



## **MPLS Management Suite**

**1.1**

### **RELEASE NOTES**

**P/N 300-002-432**

**REV A01**

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# 1

## **MPLS Management Suite, Version 1.1**

The InCharge MPLS Manager, working with InCharge Service Assurance Manager (Service Assurance) and InCharge IP Availability Manager (Availability Manager), manages MPLS networks and the VPNs configured and provisioned over them. It provides management capabilities for both the MPLS and the VPN domains of an MPLS/VPN network. It also provides for the mapping and correlation among the domains, and between the MPLS/VPN domains and the underlying transport domain, by means of cross-domain correlation and cross-domain impact analysis. Notifications, topology, and maps are displayed through the InCharge Global Console.

The MPLS Management Suite includes the following components:

- MPLS Manager
- Perl API

## Supported Platforms

Table 1 summarizes the operating systems supported for the MPLS Management Suite.

**Table 1:** Supported Platforms for MPLS Management Suite

OPERATING SYSTEM	VERSION
Solaris	8 and 9
Windows	Windows 2000 Server and Advanced Server with SP4 or later, Windows 2003

## Compatibility

The MPLS Management Suite is compatible with SMARTS products listed in Table 2.

**Table 2:** MPLS Management Suite Compatibility with SMARTS Products

MPLS MANAGEMENT SUITE PRODUCTS	COMPATIBLE PRODUCT VERSIONS	
	SERVICE ASSURANCE MANAGEMENT SUITE	IP MANAGEMENT SUITE
MPLS Manager, 1.1 Perl API	6.2, SP1 with following point patch or later Smart Pack Solaris:G28774.SUN-ALL.IC-6.2-SP1.20050417.tar.Z Windows: G28774.WIN-ALL.IC-6.2-SP1.20050417.zip	6.2, SP1 or later
The SMARTS products in this table are typically used with the MPLS Management Suite. For compatibility with other SMARTS products, contact Technical Support.		

## Other SMARTS Products Used in the MPLS Solution

The SMARTS MPLS solution requires the MPLS Management Suite and the following SMARTS products:

- Service Assurance Management Suite: Global Manager and Global Console.
- IP Management Suite: Availability Manager

## Enhancements

The MPLS Management Suite version 1.1 provides these enhancements and improvements to version 1.0:

- Support for overlapping IP addresses for Provider Edge (PE) routers on VPN Routing and Forwarding Tables (VRFs). When IP addresses are duplicated within interfaces assigned to VRFs, the Availability Manager tags each IP address with a route distinguisher that makes each IP address unique.
- Support for discovery on Juniper M/T and ERX MPLS routing devices.

## Enhancements to Other SMARTS Applications

The Service Assurance Manager was enhanced to support the MPLS Management Suite with new MPLS-related maps. These maps are available at the Global Console when the required Service Assurance point patch is installed:

- LSP (Label-Switched Paths)—shows the LSP connectivity between Provider Edge (PE) routers.
- LSP Hops—shows the intermediate LSP hops that comprise an LSP.
- VPN (Virtual Private Network)—shows the VPN, the VRFs that are members of the VPN, the PE routers that host the VRFs, and the Customer Edge (CE) routers to which the VRFs virtually connect.





# 2

## Installing the Service Assurance Point Patch

After installing the Service Assurance Management Suite and the MPLS Management Suite, you must install the Service Assurance point patch.

This release requires a point patch for Service Assurance that supports display of the MPLS-related maps. If the patch is not installed, you cannot view these maps.

When you have completed installing the patch wherever the Global Manager and Global Console are installed, configure the components as described in the *InCharge MPLS Manager Configuration Guide*.

### Installing the Service Assurance Point Patch

Perform the following steps to retrieve and install the Service Assurance point patch. Patches are available from the EMC Powerlink web site. To access the web site, you need a Powerlink username and password.

- 1 In your Web browser, access the Powerlink web site:  
*<http://powerlink.emc.com>*
- 2 Enter your Powerlink username and password.
- 3 On the Powerlink page, select **Support**.
- 4 On the Support page, select **Downloads and Patches**.

- 5 On the Downloads & Patches page, click **Downloads S-Z** to expand the list of choices and click **Smarts**.
- 6 From the Smarts Software Downloads page, select the Service Assurance Manager patch required for the MPLS Management Suite 1.1 and your operating system.
- 7 Save the file to the **BASEDIR**/*smarts* directory, where **BASEDIR** is the installation directory for Service Assurance Manager (the default directory on a UNIX operating system is */opt/InCharge6/SAM*).
- 8 Unpack the file with the appropriate command, as follows:

**Solaris:**

```
▼zcat G28774.SUN-ALL.IC-6.2-SP1.20050417.tar.Z |  
/usr/bin/tar xvf -▲
```

**Windows:**

```
unzip G28774.WIN-ALL.IC-6.2-SP1.20050417.zip
```

---

▼▲ Indicates the command must be typed as one line.

---

## Checking the Patch Installation

To make sure that the patch was successfully installed, review the contents of the **BASEDIR**/*smarts/setup/info* directory. If the patch is successfully installed, you should see one of the following files in the directory:

**Solaris:**

```
G28774.SUN-ALL.IC-6.2-SP1.20050417.txt
```

**Windows:**

```
G28774.WIN-ALL.IC-6.2-SP1.20050417.txt
```

# Release Notes for MPLS Management Suite

This chapter describes issues and resolutions for products of the SMARTS MPLS Management Suite.

## MPLS Manager Operation

The following issues apply to the MPLS Manager and to the functionality provided by the Global Manager and the Availability Manager applications in support of the MPLS Manager.

### Network Connections Not Discovered for Interfaces

PR 13135

**Issue:**

The NetworkConnections between the interfaces underlying IP and VPNIPs are not discovered in the Availability Manager.

**Resolution:**

This issue will be resolved in future releases, as follows:

The ability to disable IP tagging will be available in the Availability Manager 6.2 SP2. This will allow the Availability Manager to attempt to build network connections, even when the customer has no overlapping IPs on PE-CE links in their MPLS environment.

The ability to automatically build network connections between PE and CE when IP addresses overlap will be considered for a future release of Availability Manager/MPLS Manager.

For this release, as a workaround, you can create a user-defined connection between the interfaces of two devices. Perform the following steps:

- 1 From **BASEDIR**/IP/smarts/conf/discovery/user-defined-connections.conf, issue the following command on one line:  

```
# BASEDIR/IP/smarts/bin/sm_edit ./user-defined-connections.conf
```
- 2 Add a line to the file, using this syntax, for each missing connection:  

```
<device1>|<interface1>|<device2>|<interface2>
```
- 3 Save the file.
- 4 Rediscover these devices.

For example, if there is an undiscovered physical cable between qa-gw3 and 172.16.6.3, you could enter the following:

```
qa-gw3|Fa0/1|172.16.6.3|Fa0/0|
```

For a complete description of user-defined connections, see the *InCharge IP Discovery Guide*.

## MPLS Icons not Present in the Map Legend

PR 13144

### **Issue:**

MPLS-related icons are currently not present in the Map Legend.

### **Resolution:**

As a workaround, the *InCharge MPLS Manager User's Guide* includes a table that lists the icons used in the MPLS Topology Map.

## VPN Maps do not Increment and Decrement Hops

PR 13155

### **Issue:**

The Increment Hops and Decrement Hops options do not work for VPN maps even though there are expandable nodes in the map.

**Resolution:**

A fix will be considered for a future release of the Service Assurance Manager.

As a workaround, select the node (or multiple nodes holding down the **Ctrl** key) you wish to expand and use the "Expand Node" option in the Global Console.

## Integrated Switch Devices are not Imported by the Availability Manager into the MPLS Topology

PR 13378

**Issue:**

During discovery, the Availability Manager may identify a device as a "switch" even though it has routing capabilities and is being used as a PE router; for example, a Cisco 6500 device running integrated IOS. For MPLS, the Availability Manager only discovers routers (not switches), so if a customer is using an integrated switch device as a PE router, the device will not be discovered into the MPLS topology.

**Resolution:**

The solution is deferred to a future release. For this release, as a workaround, contact SMARTS Technical Support.

## Topology Imported from Different Availability Managers does not Include LSPs

PR 13738

**Issue:**

When topology is imported from two different Availability Managers to an MPLS Manager, LSPs spanning the devices in the Availability Managers are not initially discovered.

**Resolution:**

As a workaround, after adding a new Availability Manager as a source for MPLS Manager, you should launch a full discovery. In addition, if new IP addresses are added as a result of an incremental discovery or a rediscovery, you should launch a full discovery to ensure that all LSPs are discovered.

## MPLS Manager May Lock Up when an Availability Manager Source is Added Using the Administration Console

PR 13913

### **Issue:**

The *InCharge MPLS Manager Configuration Guide* provides instructions for adding an Availability Manager as a source for topology using the *LOCAL.import* file. The MPLS Manager does not support use of the Domain Manager Administration Console for this operation. If an Availability Manager is added using the Console, the MPLS Manager host computer may lock up.

### **Resolution:**

In the event that a source is added using the Domain Manager Administration Console and the host locks up, delete the Availability Manager source that was added via the console and configure it using the *LOCAL.import* file, as directed. If the lock up persists, you may need to restart the host computer with a clean topology by using the `-norestore` option in the startup command.

## Hidden Status Displayed Incorrectly for CEs and PEs

PR 13928

### **Issue:**

When you save an MPLS map with CE and/or PE routers hidden, and then reload the saved map, the map displays correctly but the check boxes in the right-click menu for Show CEs and Show PEs are checked, even though CEs and/or PEs are hidden.

### **Resolution:**

As a workaround to correct the displayed/hidden status of the CEs and/or PEs, click the affected right-click menu item(s) two or three times until the CEs and/or PEs show or hide as desired and the check boxes display the appropriate status.

## Installation Issues

The following issues relate to the installation process.

### Adapter for Cisco ISC Cannot Be Installed

**Issue:**

The Installation Program includes an option to install the Adapter for Cisco ISC, but the product is not included in this release.

**Resolution:**

The Adapter for Cisco ISC will be included in the next release. To ensure compatibility with the next release, select the **Complete** setup option when you install this release. (This selection is *required* if you wish to install the Adapter for Cisco ISC in the next release.)

### SMARTS Broker Might Be Inadvertently Uninstalled

PR 10397

**Issue:**

For deployments with multiple suites on the same host, the SMARTS Broker might be automatically uninstalled during the uninstallation of a suite that did not originally install the Broker.

For example, suppose that the Service Assurance Management Suite and another SMARTS Suite are installed on the same machine and that the other suite is running the Broker. After upgrading both suites to SP 1, the uninstallation code becomes misconfigured and, as a result, both suites assume ownership of the uninstallation of the Broker. If the user uninstalls the suite that did not originally install the Broker, the uninstaller program mistakenly uninstalls the Broker.

**Resolution:**

Manually re-install the SMARTS Broker to services on Windows or to the *sm\_serviced* database on UNIX. To do so, use the *sm\_service install* command as described in the *InCharge System Administration Guide*.

## CLI Mode Sensitivity to a Terminal Window's Configuration

PR 11298

### Issue:

The SMARTS Command Line Interface (CLI) mode of installation is sensitive to the terminal window's configuration. Depending on how the user's *stty* settings are configured for the terminal window, the installation program may interrupt or generate input/output errors if a special key (for example, Backspace or Delete) is pressed during the installation.

### Resolution:

You can resolve this issue in one of two ways:

- 1 Change the *stty* settings to a more "traditional" configuration and restart the installation.
- 2 Restart the installation and do not press any special characters during the installation.

## Removing In-Use SMARTS Files After an Uninstall

PR 11479

### Issue:

If the user does not stop all SMARTS processes (except *sm\_serviced*, which is required for uninstall) before uninstalling a SMARTS product suite, the uninstaller program will not be able to remove the SMARTS files in use.

### Resolution:

Stop all SMARTS processes (except *sm\_serviced*) before uninstalling a SMARTS product suite. Or, after exiting the uninstaller program, remove all directories from the **BASEDIR**/*smarts* directory except **BASEDIR**/*smarts/local* and **BASEDIR**/*smarts/setup*.

## Location of InCharge HTML Help Files

PR 14424

### Issue:

Some SMARTS documentation and the `--help` option of a SMARTS command refer the user to the **BASEDIR**/*smarts/doc/html/usage/index.html* file for additional information. This filename is incorrect.



**Resolution:**

Please refer to the following location:

**BASEDIR**/*smarts/doc/html/usage/aindex.html*

## Solaris

The following issue is specific to running SMARTS software on the Solaris platform.

### sm\_logerror Process

**Issue:**

Previous versions of SMARTS software created a process to run *pstack* each time a stack trace was requested—usually when a process was about to crash. In certain error states, it was sometimes impossible to create a process to print a stack trace; worse, attempting to do so would sometimes cause a deadlock and a hung server.

**Resolution:**

Starting with InCharge version 5.0, every running SMARTS program is accompanied by a child process running a SMARTS program named *sm\_logerror*. This process does nothing except when asked to print a stack trace, at which time it prints the stack trace of its parent process; it exits automatically when its parent exits. Using the *sm\_logerror* process avoids the stack trace printing problem for SMARTS applications running on Solaris operating systems.

## Windows

The following issues are specific to running SMARTS software on the Windows platforms.

## Recovery Options Prohibited for Failover

### **Issue/Limit:**

For the Windows 2000 platform (Server or Advanced Server), users should not set recovery options for any SMARTS services. Recovery options are set in the Recovery Tab under *Administrative Tools > Services*. The options, *First Failure*, *Second Failure*, and *Subsequent Failure*, must not be changed. SMARTS software services must use the default setting, *Take No Action*, for all these options.

## Running Multiple Brokers or Domain Managers

### **Issue:**

On the Windows 2000 platform (Server or Advanced Server), starting several SMARTS Brokers or SMARTS Domain Managers that listen on the same port is possible due to an incompatibility between the UNIX and Windows 2000 implementations of the Internet Protocol stacks. Running more than one copy of the Broker or the Domain Manager may cause unpredictable results.

### **Resolution:**

Terminate all SMARTS Broker and Domain Manager processes that are listening on the same port and start only one SMARTS process listening on that port.

## Directory Naming Convention

### **Issue:**

On the Windows 2000 platform (Server or Advanced Server) and the Windows 2003 platform, SMARTS software does not install properly or SMARTS services do not start up properly.

### **Resolution:**

The directory names used in **BASEDIR** cannot contain spaces (for example, *Program Files*). Do not install SMARTS software in directories that have names containing spaces.

## Windows Diagnostic Tool Recommendation

### **Issue/Limitation:**

If you are running SMARTS software on the Windows 2000 platform (Server or Advanced Server), SMARTS recommends that you use the Dr. Watson diagnostic tool as your debugger. Dr. Watson gathers information about your computer when a problem occurs with a program, and is typically the default tool on computers running Windows operating systems. If Dr. Watson is not currently set as your computer's diagnostic tool, you can set it with the command:

```
c:\>drwtsn32 -i
```

If you are using a different diagnostic tool, SMARTS Technical Support might not be able to acquire as much diagnostic information when problems occur. For more information about Dr. Watson, refer to your Microsoft documentation.

## SMARTS Client Program Issues

The following issues are applicable if you are using SMARTS client programs from the terminal. For example, these issues apply to the execution of the *dmctl* program from an xterm Window.

### Client Connection Attempts Timeout After 60 Seconds

PR 6325

#### **Issue:**

When <PROMPT> is specified for the InCharge username field of the *clientConnect.conf* file, a user must type a username, and possibly a password, when invoking a client program. If the username and password (if required) are not entered within 60 seconds, the operation will time out and report an input/output error. This timeout only affects clients started from the command line; it does not affect the Global Console.

#### **Resolution:**

Type the username and password before 60 seconds elapse. If the operation cannot be completed before the timeout, you can re-invoke the command. If 60 seconds elapse, you will also have to restore the terminal's echo state (see the discussion that follows).

## Unexpected Exit by Client Disables Terminal Echo (UNIX)

PR 6328

### Issue:

When the *clientConnect.conf* file is configured to prompt the user for a password, the terminal echo is disabled so that the typed password is not displayed. If the client program exits during the password prompt, the terminal's echo state remains disabled.

### Resolution:

To restore the terminal's echo state, type the following command:

```
% stty echo icanon
```

Because the terminal echo is disabled, you will not be able to see the command as you type it.

## SMARTS Documentation Changes

Certain documents, including the *InCharge ASL Reference Guide* and the *InCharge ICIM Reference* (in HTML format), that were previously only available with the Software Development Kit are now provided with all SMARTS products.

## Accessing SMARTS ICIM Documentation

Documentation for the ICIM models is provided in HTML format. To access this information, use your web browser to navigate to the document's location and open the file *index.html*. ICIM documentation is located in **BASEDIR**/*smarts/doc/html/icim*.

## Documentation Errata

The following issues describe corrections to SMARTS user documents.

## Correction for Mention of Adapter for Cisco ISC

Some SMARTS documentation for the MPLS release 1.1 may mention the Adapter for Cisco ISC as being a component in the release. This information is incorrect. The Adapter for Cisco ISC is not included in MPLS release 1.1. See [Adapter for Cisco ISC Cannot Be Installed](#) on page 11 for an important installation requirement.

## Correction for Mention of AIX

Some SMARTS documentation from release 6.2 may erroneously mention AIX as a supported operating system. This information is incorrect. AIX is not supported for release 6.2 products.

## Correction for Product Version Numbers

Not all SMARTS documentation required revision for release 6.2. Therefore, some documents do not display the latest product version number on their cover. However, the information contained in these guides remains valid.

## HTML Help Documentation not Visible on CD-ROM

PR 7479

### **Issue:**

InCharge HTML documentation is not accessible from the suite CD-ROM, as stated in some InCharge documents.

### **Resolution:**

When the suite is installed, HTML documents are installed on the host machine and are available from the

**BASEDIR**/smarts/doc/html/usage/aindex.html directory.

## Corrected Syntax for the --pattern Option

PR 12220

### **Issue:**

Table 11, on page 41 of the Version 6.2 *InCharge System Administration Guide*, describes the --pattern option of the *sm\_service start* action. The description is incorrect.

**Resolution:**

The correct description for the option `--pattern=` should read:

Start all processes with absolute paths that match the wildcard pattern.

**Issue:**

Table 12, on page 41 of the *InCharge System Administration Guide*, describes the `--pattern` option of the `sm_service stop` action. The description is incorrect.

**Resolution:**

The correct description for the option `--pattern=` should read:

Stop all processes with absolute paths that match the wildcard pattern.

**Issue:**

Table 13, on page 42 of the *InCharge System Administration Guide*, describes the `--pattern` option of the `sm_service isstop` action. The description is incorrect.

**Resolution:**

The correct description for the option `--pattern=` should read:

Return the status of all processes with absolute paths that match the wildcard pattern.

**Issue:**

Page 42 of the *InCharge System Administration Guide*, describes examples of the `sm_service isstopped` action. The examples are incorrect.

**Resolution:**

The examples should read:

This checks to see whether all of the services started from the `/opt/InCharge6` directory are stopped:

UNIX

```
sm_service isstopped --pattern='/opt/InCharge6/*'
```

Windows

```
sm_service isstopped "--pattern=c:\InCharge6\*"
```

This example checks whether all SMARTS servers are stopped:

UNIX

```
sm_service isstopped --pattern='*sm_server*'
```

Windows

```
sm_service isstopped "--pattern=*sm_server*"
```

