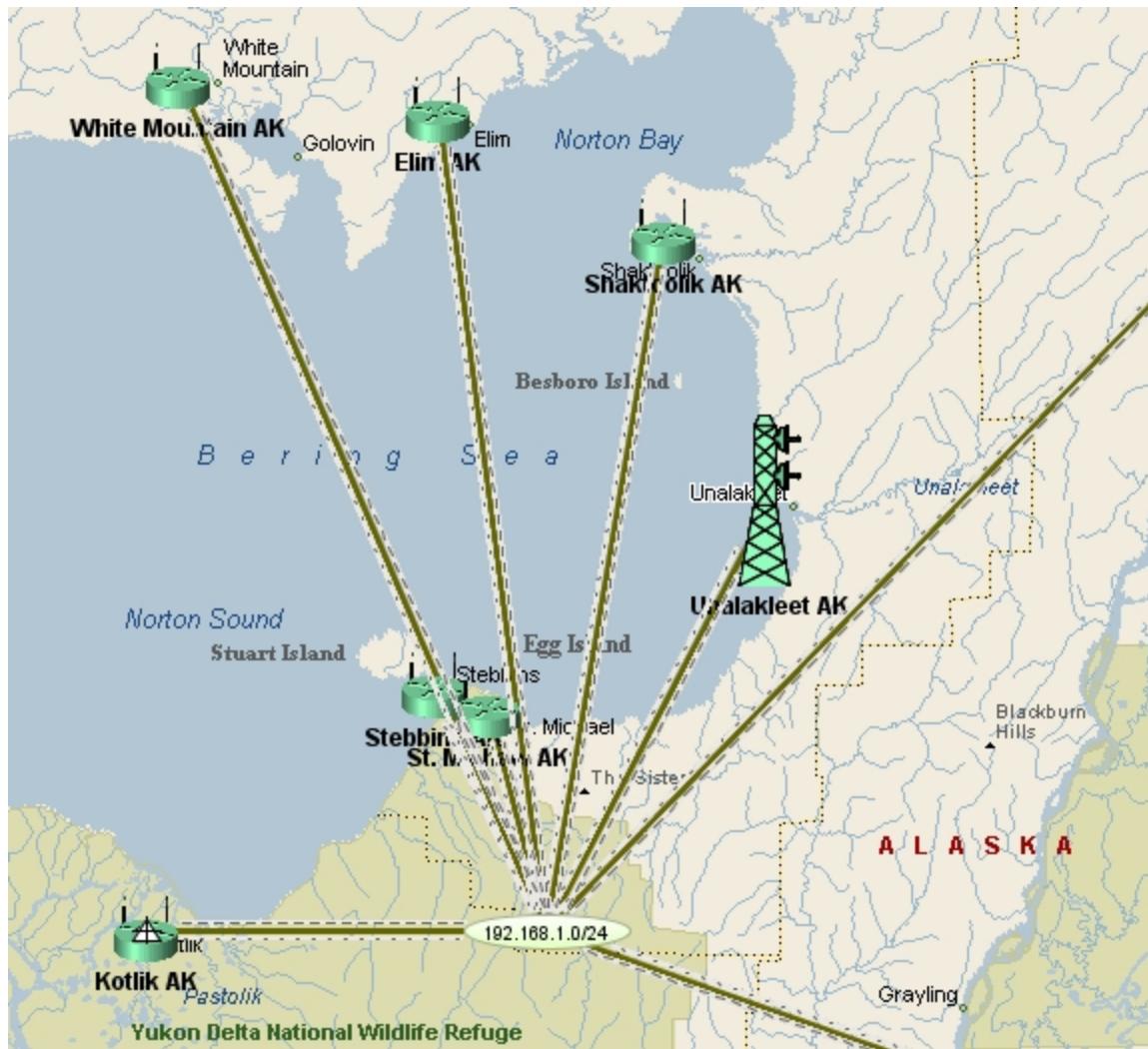
To view a device's status window:

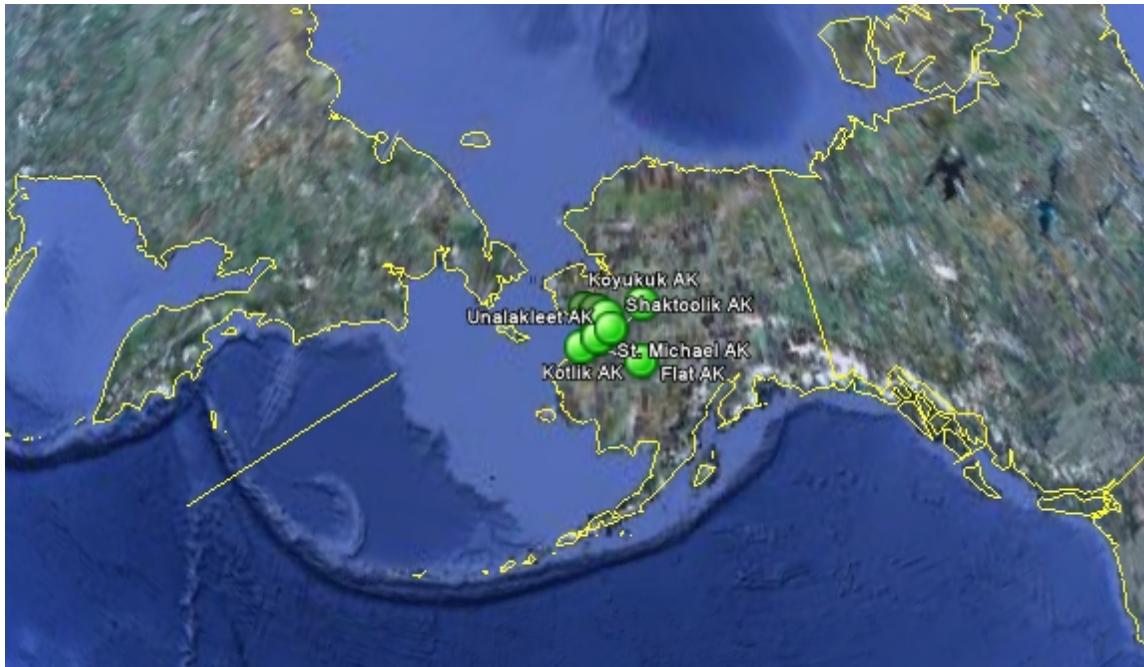
- Click the device's badge. The device's Status Window appears in the Google Earth window.

The map refreshes automatically every 5 minutes.

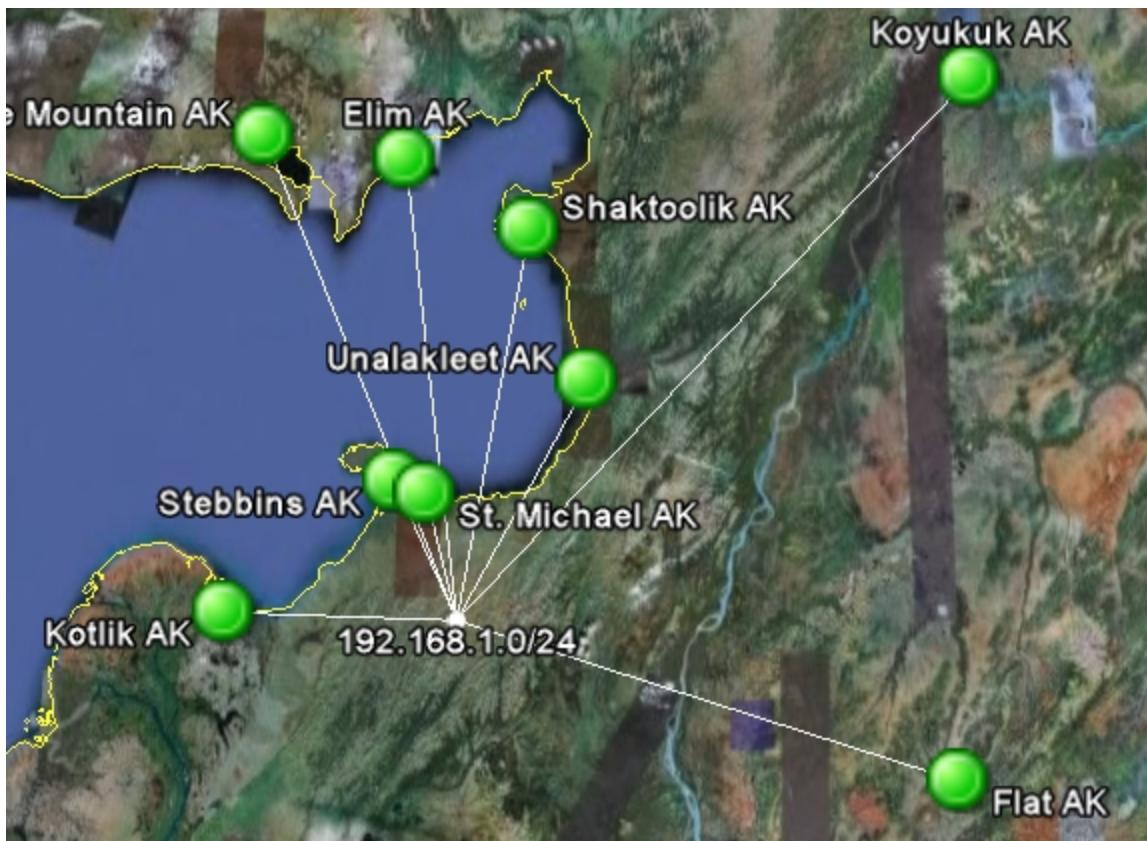
### What you see

The images below show the original map, the mapped devices displayed from two different zoom levels, and the status window for one of the devices.





*Wide view in Google Earth*



*Closer view in Google Earth*



*Status window in Google Earth*

# Chapter 17

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## Advanced Data Importing

### Introduction - The Directive Line

If you need more control over the import process, you can use the Directive line technique instead of a spreadsheet-style import file. In addition to inserting new devices, you can update specific attributes of existing devices, change their appearance or location, and delete them.

**Note:** You can automate the importing of map data by sending commands to InterMapper RemoteAccess through its command-line interface. This allows you to interact with InterMapper through your own scripts. For more information, see *Using the Command Line Interface* in the [Developer Guide](#).

The first line, known as the **directive** line, is formatted as in this example:

```
# format=tab table=devices fields=id,name,address  
modify=address match=id
```

Each of the elements below is separated by a tab:

- The first line must begin with pound/hash sign ("#").
- The *table=devices* parameter specifies which table the data should be imported into.

Valid choices are detailed in [Data types \(Pg 604\)](#), below.

#### Notes:

- You can generate a list of fields and descriptions for any data type by exporting the **Schema** table. For more information, see [Exporting Data From Maps \(Pg 586\)](#).
- You can include columns in your import file from both the Device and Vertices tables. InterMapper automatically applies the Vertex attributes appropriately to the vertex linked to the indicated device.
- The *fields=id,name,address* parameter identifies the order of the data in the columns. In this example, there are three columns for the device's ID, name, and address.
- The *modify* and *match* parameters combine to specify which device attributes to change, and which device attributes to use to verify that the correct device has been found.

### Directive Format/Options

#### Parameter

*Format*      Supported file formats:

- **tab** - tab-delimited
- **csv** - comma-separated
- **xml** - XML format (see an exported file for the format)

#### Example:

```
format=tab
```

*Table*      Available values for the `table` directive are listed in [Data types \(Pg 604\)](#), below.

#### Examples:

```
table=devices  
table=vertices
```

*Modify*      Comma-separated list of field names. Use this parameter to specify which of the columns you want to update. You can combine this with the optional **Match** parameter.

**Note:** If there is no **Match** parameter, the **ID** field is used to find matches. If no **ID** field exists, the import fails.

#### Example:

```
modify=ID,MapName,Address,Latitude,Longitude
```

*Match*      Comma-separated list of field names. Use this parameter to specify which of the columns you want to use to determine whether to modify device values.

If no **Match** parameter is included, the **ID** field is used to find matches.

If no **ID** field is included in the file, the import fails.

#### Example:

```
match=MapName,Address
```

**Insert**

Comma-separated list of field names. Use this parameter to specify the fields you want to set when creating the device.

You must include a combination of at least two fields whose Access attribute is "CREATE" (MapPath, Address, DNSName, IMProbe, MapID). To see the valid combinations, see [Device Attributes \(Pg 605\)](#). When no valid MapPath is included, one is created for you, named "Untitled 1".

Once the device is created using one or more of these fields, InterMapper attempts to set the values of the remaining fields specified in the Insert parameter to the values in the corresponding columns.

*Insert* fields are evaluated from left to right. If, for example, you specify an Address, DNSName, and IMProbe in that order, the Address is set, and the DNSName is resolved to it, and remaining fields are set from the IMProbe parameter.

**Examples:**

```
Insert=MapPath,Address,Name,Latitude,Longitude
```

(The example above creates devices in the specified maps with the specified addresses, names, latitude, and longitude)

**Delete**

Comma-separated list of field names. Use this parameter to specify which of the columns you want to use to determine whether a device should be deleted.

**Example:**

```
delete=MapName,Probe
```

(The example above would delete all devices in the specified maps that use the specified probes)

### ***Remaining lines - specifying the data***

The remaining lines of the file contain the data as specified in the **fields** definition described above. Each column is separated by a tab, and columns must appear in the order specified in the **fields** definition (for directive line imports) or must correspond to the field names specified in the first line of the file (spreadsheet-style imports).

Available values for the `table` directive are listed in [Data types \(Pg 604\)](#), below.

### ***Import File Example***

Below is an example of an Import file. This file specifies itself as a tab-delimited file containing a list of devices. All devices are going into the map named "MapA", and each device definition contains Address, Probe, Latitude, and Longitude columns.

```
# format=tab table=devices
fields=MapName,Address,Probe,Latitude,Longitude
MapA 192.168.2.100 http 43.3 -72.0
MapA 192.168.2.101 http 43.9 -72.3
MapA 192.168.2.102 http 43.8 -72.8
MapA 192.168.2.103 http 43.0 -72.4
MapA 192.168.2.104 http 43.2 -72.3
MapA 192.168.2.105 http 43.6 -72.2
```

### ***Automatic Placement of Devices***

If your map contains no benchmarks (as described in [Using Geographic Coordinates \(Pg 591\)](#)) latitude and longitude fields are ignored. You can place devices at specific locations using the XCoordinate and YCoordinate fields (described in the [Vertex Attributes \(Pg 616\)](#)). X and Y coordinates are calculated from the upper left.

If the map contains benchmarks to specify geographic coordinates, InterMapper uses them to place devices at the proper location in the map.

**Note:** In order for InterMapper to place devices accurately using geographic coordinates, two benchmarks must be specified before you import or update the devices. If you have imported the devices to the map before specifying the benchmarks, you can create an export file containing the MapPath, ID, Latitude and Longitude, then re-import the file after specifying your benchmarks. The devices are moved to the appropriate locations on the map.

### ***How InterMapper Inserts Devices***

InterMapper places new devices in horizontal rows across the top of the specified map. If either X/Y coordinates or geographic coordinates are specified for the device, InterMapper places it at the specified location on the map.

### **How InterMapper Handles Errors and Defaults**

InterMapper strives to use sensible defaults. The import file needs only a server name, map path, and either an IP address or DNS Name for a new device. InterMapper uses its default settings for other values and parameters.

The import process recovers sensibly from faulty, ill-formatted, or inconsistent input values. An invalid format for an IP address, for example, cannot succeed, and is reported as an error. Most other data is passed along so the device can be added to the map with appropriate defaults. The InterMapper Event Log file contains a line for each newly added device, along with indication of success or error.

If the attribute name in the header of the imported file is not recognized as a valid attribute, InterMapper displays an error message and ignores the contents of that column.

When the import is finished, a summary is written to the Event Log file.

#### **Notes:**

- Every InterMapper server maintains a unique identifier (the "id") for each of its devices on each map. This makes it a convenient value for matching updated information to an existing device.
- InterMapper defines a new *IMProbe* URL that completely specifies all the parameters of an InterMapper Probe. This IMProbe: URL is defined in [The IMProbe URL \(Pg 636\)](#).

#### **Data types**

For each table for which data can be imported or exported, a data type is defined. For information on the different data types, and what information is readable, writable, or both, see the Attributes topic for each data type as linked below.

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">table=[data type]</td> </tr> </table>	table=[data type]
table=[data type]	

- **devices** - imports data specific to devices. See the [Device Attributes \(Pg 605\)](#) table.
- **vertices** - You can also control other aspects of a device in a map, such as the device's color, label, shape, or font. The `vertices` type imports data specific to the appearance of devices. See the [Vertex Attributes \(Pg 616\)](#) table.
- **interfaces** - imports data specific to the switch and router interfaces. See the [Interface Attributes \(Pg 619\)](#) table.
- **maps** - imports data specific to maps. See the [Map Attributes \(Pg 624\)](#) table.
- **notifiers** - imports data to describe notifiers. See the [Notifier Attributes \(Pg 627\)](#) table.
- **notifierrules** - imports data to describe how a notifier is applied. See the [Notifier Rules Attributes table. \(Pg 628\)](#)
- **users** - imports user account information. See the [User Attributes \(Pg 630\)](#) table.
- **retentionpolicies**- imports user account information. See the [Retention Policy Attributes \(Pg 631\)](#) table

## Device Attributes

Device attributes are supported as described in the table below. At minimum, **MapName** and **Address** are required. To create a device by importing, the following is required:

- One of **MapPath** or **MapID**
- One of **Address**, **DNSName**, or **NetBIOSName**

For any attribute that is not in the file, a default value is used. For example, if no probe is specified, the **Automatic** probe is used.

Use these attributes with the following table specification in line 1:

```
table=device
```

### Notes:

- Fields marked with an asterisk (\*) are required.
- Fields marked with an plus(+) can be updated during import.
- Fields with the Access attribute of "SENSITIVE" can only be imported by an administrator over a secure SSL connection.
- The columns are imported in the order specified. The last value specified takes precedence over previous values in the same line. Because of this, Help/Systems recommends that you use only one the following columns when importing: **Address**, **DNSName**, **IMProbe**. If more than one of these is specified, and there are conflicts, the last column's values are used.

## Device Attributes

Field Name	Description
<b>MapName</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Name of the map containing the device.
<b>MapPath</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> CREATE <b>Description:</b> Full path of the map containing the device, including the name of the map.
<b>Address</b> +	<b>Type:</b> ADDRESS <b>Access:</b> READ-WRITE <b>Attributes:</b> CREATE <b>Description:</b> The IP or AppleTalk address of the device that is probed by InterMapper. The IP address is represented in dotted-decimal notation, e.g.

	'a.b.c.d'. The AppleTalk address is represented in slash notation, e.g. 'a/b'.
<b>Id</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> INDEX <b>Description:</b> A unique, persistent identifier for this device instance. The id will be unique across all maps on a single InterMapper server.
<b>Name</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The name of the device. The name is the first non-empty line in a device's label on a map.
<b>Probe +</b>	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The human-readable name of the InterMapper probe.
<b>Comment +</b>	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The comment associated with the device.
<b>Community +</b>	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> SENSITIVE <b>Description:</b> The SNMP community of the device.
<b>DisplayIfUnNumbered +</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> True if the device's behaviour is set to display unnumbered interfaces.
<b>DNSName +</b>	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> CREATE <b>Description:</b> The fully-qualified DNS name of the device.

<b>IgnoreIfAppleTalk</b> +	<b>Type:</b> BOOLEAN <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> True if the device's behaviour is to ignore AppleTalk interface information.
<b>IgnoreIfDiscards</b> +	<b>Type:</b> BOOLEAN <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> True if the device's behaviour is to ignore interface discards.
<b>IgnoreIfErrors</b> +	<b>Type:</b> BOOLEAN <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> True if the device's behaviour is to ignore interface errors.
<b>IgnoreOutages</b> +	<b>Type:</b> BOOLEAN <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> True if the device's behaviour is to ignore outages.
<b>AllowPeriodicReprobe</b> +	<b>Type:</b> BOOLEAN <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> True if the device's behaviour is to allow periodic reprobe.
<b>IMProbe</b> *+	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> SENSITIVE,CREATE <b>Description:</b> A special URL representation describing the InterMapper probe and its parameters, e.g. improbe://address:port/...
<b>Latitude</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The latitude of the device. The value will be a double within the range [-90..90] or empty string

---

	if the device does not have this attribute set.
<b>Longitude +</b>	<p><b>Type:</b> TEXT  <b>Access:</b> READ-WRITE  <b>Attributes:</b> none  <b>Description:</b>            The longitude of the device. The value will be a double within the range [-180..180] or empty string if the device does not have this attribute set.</p>
<b>LastTimeDown</b>	<p><b>Type:</b> TIMESTAMP  <b>Access:</b> READ-ONLY  <b>Attributes:</b> none  <b>Description:</b>            The time when the device last went down. Value is 0 if device has not gone down since we started monitoring it.</p>
<b>LastTimeSysUp</b>	<p><b>Type:</b> TIMESTAMP  <b>Access:</b> READ-ONLY  <b>Attributes:</b> none  <b>Description:</b>            The time when the device last came up (ie rebooted), based on the value of sysUpTime. The value is 0 if unknown.</p>
<b>LastTimeUp</b>	<p><b>Type:</b> TIMESTAMP  <b>Access:</b> READ-ONLY  <b>Attributes:</b> none  <b>Description:</b>            The time when the device status last transitioned from DOWN to UP. Value is 0 if this has not happened since we started monitoring.</p>
<b>MACAddress</b>	<p><b>Type:</b> TEXT  <b>Access:</b> READ-ONLY  <b>Attributes:</b> none  <b>Description:</b>            The device's MAC Address. If the device has multiple interfaces, this field will contain the MAC Address associated with the device's main IP Address (the same address in the address field).</p>
<b>MapAs +</b>	<p><b>Type:</b> TEXT  <b>Access:</b> READ-WRITE  <b>Attributes:</b> none  <b>Description:</b>            Value is one of { ROUTER , SWITCH , HUB , END }</p>

	SYSTEM }
<b>MapId</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> CREATE <b>Description:</b> The unique Id of the map file containing the device.
<b>MaxTries</b> +	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The maximum number of attempts to reach the device, typically indicates the maximum number of packets to send during each poll, for packet-based probes.
<b>NetBIOSName</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> CREATE <b>Description:</b> The NetBIOS/WINS name of the device.
<b>PctLoss</b>	<b>Type:</b> DOUBLE <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The percent loss (# packets lost/total # packets sent).
<b>ShortTermPctLoss</b>	<b>Type:</b> DOUBLE <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The short-term percent loss (# packets lost/# packets sent).
<b>Availability</b>	<b>Type:</b> DOUBLE <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The percent availability (time up/time monitored).
<b>PollInterval</b> +	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The poll interval of the device, in seconds. Value is 0 if non-polling.

---

<b>Port</b> +	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The UDP or TCP port number. If the port number is not applicable, this value is always 0. (e.g. for ICMP)
<b>Resolve</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Value is one of { name , addr , none }.
<b>RoundTripTime</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The last round-trip time in milliseconds, if known.
<b>SNMPv3AuthPassword</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> SENSITIVE <b>Description:</b> The device's SNMPv3 authentication password.
<b>SNMPv3AuthProtocol</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The device's SNMPv3 authentication protocol (MD5, SHA, None).
<b>SNMPv3PrivPassword</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> SENSITIVE <b>Description:</b> The device's SNMPv3 privacy password.
<b>SNMPv3PrivProtocol</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The device's SNMPv3 privacy protocol (DES, None).
<b>SNMPv3UserName</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none

	<b>Description:</b> The device's SNMPv3 user name.
<b>SNMPVersion</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The device's SNMP version (SNMPv1, SNMPv2c, or SNMPv3).
<b>Status</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The status of the device. The value is one of { 'UP', 'DOWN', 'UNKNOWN' }.
<b>StatusLevel</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The status level of the device. The value is one of { 'Unknown', 'OK', 'Warning, Acked', 'Warning', 'Alarm, Acked', 'Alarm', 'Critical', 'Critical, Acked', 'Down', 'Down, Acked' }.
<b>StatusLevelReason</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The reason the device has its status level.
<b>SysDescr</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The value of sysDescr.
<b>SysName</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The value of sysName.
<b>SysContact</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The value of sysContact.

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<b>SysLocation</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The value of sysLocation.
<b>SysObjectID</b>	<b>Type:</b> ADDRESS <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The value of sysObjectID.
<b>TimeOut +</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The timeout of the device, in seconds. Value is 0 if not-applicable to the probe.
<b>IMID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> INDEX <b>Description:</b> Identifier of the device in the IMID format.
<b>Type</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> One of { none, other, snmp, tcp, udp, icmp, cmd, bigbro, ntsvcs }. These values have been updated in 5.0 to match the values used by the database in the probekind field of the devices table.
<b>ProbeXML</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> SENSITIVE <b>Description:</b> XML dataset DTD, type='probe'.
<b>SNMPVersionInt</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> 1, 2, 3 - SNMP versions. 0 for non-SNMP.
<b>SysServices</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none

	<b>Description:</b> 16-bits integer.
<b>EntSerialNum</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> SnmpAdminString (entPhysicalSerialNum of chassis).
<b>EntMfgName</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> SnmpAdminString (entPhysicalMfgName of chassis).
<b>EntmodelName</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> SnmpAdminString (entPhysicalModelName of chassis).
<b>DataRetentionPolicy</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Data retention policy for IM Database
<b>CustomerNameReference</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Customer-supplied device name reference, for linking to an external database.
<b>EnterpriseID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The value of sysEnterpriseID.
<b>DeviceKind</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> User-specified device type.
<b>SysUpTime</b>	<b>Type:</b> TEXT

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	<b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> System uptime.
<b>LastModified</b>	<b>Type:</b> TIMESTAMP <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Timestamp of last modification to this device.
<b>Parent</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Device ID of the parent probe group; this device's id if this device is a probe group; 0 if the device is not part of a probe group.
<b>Acknowledge</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The acknowledgement state of the device; one of { 'None', 'Basic', 'Maintenance' }. The AckMessage field must also be set to import this field. Indefinite maintenance will be set if AckExpiration is missing and state is set to 'Maintenance'.
<b>AckMessage</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The message associated with the acknowledge state. If Acknowledge is not set and an AckMessage is supplied, Acknowledge will be set to 'Basic'.
<b>AckExpiration</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The absolute time when the timed acknowledgement expires, if any. The AckMessage field must also be set to import this field. Acknowledge will be set to 'Maintenance' if not supplied.

<b>AckTimer</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The time in seconds remaining until the timed acknowledgement expires, if any.
<b>VertexId</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The Vertex Id of the vertex associated with the device. Matches the VertexId of the corresponding vertex in the vertices table.
<b>Layer2</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> True if layer2 mapping is enabled for this device.

## Vertex Attributes

Use the `vertices` data type to control the appearance of devices in your map, such as the device's color, label, shape, or font.

Use these attributes with the following table specification in line 1:

table=vertices
----------------

- Fields marked with an asterisk (\*) are required.
- Fields marked with an plus(+) can be updated during import.

Field Name	Description
<b>MapName</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Name of the map file containing the vertex.
<b>Id</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> INDEX <b>Description:</b> A unique, persistent identifier for this vertex instance. The id will be unique across all maps on a single InterMapper server.
<b>Name</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The name of the vertex. The name is the first non-empty line in a device or network's label on a map.
<b>Color</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Color (valid names: white, black, red, orange, yellow, blue, green, brown)
<b>FontName</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Font name, eg. Bodoni MT
<b>FontSize</b> +	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE

	<b>Attributes:</b> none <b>Description:</b> Font size in points.
<b>FontStyle</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Font style (bold, italic, plain)
<b>Label</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Vertex label.
<b>LabelPosition</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Label position. Valid values are topleft, top, topright, left, center, right, bottomleft, bottom, bottomright
<b>LabelTemplate</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Vertex label template.
<b>LabelVisible</b> +	<b>Type:</b> BOOLEAN <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> True if the vertex label is visible (only used when the device is represented by an icon)
<b>MapId</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The unique Id of the map file containing the vertex.
<b>Origin</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The origin determines whether the vertex coordinates are relative to the center or one of the sides of the vertex. Valid values: center, top, left, right, botom, topleft, topright, bottomright, bottomleft.

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<b>Shape</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Vertex shape (rect, oval, wire, cloud, text, or icon name).
<b>VantagePoint</b> +	<b>Type:</b> BOOLEAN <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> True if the vertex is a vantage point of the graph
<b>XCoordinate</b> +	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Horizontal map coordinate, the positive direction is to the right.
<b>YCoordinate</b> +	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Vertical map coordinate, the positive direction is to the bottom.
<b>VertexId</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The Vertex Id of the vertex. Corresponds to the device with a matching VertexID in the devices table.

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## Interface Attributes

The `interfaces` data type imports data specific to the switch and router interfaces.

Use these attributes with the following table specification in line 1:

```
table=interfaces
```

- Fields marked with an asterisk (\*) are required.
- Fields marked with an plus(+) can be updated during import.

### Interface Attributes

Field Name	Description
<b>MapName</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The name of the map to which the interface belongs.
<b>InterfaceID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> INDEX <b>Description:</b> A unique persistent identifier for this interface instance.
<b>DeviceID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The unique persistent identifier for the adjacent device.
<b>NetworkID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The unique persistent identifier for the adjacent network.
<b>Index</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface index (i.e. ifIndex) of the interface.
<b>IntegerIndex</b>	<b>Type:</b> TEXT

	<b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface index (i.e. ifIndex) of the interface, as an integer.
<b>Description</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface description (i.e. ifDescr).
<b>Name</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface name (i.e. ifName).
<b>Alias</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface alias (i.e. ifAlias).
<b>PhysAddress</b>	<b>Type:</b> ADDRESS <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface's data-link layer address (i.e. ifPhysAddr).
<b>Type</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface type as a human-readable string (i.e. ifType).
<b>MTU</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface MTU (i.e. ifMTU).
<b>Address</b>	<b>Type:</b> ADDRESS <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface's first network-layer address.

<b>SubnetMask</b>	<b>Type:</b> ADDRESS <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The subnet mask associated with "Address".
<b>SubnetList</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> A comma-separated list of addresses/masks on this interface.
<b>SubnetPrefixList</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> A comma-separated list of addresses/prefixes on this interface.
<b>Speed</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface's speed in bits per second. (Derived from preferred speed and reported speed.)
<b>PreferredSpeed</b> +	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> The preferred speed of the interface as set by the customer.
<b>ReportedSpeed</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The speed of the interface as reported by the interface.
<b>LastChange</b>	<b>Type:</b> TIMESTAMP <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The timestamp when the interface last changed status.
<b>Status</b>	<b>Type:</b> TEXT

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	<b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The status of the interface (e.g. UP, DOWN, or ADMIN-DOWN).
<b>Enabled</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Flag which indicates whether the interface is enabled or not.
<b>MapId</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The unique persistent identifier for the map to which the interface belongs.
<b>IMID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> INDEX <b>Description:</b> Identifier of the interface in the IMID format.
<b>TypeInt</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The interface type as a number.
<b>RecvSpeed</b> +	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Unsigned 64-bit integer. 0 means baseband; speed in Speed.
<b>StatusInt</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> The status of the interface as integer. Values correspond to {UP, DOWN, ADMIN-DOWN, DOWN but locally acked}.
<b>CustomerNameReference</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY

	<b>Attributes:</b> none <b>Description:</b> Customer-supplied name, for referencing an external database.
<b>DataRetentionPolicy</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Database data retention policy.
<b>Duplex</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Interface Duplex status.
<b>VLANs</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Comma-separated list of this interface's VLANs.
<b>NatVLAN +</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-WRITE <b>Attributes:</b> none <b>Description:</b> Native VLAN. Signed integer (0-4093). 0 means none.

## Map Attributes

The `maps` directive imports data specific to maps.

Use these attributes with the following table specification in line 1:

table=maps
------------

- Fields marked with an asterisk (\*) are required.
- Fields marked with an plus(+) can be updated during import.

<b>Field Name</b>	<b>Description</b>
<b>MapId</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> A unique, persistant identifier for this map instance.
<b>MapName</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Name of the map.
<b>MapPath</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Full path of the map, including the name of the map.
<b>Status</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Status of the map (e.g. down, critical, alarm, warning, okay).
<b>DeviceCount</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Number of devices in the map.
<b>NetworkCount</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Number of networks in the map.

<b>InterfaceCount</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Number of interfaces in the map.
<b>DownCount</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Number of devices that are down.
<b>CriticalCount</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Number of devices in critical status.
<b>AlarmCount</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Number of devices in alarm status.
<b>WarningCount</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Number of devices in warning status.
<b>OkayCount</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Number of okay devices.
<b>DataRetentionPolicy</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Database retention policy.
<b>IMID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Identifier of the map in the IMID format.
<b>Enabled</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY

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	<b>Attributes:</b> none <b>Description:</b> True if the map is currently running.
<b>Layer2</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> True if the map is enabled for layer 2 polling.

## Notifier Attributes

The `notifiers` data type imports data to describe notifiers.

Use these attributes with the following table specification in line 1:

```
table=notifiers
```

Field Name	Description
<b>IMID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Identifier of the notifier in the IMID format.
<b>Name</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Human readable, one-line name.
<b>NotifierXML</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> XML dset DTD, type='notifier'.
<b>enabled</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> True if the notifier is enabled.

## Notifier Rules Attributes

The `notifierrules` data type imports data to describe how a notifier is applied.

Use these attributes with the following table specification in line 1:

table=notifierrules
---------------------

Field Name	Description
<b>NotifierIMID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Identifier of the notifier in the IMID format.
<b>EscalationIMID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Identifier of the escalation in the IMID format.
<b>Down</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> True if user is notified of DOWN events.
<b>Up</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> True if user is notified of UP events.
<b>Critical</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> True if user is notified of CRITICAL events.
<b>Alarm</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> True if user is notified of ALARM events.
<b>Warning</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none

	<b>Description:</b> True if user is notified of WARNING events.
<b>Okay</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> True if user is notified of OKAY events.
<b>Trap</b>	<b>Type:</b> BOOLEAN <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> True if user is notified of TRAP events.
<b>Delay</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Notification delay.
<b>Repeat</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Notification repeat.
<b>Count</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Notification count.

## User Attributes

The `users` data type imports user account information.

Use these attributes with the following table specification in line 1:

table=users
-------------

- Fields marked with an asterisk (\*) are required.
- Fields marked with an plus(+) can be updated during import.

<b>Field Name</b>	<b>Description</b>
<b>Id</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> INDEX <b>Description:</b> A unique, persistent identifier for this user.
<b>Name</b> *+	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> SENSITIVE,CREATE <b>Description:</b> Login name of the user.
<b>Password</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> SENSITIVE <b>Description:</b> If the user is to be validated locally, the user's password.
<b>Guest</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> SENSITIVE <b>Description:</b> The user's autologin properties.
<b>External</b> +	<b>Type:</b> BOOLEAN <b>Access:</b> READ-WRITE <b>Attributes:</b> SENSITIVE <b>Description:</b> Indicates user is to be validated by an auth server.
<b>Groups</b> +	<b>Type:</b> TEXT <b>Access:</b> READ-WRITE <b>Attributes:</b> SENSITIVE <b>Description:</b> Comma-separated list of groups to which to add user. (Will not remove users from groups not in list.)

## Retention Policy Attributes

The `retentionpolicies` data type imports retention policy information.

Use these attributes with the following table specification in line 1:

```
table=retentionpolicies
```

- Fields marked with an asterisk (\*) are required.
- Fields marked with an plus(+) can be updated during import.

Field Name	Description
<b>IMID</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> IMID of the retention policy.
<b>RetentionPolicyID</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Identifier of the retention policy.
<b>Name</b>	<b>Type:</b> TEXT <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> Name of the retention policy.
<b>ServerStorageType</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> How long chart data is retained by the server; 0 = No data retained, -1 = data retained forever, -2 = data retained in memory only.
<b>RawExpiration</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> How long raw chart data is retained by the database in days; -1 = forever.
<b>FiveExpiration</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b>

	How long five-minute sample data is retained by the database in days; -1 = forever.
<b>HourlyExpiration</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> How long hourly sample chart data is retained by the database in days; -1 = forever.
<b>DailyExpiration</b>	<b>Type:</b> INTEGER <b>Access:</b> READ-ONLY <b>Attributes:</b> none <b>Description:</b> How long daily sample chart data is retained by the database in days; -1 = forever.

## About D-Sets

When you export data, you can export a generic set of information about a probe or notifier. This information is in XML format, contained in an export field in the following export tables:

- ProbeXML - If this field is included in the export, a D-set is included for each selected device on the map.
- NotifierXML - If this field is included in the export, a D-set is included for each active notifier associated with the map.

### ProbeXML D-set

This D-set contains information about a specific probe. Depending upon the probe type, it may have more or fewer `<d>` clauses. Here is an example:

```
<dset type='probe' hashcode='abcdef'>
  <d name='probe'>com.dartware.snmp</d>
  <d name='snmp_ver'>SNMPv3</d> // present only for snmp probes
  <d name='address'>192.168.1.23</d>
  <d name='username'>MyName</d> // present only for snmp_v3
  <d name='auth_protocol'>MD5</d> // present only for snmp_v3
  <d name='auth_passwd'>somePwd</d> // present only for snmp_v3
  <d name='priv_protocol'>DES</d> // present only for snmp_v3
  <d name='priv_passwd'>somePwd2</d> // present only for snmp_v3
  <d name='community'>public</d> // present only for snmp_v1 and
  snmp_v2c probes
  <d name='port'>80</d>
  <d name='interval'>30</d>
  <d name='timeout'>3</d>
  <d name='tries'>3</d>
  <d type='param' name='Disk Usage Warning %'>75</d>
  <d type='param' name='Memory Usage Alarm %'>90</d>
  <d type='param' ... ></d>
</dset>
```

### NotifierXML D-set

This D-set contains information about a specific notifier. Depending upon the notifier type, it may have more or fewer `<d>` clauses. Here are some examples:

```
<dset type='notifier'>
  <d name='method'>smtpmail</d>
  <d type='param' name='email_addr'>abc@dd.com</d>
  <d type='param' name='subject'>This is a subject</d>
  <d type='param' name='message'>This is a message.</d>
</dset>
```

```
<dset 'notifier'>
  <d name='method'>audible</d>
  <d type='param' name='down_sound'>name of the sound (as string)
  </d>
  <d type='param' name='up_sound'></d>
  <d type='param' name='crit_sound'></d>
```

```

<d type='param' name='alarm_sound'></d>
<d type='param' name='warn_sound'></d>
<d type='param' name='ok_sound'></d>
<d type='param' name='trap_sound'></d>
<d type='param' name='down_vol'>3</d>
<d type='param' name='up_vol'>2</d>
<d type='param' name='crit_vol'>1</d>
<d type='param' name='alarm_vol'>1</d>
<d type='param' name='warn_vol'>1</d>
<d type='param' name='ok_vol'>1</d>
<d type='param' name='trap_vol'>5</d>
</dset>

```

```

<dset type='notifier'>
  <d name='method'>sntptrap</d>
  <d type='param' name='address'></d>
  <d type='param' name='community'></d>
</dset>

```

```

<dset type='notifier'>
  <d name='method'>snpppager</d>
  <d type='param' name='pager_id'></d>
  <d type='param' name='message'></d>
</dset>

```

```

<dset type='notifier'>
  <d name='method'>modempager</d>
  <d type='param' name='pager_id'></d>
  <d type='param' name='message'></d>
</dset>

```

```

<dset type='notifier'>
  <d name='method'>winpopup</d>
  <d type='param' name='popup_id'></d>
  <d type='param' name='message'></d>
</dset>

```

```

<dset type='notifier'>
  <d name='method'>cmdline</d>
  <d type='param' name=' cmdline'></d>
  <d type='param' name='success'></d>
  <d type='param' name='message'></d>
</dset>

```

```

<dset type='notifier'>
  <d name='method'>syslog</d>
  <d type='param' name='address'></d>
  <d type='param' name='facility'></d>
</dset>

```

```
<d type='param' name='severity'></d>
<d type='param' name='message'></d>
</dset>
```

```
<dset type='notifier'>
  <d name='method'>group</d>
  <d type='param' name='id_list'></d>
</dset>
```

## The IMProbe URL Specification

InterMapper defines a URL format for specifying all the parameters for a probe in a single string. This makes it straightforward to import information about a probe into InterMapper from a text file.

When you export data from InterMapper, you can include the IMProbe field in the export file. The IMProbe field contains the IMProbe URL, which in turn contains all configuration information for a probe in URL-encoded format. You can use the IMProbe URL to change the parameters of probes editing the parameters of the URL, and then importing the URL into the map.

For example, you could change the username and password for all of your HTTP probes in all maps at once by:

1. Exporting the data, including the MapName, Address, and Id, and IMProbe fields for all maps.
2. Finding and replacing the username and password parameters in each URL.
3. Re-importing the text file.

The URL format specifies the information necessary to define a probe using the IMProbe scheme:

```
URL: 'improbe://' [community'@']address[':'port] '/probe
['?'parameters]
```

**Note:** 'improbe://' is case-sensitive, and must be lower-case.

The minimal information required for an IMProbe URL is the Address information, Probe type, and Authentication information.

- Address information
  - DNS name
  - IP address
  - port number (optional)
- Probe type
  - canonical probe name
  - probe-specific parameters (optional)
- Authentication information
  - SNMP community name (optional)

The probe may be a canonical InterMapper probe name specified in full, ie. com.dartware.radius, com.dartware.http.redirect, or a unique probe suffix may be specified, ie. radius, http.redirect.

The parameters are the parameters for the probe, encoded as for a GET request. To make it simpler to create IMProbe URL's manually, the matching of parameter names is simplified. Before matching parameter names, the parameter names are converted to lower-case, and any spaces and underscores are removed. For a parameter named Shared Secret, this means that IMProbe parameters shared%20secret, sharedsecret and shared\_secret will match and provide values.

If the `parameters` section contains a parameter name that is not defined for the probe, the parameter is ignored. If a probe parameter is left out of the IMProbe URL, it is set to its default value from the probe file.

### Examples

Both of the IMProbe URLs below specify that the host `netopia.example.com` should be tested with the built-in Ping probe:

```
improbe://netopia.example.com/com.dartware.ping  
improbe://netopia.example.com/ping
```

Both these URLs test a RADIUS server at `netopia.example.com`, with a shared secret of '`secret`', a user name of '`im`', and a password of '`pw`'. The "Shared Secret" parameter can be written multiple ways:

```
improbe://netopia.example.com/com.dartware.radius?shared_secret=secret&user_name=im&password=pw  
improbe://netopia.example.com/radius?sharedsecret=secret&username=im&password=pw
```

The URLs below specifies the SNMP probe, testing a device at `192.168.1.1`, using the community string of '`public`'. The second URL a test against port `1611` instead of the default port `161` used in the first URL:

```
improbe://public@192.168.1.1/com.dartware.snmp  
improbe://public@192.168.1.1:1611/snmp
```

### Encoding Special Characters

The IMProbe URL format uses the Common Internet Scheme Syntax as specified in section 3.1 of RFC 1768. The following characters are illegal and must be encoded with `%hh`:

```
00-1F, 7F, 80-FF
```

The following characters are also considered unsafe and should be encoded with `%hh`:

```
< > " # %
```

The following characters are reserved for special purposes and should not appear unencoded except when used as delimiters in the URL:

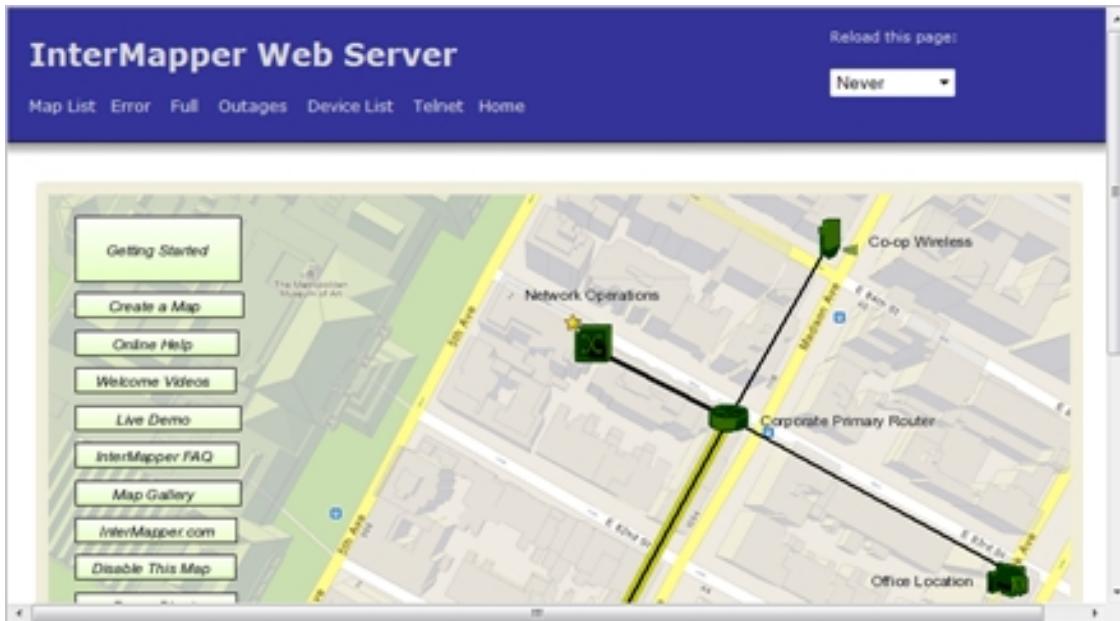
```
; / ? : @ = &
```

# Chapter 18

---

## Using the Web Server

Each page that InterMapper serves contains the same controls at the top. The example below shows an InterMapper map as it appears in a web page.



A typical InterMapper web page. the "Example.com" National map.

The InterMapper web page typically has three parts:

- The *header*, which shows the map name or other title, a navigation bar for going to other pages, and the Refresh menu. This is usually the same for every page.
- The *content* of the page, which varies, depending on which page is selected.
- The *footer* of the page, which shows the time the page was created.

### InterMapper Web Page Navigation

Use the menu at the top of the InterMapper Web Page to access the available features of the web page. The example above shows a web page for a particular map. The image below shows the InterMapper Web Server menu, found at the top of each page.



The header for the global web pages. Note that the navigational links list different choices from a map's links.

Click any of the menu items at the top of the page to view the page. Here is a brief description of each page:

- **Map List** - Click this menu item to view a list of open maps and the charts associated with those maps.
- **Error** - Click this menu item to view a list of InterMapper errors.
- **Full** - Click this item to view a list of devices and networks associated with all open maps.
- **Outages** - Click this item to view a list of current outages (that are currently down) and previous outages (that failed in the past, but have returned to service).
- **Device List** - Click this item to view a list of devices and networks associated with all open maps.
- **Telnet** - Click this item to open a Telnet client and a connection to the InterMapper Telnet server.
- **About** - Click this item to view information about the current version of InterMapper under which the Web Server is running.

### Setting the Interval for Reloading the Web Page

InterMapper pages can be set to refresh at a specified interval. This keeps the web page's information up-to-date.

#### To set the Reload interval:

1. From the **Reload this page** dropdown menu, choose a reload interval.
2. Click the **Set** button. The web browser refreshes the page at the specified interval.

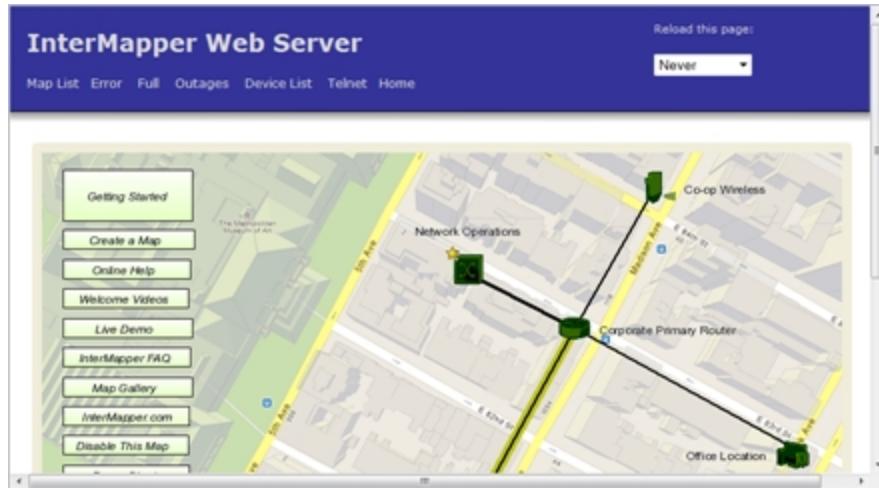


### Customizing Web Pages

InterMapper's web page appearance is controlled by template files. For more information, see *Customizing Web Pages* in the [Developer Guide](#).

## The Map Web Page

Use the Map web page to view the selected map.



*A typical Map page. Click any link, network or device to view detailed information about the item.*

**Note:** The map that appears in the Map web page is actually a "snapshot" graphic of the current state of the map at the time you request it. If you do not refresh the page, the state of the map does not change. Use the **Reload this page** dropdown menu and **Set** button to refresh the page.

- Click any link, device, or network to view detailed information about that item.

InterMapper generates a PNG image if the web browser requests that format, or JPEG image otherwise. The map image is static, but can be updated periodically using the **Reload this page** dropdown menu and **Set** button.

## **Viewing Information for a Link, Device, or Network**

Click any link, device, or network to view detailed information about that item. This is the same information that appears in a Status window. Here are typical displays:

### ***Device Information***

**Device Information**  
Name: router.company.net.  
DNS Name:router.company.net.  
Address: 192.168.1.1  
Status: UP  
Protocol:Ping/Echo  
Up Time: n/a  
Availability:100% (of 1 hour, 29 minutes, 12 seconds)  
Packet Loss:0.0% (of 143 total attempts) [Reset]  
Recent Loss:None  
*Last updated Jun 23, 12:16:42; interval: 30 seconds*

*Typical Device Information.*

### ***Network Information***

**Network Information**  
Name: 192.168.1.0/24  
IP Net:192.168.1.0/24 (255.255.255.0)  
Sum In: 2 pkt/sec 548 byte/sec 0 error/min  
Sum Out: 3 pkt/sec 316 byte/sec 0 error/min

**Comment:**

This is the network in the office.  
It has an IP address of 192.168.1.0, and a subnet mask of 255.255.255.0.

*Typical Network information.*

### **Link Information**

**Interface Information** (ifIndex = 1)  
Device Name: router.company.net.  
Description: EN1  
Type: 10 MBit ethernetCsmacd (MTU=1500)  
Status: UP for 4 days, 13 hours  
Address: 192.168.1.1 (255.255.255.0)  
MAC Address: 00-00-C5-76-E2-EC  
**Interface Statistics**  
Utilization: 0.01% (of 10 Mbit bandwidth)  
Percent Err: 0.0% (59 pkts w/o error)  
Transmit Statistics (0.01% utilization)  
Pkt/Second: 0 (5.88% multicast)  
Byte/Second: 73 (590 bps)  
Err/Minute: 0 (0 errors)  
Disc/Minute: 0 (0 discards)  
Percent Err: 0.0% (17 pkts w/o error)  
Receive Statistics (0.01% utilization)  
Pkt/Second: 1 (59.5% multicast)  
Byte/Second: 93 (748 bps)  
Err/Minute: 0 (0 errors)  
Disc/Minute: 0 (0 discards)  
Percent Err: 0.0% (42 pkts w/o error)  
Last updated Jun 23, 12:21:02; sample: 37.94 seconds.

*Typical Link Information.*

### **Map Status**

When you click a Map Status item, the map associated with that device appears, rather than an information window.

## The Error and Full Pages

Use the **Error Page** to view devices, networks, and links that are down, or in alarm or warning states. This page appears by default when you first connect your browser to the InterMapper web server.

Use the **Full Page** to view all devices, networks, and links being monitored by InterMapper, not just those with problems.

Both the Error and Full web pages have the same format, shown below.

- Click a link in the left column of either page to view detailed information about the link, device, or network.

The [Map Web Page \(Pg 640\)](#) topic shows typical Device and Network information pages.

Nov 24 14:58:12 162 nodes, 1 down, 348 links, 4 down, 8283 pk/s, 2268 K by/s												
Device	Stat	SysUpTime	Avail	Loss	Probe	Address						
<a href="#"><u>valley5</u></a>	DOWN	0+00:01:38	63.5	63.2	SNMP	198.115.160.180						
<hr/>												
Link	Prt	Stat	TPkt	TBytes	TErr	TDis	RPkt	RBytes	RErr	RDis	Util	Segment
<a href="#"><u>Burke (2)</u></a>	A10	UP	13	1941	0	0	11	268	4*	0	7.7%	
<a href="#"><u>Rope Ferry (7)</u></a>	A10	UP	8	2564	0	0	7	437	2*	0	10.4%	
<a href="#"><u>Silsby1 (10)</u></a>	A10	UP	11	2636	0	0	10	416	1*	0	10.6%	
<a href="#"><u>Fairchld1 (12)</u></a>	A10	UP	16	2048	0	0	16	455	6*	0	8.7%	
<a href="#"><u>Dartrow (14)</u></a>	A10	UP	7	1681	0	0	7	320	1*	0	7.0%	
<a href="#"><u>Blunt (15)</u></a>	A10	UP	2	656	0	0	1	30	1*	0	2.4%	
<a href="#"><u>Fleet (20)</u></a>	A10	UP	17	1549	0	0	42	19874	40*	0	74.4%*	
<a href="#"><u>The Hop (21)</u></a>	A10	UP	5	811	0	0	5	111	1*	0	3.2%	
<a href="#"><u>McNutt1 (55)</u></a>	A10	UP	22	2310	0	0	20	401	12*	0	9.4%	
<a href="#"><u>College (57)</u></a>	A11	UP	12	2795	0	0	11	383	1*	0	11.0%	
<a href="#"><u>Gym (62)</u></a>	A10	UP	8	2278	1*	0	8	334	3*	0	9.1%	

*The InterMapper Errors or Full web page. Note that the "reason" for the device being listed is shown in red.*

## Viewing the Summary Information

The top line shows a summary of items being monitored in all open maps. They are, in order:

- **date** and **time** the page was generated
- **number of devices** being monitored
- **number of devices** currently shown as down
- **number of links** being monitored
- **number of links** currently shown as down
- **total packets per second** entering the network
- **total bytes per second** entering the network

## Viewing Information for Devices

The first detailed section of the page shows *devices* that are down, or are in alarm or warning states. The Device section shows:

- **Device** - device name (click the link for more information)
- **Stat** - device status
- **SysUptime** - device uptime
- **Avail** - availability
- **Loss** - packet loss
- **RTT** - round-trip time
- **Probe** - probe type
- **Address** - network address

## Viewing Information for Networks and Links

The second detailed section of the page shows *networks* and *links* that are down, or are in alarm or warning states. The Link section shows:

- **Link** - device name (click the link for more information)
- **Prt** - device port number
- **Stat** - device status
- **TPkt, TBytes, TErr, TDis** - transmit information (transmitted packets and bytes per second, transmit errors and discards per minute)
- **RPkt, RBytes, RErr, RDis** - receive information (received packets and bytes per second, received errors and discards per minute)
- **Util** - network utilization
- **Segment** - segment name (if any)

## The Outages Web Page

Use the Outages web page to view a history of outages, as shown below.

- Click an active link on the Outages Web page to view detailed information as described in the [Map Web Page](#) topic.

The Outages web page lists up to 10 outages for each device.

<u><a href="#">Current Outages</a></u>			
<b>Date</b>	<b>Time</b>	<b>Device</b>	<b>Duration</b>
Sat, Jun 23	08:52 AM	<a href="#">router.company.net</a> (ACK'd)	1 day, 18 hours
<u><a href="#">Previous Outages</a></u>			
<b>Date</b>	<b>Time</b>	<b>Device</b>	<b>Duration</b>
Fri, Jun 22	3:01 PM	<a href="#">Fleet.company.net</a>	1 minutes, 48 seconds
Fri, Jun 22	2:53 PM	<a href="#">Fleet.company.net</a>	1 minute, 0 seconds

*The InterMapper Outages web page.*

## The Device List Web Page

Use the Device List web page to view a list of devices appearing in all open maps. The list shows each device's status, name, condition, and date and time of the last change in status.

- Click a link to view detailed information about a device. The example below shows a typical Device List web page.

### Device List for "Demo Map"

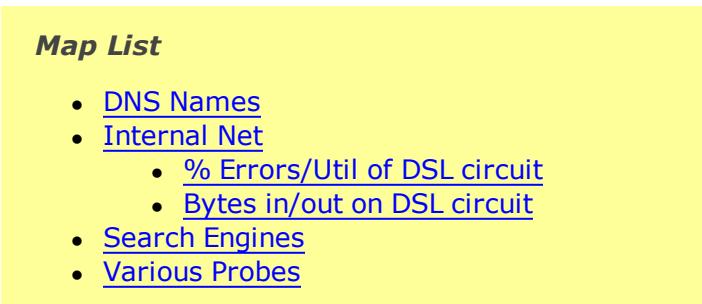
Status	Name	Condition	Date Time
	<a href="#">mail.company.net</a>	Down	06/23 10:48:06
	<a href="#">ftp.company.net</a>	Down	06/23 10:49:32
	<a href="#">dns.company.net</a>	[DNS] IP address in response doesn't match "129.170.16.79"	06/23 10:47:59
	<a href="#">www.company.net</a>	[HTTP] "" not found in returned HTTP data.	06/23 10:48:02
	<a href="#">router.company.net</a>	OK	06/23 10:47:48

*Web Device List. This shows the status of all the devices InterMapper is monitoring, sorted by severity of their status.*

## The Map List Web Page

Use the Map List web page to view a list of open maps, and a list of charts defined for each map.

The **Maps** link leads to a page listing all the maps. Clicking on one of the map links goes to a [map display page \(Pg 640\)](#) that shows a graphic of the map. This page also lists the charts associated with each page; clicking on one of those links goes to a [chart page \(Pg 649\)](#).



*The Map List Page. This shows the list of maps available to view, and any charts within a map.*

### To view a map or chart:

- Click a Map link to view the map. The selected map appears. For information on the Map web page, see [The Map Web Page \(Pg 640\)](#).
- Click a Chart link to view the chart. The selected chart appears. For information on the Chart web page, see [The Chart Web Page \(Pg 649\)](#).

## The About Page

InterMapper's About web page shows information identical to that shown in the InterMapper program's About box.

### About InterMapper [version info]

**Network Monitoring and Alerting Software**. Version [version info]

Built on [date]2.

For the latest news, visit the [InterMapper Web Page](#). For feedback and technical support, send e-mail to [support@intermapper.com](mailto:support@intermapper.com).

### Registration Information:

Registered to: Tom Terrific

Expires: Tuesday, June 19, 2012

Maximum number of monitored devices: Unlimited

Current number of monitored devices: 15

### InterMapper Statistics

#### System & Network Configuration

InterMapper Running Time: 1 hour, 2 minutes

Windows Running Time: 2 hours, 46 minutes

Windows Version: Windows 7 Service Pack 1, Build 7601

Net Software Version: WinSock 2.0

#### Network Interfaces

```
▷Interface {DFC7C6A0-484C-4B5A-8E73-F8B216853672} ifIndex 21
    ▷Interface {4F6E29AF-38F4-46A2-8663-66BB507B8C66} ifIndex 14
    ▷Interface {846EE342-7039-11DE-9D20-806E6F6E6963} ifIndex 1
▷Interface {B3D9C37C-5AE6-4791-9471-0C2875124E9B} ifIndex 13
    ▷Interface {EC7F0506-366B-4E8C-A8E8-3F794656E142} ifIndex 11
    ▷Interface {71BB0C1C-3460-418E-BD6A-9835B58DD37F} ifIndex 15
```

## Telnet Link

The **Telnet** link causes *InterMapper* to launch the Telnet application configured for your machine, which in turn connects to *localhost*.

## The Charts Web Page

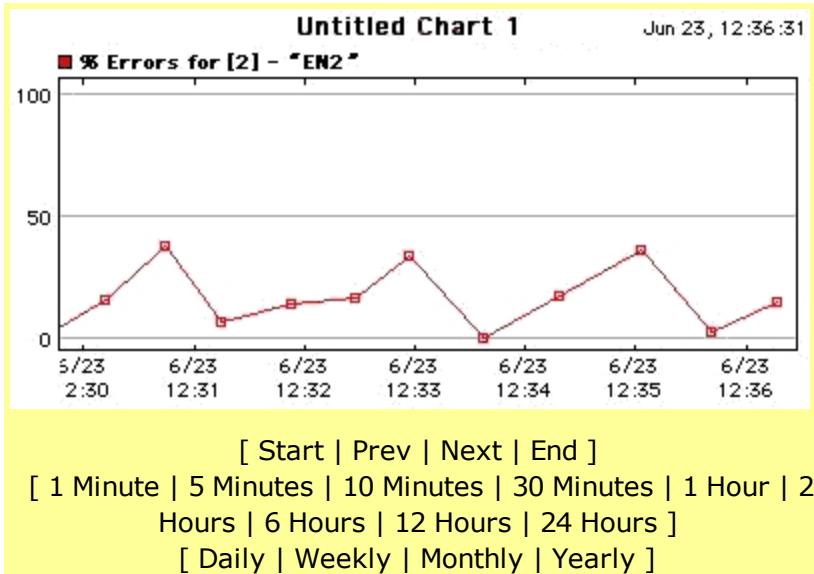
Use the Chart web page to view the selected chart.

The Map List web page shows a list of the charts associated with a particular map.

- Click on a chart name to view the chart.

- Demo Map
  - % Errors for [2] - "EN2"
- DNS Servers - Up time
- Web Servers - Up time
- FTP Servers - Up time
- Demo Map 2

*A typical Map List page. It lists the charts for the particular map.*



*A typical chart. Click the Start, Prev, Next or End links to show different parts of the history.*

# Chapter 19

---

## Telnet Server Command Reference

The Telnet Server uses a text-based command-line interface to provide information about devices and networks in maps that are open in InterMapper.

Here is summary of the features and functions available from the Telnet Server, as shown through the server's help system. For each command listed below, click [ details ] to view the server help for that command:

```
Welcome to the InterMapper [version #] operations interface.  
Enter 'help' for command list.
```

```
> help
```

### **ERROR**

- Shows a report of all devices and links that exceed some threshold. This report is updated every minute. For detailed information about the fields and columns of this report, type "help error". This is the default command when you connect. [\[ details \] \(Pg 652\)](#) (Abbreviations: "E", "ERR")

### **FULL**

- Shows a report of all devices and links being monitored. [\[ details \] \(Pg 652\)](#) (Abbreviations: "F")

### **NODE <name-prefix>**

- Shows a report of the named device using the same format as the "ERROR" report. This report is updated every time InterMapper polls the device.

[\[ details \] \(Pg 652\)](#) (Abbreviations: "N")

### **BUS <name-prefix>**

- Shows a report of the named network or segment using the same format as the "ERROR" report. This report is updated every minute.

[\[ details \] \(Pg 652\)](#) (Abbreviations: "B")

**DOWN-** Lists all devices that are down. The same functionality is also provided by the ERRORS command. [\[ details \] \(Pg 653\)](#)

**IDOWN-** Lists all interfaces (ie links) that are down. The same functionality is

also provided by the ERRORS command.  
[\[ details \]](#) (Pg 655)

**LOG** [ ]  
- Displays the last entries from the event log window and continuously displays new log lines. [\[ details \]](#) (Pg 655)

**KALI** [ <conn> [ "compress" | "kill" ] ]  
- Displays list of Kali connections and allows you to debug them.  
[\[ details \]](#) (Pg 654)

**KALID**  
- Displays a list of the maps, log, lists, and other shared resources open by each Remote connection.  
[\[ details \]](#) (Pg 655)

**HELP** [ <topic> ]  
- Without a parameter, the help command displays this help text. If you include the name of the command as the parameter, it displays detailed information about the format of the report generated by it. [\[ details \]](#) (Pg 654)

**QUIT**- End the telnet session and disconnect. [\[ details \]](#) (Pg 655)

**RELOAD**  
- Closes all map files and reopens them. This command is only implemented in the server/daemon version of InterMapper. [\[ details \]](#) (Pg 656)

**REMOTE** <hostname> [ <port> ]  
- Initiates a remote connection with a client at hostname, listening on <port>, rather than the usual procedure of a client initiating a connection with the server. This is useful when the server is behind a firewall. InterMapper Support may occasionally ask you to do this in order to let us take a look at your system without requiring you to adjust your firewall. If the port is not specified, it is assumed to be 8181.

**DETAILS** < "net" | "graph" | "collaborator" | "smtp" | "probe" >  
 - Toggles detailed logging to the debug log for the indicated class of events. InterMapper Support may occasionally ask you to do this in order to provide us with more detailed information about what is happening when you run InterMapper.

**SERVER** <server> <"start" | "stop" | "status" > [ <port> ] [ "secure" ]  
 - Start, stop or change one of the three servers: Web, Telnet or Remote. [\[ details \] \(Pg 656\)](#)

**TELNET**

- Displays a list of current connections to the Telnet server. [\[ details \] \(Pg 656\)](#)

**USERS** [<UID>] - Displays a list of users with user IDs. Include the user ID to delete the user.

**WEB**

- Displays a list of current connections to the Web server. [\[ details \] \(Pg 657\)](#)

**Command Details**

> **help error**

The ERROR, FULL, NODE, and BUS commands emit a report with three parts:

- (1) a status line summarizing the condition of the entire network
- (2) a node report
- (3) a link report.

Example:

```
Jul 31 11:11:58 2 nodes, 1 down, 8 links, 0 down, 461 pk/s,
141 K by/s
Name      Stat SysUpTime Probe Address
egg-1    DOWN 0+00:00:00 ICMP 127.110.13.210

Name      Prt Stat TPkt TBytes TErr TDis RPkt RBytes RErr RDis
Util
Segment
egg-1      1 UP   46 13790  0   0   67 10152 12* 0
1% 127.0.13.0/24
egg-1      2 UP   78 8330   0   0   586 144524 14* 0
12% 127.0.14.0/24
```

(1) THE STATUS LINE

```
Jul 31 11:11:58 2 nodes, 1 down, 8 links, 0 down, 461 pk/s,
141 K by/s
```

In order, these fields are:

- the date and time of the report
- the total number of devices
- the number of devices which are down
- the total number of links
- the number of links which are down
- the sum of pkts per second transmitted on all links
- the sum of bytes per second transmitted on all links

### (2) NODE REPORT

Name	Stat	SysUpTime	Probe	Address
------	------	-----------	-------	---------

The columns are:

- |           |  |
|-----------|--|
| Name      | - the name of the device   |
| Stat      | - the status of the device (UP, DOWN, or ACK)                    |
| SysUpTime | - the number of days + hh:mm:ss that the device has been running |
| Probe     | - the type of probe used to check the device                     |
| Address   | - the address of the device (where the probes are sent)          |

### (3) LINK REPORT

Name	Prt	Stat	TPkt	TBytes	TErr	TDis	RPkt	RBytes	RErr	RDis
Util										
Segment										

The columns are:

- |         |  |
|---------|--|
| Name    | - the name of the device   |
| Prt     | - the interface number   |
| Stat    | - the status of the interface (UP, DOWN, or ACK)                       |
| TPkt    | - the number of pkts per second transmitted on this interface          |
| TBytes  | - the number of bytes per second transmitted on this interface         |
| TErr    | - the number of packets per minute lost due to errors                  |
| TDis    | - the number of packets per minute dropped due to resource limitations |
| RPkt    | - the number of pkts per second received on this interface             |
| RBytes  | - the number of bytes per second received on this interface            |
| RErr    | - the number of packets per minute received with an error              |
| RDis    | - the number of packets per minute dropped due to resource limitations |
| Util    | - the percentage utilization of the interface                          |
| Segment | - the name of the network or segment attached to this interface        |

The \* following a value indicates that the value is above the threshold. This is useful because it tells you why the link is being displayed as part of the error report.

> **help down**

The DOWN command lists all devices which currently have the 'DOWN' or 'DOWN-ACK' status.

Each line of the DOWN list has the format:

mm/dd hh:mm:ss DOWN <Device-Name>

For devices which are acknowledged down, the following format is used:

```
mm/dd hh:mm:ss DOWN-ACK <Device-Name>
```

> **help**

HELP [<topic>]

- Without a parameter, the help command displays this help text. If you include the name of the command as the parameter, it displays detailed information about the format of the report generated by it.

> **help kali**

KALI [ [ "compress" | "kill" ] ]

Displays a list of current InterMapper RemoteAccess connections and allows you to monitor them.

When you enter "KALI" without any arguments, the response is a list of the current InterMapper RemoteAccess connections in the form:

ID	USER	REMOTE ADDRESS	IN	OUT	LOGIN@
366a58	<listener>	<server-port 8181>	0	0	-
485d58	Guest	198.115.166.18:58619	20339	177408	Oct 02,
15:51:12					
2d18b8	<listener>	<server-port 8181>	0	0	-

The second and third columns identify the user and their source IP address. The two users marked "<listener>" are the server's two pending listening connections for port 8181.

The first column of output is the identifier for the connection. To monitor an existing connection, type "KALI <conn>" where <conn> is a connection ID.

To monitor the next new connection to the server, use "next" for the connection

ID; i.e. type "KALI NEXT".

Monitoring a remote connection turns off compression for the data stream; this makes it easier to see the actual traffic. To leave compression enabled when

while monitoring, include the "compress" option; i.e. type "KALI <conn> COMPRESS".

To forcibly disconnect an existing connection, type "KALI <conn> KILL".

This command will terminate the remote connection and release its resources on the server.

> **help kalid**

Displays a list of the maps, log, lists, and other shared resources open by each Remote connection.

Here is some sample output:

```
+ CKaliOpenMapList [2d6008] user='Guest' [ADMIN]
  - [485d58] Guest@198.115.166.18:58619
+ CKaliOpenLogList [351cd8] addr='198.115.166.18' user='Guest'
[ADMIN]
  - [485d58] Guest@198.115.166.18:58619
+ CKaliOpenSoundSetList [351d68]
  - [485d58] Guest@198.115.166.18:58619
```

This indicates that the remote connection [485d58] is responsible for an "open map list", an "open log list", and an "open sound list". Essentially, this means that client will be notified of any changes to those lists. If this user had opened a map, you would see them registered for that "open map"; i.e. they would be notified of any changes.

Multiple connections may be registered for the same resource, the output above only shows the server state with one connection.

> **help ldown**

The LDOWN command lists all interfaces which currently have the 'DOWN' status. The LDOWN report does not include interfaces which are hidden and therefore not being polled.

Each line has the following format:

```
mm/dd hh:mm:ss DOWN <Device-Name>:<ifIndex>:<ifDescr>
<ifIndex> is the index of the interface in the interface table,
and <ifDescr> is a description of the interface.
```

> **help log**

Displays the last <num-lines> entries from the event log window and continuously displays new log lines.

The format of the LOG output is exactly the same as the format of the "Event Log" window of the InterMapper program.

> **help quit**

QUIT

- End the telnet session and disconnect.

```
> help reload  
RELOAD
```

Closes all map files and reopens them. This command is only implemented in the server/daemon version of InterMapper.

This command is for experimental purposes. You should avoid using it; it may go away in future versions.

```
> help server  
SERVER <server> <"start" | "stop" | "status"> [ <port> ] [ "secure" ]
```

Start, stop or change one of the three servers: Web, Telnet or Remote.

To start a server on the same or different port number (with SSL/TLS disabled), type:

```
server <server> start <port>
```

To start the server with SSL/TLS enabled, type:

```
server <server> start <port> secure
```

In both cases, <server> must be one of "web", "telnet" or "remote".

To stop a server, type:

```
server <server> stop
```

Note: You cannot stop the Telnet server using the SERVER command. However, you can restart the telnet server on a different port number. When you do this, your own telnet connection will be disconnected immediately.

To receive a quick status report on all three servers, type "server status".

This command combines the output of the "web", "telnet" and "kali" commands.

```
> help telnet
```

```
TELNET
```

Displays a list of current connections to the Telnet server.

```
ID USER REMOTE ADDRESS IN OUT LOGIN@  
404c28 <listener> <server-port 23> 0 0 -  
3f63a8 Guest 192.168.1.21:49176 0 0 -  
2d60e8 <listener> <server-port 23> 0 0 -
```

This command is similar in output to the KALI command. It lists the source and login ID of any existing telnet connections. However, unlike the KALI command, you cannot monitor or terminate telnet connections using the TELNET command; you can only receive a status report.

Note: The IN, OUT, and LOGIN@ stats are not implemented for the TELNET command.

```
> help web
```

WEB

Displays a list of current connections to the Web server. The web server normally does not allow HTTP connections to linger, so the list of current connections should never grow very large.

```
ID USER REMOTE ADDRESS IN OUT LOGIN@  
38af68 <listener> <server-port 80> 0 0 -  
35f518 <listener> <server-port 80> 0 0 -  
478478 <listener> <server-port 80> 0 0 -  
39f308 <listener> <server-port 80> 0 0 -  
473e98 <listener> <server-port 80> 0 0 -  
481bb8 <listener> <server-port 80> 0 0 -
```

This command is similar in output to the KALI command. It lists the source and login ID of any existing web connections. Since the web server has to deal with the possibility of many simultaneous hits, the number of reserve pending listeners is larger than for the other server.

Unlike the KALI command, you cannot monitor or terminate web connections using the WEB command; you can only receive a status report.

Note: The IN, OUT, and LOGIN@ stats are not implemented for the WEB command.

# Chapter 20

---

## Command-line Options

### Command-line Options for InterMapper

A number of command-line options are available for use with InterMapper.

Usage:

```
intermapperd [OPTIONS] (Mac OS/Linux*)
intermapper.exe [OPTIONS] (Windows)
```

\*For Mac OS and Linux, you may need to use the full path to the executable (/usr/local/bin/intermapperd) in order for some options to work correctly.

Argument	Description
-h -? --help	Display this help text and exit.
-v --version	Print the version number.
-f <file>	Use the specified configuration file.
-A <user-addr>	Add the specified 'user[:pass]@address' to the access list.  Extended options: -u --user <name> Run as this user. (Overrides 'User' directive) --group <name> Run as this group. (Overrides 'Group' directive)
-u --user <name>	Run as this user. (Overrides 'User' directive)
--group <name>	Run as this group. (Overrides 'Group' directive)
--settings <path>	Specify path to 'InterMapper Settings' directory. (Overrides 'SettingsFolder' directive)
--fonts <path>	Specify path to 'Font' directory. (Overrides 'FontFolder' directive)
--listen <address>	Listen only on the interface with the specified IPv4 address. Disable IPv6.
--port <port>	Listen for remote connections on the specified TCP port.
--no-daemonize	Do not fork and disassociate from the controlling terminal.
--no-ipv6	Disable IPv6 support.
--no-ssl	Disable SSL for remote connections.
--test-only	Run tests and exit.
-d --debug	Enable debug mode; don't disassociate from controlling terminal.
--printconfig	Print the daemon's configuration.
--getenv <var>	Get the value of <var> in the InterMapper environment.

--setenv <var>=<val>	Set the value of <var> to <val> in the InterMapper environment.
--wrap <filename>	Wrap the probe bundle defined by the bundle header at <filename>.
--output <filename>	Put output of wrap operation in file at <filename>.
--suppress-avail	Suppress the 'availability' statistic in device status windows.
--verify-permissions	Check the permissions of all files in the 'InterMapper Settings' directory.
--check-upgrade <date>	Check the release manufacture <date>against the maintenance contract date.
--detail <log>	Turn on detailed logging for the type indicated by <log>.

### Command-line Options for RemoteAccess

You can call InterMapper RemoteAccess from a command line, and control a significant number of functions. This can be useful for automating the updating of maps, or for various testing purposes.

InterMapper RemoteAccess currently supports the following command-line arguments:

Argument	Description
-host --host <HOST>	connect to the specified HOST
-port --port <PORT>	connect to the specified PORT on HOST (defaults to 8181)
-map --map <MAP_NAME>	load the specified map(s) from HOST (separate map names with ":")
-f --file <FILE_NAME>	open the specified shortcut file
-d --debug <DEBUG_CONFIG_FILE>	use the specified configuration file to configure debugging output
-dmax --dmax <MAX_CHARS>	set the maximum number of characters in the debug window
-D<name>=<value>	set a system property
-user --user <USER>	log in as USER
-pass --pass <PASSWORD>	log in as USER with PASSWORD
-version --version	print product version
-env --env	print out system properties
-h -? --help	print this help message
-import --import <FILE_NAME>	import the specified file (use - for stdin)
-export --export <EXPORT-SPEC>	export the specified data to stdout.
-ignore-cert-check	<b>Note:</b> Data for all maps is exported. accept all server SSL certificates without prompting

-importmap --importmap <FILE_NAME>	import the specified map.
-exportmap --exportmap <MAP_ID>	export the specified map
	<b>Note:</b> The easiest way to get the map ID is to look in the Maps folder in the InterMapper Settings folder. Each map name has a prefix that begins with "g". The text between the "g" and the hyphen ("") is the Map ID.

### Examples for Import commands

To import to a specified server, IM Remote is invoked as follows:

```
java -jar <jar-file> --host <intermapper-server> [--user <username>  
--pass <password>] --import <import-file>
```

The example below reads imported data from newdata.tab.

```
java -jar intermapper_remoteaccess.jar --host big.dartware.com --  
user admin --pass adminpw --import newdata.tab
```

The example below reads imported data from *stdin*.

```
java -jar intermapper_remoteaccess.jar --host big.dartware.com --  
user admin --pass adminpw --import -
```

The *stdin* form of the *--import* option allows Unix users to create self-contained executable files that import stuff:

```
#!/usr/bin/java  
-jar intermapper_remoteaccess.jar --host big.dartware.com --import -  
#import blah blah  
blah  
blah blah  
blah  
blah blah  
blah
```

One use for this would be to automate testing of InterMapper Server.

### Examples for Export commands

To export from a specified server, IM Remote is invoked as follows:

```
java -jar <jar-file> --host <intermapper-server> [--user <username>  
--pass <password>] \  
--export "format=<output-type> table=<table-name> fields=<field-  
list>"
```

The example below writes exported data to *stdout*.

```
java -jar intermapper_remoteaccess.jar --host big.dartware.com --user  
admin --pass adminpw --export "format=tab table=devices fields=*"'
```

# Chapter 21

---

## Troubleshooting InterMapper

- [How do I change the community string? \(Pg 662\)](#)
- [How do I monitor a fixed IP address? \(Pg 662\)](#)
- [I still can't make my router talk... \(Pg 662\)](#)
- [My switches are always orange and showing lots of errors \(or discards\). Why? \(Pg 663\)](#)
- [What does it mean when InterMapper says a "subnet mask is discontiguous"? \(Pg 663\)](#)
- [Why do network labels sometimes have a "/2\\*"? \(Pg 664\)](#)
- [Why won't a device connect to the proper subnet oval? \(Pg 664\)](#)
- [There are two separate network ovals on my map where there should only be one... \(Pg 664\)](#)
- [Some network ovals have more than one IP network number... \(Pg 664\)](#)
- [Does InterMapper support unnumbered IP links? \(Pg 665\)](#)
- [What does it mean when a Status Window shows \[\[ifIndex not in ifTable\]\] ? \(Pg 665\)](#)
- [How can I find out how many devices I'm monitoring with InterMapper. Do I have to count all the boxes on each map? \(Pg 666\)](#)
- [I get an error message: "This InterMapper Server already appears to be associated with the InterMapper Database. Existing UUID is associated with a different URL". \(Pg 668\)](#)

### How do I change the community string?

You can open the **Show Info** window on a device as described in the [Monitor menu \(Pg 360\)](#) reference topic.

#### To set the community string:

1. Select the devices for which you want to change the community string.
2. From the Monitor menu, choose **Set Community**. The Set Community window appears.
3. Enter a Community string and click **OK**.

Use this procedure to set the Read-Only community string for one or more devices at once.

### How do I monitor a fixed IP address?

In the **Add Device...** dialog, enter an IP address in dotted-decimal notation .

IP addresses discovered using the IP discovery feature are fixed by default.

### I still can't make my router talk...

If you still can't make the router work with InterMapper, try the following:

- From the Help Menu's Diagnostics submenu choose **Server Log**, or from the Window menu's Logs submenu, choose **Debug**. Look for any messages

related to that device.

- Let us know. Send E-Mail to [support@intermapper.com](mailto:support@intermapper.com) with information about the type of device and the trouble you're having.

### My switches are always orange and showing lots of errors (or discards).

#### Why?

We frequently hear of devices that appear to have high levels of discards and/or errors. They are usually orange on the map, and the status window shows a message like this:

Reason: Discards = 738: [1] sc0

The most likely reason that InterMapper shows a high rate of discards from a device is that the device is actually reporting these errors. It's common that when InterMapper reports errors (from its SNMP queries), the manufacturers' own monitoring tools will report zero errors. (It's also normal that the affected devices are operating normally, without problems, in this state.)

#### Experiments and Workarounds:

1. Use the vendor's own network monitoring tool (by telnetting in, using a web browser, etc.) to see if errors are being reported through the native management interface. It's possible that there actually *is* a problem.
2. This may be a bug in the SNMP implementation of the device. You can check with your vendor to see if there's a firmware upgrade that addresses the problem.
3. To test InterMapper's accuracy, use another SNMP console to check out the particular MIB variables for the device. InterMapper monitors the `ifInDiscards` and `ifInErrors` MIB variables (and the corresponding `ifOutxxxx` variables) listed on the [Network and Server Probes \(Pg 559\)](#) page to compute its error & discard figures.

You can monitor these same variables with your SNMP Console to see if the same errors are reported there.

4. Run a ping test through the device that's reporting the errors.
  - If packets are actually being discarded, you'll see a higher than normal packet rate of dropped packets.
  - If packets aren't being dropped, it's another clue that the values reported by SNMP are incorrect.
5. As a workaround, if you've satisfied yourself that the error reports are bogus, you can instruct InterMapper to ignore the discards and/or errors. To do this, Get Info on the affected device and check the "Ignore Interface Errors" or "Ignore Interface Discards" box as desired.

## What does it mean when InterMapper says a "subnet mask is discontiguous"?

In usual network configurations, a device's subnet mask contains one bits in the left side of the number, and zero bits on the right. InterMapper can then use the convention that a subnet mask is described as the number of bits in the subnet mask, and uses the notation of "/24" to indicate a subnet mask of 24 one-bits, or "255.255.255.0". For more details, see the [IP Addressing FAQ. \(Pg 670\)](#)

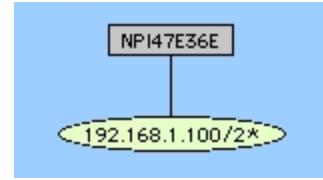
A subnet mask that has zero bits interspersed with the one bits in the left half of the value is often a configuration error. InterMapper points this out when you click and hold on a link: the status window resembles the figure at the right.



Normally, the address line contains the IP address and the subnet mask. This example shows a device whose IP address and subnet mask are set to the same value. This error is shown in the status window.

## Why do network labels sometimes have a "/2\*"

This is another indication that there's a problem with the subnet mask. The figure at the right shows the network oval with a discontiguous subnet mask. The **/2\*** indicates that the subnet mask has zero bits in the left half; clicking on the link will give a status window similar to the one above.



This example comes from an HP printer that has a bug in its SNMP implementation. The subnet mask of the printer is actually configured properly, and the printer is working. However, the SNMP software in the printer is reporting the incorrect value (it's reporting the IP address) for the subnet mask. Help/Systems has reported this to HP.

## There are two separate network ovals on my map where I only expect one...

Examine the network's Status window to determine whether the subnet masks are the same in both ovals. If the subnet masks are different, one of the devices connected to the oval with the "wrong" subnet mask probably has a misconfigured subnet mask. (Look for the device that is being polled with SNMP.)

Note: For devices polled with ICMP echoes, InterMapper tries to guess whether it should draw a link to the network that contains the IP address. If both network ovals look equally good, it may draw a link to the "wrong" one, or alternate between them.

### **Some network ovals have more than one IP network number...**

It's possible for a router or host to have two or more configured IP addresses for a particular interface. This form of secondary IP addressing can be common if your addressing is in transition. Rather than bringing everything to a halt to change IP addresses, a network administrator will support two IP subnets on the same logical wire. All the devices in the subnet can then have their IP addresses changed at their leisure, rather than forcing everyone to change them all at once. When all the addresses have changed, the administrator usually gets rid of the old network number.

It's also possible that InterMapper is only reporting what it knows, and the information it is using is incomplete. This may be true of multi-point network technologies (like frame-relay clouds). If you find a situation where InterMapper is reporting multiple networks on a logical network and you know it's wrong, please send us email ([support@intermapper.com](mailto:support@intermapper.com)) so we can figure out a way to make InterMapper's depictions more accurate.

We would also like to hear about a network with multiple IP network numbers where InterMapper does not show them correctly.

### **Does InterMapper support unnumbered IP links?**

Yes.

#### **To display unnumbered links:**

1. From the Monitor menu, choose **Set Behavior...**. The Set Behavior window appears.
2. Select the **Display unnumbered interfaces** check box.
3. Click **OK**. Unnumbered interfaces are now shown.

For more information, see the [Set Behavior \(Pg 357\)](#) window reference section of the Monitor Menu reference topic.

### **What does it mean when a Status Window shows [[ifIndex not in ifTable]] ?**

It is a normal situation for VLANs. InterMapper first traverses the ipAddrTable which maps IP addresses to ifIndex entries. If the ipAddrTable looks like:

```
ifIndex 1 --> 192.168.1.1/24  
ifIndex 2 --> 192.168.2.1/24  
ifIndex 3 --> 192.168.3.1/24
```

And the ifTable looks like:

```
ifIndex 1 --> Ethernet 10/100  
ifIndex 3 --> Ethernet 10/100
```

Then the interface description for ifIndex 2 will be listed as "[[Not in ifTable]]".

**How can I find out how many devices I'm monitoring with InterMapper.  
Do I have to count all the boxes on each map?**

The Server Information pane of the Server Settings window shows the number of devices you are monitoring.

**I discovered a multi-protocol router (TCP/IP & AppleTalk) using TCP/IP,  
but I could not go back and change the protocol to RTMP?**

This problem is related to having only one "target" address for each device, even though InterMapper knows the addresses of the other ports. When a device is discovered using TCP/IP, it gets added with a target address in IP. You can't switch to use RTMP because that's an AppleTalk-only protocol.

## Troubleshooting InterMapper RemoteAccess

### Where do I find debugging information for InterMapper RemoteAccess

#### *Unix Systems (including MacOS X)*

Sending a SIGQUIT message to InterMapper RemoteAccess will result in a full thread dump. If you launched InterMapper RemoteAccess via the command line (e.g., java -jar <InterMapper RemoteAccess>), Ctrl-\ to stdin will also work.

To send a SIGQUIT message, type the following in a terminal window (pid is the process id for InterMapper RemoteAccess):

```
kill -QUIT pid
```

The thread dump will be sent to stderr. On MacOS X, this is always the Console, unless you are running from the Terminal.

#### *Windows Systems*

If you have launched InterMapper RemoteAccess from the command line (e.g., java -jar <InterMapper RemoteAccess>) press Ctrl-Break in the Command Prompt to force the stack trace.

The stack trace always goes to stderr.

On Windows, this is the equivalent of /dev/null unless you are running from a Command Prompt or have redirected stdout/stderr to a file via the Debug Window's Redirect System Output... menu item.

## Troubleshooting InterMapper DataCenter

- [I get an error message: "This InterMapper Server already appears to be associated with the InterMapper Database. Existing UUID is associated with a different URL". \(Pg 668\)](#)

### **I get an error message: "This InterMapper Server already appears to be associated with the InterMapper Database. Existing UUID is associated with a different URL"**

Because multiple InterMapper installations can report to a single InterMapper Database, when InterMapper registers with InterMapper Database, it supplies a UUID to uniquely identify it. The InterMapper Database makes note of the URL and other characteristics of the server and associates them with the UUID. If InterMapper Database receives the same UUID from a different URL, it generates the error above. This may happen, for instance, if you copy your server settings from one copy of InterMapper to another, or move InterMapper to a new host or IP address. Your choices are to:

- **Cancel** - Stop the registration of the server
- **Force** - Force the UUID to be associated with the new URL.
- **Regenerate** - Have InterMapper generate a new UUID.

If you are certain that the installation of InterMapper which has generated this error is the same installation that was associated with the UUID previously, or if you know it should replace it, you can choose "Force".

If this is a different installation of InterMapper, choose "Regenerate".

**Note:** *It is important to pay attention to this error; map ids, device ids, etc., are only unique within a given server; if you associate a completely different installation of InterMapper with an existing UUID, the information about maps, etc. on the old server will be replaced or updated by information from the new server. When that occurs, datapoints from completely different datasets may be associated as if they were from one dataset.*

## About IP Addresses

**Note:** InterMapper now supports 128-bit IPv6 addresses. Most of the information in this topic is still relevant and accurate. In addition, you can enter an IPv6 address anywhere in InterMapper that you can enter a 32-bit IPv4 address.

- [What is an IP address? How do I get one? \(Pg 669\)](#)
- [How do computers send data through the Internet? \(Pg 669\)](#)
- [What is a subnet? Why do I care? \(Pg 670\)](#)
- [What does the "/24" mean? How does that relate to my subnet mask? \(Pg 670\)](#)
- [What is a "private IP address range"? \(Pg 671\)](#)

### **What is an IP address? How do I get one?**

An IP address ("Internet Protocol address") is a number that represents a single unique computer on the Internet. IP addresses are similar to telephone numbers, in that each computer (or telephone) must have its own unique IP address (telephone number.) Like telephones, there's a directory system - called the Domain Name System, or "DNS" - that can convert a name such as "www.apple.com" into a corresponding numeric IP address.

32-bit IPv4 Addresses are written as a sequence of four numbers separated by ".", like this: 208.123.246.35. Each of the four numbers in the IP address can take the value between 0 and 255.

InterMapper now supports 128-bit IPv6 addresses.

Every computer on the Internet must have a unique IP address. ISPs purchase large blocks of consecutive IP addresses, and then allocate smaller ranges of these addresses to their customers. Thus, a particular company might be assigned all the 254 IP addresses in the range 208.123.246.1 to 208.123.246.254. (The addresses ".0" and ".255" are not usually assigned.) Companies then assign the IP address to individual computers within the organization.

### **How do computers send data through the Internet?**

Computers send information through the Internet by dividing the data to send into small chunks ("packets") and transmitting them to the other device. All this happens without your doing anything - the web browser, e-mail program, etc. all take care of these low level details.

When your computer wants to send to another computer, it creates the packet, then places the other computer's address in the *destination address* of the packet, places its own address in the *source address* of the packet, and then sends the packet off, either directly to the destination computer, or to a nearby router that takes responsibility for routing the packet.

There's an analogy with the post office here. Packets are like envelopes, with destination addresses and return addresses. Routers are like post offices: they check the destination address and have the responsibility for delivering the packet

to the final destination computer or to another router that's closer to the destination.

### **What is a subnet? Why do I care?**

A *subnet* is a range of IP addresses. The special attribute of a subnet is that all the computers within the subnet (a "sub-network") can talk directly to each other, and don't need a router to communicate.

As mentioned above, your computer delivers a packet directly to the destination computer or sends it to the router for ultimate delivery.

But how does your computer know whether the packet's destination is within its subnet? The answer is that your computer uses the subnet mask to determine the members of the subnet.

The chart below associates the number of IP addresses in a subnet to the subnet mask. For example, the subnet mask "255.255.255.0" represents 254 consecutive IP addresses. If your computer's IP and the destination computer's IP addresses are in the same subnet address range, then they can send packets directly to each other. If they're not in the same range, then they must send their data through a router for delivery.

### **What does the "/24" mean? How does that relate to my subnet mask?**

InterMapper uses a shorthand notation to represent an IP subnet's information. The number in the "/xx" shorthand stands for the number of bits (technically, bits set to one) in the subnet mask. The convention is always to start at the left end of the 32-bit (IPv4)subnet mask. The table below shows the correspondence between the "/xx" notation and the actual numeric representation.

<b>Subnet Mask</b>	<b># of Addresses</b>	<b>Subnet Mask</b>	<b># of Addresses</b>
/1 128.0.0.0	2.1 billion	/17 255.255.128.0	32,766
/2 192.0.0.0	1 billion	/18 255.255.192.0	16,382
/3 224.0.0.0	536 million	/19 255.255.224.0	8,190
/4 240.0.0.0	268 million	/20 255.255.240.0	4,094
/5 248.0.0.0	134 million	/21 255.255.248.0	2,046
/6 252.0.0.0	67 million	/22 255.255.252.0	1,022
/7 254.0.0.0	34 million	/23 255.255.254.0	510
/8 255.0.0.0	17 million ( <i>Class A</i> )	/24 255.255.255.0	254 ( <i>Class C</i> )
/9 255.128.0.0	8.4 million	/25 255.255.255.128	126
/10 255.192.0.0	4.2 million	/26 255.255.255.192	62
/11 255.224.0.0	2.1 million	/27 255.255.255.224	30
/12 255.240.0.0	1 million	/28 255.255.255.240	14
/13 255.248.0.0	524 thousand	/29 255.255.255.248	6
/14 255.252.0.0	262 thousand	/30 255.255.255.252	2
/15 255.254.0.0	131 thousand	/31 255.255.255.254	<a href="#">RFC 3021</a>
/16 255.255.0.0	65,534 ( <i>Class B</i> )	/32 255.255.255.255.	<i>Loopback address</i>

**What is a "private IP address range"?**

The Internet Assigned Numbers Authority (IANA) has reserved several blocks of IP addresses that an organization may assign for its own private internet. These blocks are defined in RFC 1918 (<http://www.ietf.org/rfc/rfc1918.txt?number=1918>).

From the RFC:

3. Private Address Space

The Internet Assigned Numbers Authority (IANA) has reserved the following three blocks of the IP address space for private internets:

10.0.0.0 - 10.255.255.255 (10/8 prefix)  
172.16.0.0 - 172.31.255.255 (172.16/12 prefix)  
192.168.0.0 - 192.168.255.255 (192.168/16 prefix)

We will refer to the first block as "24-bit block", the second as "20-bit block", and to the third as "16-bit" block. Note that (in pre-CIDR notation) the first block is nothing but a single class A network number, while the second block is a set of 16 contiguous class B network numbers, and third block is a set of 256 contiguous class C network numbers.

## Quick Intro to IPv6 Address Formatting

This table gives the major forms of IPv6 addresses. The most important/common are **Localhost** (::1), **Global Unicast** (usually starting with "200x"), and **Link-Local Unicast** (starting with "FF80").

Address Type	Binary Prefix	IPv6 Notation
Unspecified	00...0 (128 bits)	::/128
Loopback	00...1 (128 bits)	::1/128
Multicast	1111 1111	FF00::/8
Link-Local Unicast	1111 1110 10	FE80::/10
ULA (*)	1111 110	FC00::/7
Global Unicast (**)	001	2000::/3
IPv4-Mapped	00...0:1111 1111:IPv4	::FFFF:IPv4/128
Site-Local Unicast (***)	1111 1110 11	FEC0::/10
IPv4-compatible (***)	00...0 (96 bits)	::IPv4/128

\* Unique Local Address (ULA) is an IPv6 unicast address that is generated to be unique in a local context. It is highly likely to be unique globally.

\*\* Global Unicast address are all currently being assigned with a 2000::/3 prefix. Other three-bit prefixes are reserved for future use.

\*\*\* Site-Local Unicast and IPv4-compatible prefixes are deprecated. Use ULA and IPv4-mapped addresses, respectively.

## About DNS

- [What resolver does InterMapper OSX use for its DNS? \(Pg 1\)](#)
- [InterMapper sometimes won't show a device's DNS name... \(Pg 673\)](#)
- [What is a FQDN? \(Pg 673\)](#)

### **What resolver does InterMapper OSX use for its DNS?**

InterMapper uses two different DNS resolvers. When you add a device using the **Add Device...** command, InterMapper uses the system's resolver, configured in the OSX Network settings panel. When you use the "DNS Check" feature , InterMapper does its own DNS operations, via UDP packets, to the domain name servers listed in the DNS Monitor Preferences panel. InterMapper's built-in domain name resolver assumes that the domain name is fully-qualified. The interval for verifying the domain name is determined by the TTL in each DNS response (with the minimum interval specified in the DNS Monitor preferences panel).

When you discover devices, InterMapper initially looks up the FQDN name from the IP address (address --> name), then it settles down to monitoring the domain name (name --> address). InterMapper's built-in DNS resolver doesn't handle partially-qualified or invalid domain names; they fail to resolve.

### **InterMapper sometimes won't show a device's DNS name...**

From the Edit menu, you can choose the Set Info submenu, then choose **Set Address...** to change the DNS option for each affected device from**Resolve name to address** to **Resolve address to name**. With this setting InterMapper always resolves the address to a name, and you don't see errors with names that aren't fully-qualified domain names.

### **What is a FQDN?**

This is an acronym for a "Fully-Qualified Domain Name." Within an organization, it's convenient to refer to a computer by the first part of its name, knowing that "everyone" will know that the remainder is the same as the other computers in the organization. Thus, you may speak of "sneezy" and "dopey", knowing that they're really two computers at "seven-dwarves.org".

To identify a computer uniquely, you need the FQDN, such as "sneezy.seven-dwarves.org." Most user software can add a "search domain" to a partially-qualified domain name, adding the missing part of the FQDN. Some DNS servers require the FQDN to work properly with InterMapper. It's always best to enter the full domain name.

**Tip:** Even though you enter a FQDN when specifying a computer, you can use the *Short, Smart Name* when [constructing a label for a device \(Pg 381\)](#).

**Tip:** Technically, a FQDN requires a "." at the end. Just as the search domain is tacked onto the end of a partial domain name, most user software adds the trailing "..."

## SNMP Information

- [What is SNMP? \(Pg 674\)](#)
- [What is the 'Read-only Community String'? \(Pg 674\)](#)
- [Why can't I get SNMP information from a device? \(Pg 675\)](#)
- [How can InterMapper query a particular MIB variable? \(Pg 675\)](#)
- [Do all tables have an index? \(Pg 676\)](#)
- [Where can I read more information about SNMP? \(Pg 677\)](#)
- [How do I interpret an unknown enterprise number? \(Pg 677\)](#)
- [Is there a way to scan a network for all SNMP devices? \(Pg 677\)](#)

### What is SNMP?

SNMP stands for the Simple Network Management Protocol. At its heart, SNMP is a set of rules that allows a computer to get statistics from another computer across the Internet.

Computers keep track of various statistics that measure what they're doing. For example, routers can keep track of the number of bytes, packets, and errors that were transmitted and received on each interface (port). Web servers might keep a tally of the number of hits they have received. Other kinds of equipment have configuration information that's available through SNMP.

Each of these pieces of information (packet statistics, page hits, configuration) is kept in a database described by a *Management Information Base* (a *MIB* in SNMP parlance.) There are many different MIBs, describing many different aspects of a computer's operation.

The various values that can be retrieved from a MIB are called *MIB variables*. These variables are defined in the MIB for a device. Each MIB variable is named by an *Object Identifier* (OID), which usually has a name in the form of numbers separated by periods ("."), like this: 1.3.6.1.xxxx.x.x.x.x...

For example, the MIB-II (pronounced, "MIB two") has a variable that indicates the number of interfaces (ports) in a router. It's called the "ifNumber", and its OID is 1.3.6.1.2.1.2.1.0

InterMapper can query a device for the MIB variables and display the results. When a device receives a SNMP Get-Request for this ifNumber OID, it responds with the count of interfaces.

**Note:** The trailing ".0" in the example above is technically part of the OID. Although you will often see OIDs written without it, InterMapper requires that it be present wherever you enter an OID.

### What is the 'Read-only Community String'?

The SNMP Read-Only Community String is like a password. It is sent along with each SNMP Get-Request and allows (or denies) access to device. Most network vendors ship their equipment with a default password of "public". (This is the so-called "default public community string".) Many network administrators will change the community string to keep intruders from getting information about the

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network setup. This is a good idea. Even if it's only read-access, SNMP can divulge a lot of information about the network that could be used to compromise it.

If there's a "read-only community string", you might expect that there is a "Write community string". You'd be correct. There is also a SNMP Set-Request, which is a command to set certain SNMP MIB variables (e.g., certain OIDs) to a specified value. These writes are protected by the write community string (which should *never* be set to 'public'!). Many SNMP-speaking devices also have IP address filters that ignore requests (read and write) unless the source address is on an access list.

There's also a SNMP Trap, which is an unsolicited message from a device to an SNMP console (for example, InterMapper) that the device is in an interesting state. Traps might indicate power-up or link-up/down conditions temperatures exceeding certain thresholds, high traffic, etc. Traps provide an immediate notification for an event that might otherwise be discovered only during occasional polling.

### **Why can't I get SNMP information from a device?**

InterMapper requires that SNMP be available and configured to display traffic information. The most common cause of not being able to see traffic is that you haven't entered the SNMP Read-only community string. (This is like a password that controls whether another computer can retrieve SNMP information.)

In order of simplest to most complex, here is a list of reasons that InterMapper might not get SNMP information from a device:

- **Wrong DNS name/IP address** - (not likely, but we have to mention it)
- **No connectivity** - Can you ping the device from InterMapper?
- **No SNMP agent on the device** - Many devices or computers have optional SNMP capabilities that must be installed separately.
- **Is the SNMP agent disabled?** - Many devices allow you to disable the SNMP capability totally, or from certain ports.
- **If the SNMP agent is based on net-snmp or UCD-snmp package** - be sure that the configuration file specifically lists InterMapper's IP address/subnet as an allowed client
- **In a custom probe, have you specified the OID properly?** - (See the [OID Format FAQ \(Pg 675\)](#) for details.)
- **Wrong Community string** - (have you tried 'public'?)
- **Access lists: does the equipment only allow SNMP access from certain addresses?**
- **Firewalls: does a firewall block the SNMP port between your Mac and the equipment?**
- **Bugs in the SNMP agent on the equipment** - InterMapper uses SNMP Get-Next-Requests in several places. We've seen certain equipment that fails when queried this way.

If you're sure that you've checked all these things and you still can't get SNMP information, please get back to us at [support@intermapper.com](mailto:support@intermapper.com). We may have some tricks up our sleeves. (Or we may wind up learning something!)

## How can InterMapper query a particular MIB variable?

There are two kinds of MIB variables: scalar values and table entries.

- **Scalars** have a single value, such as the interface number shown above. For example, the `ifNumber` MIB variable of a router is a single number that represents the total number of its interfaces (ports).
- **Table values**, on the other hand, provide the same pieces of information for different items, such as the traffic for each of a router's ports, or information about each of the TCP connections in a device.

InterMapper can read and display both scalar variables and table variables in its custom SNMP probes.

Scalar values must have a ".0" suffix in their OIDs. For example, the OID for `ifNumber` in MIB-II is often written as "1.3.6.1.2.1.2.1". In custom probe files, it should be represented as "1.3.6.1.2.1.2.1.0". (This ".0" is technically part of the OID - it's convenient not to write it, though.)

Table variables are generally suffixed with the index of the row. (This isn't always true: see the note below). For example, the Cisco Environment Monitoring MIB defines two variables for the input air temperature and input voltage as the first rows in each of these tables:

```
ciscoEnvMonTemperatureStatusValue 1.3.6.1.4.1.9.9.13.1.3.1.3
ciscoEnvMonVoltageStatusValue 1.3.6.1.4.1.9.9.13.1.2.1.3
```

If you add a suffix ".1" to each of these, you'll get the value of the first row; add ".2" to as a suffix, you'll get the second row, etc.

## Do all tables have an index?

As noted above, some tables don't have a separate index column. These rows are named (their OIDs are specified by) data in the row. For example, the OID for `tcpConnState` row, the status of a particular TCP connection is "1.3.6.1.2.1.6.13.1.1". Its index is the source and destination IP address and port (all four values) which are appended to the `tcpConnState` OID. Thus, the full OID for the state of a TCP connection from 9.8.7.6 port 543 to 123.45.67.89 port 8765 would be:

```
1.3.6.1.2.1.6.13.1.1.9.8.7.6.543.123.45.67.89.8765
```

### **Where can I read more information about SNMP?**

Here's a great site to start learning about MIBs and all the cool things you can do with them:

<http://www.snmpworld.com/>

Another is:

<http://netman.cit.buffalo.edu/>

A periodic newsletter, *The Simple Times*, is online at:

<http://www.simple-times.org/>

A great site pointing to various snmp products:

<http://www.simpleweb.org/>

### **How do I interpret an unknown enterprise number?**

**Q:** My error log file shows the following lines:

```
14/02 15:13:07 TRAP CITRIX1:: coldStart14/02 15:13:07 TRAP  
CITRIX1:: linkUp, ifIndex = 114/02 15:13:07 TRAP CITRIX1::  
linkUp, ifIndex = 1677721914/02 15:14:07 TRAP CITRIX1::  
1.3.6.1.4.1.3845.3.1.1 (8) { <no variables> }
```

Can you tell me what that SNMP ID is? (1.3.6.1.4.1.3845.3.1.1 (8))

**A:** The "1.3.6.1.4.1..." prefix of the OID indicates that the trap is from a private enterprise MIB. You can find out what enterprise by downloading the Enterprise Numbers RFC from:

<http://www.iana.org/assignments/enterprise-numbers>

Reading through the file indicates this:

```
3845 Citrix Systems          Keith Turnbull  
keith@citrix.com
```

You should contact the Citrix company (or read their MIB) to find out the exact interpretation of the trap's OID.

### **Is there a way to scan a network for all SNMP devices?**

InterMapper will do a very good job of finding SNMP-speaking devices if you know the devices' SNMP Read-only Community string. Detailed instructions for scanning a subnet are available from the network scanning page. Be sure to set the default SNMP Read-only Community String as shown in the [SNMP Preferences. \(Pg 227\)](#)

InterMapper may not be able to find a device for [any of these reasons. \(Pg 675\)](#)

## About WINS Names

Microsoft's Windows Internet Naming Service (WINS) is a name resolution service that resolves computer names to Internet Protocol (IP) address. Using WINS, the computer name can be resolved to a specific IP address.

InterMapper uses WINS names as follows:

- InterMapper (all platforms) queries devices for a NetBIOS (WINS) name. This name is used as the device's smart name if the DNS name is unknown or contains the word "DHCP".
- When adding a device that is in the same LAN as InterMapper server, you can use the device's NetBIOS/WINS name. To cause a name to be treated as a WINS name, place "\\\" in front of the name when adding a device. The name is not looked up in the DNS.

**Note:** InterMapper does not use the WINS server - it only resolves local device names.

## InterMapper FAQs

### **How can I stop the InterMapper server from polling for a while?**

The easiest way to stop InterMapper's polling for a while is to disable all the maps. To do this:

1. Open the Server Settings... window
2. Click the Enabled Maps tab.
3. Uncheck all the maps. They will no longer be polled or tested.

Alternatively, you can disable maps individually from the Map List by right-clicking on a map in the list and selecting the 'Disable' command.

### **How can I stop the InterMapper server? How can I restart it?**

On MacOS X, InterMapper installs a Menu Bar Application that gives a summary of InterMapper's status, and allows you to start and stop the InterMapper daemon.

On Windows, InterMapper installs an icon in System Tray (lower right corner) that does much the same thing.

On all Unix/Linux installations, InterMapper installs a script to control the server daemon.

We recommend you read the Readme file on the [Downloads page](#) for information specific to your version.

### **How can I move InterMapper from one server to another?**

The recommended way to move InterMapper to another server is to follow these steps:

1. Install InterMapper on the new server, and stop the InterMapper service/daemon when installation is complete.
2. Stop the InterMapper service/daemon on the old server and copy your InterMapper Settings folder to the new platform, replacing the one created when you installed InterMapper on the new server.
3. On the new server, start the InterMapper service/daemon.

The default location for the InterMapper Settings folder depends upon the platform where installed:

- Windows: C:\Program Files\InterMapper\InterMapper Settings
- Mac OS X: /Library/Application Support/InterMapper Settings
- UNIX/Linux: \$HOME/InterMapper\_Settings/, where \$HOME is the home directory for the specified user InterMapper is running under.

Note: If you are migrating from Mac OS X PowerPC to Mac Intel, Windows or any other Intel-based system; or from Solaris Sparc to Solaris Intel, please contact [support@intermapper.com](mailto:support@intermapper.com) prior to installing on the new platform. Additional steps are necessary in order to preserve the historical chart data when migrating between these platforms.

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## How can I uninstall the InterMapper server?

Each version of InterMapper comes with its own uninstaller. Find the original distribution file (or retrieve the current version from <http://www.intermapper.com/files>) and use its uninstall feature.

## I get an "intermapperd dead but subsys locked" error message when I get InterMapper status by typing "/etc/init.d/intermapperd status". What does this mean?

The message "intermapperd dead but subsys locked" means that intermapperd is not running; the daemon has either crashed or was sent an explicit kill command by the root user. Furthermore, the InterMapper lock file /var/lock/subsys/intermapperd exists when intermapperd isn't running.

To restart InterMapper, log on to the system as root and type:

```
/etc/init.d/intermapperd restart
```

You may also clear the lock file by typing:

```
rm /var/lock/subsys/intermapperd
```

but this isn't required because the restart command does this.

## Why do I have trouble with Telnet using my Windows terminal program?

**Q:** When I use HyperTerminal to telnet into InterMapper's server, I don't see character echoes. Why not?

**A:** Two commonly-available Windows telnet clients, HyperTerminal and the command-line telnet client, do not work correctly with InterMapper in their default configuration. Neither of them do local echoing by default, and both refuse to turn it on when asked to do so by the InterMapper server.

Therefore, neither of these clients work out-of-the-box with InterMapper, so you need to turn on local echoing yourself.

### *Turning On Local Echoing in HyperTerminal*

With your InterMapper session loaded, choose File->Properties. Click the Settings tab. Click the ASCII Setup... button. Check the box labelled "Echo typed characters locally". When connecting to earlier versions of InterMapper, you should also check the box labelled "Send line ends with line feeds". Later versions of InterMapper do not require this (although it won't hurt.) Click Ok to close the ASCII Setup dialog, then click Ok to put away the Properties dialog. Remember to save your session to make the new settings permanent.

### **Turning On Local Echoing with Built-in Telnet Client**

Start your telnet session with InterMapper. Press Ctrl+] to enable the client to process setup commands. Type "SET LOCAL\_ECHO" and press Enter to turn on local echoing. Press Enter again to return to your session. I'm not aware of any way to save this setting for future sessions, so you'll need to do this each time.

### **Putty - Another Choice**

One free Windows telnet client we have had good luck with is Putty. Putty is available at <http://www.chiark.greenend.org.uk/~sgtatham/putty/>. Putty requires no configuration to work correctly with InterMapper. You may find this nicer to use than either of the built-in options that come with Windows.

### **On an Xserve, can I use the serial port for paging?**

You can use the built-in serial port to drive an external modem that can in turn send page notifications. To do this, you must disable the getty process that's usually listening on that port.

On the Xserve, open this file:

```
/System/Library/StartupItems/SerialTerminalSupport
```

At about line 72 is:

```
ENABLE_SERIAL_TERMINAL=$TRUE
```

Change this to:

```
ENABLE_SERIAL_TERMINAL=$FALSE
```

Re-init the system, and there should be no getty and InterMapper will get to the modem just fine. (Thanks to Charlie Winchcombe for this tip.)

## InterMapper Flows FAQs

### **When the InterMapper Flows server is restarting and reloading the sessions, the Flows Window displays the number of records loaded so far vs. the total number of sessions. Sometimes the first number is larger than the second. What's going on?**

The NetSAW server estimates the number of flows it will load into its cache, based on the flowrate that's learned from the actual records in the DB. Since this estimate is never perfect, you'll sometimes notice that the actual number of records exceeds the estimated records. Other times it'll fall short and finish early.

### **Is there any additional information available for troubleshooting or debugging a problem with InterMapper Flows?**

InterMapper can provide some debug information via the Telnet server. To do this, turn on the Telnet server in the InterMapper Settings. Then telnet to the InterMapper server and use the "flows" command to list the exporters that InterMapper knows about. Use the "ext" command to check that InterMapper has its own connection to the IMFlows server.

You can copy/paste the output of these two commands into a bug report (Help -> Report a Bug...).

In the directory in which InterMapper Flows is installed, (see the Readme file in the installation package for a file location) there is a log file named "ns2flows.log". The server logs significant information in this file. If you feel the file is getting too large, you can delete it safely.

### **Does InterMapper Flows work on LAN links? On WAN Links?**

Yes, InterMapper Flows will work on any link where there's an "exporter" (the router/switch) to keep track of the traffic statistics. Many kinds of Cisco equipment can export flow records that summarizes the data flowing through that device.

### **How much bandwidth will NetFlow consume? How frequent is the traffic flow?**

A quick answer is "not much". According to Cisco reference documents, NetFlow consumes 5 to 10 percent of your network bandwidth, depending on your configuration. In Help/Systems' experience, it is often much less. The switch/router summarizes the flow information, and typically will send an update about the flows it has seen every 60 or 120 seconds (this is configurable).

It is easy to set up your Cisco gear to send flow records, so you can see the effect on the traffic. You can find a brief document that describes the commands at:

[http://dartware.com/support/tech\\_notes/imflows/netflowconfig.html](http://dartware.com/support/tech_notes/imflows/netflowconfig.html)

### **Does IM Flow act as collector at each location so that the central server can pull the data from each collector and correlate the same?**

No. In our first release, all the flow records must be sent to one InterMapper Flows machine (the "collector"). You can have multiple exporters sending flow records to the single collector, though.

## Cross-platform Questions

These questions relate to the differences between the implementations on various platforms.

- [How can I move from Traditional to the service/daemon version on Windows/Unix/Linux? \(Pg 683\)](#)
- [How can I keep InterMapper from polling for a while? \(Pg 684\)](#)
- [How can I stop the InterMapper server? \(Pg 684\)](#)
- [How can I remove the InterMapper server completely? \(Pg 684\)](#)

### **How can I move from Traditional to the service/daemon version on Windows/Unix/Linux?**

The recommended way to upgrade to InterMapper on another platform is to follow these steps:

1. Set up InterMapper on the other platform, configuring the preferences anew as well as your notification settings.
2. Copy your map files to the "InterMapper Settings/Maps (Disabled)" folder on the new platform. (If you wish, you can also use InterMapper RemoteAccess to "import" them onto the new server.)
3. On the new platform, open the Server Settings window and "enable" the maps that you want to run.
4. Go through your maps and re-attach notifications to devices; these connections were lost in the transfer.

It is also possible to copy your InterMapper Settings folder and maps directly from one platform to another. This will preserve the attached notifiers for devices in your maps, but the procedure is slightly more complicated:

If you are running InterMapper "traditional" on a pre-Mac OS X system (ie Mac OS 9.2 or earlier), you will need to convert your preferences file ("InterMapper Prefs"). The easiest way to do this is to run InterMapper on Mac OS X -- start up the program and quit it -- InterMapper will fix up the file so it is cross-platform.

If you have any icon files in your "Custom Icons" folder, you will need to convert these to "data-fork" based resource files. You can use the [Custom Icon Conversion Script \(Pg 683\)](#) on a MacOS X computer to convert the file format. If that's not convenient, then send a note to [support@intermapper.com](mailto:support@intermapper.com). We will do the conversion and return the new file to you.

You must double-check your modem pager settings on the new platform; the location of the modem device stored in the preferences file will be completely different.

All of the other files should transfer without any problems.

### **How can I use custom icons from my Mac Classic installation on OSX?**

There is a droplet that converts resource-based icons (used by the Classic/MacOS 8-9 versions) to a "data-fork" version that works on OS X. You can retrieve the droplet from: [http://www.intermapper.com/binaries/Convert\\_Custom\\_Icon\\_File.sit](http://www.intermapper.com/binaries/Convert_Custom_Icon_File.sit)

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Drag your icon files onto this droplet program, and they will be converted to a form usable by the MacOS X version of InterMapper. Drag the resulting files to the */Library/Application Support/InterMapper Settings/Custom Icons* folder.

### **How can I stop the InterMapper server from polling for a while?**

The easiest way to stop InterMapper's polling for a while is to disable all the maps. To do this:

1. Open the **Server Settings...** window
2. Click the **Enabled Maps** tab.
3. Uncheck all the maps. They will no longer be polled or tested.

### **How can I stop the InterMapper server? How can I restart it?**

When using the Traditional InterMapper on MacOS X, simply quit the application. That will stop the polling. If you're using one of the server-based InterMapper versions (on OSX, Windows, or Unix/Linux), you'll need to stop the InterMapper service/daemon separately from InterMapper or InterMapper RemoteAccess.

On Windows installations, use InterMapper Control Center to start, stop, or restart the InterMapper service.

On all Unix/Linux/MacOSX installations, InterMapper installs a script to control the server daemon. The script should be invoked with one of these commands:

- **start** - start the daemon
- **stop** - stop the daemon
- **restart** - stop and restart the daemon
- **status** - check the status of the daemon

This script will be installed in different directories, depending on the operating system.

- **MacOS X:** /Library/StartupItems/InterMapperServer/InterMapperServer *command*
- **Most versions of Linux:** /etc/init.d/intermapperd *command*
- **FreeBSD:** /usr/local/etc/rc.d/intermapperd.sh *command*
- **Solaris:** /etc/init.d/intermapperd *command*

### **How can I uninstall the InterMapper server?**

Each server-based version of InterMapper comes with its own uninstaller. Find the original distribution file (or retrieve the current version) and use its uninstall feature.

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