EMC² | smarts

MPLS Management Suite

1.2

RELEASE NOTES

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Contents

1

MPLS Management Suite, Version 1.2

The EMC Smarts MPLS Manager, working with EMC Smarts Service Assurance Management Suite (Service Assurance) and EMC Smarts Availability Manager (Availability Manager), discovers and manages MPLS networks and the VPNs configured and provisioned over them. The MPLS Management Suite includes the following components:

- MPLS Manager
- EMC Smarts Adapter for Cisco ISC (ISC Adapter)
- Perl API

Supported Platforms

Table 1 lists operating systems supported by 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

Other Required EMC Smarts Products and Compatibility

The EMC Smarts MPLS solution requires the MPLS Management Suite and the following EMC Smarts products:

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

The MPLS Management Suite is compatible with the versions of these products listed in Table 2.

Table 2: MPLS Management Suite Compatibility with Other Product Suites

Compatible Versions		
MPLS Management Suite	**Service Assurance Management Suite**	**IP Management Suite**
1.2, with latest rolling patch.	6.2, SP2 or later SmartPack, with latest rolling patch.	6.2, SP2 or later SmartPack, with latest rolling patch and an optional point patch.
The EMC Smarts products in this table are typically used with the MPLS Management Suite.		

The latest SmartPacks and rolling patches for EMC Smarts products are available through Powerlink. For information, see *EMC Powerlink* on page 6.

Enhancements

The MPLS Management Suite version 1.2 provides these enhancements and improvements to version 1.1:

- Support for Layer 2 Virtual Private Networks (L2VPNs), including discovery and management of the following L2VPN elements: Forwarder, Pseudowire, VPN, LdpProtocolElement, and LdpAdjacency.
- Support for Remote Ping on L3VPNs. The remote ping feature allows MPLS network elements (PE and CE devices) to ping one another (and associated VRFs) to get an indication of the customer experience, and to determine the reachability of network elements from various network devices.

- For Ethernet-based Virtual Local Area Networks (VLANs), correlates problems with the PseudoWire carrying the traffic to the VLAN that is impacted (Transparent LAN Service or TLS)
- Support for light discovery (often known as lite discovery), which allows the Availability Manager to perform selective discovery of MPLS-enabled devices and components only. (This functionality is available through a point patch. For information, see *Point Patch to Enable Light Discovery* on page 4.)

Enhancements to Other EMC SMARTS Applications

The Service Assurance Manager was enhanced to support the MPLS Management Suite in two major areas:

- Remote ping server tool functionality
- Maps related to L2VPNs

Remote ping functionality is available when Service Assurance 6.2, SmartPack 2, and the latest rolling patches for Service Assurance and MPLS are installed.

L2VPN maps are available at the Global Console when Service Assurance 6.2, SmartPack 2, and the latest rolling patches for Service Assurance and MPLS are installed. The following L2VPN maps are available:

- LSP (Label-Switched Paths)—shows the LSP connectivity between Provider Edge (PE) routers; when launched from a Forwarder, shows all of the LSPs used by the Forwarder to communicate with its peer Forwarder; when launched from a Pseudowire, shows all of the LSPs underlying the Pseudowire
- VPN (Virtual Private Network)—shows the L2VPN, the related Forwarders, the PEs hosting the Forwarders, and any attached Customer Edge (CE) routers. If additional Forwarders that belong to other VPNs are hosted by the PEs, the map can be expanded to show these Forwarders as well.
- Pseudowire—shows the following:
  - When launched from a VPN, displays the Forwarder that is part of this VPN along with its PEs and CEs
  - When launched from a PE, displays all of the Forwarders hosted by the PE

- When launched from a Forwarder, displays that Forwarder
- When launched from a CE, displays all of the Forwarders to which this CE is attached

Point Patch to Enable Light Discovery

The MPLS Manager requests the Availability Manager to perform discovery of the physical network and provide the MPLS Manager with a complete physical topology.

If, for your deployment, it would be more efficient for the Availability Manager to perform a selective discovery of MPLS-enabled devices and components only, you can download and install a point patch on the Availability Manager. This patch provides light discovery support for the Availability Manager by creating a topology collection set of all interfaces, cards, network communications, devices, and IPs that participate in MPLS communication.

After installing the patch, you copy and rename the *dxa-am-lite.conf* file on the MPLS Manager.

Downloading the Point Patch

For information about obtaining the light discovery point patch, contact Technical Support, as indicated in *Technical Support* on page 5.

Installing the Point Patch

To install the light discovery point patch on the Availability Manager, follow one of these procedures:

1. Issue the following command on one line (with this procedure, it is not necessary to stop the Availability Manager):

   ▼`./sm_adapter -n <Availability Manager Server Name> -f $SM_HOME/local/conf/discovery/DISCOVERY_ZMPLS.import import.asl`▲

2. Initiate rediscovery of all devices.

OR

1. Stop the Availability Manager.
2. Issue the following command on one line:

```
▼# zcat G14076206.PLATFORM-ALL.IC62SP1.20061031.tar.Z
| tar xvf▲
```

3. Restart the Availability Manager.
4. Initiate rediscovery of all devices.

Copying the Configuration File

The MPLS Manager includes the following configuration files that control whether to request full or selective (light) topology import from the Availability Manager:

- *dxa-am.conf*–Requests the full topology import (default).
- *dxa-am-lite.conf*–After the Light Discovery point patch has been applied to the Availability Manager, requests the selective topology import.

To enable the MPLS Manager to import the selective MPLS topology set from the Availability Manager, perform the following steps to copy, paste, and rename the file:

1. At ***BASEDIR****/smarts/local/conf/mpls-vpn*, make a backup copy of the *dxa-am.conf* file, if it exists in the directory. If the file is not in the directory, this is not a problem.
2. Make a copy of the *dxa-am-lite.conf* file and rename it *dxa-am.conf*.

Note: The change will take effect the next time the MPLS Manager imports topology from the Availability Manager. It is not necessary to restart the MPLS Manager.

Technical Support

For questions about technical support, call your local sales office or service provider. For service, call one of the following numbers:

United States: 800.782.4362 (SVC.4EMC)

Canada: 800.543.4782 (543.4SVC)

Worldwide: 508.497.7901

EMC Powerlink

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http://powerlink.emc.com

2

Release Notes for All Products

This chapter describes issues and resolutions pertinent to all EMC Smarts products.

Correction for Supported Operating Systems

Some EMC Smarts documentation may erroneously mention AIX, HP-UX, Solaris 8, Red Hat Linux, Windows 2003 and Windows XP as supported operating systems. This information is incorrect. These operating systems are not supported for this release. Supported operating systems are Solaris 8 and 9, Windows 2000 Server and Advanced Server with SP4 or later, Windows 2003.

Installation Issues

The following issues relate to the installation process.

Broker Might Be Inadvertently Uninstalled

PR 10397

Issue:

For deployments with multiple suites on the same host, the 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 the IP Management Suite are installed on the same machine and that the IP Management Suite is running the Broker. After upgrading both suites, 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 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 *EMC Smarts System Administration Guide*.

Solaris

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

sm_logerror Process

Issue:

Previous product versions 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 version 5.0, every running EMC Smarts program is accompanied by a child process running an EMC 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 products running on Solaris operating system.

Windows

The following issues are specific to running EMC 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 EMC 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. EMC Smarts 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 Brokers or Domain Managers that listen on the same port is possible due to an incompatibility between the UNIX and 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 Broker and Domain Manager processes that are listening on the same port and start only one process listening on that port.

Directory Naming Convention

Issue:

On the Windows 2000 platform (Server or Advanced Server), EMC Smarts products do not install properly or EMC Smarts services do not start up properly.

Resolution:

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

Windows Diagnostic Tool Recommendation

Issue/Limitation:

If you are running EMC Smarts products on the Windows 2000 platform (Server or Advanced Server), EMC 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, 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.

EMC Smarts Client Program Issues

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

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.

Unbalanced Quotes in dmctl Command Causes dmctl To Hang

PR 15249

Issue:

Entering a *dmctl* command containing an unbalanced number of double quotation marks causes the *dmctl* program to hang. The program hangs because it interprets the newline character as ending a quoted string and then continues to wait for a newline character that never comes.

For a similar reason, entering a *dmctl* command having an unbalanced (odd) number of single quotation marks causes the *dmctl* program to hang.

The following are examples of unbalanced quotation marks in a dmctl command:

```
dmctl>get "abc
dmctl>get "abc" "d
dmctl>get 'abc
```

The following examples illustrate correct syntax:

```
dmctl>get "abc"
dmctl>get "abc" "d"
dmctl>get 'abc'
```

Please note that an additional syntax error in which double quotes are surrounded by single quotes and vice versa, do not trigger *dmctl* hanging problem; however, the resulting line is meaningless as a command. The following examples illustrate this error:

```
dmctl>get '"abc'
dmctl>get "'abc"
```

Resolution:

EMC Smarts intends to modify its quotedString and singleQuotedString definitions in a future release to resolve the *dmctl* hanging problem. Until then, ensure that a *dmctl* command contains balanced double or single quotation marks before entering the command. If the *dmctl* program hangs due to an unbalanced number of quotation marks, type an additional newline to complete the *dmctl* command.

The sm_plist Utility

The following pertains to administering services.

Detecting EMC Smarts Programs

The *sm_plist* utility identifies all EMC Smarts programs that are running for any product suite on your machine.

You can use the *sm_plist* utility whenever you need to identify EMC Smarts programs that are running (for example, before an installation, an upgrade, an uninstallation, or applying a SmartPack).

To use the utility, issue *sm_plist.sh* for UNIX and *sm_plist.vbs* for Windows from the ***BASEDIR****/smarts/script* directory. The utility displays active programs in a window.

In the following command, ***BASEDIR2*** represents the location of any product.

UNIX

```
# BASEDIR/smarts/script/sm_plist.sh BASEDIR2
```

Windows

```
cscript BASEDIR\smarts\script\sm_plist.vbs BASEDIR2
```

For example on UNIX, to identify programs running for a SAM Suite, issue:

```
▼ # /opt/InCharge6/IP/smarts/script/sm_plist.sh
/opt/InCharge6/SAM ▲
```

For example on Windows, to identify programs running for a SAM Suite, issue:

```
▼ cscript C:\InCharge6\IP\smarts\script\sm_plist.vbs
C:\InCharge6\SAM ▲
```

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

Note: If you use the *sm_plist* utility and are stopping services before an uninstallation, do not stop *sm_serviced*. See the Installation Guide that accompanied your product suite for information about uninstalling software.

Documentation Errata

The following issues describe corrections to EMC Smarts user documents.

Correction for e-mail Address for Licensing

The chapter "Licensing InCharge Software" of the *EMC Smarts System Administration Guide* does not list the recently updated e-mail address to obtain a permanent EMC Smarts license. The correct e-mail address is: *smartslicensing@emc.com*. This will be addressed in the next update of the document.

Documentation Changes

Some EMC Smarts documentation may erroneously mention the *MODEL Reference Guide*, *Dynamic Modeling Tutorial*, *ICIM Reference* and the *ICIM Wall Chart*. This information is incorrect. These documents are not shipped for this release.

Syntax for the --pattern Option

PR 12220

Issue:

Table 11, on page 41 of the *EMC Smarts System Administration Guide*, describes the `--pattern` option of the *sm_service* start action. It is incorrect.

Resolution:

The correct description should read:

OPTIONS	DESCRIPTION
`--pattern=`	Start all processes with absolute paths that match the wildcard pattern.

Issue:

Table 12, on page 41 of the *EMC Smarts System Administration Guide*, describes the `--pattern` option of the *sm_service* stop action. It is incorrect.

Resolution:

The correct description should read:

OPTIONS	DESCRIPTION
`--pattern=`	Stop all processes with absolute paths that match the wildcard pattern.

Issue:

Table 13, on page 42 of the *EMC Smarts System Administration Guide*, describes the `--pattern` option of the *sm_service* isstopped action. It is incorrect.

Resolution:

The correct description should read:

OPTIONS	DESCRIPTION
`--pattern=`	Return the status of all processes with absolute paths that match the wildcard pattern.

Issue:

Page 42 of the *EMC Smarts 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 EMC Smarts servers are stopped:

UNIX

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

Windows

```
sm_service isstopped “--pattern=*sm_server*”
```

3

Release Notes for MPLS Management Suite

This chapter describes issues and resolutions for products of the 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.

MPLS Manager May Crash When there is Excessive Recursion in Topological Relationships

PR 16320

Issue:

If there is an excessive amount of recursion in topological relationships in the MPLS repository, the server may crash. For example, the presence of following in the MPLS repository may cause the server to crash:

```
Interface::aa::LayeredOver = Interface::bb
Interface::bb::LayeredOver = Interface::cc
Interface::cc::LayeredOver = Interface::aa
```

Resolution:

To prevent server crashes caused by this issue from occurring, follow these steps:

1. Go to the ***BASEDIR****/smarts/bin* directory in the MPLS Manager installation area and open *runcmd_env.sh* using the *sm_edit* utility:

   ```
   # ./sm_edit conf/runcmd_env.sh
   ```

2. Add the following lines to the file:

   ```
   SM_COUNT_REPOS_LOCKS=TRUE
   export SM_COUNT_REPOS_LOCKS
   ```

3. Save the *runcmd_env.sh* file. The modified version of the file is saved to the ***BASEDIR****/smarts/local/conf* directory.

The *runcmd_env.sh* file automatically sets these environment variables (and any other environment variable definitions that the file contains) for each newly started MPLS Manager application.

After making this change to the *runcmd_env.sh* file and starting the MPLS Manager, monitor the MPLS Manager log file for a potential processing loop. This could occur if devices are managed by multiple Availability Managers that act as topology sources to an MPLS Manager. Because the Availability Managers will discover these common devices at different times and in potentially different configurations, inconsistent topological information for the devices may result in a processing loop. Contact Technical Support if the following message occurs in the log file:

```
MR-W-ELOOPR- Thread acquired 51 locks, instance
<topology_instance>, potential loop?
```

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 *EMC Smarts 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.

MPLS Manager on Windows does not Support CLI Discovery

PR 13325

Issue:

When MPLS Manager runs on a Windows operating system, discovery using CLI is not supported. For discovery using Windows, the routing devices must have MIB support.

Resolution:

For routing devices that do not have MIB support, you must run the MPLS Manager on a Solaris operating system.

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 will be addressed in a future release. For this release, as a workaround, contact 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.

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.

ISC Adapter Disabled as Service After Upgrade

PR 15780

Issue:

When upgrading from MPLS Manager version 1.1 to version 1.2, if you attempt to install the ISC Adapter as a service, the adapter is installed, but disabled.

Resolution:

Use the following command to install the Adapter as a service and start it:

UNIX

```
▼ # BASEDIR/smarts/bin/sm_service install
--force
--unmanaged
--startmode=runonce
--name=<service_name>
--description="SMARTS InCharge Adapter for Cisco ISC
--env=SM_JAVA_ENABLED=YES
BASEDIR/smarts/bin/sm_server
--config=prov
--name=<ISC_Adapter_name>
--output
--norestore
start ▲
```

Windows

```
▼ BASEDIR\smarts\bin\sm_service install
--force
--name=<service_name>
--description="SMARTS InCharge Adapter for Cisco ISC"
--env=SM_JAVA_ENABLED=YES
--startmode=runonce
BASEDIR\smarts\bin\sm_server.exe
--config=prov
--name=<ISC_Adapter_name>
--output
--norestore
start ▲
```

For UNIX and Windows installations,

- *<service_name>* is a unique name for the service. The default name is ic-isc-adapter.
- *<ISC_Adapter_name>* is a unique name for the ISC Adapter. The default name is INCHARGE-PROV.

ISC Adapter Start-Up Problem on Solaris

PR 15994

Issue:

There is an intermittent start-up problem with the ISC Adapter when running on Solaris. The problem manifests as follows:

After the adapter is started, a notification appears in the Service Assurance Notification Log indicating that INCHARGE-PROV is disconnected.

The logs record these startup errors.

Resolution:

Close the shell from which the adapter was invoked. Open a new shell and restart the adapter.

ISC Adapter-Related Alarms May Not be Set or Cleared Immediately

PR 16107

Issue:

When the SC Adapter is deployed with the MPLS Manager, VpnInterfaceMismatch and VpnInterfaceNotFound notifications may not appear or clear at the time that their respective service requests are initiated. Such notifications will appear under the following circumstances:

- After the service request is re-initiated
- After a subsequent Availability Manager discovery occurs
- After a manual synchronization between the ISC Adapter, the MPLS Manager, and the Global Manager is executed.

Resolution:

This issue will be fixed in a future release of the ISC Adapter.

Remote Ping Server Tools

PR 16122

Issue:

An error in the Notification Log for MPLS lists on-demand RemotePing server tools for a number of classes. However, you can only access the on-demand Remote Ping server tools for instances of the VRF and UnitaryComputerSystem classes.

Resolution:

Set up on-demand Remote Pings for instances of the VRF and UnitaryComputerSystem classes only.

Deleting Expect Logs after Discovery

PR 16157

Issue:

The RemoveExpectLogs feature mentioned on page 7 of the *EMC Smarts MPLS Manager Discovery Guide Supplement* is not available in this release. The Expect logs created by the MPLS server during the discovery process are not automatically deleted before a new discovery is initiated.

The optional procedure on page 36 of the *EMC Smarts MPLS Manager Configuration Guide*, for changing the default setting, *Preserving CLI Log Files Across Discovery Settings,* is not relevant to this release.

Resolution:

Once the discovery process is complete, you may delete these files manually or using a system tool such as a cronjob.

Devices Added to the Availability Manager Pending List by the ISC Adapter Remain on the List

PR 16559

Issue:

When devices are added to the Availability Manager Pending List by the ISC Adapter, there can be a delay before discovery. The ISC adapter starts pending discovery shortly after a device is provisioned in ISC so you can monitor the device immediately. However, if the Availability Manager is performing post processing at the time the device is placed on the list, the pending discovery request is discarded. The Availability Manager will rediscover the device during next scheduled pending list discovery, and remove the device from the list.

Problem with LDPAdjacency Down Notification

PR 16633

Issue:

A problem with correlating failures of physical components in an MPLS network reported by the Availability Manager with failures of logical MPLS components reported by the MPLS Manager results in the incorrect association of an LDPAdjacency Down notification with more than one root-cause problem.

For example, when a failed interface results in a Interface Down root cause notification, the MPLS Manager should notify the LDPAdjacency Down as both a Symptom and an Impact of the Interface Down problem. However, currently, it reports the Interface Down and the LDPAdjacency Down as root causes.

Resolution:

This issue will be fixed in a future release of the MPLS Manager.