Configuration and Management

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Introduction

This chapter describes how to configure and manage the Subscriber Manager.

Subscriber Manager Configuration and Management Methods

Configure and manage the Subscriber Manager by using configuration files and command-line utilities.

- Configuration Files—Enable configuring the parameters that define the system behavior.
- Command-Line Utilities—Enable viewing subscriber management.

The configuration file and Command-Line Utilities (CLU) enable you to control the Subscriber Manager, which includes subscriber management, database management. The configuration file and CLU also enable you to perform Service Control Engine (SCE) network configuration and management.

Configuration Files

The Subscriber Manager has a set of configuration files, located in **~pcube/sm/server/root/config/**.

- p3sm.cfg—Main Subscriber Manager configuration file. For a detailed description of the configuration file parameters, see the Configuration File Options, page 6-1.
- p3qm.cfg—Main Quota Manager configuration file. For more information, see the "Configuring the Quota Manager" chapter in the *Cisco Service Control Management Suite Quota Manager User Guide*.
- vlink.cfg—Virtual Link Manager (VLM) configuration file. For more information, see the "Configuring the Solution" chapter in the *Cisco Service Control for Managing Remote Cable MSO Links Solution Guide*.

- dhcp_pkg.cfg—Policy configuration file for DHCP integration. This file is used by the Lease Query LEG and the DHCP Sniffer LEG. For more information, see the "Configuring the SCE-Sniffer DHCP LEG" chapter in the *Cisco SCMS SM LEGs User Guide*.

- dhcpsnif.cfg—The DHCP Sniffer LEG configuration file. For more information, see the "Configuring the SCE-Sniffer DHCP LEG" chapter in the *Cisco SCMS SM LEGs User Guide*.

- dhcpv6snif.cfg—The DHCPv6 Sniffer LEG configuration file. For more information, see the "Configuring the SCE-Sniffer DHCPv6 LEG" chapter in the *Cisco SCMS SM LEGs User Guide*.

- leaseq.cfg—DHCP Lease Query LEG configuration file. For more information, see the "Subscriber Manager Integration - Configuration" chapter in the *Cisco SCMS SM LEGs User Guide*.

- leaseqv6.cfg—DHCPv6 Lease Query LEG configuration file. For more information, see the "Subscriber Manager Integration - Configuration" chapter in the *Cisco SCMS SM LEGs User Guide*.

- rad_snif.cfg—RADUS Sniffer LEG configuration file. For more information, see the "Configuring the SCE-Sniffer RADIUS LEG" chapter in the *Cisco SCMS SM LEGs User Guide*.

- soap_leg.cfg and soap_pkg.cfg—SOAP LEG configuration files. For more information, see the "Configuring the SOAP LEG" chapter in the *Cisco SCMS SM LEGs User Guide*.

- ipdr.cfg—IPDR LEG configuration files. For more information, see the "Configuring the IPDR LEG" chapter in the *Cisco SCMS SM LEGs User Guide*.

The configuration files and command-line utilities enable you to configure all the parameters that define the behavior of the Subscriber Manager application. (See Appendix 7, "Command-Line Utilities.")

Each configuration file is comprised of sections. A unique name identifies each section. The name of the section appears in square brackets as in the following example:

```
[SM General]
```

Each section contains several parameters. Each parameter is defined as a **key=value** pair, as in the following example:

```
[SM General]
introduction_mode=push
```

Note   The equal sign (**=**) is a key-value separator in the configuration file. To use the equal sign as part of the value, you must insert a backslash (****) before it, as in the following example:

```
[Sample Section]
key=value1\=value2
```

The p3sm.cfg configuration file contains the following types of parameters:

- General, systemwide parameters, such as subscriber state saving, persistency, subscriber introduction mode (Pull mode or Push mode), and topology

- Parameters for managing Subscriber Manager-LEG connection failure

- Parameters for managing Subscriber Manager-SCE connection failure

- Parameters for SCE platform configuration

- Parameters for domain configuration

    - Associating domains and SCE platforms

    - Specifying domain aliases

    - Specifying domain properties

- Auto-logout parameters, for controlling automatic logout of subscribers after timeout
- Parameters for RADIUS Listener configuration
  - Specifying NAS configuration
  - Specifying properties configuration
- Parameters for FTP, HTTP, and PRPC server configuration
- Parameters for Cable Adapter configuration
- Parameters for configuring Subscriber Manager operation with the Subscriber Manager database

Usually, you specify the parameters in the configuration file once when setting up the system. The parameters are then valid throughout the lifetime of the system. To modify the configuration file parameters, edit the file using any text editor. Reload the configuration file by using the CLU (see the "Reloading the Subscriber Manager Configuration (p3sm)" section on page 5-15). You can load the configuration file when you start or restart the Subscriber Manager or by explicitly running the CLU command.

The configuration file is designed so that you can use the same configuration file in multiple Subscriber Manager applications of a high availability setup. This enables you to replicate the configuration by copying the file from one machine to another.

Command-Line Utilities

The Subscriber Manager provides a set of Command-Line Utilities (CLU), which you can use in addition to the configuration file to configure the parameters that might change during the operation of the Subscriber Manager.

The CLU enables you to configure the Subscriber Manager by using shells that are installed on the machine. You can execute CLU commands are executable only when you are logged in to the machine. You must access the **pcube** user account, which is always installed (see Chapter 4, "Installation and Upgrading.") Use the CLU mainly for viewing and for subscriber management.

In high availability setups, you cannot use the CLU to perform subscriber management operations on the standby Subscriber Manager. The standby Subscriber Manager refreshes the database before performing subscriber display operations, so the operation takes longer (than for the active Subscriber Manager). Therefore, you should perform all subscriber operations on the active Subscriber Manager.

This chapter explains how to perform various tasks using the appropriate CLU, but it does not describe the CLU in detail. For a complete, detailed description of the CLU, see the "Command-Line Utilities" section on page 5-3.

Establishing a Subscriber Management Solution

This section describes establishing a Cisco Service Control deployment consisting of several SCE platforms and Subscriber Manager systems in order to prepare the system for subscriber integration.

This section uses the terminology and tools explained in previous chapters. This section also refers to terms and configuration tools described in the SCE 8000 User Guides.

- Configuring the Subscriber Management Solution, page 5-4
- System Configuration Examples, page 5-8

Configuring the Subscriber Management Solution

This configuration procedure applies to a single group, consisting of the following components:

- A Subscriber Manager application
- A set of LEG applications or components that connect to this Subscriber Manager
- The SCE platforms that this Subscriber Manager serves

You can divide every subscriber management solution into such groups. You can apply this procedure to each of these groups.

Prerequisites

Before configuring any of the components in your subscriber management solution, verify that all the items on the following checklist have been successfully completed:

- The SCE platforms in your network are installed and configured as explained in the SCE 8000 User Guides.
- The Subscriber Manager applications in your network are installed as explained in Chapter 4, "Installation and Upgrading."
- The Cisco Service Control Application for Broadband (SCA BB) is installed on all SCE platforms in your network. See the *Cisco Service Control Application for Broadband User Guide* for instructions on installing the Service Control Application on the SCE platforms.

✎
Note   Login Event Generators and the SCA BB application are installed by default on the Subscriber Manager.

- The subscriber integration concept has been determined and an appropriate solution was designed for driving subscriber mappings and policy information into the Subscriber Manager. This can be implemented automatically using a LEG or manually using the CLU.
- The subscriber introduction mode (Push or Pull) has been determined for each Subscriber Manager system, based on the number of subscribers that the relevant SCE platforms should be serving.
- The association between SCE platforms and the relevant Subscriber Manager systems has been determined.
- For each Subscriber Manager system, the association between the SCE platforms that it serves and the subscriber domains has been designed.

Step 1   Edit the Subscriber Manager configuration file **p3sm.cfg** according to your system definition, and reload it using the **p3sm --load-config** command.

Step 2   Configure the SCE platform repository.

Use the **p3net** CLU command to verify the connection state of each SCE Platform that should be provisioned by the Subscriber Manager.

After the physical installation of an SCE platform (connection to the management network), you must explicitly add it to the Subscriber Manager list, or repository, of existing SCE platforms before the Subscriber Manager will recognize it. Conversely, if you remove an SCE platform from that list, the Subscriber Manager will no longer recognize it, even though it is still physically connected.

Each SCE.XXX section defines the following configuration parameters that represent a single SCE platform, where *XXX* represents the SCE logical name:

- ip

  Defines the IP address of a standalone SCE device or the two IP addresses of a cascade SCE pair.

- port

  Defines the port through which the SCE platform connects. The default is 14374.

To view the SCE platforms, use the **p3net** CLU. See "The p3net Utility" section on page 7-12.

For more information, see the "SCE.XXX Section" section on page 6-18.

a. Configure the SCE.XXX sections to add the SCE Platform to the repository.

b. Load the SCE configuration to the Subscriber Manager using the **p3sm** CLU.

    ```
    p3sm --load-config
    ```

c. Verify that the SCE platform was successfully connected.

    ```
    p3net --show
    ```

d. Verify your configuration when you are finished.

    ```
    p3net --show-all
    ```

Step 3 Configure the domains.

Use the **p3domains** command to verify the domain configuration and that the SCE platforms are set to these domains.

When a system has more than one SCE platform, you can configure the platforms into groups, or domains. A subscriber domain is one or more SCE platforms that share a specified group of subscribers. Before adding an SCE platform to a domain, you must add the SCE platform to the SCE platform repository.

Note The Subscriber Manager is preconfigured with a single subscriber domain called *subscribers*.

Each Domain.XXX section specifies the elements (SCE platforms), aliases, and properties for one domain. It contains the following parameters:

- subscriber_ipv6_prefixes=IPv6 Prefix 1, [IPv6 Prefix 2,...]

  Defines the list of prefixes to be used in the pull lookup operation when an IPv6 pull request notification is received by the Cisco Service Control Subscriber Manager. For more than one prefix, separate the values using a coma (,). Possible value range is from 32 to 64. The default value is 64. Lookup order is always from the higher prefixes to lower prefixes. The changes takes effect only after a Cisco Service Control Subscriber Manager restart.

- elements=<logical_name1[,logical_name2,...]>

  Specifies the names of the Cisco SCE platforms that are part of the domain.

- aliases=alias_name1[,alias_name2,...]

  Defines domain aliases. When the subscriber manager receives information from the LEG with one of the aliases (for example, **alias1**), the information is distributed to the domain that matches this alias (for example, **domain_name1**). A typical alias could be a network device IP address, where, for example, each string in the values can be the IP address of a NAS or a CMTS.

Note Each alias (for example, alias_name1) can only appear in *one* [Domain.XXX] section.

- The specification **aliases=*** means that every subscriber that does not have a domain is put in this domain.

> **Note** Only one domain may specify this option (**aliases=***).

- property.<name1>=<value1>[,property.<name2>=<value2>,...]

  Defines the default policy property values for a domain. Unless the LEG/API overrides these defaults when it introduces the subscriber to the Subscriber Manager, the subscriber policy is set according to the default policy property values of its domain. Property values must be integers.

To view the domains, use the **p3domains** CLU. See "The p3domains Utility" section on page 7-8.

For more information, see the "Domain.XXX Section" section on page 6-6.

Step 4 Configure the Subscriber Manager General section.

This section of the configuration file is relevant to any deployment topology. It addresses the following systemwide parameters:

- introduction_mode

  Defines whether the Subscriber Manager introduces the subscribers to the SCE platforms immediately after a login operation (Push mode), or only when the SCE requests the subscriber specifically (Pull mode).

- application_subscriber_lock

  Defines whether to lock subscriber-related operations (login, logout, etc.) at the application level. Set this parameter to true for cases in which several LEG components can update subscribers simultaneously.

- force_subscriber_on_one_sce

  Defines whether the Subscriber Manager supports the solution in which a Cisco 7600/6500 is used for load-balancing among several SCE platforms. In this solution, when one SCE platform fails, subscriber traffic is redistributed to a different SCE platform. The Subscriber Manager must remove these subscribers from the failed SCE platform and send the relevant subscriber information to the new SCE platform. This parameter is relevant only in the Pull mode.

  > **Note** When support_ip_ranges is set to 'true,' set the force_subscriber_on_one_sce parameter to 'false' or use a different load-balancing scheme on the Cisco 7600/6500.

- logon_logging_enabled

  Defines whether to enable the logging of subscriber log in events.

To view the Subscriber Manager settings, use the **p3sm** CLU. See "The p3sm Utility" section on page 7-17.

> **Note** Setting **logon_logging_enabled** to **true** causes performance degradation. For additional information, see the "Subscriber Manager General Section" section on page 6-2.

Step 5 Configure the Data Repository section.

The Data Repository section defines the Subscriber Manager operation with the Subscriber Manager database In-Memory Database, via the following parameters:

- support_ip_ranges

Defines whether the Subscriber Manager supports IP-Ranges.

> **Note** Disabling this support provides better performance.

- checkpoint_interval_in_seconds

  Defines the interval, in seconds, for calling the Subscriber Manager database checkpoints. Reducing the value affects performance. Increasing the value increases vulnerability to power-down.

- max_range_size

  Determines the maximum IP range size used in the system. This parameter is used for improving performance of the Subscriber Manager in Pull mode when the **[Data Repository]** section is configured with **support_ip_ranges=yes**.

> **Note** Defining this parameter with too large a value may cause performance degradation in processing pull requests.

For more information, see the "Data Repository Section" section on page 6-21.

Step 6 Configure the **High Availability** section.

The **High Availability** section defines the type of topology in which the Subscriber Manager should work, via the parameter:

- topology

  Defines the topology type in which the Subscriber Manager will work (cluster or standalone).

For more information, see the "Subscriber Manager High Availability Setup Section" section on page 6-4.

Step 7 Import subscribers to the Subscriber Manager from a CSV file.

Perform this step only when you are integrating manually, or when you perform a setup prior to the beginning of the automatic integration.

A csv file is a simple text file in which each line consists of comma-separated values. Because each line might contain subscriber properties, which are application dependant, see the documentation of the application that you installed on your system for the format of a csv import file.

In most cases, when importing csv files, you should use the **p3subsdb --import** CLU command. When integrating with a cable AAA system and working in the CPE as Subscriber mode, importing cable modems requires the **p3cable --import-cm** CLU command. (see Appendix 8, "CPE as a Subscriber in a Cable Environment.")

Step 8 Configure the SCE platforms

Perform this step only when you use the Pull mode to introduce subscribers, or when you perform a special operation on Subscriber Manager-SCE connection failure. Use the SCE platform Command-Line Interface (CLI) to configure several configuration parameters, according to the following explanation.

Configuring these parameters ensures that the SCE platform correctly applies appropriate defaults to subscribers in the period between subscriber detection and pull response (for unmapped subscribers). For additional details, see the SCE 8000 User Guides.

- Anonymous groups and subscriber templates

  When the SCE platform encounters network traffic that is not assigned to any introduced subscriber, it checks whether the mapping of the unfamiliar subscriber belongs to one of the anonymous groups. If the subscriber belongs to an anonymous group, a new anonymous subscriber is created, and a

request for an updated subscriber record is sent to the Subscriber Manager. The properties of the anonymous subscriber are taken from the subscriber template that is assigned to the newly created subscriber anonymous group.

- Anonymous subscriber groups

    An anonymous group is a specified IP range, possibly assigned a subscriber template (defined in the next section). If a subscriber template has been assigned to the group, the anonymous subscribers generated have subscriber properties as defined by that template. If no subscriber template has been assigned, the default template is used.

    Use the appropriate CLI commands to import anonymous group information from a csv file, or to create or edit these groups explicitly.

- Subscriber templates

    Values for various subscriber properties for unmapped or anonymous subscriber groups are assigned in the system based on subscriber templates. A number from 0 to 199 identifies subscriber templates. CSV formatted subscriber template files define the subscriber templates 1 to 199. However, template 0 cannot change; it always contains the default values. If a template is not explicitly assigned to an anonymous group, the group uses template 0.

    Use the appropriate CLI commands to import subscriber templates from a csv file, or edit these templates from the command line. Additionally, use the appropriate CLI commands to assign subscriber templates to the anonymous groups.

- Subscriber aging parameters

    To prevent SCE capacity problems in Pull mode, configure the aging of introduced subscribers. The aging parameter defines a timeout. Any subscriber that does not generate traffic during this timeout interval is automatically logged out from the SCE.

- Subscriber Manager-SCE connection failure

    To prevent incorrect classification of a subscriber's traffic during a lengthy connection failure between the Subscriber Manager and the SCE, configure the Subscriber Manager connection failure parameters.

    The SCE has several alternatives for managing connection failures:

    – The SCE can clear the mappings of all of the subscribers

    – The SCE can put the line in cut-off mode

    – The SCE does nothing

- The timeout between the connection detection and actually performing the operation is also configurable.

System Configuration Examples

This section presents common subscriber management scenarios, including the correct configuration parameters for these scenarios. The following scenarios are described:

- Automatic introduction of subscribers, with Push mode and fail-over of SCE platforms

- Manual introduction of subscribers with Pull mode

- Subscriber Manager fail-over scenario

Automatic Introduction of Subscribers, with Push Mode and Fail-Over of SCE Platforms

The example in this section assumes that the following conditions of the system are established:

- Automatic introduction of subscribers, that is, a provisioning system of an AAA system introduces the subscribers. This example assumes that integration with a DHCP server allows automatic introduction of subscribers to the Subscriber Manager.

- The Subscriber Manager is operating in Push mode.

- The application that is used includes states that should be preserved such as volume quota states in the Cisco Service Control Application for Broadband (Cisco SCA BB).

Figure 5-1   Cable Topology with Automatic Integration with a DHCP Server, Push Mode, and Fail-Over of SCE Platforms
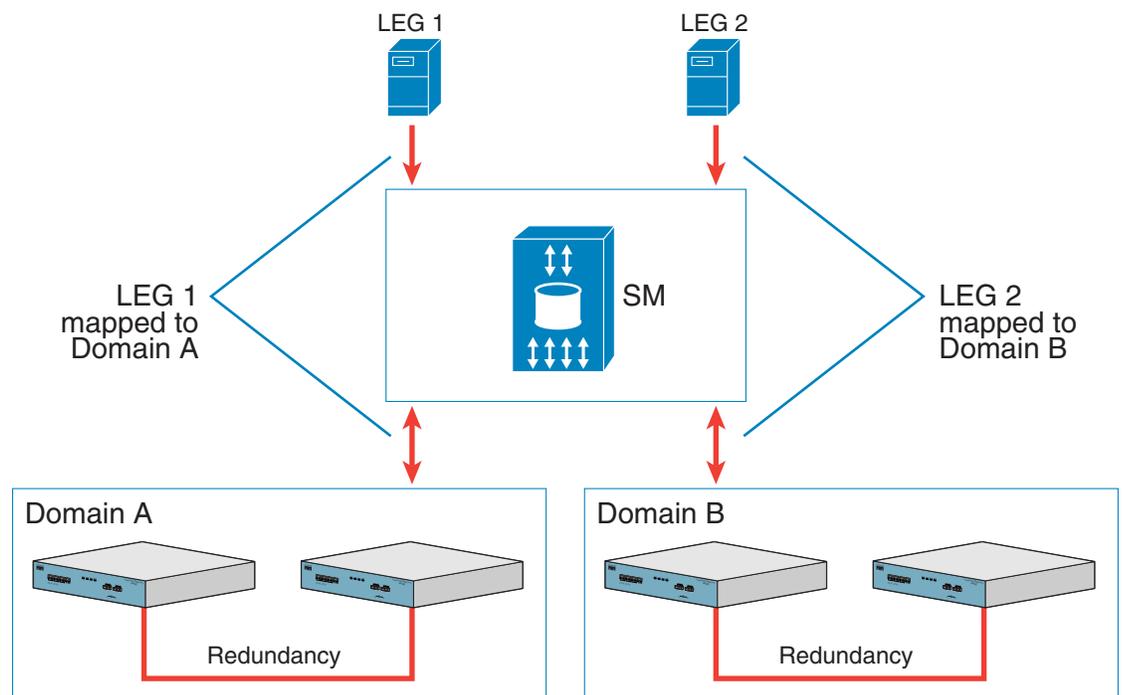
> **Note**   Ensure that everything is properly installed before you configure the Subscriber Manager.

The following general steps describe how to configure the Subscriber Manager for this scenario:

1. Edit the Subscriber Manager configuration file to add the SCE devices to the SCE device repository and group the SCE devices to domains as depicted in Figure 5-1.

2. Edit the Subscriber Manager configuration file as shown in Table 5-1.

3. Reload the Subscriber Manager configuration file using the **p3sm** CLU.

4. Import the cable modems to the Subscriber Manager database using the **p3cable** CLU.

This scenario does not need an SCE platform configuration.

Table 5-1   *Configuration File Parameters for Automatic Integration with Push Mode in a Cable Environment*

Section and Parameter	Value and Description
Subscriber Manager General	
introduction_mode	**push**
High Availability Setup	
topology	**standalone** Set to **standalone** because the described scenario has just one Subscriber Manager.
Subscriber Manager-LEG Failure Handling	
timeout	300 seconds (more tolerance might be advisable for Subscriber Manager-LEG failures in actual configurations)
clear_all_mappings	**True** Set to **true** because under the scenario conditions (automatic integration in cable environment), subscribers are likely to change their state or to logout from the SCE during a Subscriber Manager-LEG connection failure. Therefore you ought to clean their mappings when the Subscriber Manager and LEG are reconnected.
LEG-Domain Association	
<LEG name>	Define associations between LEGs and domains. LEG-Domain associations should be defined in order so that all subscriber mappings are cleared on Subscriber Manager-LEG disconnection. If no association is defined, subscriber mappings will not be cleared (the **clear_all_mappings** value will be ignored).
Default Domains Configuration	
property	**None** Configure the policy here if all domains in the system have the same policy.
Domain.XXX	
aliases	Define aliases to facilitate working in a cable environment. Define aliases if you are working with LEGs that are not aware of system domains. Alternatively, you can define domains with names that match values produced by LEGs.
property	None Configure the policy here only if you want it to be applied to all subscribers in the domain.
allow_dynamic_CM	**No** Set to **no** to prevent uninstalled cable modems from using the network.
Auto Logout	

Table 5-1   *Configuration File Parameters for Automatic Integration with Push Mode in a Cable Environment (continued)*

Section and Parameter	Value and Description
`auto_logout_interval`	**60 minutes** Assuming that the AAA system cannot provide logout events, activate auto-logout, which is necessary in cable environments. The value you specify should be smaller than the CPE lease time in this cable environment.
`grace_period`	**10 seconds** Specify a relatively high value to eliminate mistakes because of management network delays.
`max_rate`	**100 logouts per second** Specify a value similar to the max-login rate to the Subscriber Manager.

Manual Introduction of Subscribers with Pull Mode

The example in this section assumes that the following conditions of the system are established:

- Manual introduction of subscribers
- Pull mode
- Application that does not require preserving state

Note   Ensure everything is properly installed before you configure the Subscriber Manager.

Figure 5-2   *Topology with Manual Introduction of Subscribers and Pull Mode*
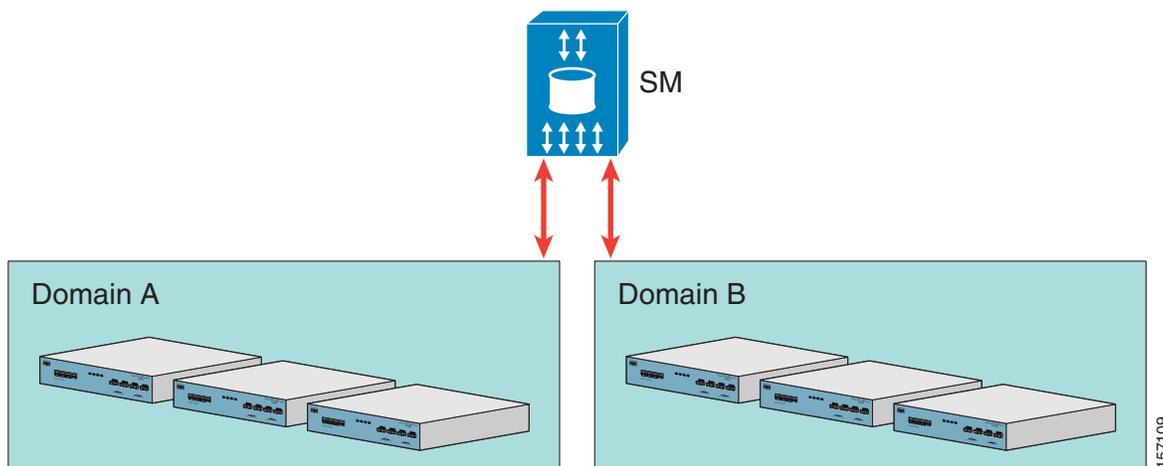
The following general steps describe how to configure the Subscriber Manager for this scenario:

1. Edit the Subscriber Manager configuration file to add the SCE devices to the SCE device repository and group the SCE devices to domains as depicted in Figure 5-2.

2. Edit the Subscriber Manager configuration file as shown in Table 5-2.

3. Reload the Subscriber Manager configuration file using the **p3sm** CLU.

4. Import the subscribers to the Subscriber Manager database by using the **p3subsdb** CLU (required for manual integration; there is no other way to bring subscribers into the Subscriber Manager).

5. Use the SCE platform CLI to configure the system for Pull mode:

   – Subscriber templates—According to the application

   – Anonymous groups—According to the network and subscribers

   – Introduced subscriber aging—According to the network and IP address allocation scheme

Table 5-2   Configuration File Parameters for Manual Integration with Pull Mode

Section and Parameter	Value and Description
Subscriber Manager General	
introduction_mode	**Pull**
High Availability Setup	
topology	**Standalone** Set to **standalone** because the described scenario has just one Subscriber Manager.
Subscriber Manager-LEG Failure Handling	
timeout	Not applicable—No LEGs are involved in the scenario (use default—60 seconds)
clear_all_mappings	Not applicable—No LEGs are involved in the scenario (use default—no action)
LEG-Domain Association	
<LEG name>	Not applicable—No LEGs are involved in the scenario (Use default—no mappings)
Default Domains Configuration	
Default policy (property.XXX)	None Configure the policy here if all domains in the system have the same policy.
Domain.XXX	
aliases	Not applicable (use default—none)
property.XXX	None Configure the policy here only if you want it to be applied to all subscribers in the domain.
allow_dynamic_CM	Not applicable—valid for cable environment only (use default – no)
Auto Logout	
auto_logout_interval	Not applicable (use default—0)
grace_period	Not applicable (use default—10)
max_rate	Not applicable (use default—50)

Subscriber Manager Fail-over Configuration (General)

For a set-up with Subscriber Manager fail-over (based on two Subscriber Manager nodes connected in a cluster), the configuration is identical to the regular configuration, with one exception:

- The topology parameter in the Subscriber Manager High Availability section of the configuration file should be set to cluster for both Subscriber Manager machines. (See "Subscriber Manager High Availability Setup Section" section on page 6-4.)

In addition to that exception, configure Subscriber Manager fail-over normally via the **p3sm.cfg** configuration file. Manually copy the configuration file from the active Subscriber Manager to the standby Subscriber Manager.

For additional information on configuring the VCS, see Appendix A, "Veritas Cluster Server."

Using the Command-Line Utilities

This section introduces the Command-Line Utilities (CLU) and describes how to use the CLU for viewing, subscriber management, and other tasks for working with the Subscriber Manager.

Note   You can specify some CLU operations and options with abbreviations. For the abbreviations and additional information about the CLU, see Appendix 7, "Command-Line Utilities."

The procedures presented in the following sections invoke the following CLU commands:

```
p3batch
p3cable
p3clu
p3cluster
p3db
p3dhcpsniff
p3domains
p3ftp
p3http
p3inst
p3ipdr
p3leasequery
p3log
p3net
p3qm
p3qrdr
p3radius
p3radiussniff
p3rdr
p3rpc
p3sm
p3soap
p3subs
p3subsdb
p3vlink
p3vpn
```

This section contains the following topics:

Informative Output

All CLU commands support the following operations for informative output:

Operation	Description
`--help`	Prints the help for the specified CLU command, then exits.
`--version`	Prints the Subscriber Manager program version number, then exits.

Parsing CLU Operations and Options

Place in quotation marks a command operation or option containing any of the following characters:

- Space character
- Separation sign (comma ","; ampersand "&"; colon ":")
- Escape character (backslash "\")

You must insert an escape character before any of the following characters in a command operation or option.

- Equal sign (=)
- Quotation mark ("or")
- Escape character (backslash "\")

Table 5-3 presents several examples of the preceding rules.

Table 5-3   *Parsing CLU Operations, Options, and Examples*

Operation/option contains the character	Example of how to write operation/option
Space character	`--property="filename"`
Escape character (backslash "\")	`--property="good\\bad"`
Equal sign (=)	`--property="x\=y"`
Quotation marks ("or")	`--name="\"myQuotedName\""` (in the preceding example, inner quotation marks are escaped)
Separation characters	
comma (,)	`--names="x,y"`
ampersand (&)	`--names="x&y"`
colon (:)	`--names="myHost:myDomain"`

One-letter abbreviations are available for some of the operations and options. For example, **-d** is an abbreviation for **--domain**. Note that only one hyphen (-), not two, precedes the letter for an abbreviation, and that if the operation or option takes a parameter, there is a space and not an equal sign before the parameter.

Example of using a complete name	`--domain=subscribers`
Example of using an abbreviated name	`-d subscribers`

The abbreviations are useful if you want to specify an expression to be expanded by the UNIX shell, as in the following example:

`p3subsdb --import -f ~pcube/file.csv`	~pcube will be expanded by the UNIX shell

Reloading the Subscriber Manager Configuration (p3sm)

Use the **p3sm** utility to configure the Subscriber Manager by reloading the Subscriber Manager configuration file **p3sm.cfg**. Use any standard text editor to edit the configuration file.

Step 1   From the shell prompt, type:

`p3sm --load-config [--ignore-warnings] [--remote=OTHER_SM_IP[:port]]`

The configuration file is loaded, and the Subscriber Manager configuration updated.

The **--remote** option loads the configuration first to the local Subscriber Manager, and afterward to the remote Subscriber Manager (in High Availability setups).

Managing the Subscriber Manager (p3sm)

Use the **p3sm** utility to manage the Subscriber Manager. The **p3sm** utility enables you to start, stop, and resynchronize the Subscriber Manager.

Step 1 From the shell prompt, enter a command of the format **p3sm operation** [**--ne-name**=*SCE NAME*].

For a complete list of **p3sm** operations and options, see "The p3sm Utility" section on page 7-17.

Examples for Managing the Subscriber Manager

- Stopping and Restarting the Server: Example, page 5-16
- Resynchronizing an SCE, page 5-16
- Extracting Support Information, page 5-16

Stopping and Restarting the Server: Example

The following example shows how to stop the server operation and then restart it.

```
p3sm --restart
```

Resynchronizing an SCE

The following example shows how to resynchronize an SCE whose logical name is *SCE_1000A*.

```
p3sm --resync --ne-name=SCE_1000A
```

Extracting Support Information

The following example shows how to extract the Subscriber Manager support information to a file named **support.zip**.

```
p3sm --extract-support-file --output=support.zip
```

Managing Subscribers, Mappings, and Properties

Use the **p3subs** utility to manage specific subscribers. You can add or remove subscribers. You can also manage subscriber properties and mappings with this utility.

- Using the p3subs Utility for Managing Subscribers, Mappings, and Properties, page 5-16
- Managing Subscribers, Mappings, and Properties—Examples, page 5-17

Using the p3subs Utility for Managing Subscribers, Mappings, and Properties

Step 1 From the shell prompt run the **p3subs** CLU command.

The command should be in the following general format:

```
p3subs operation --subscriber=Subscriber-Name [--ip=IP-address@VPN-NAME]
[--vpn=VPN-NAMES-LIST] [--community=AS:value@VPN-NAME] [--property=property-name=value]
[--domain=domain-name] [--overwrite]
```

The subscriber on whom the operation is to be performed is specified by using the format **--subscriber=subscriber-name**. A mapping (IP address), property, or domain, if specified, uses the format displayed.

Note   If a domain is not specified, the subscriber is added to the default *subscribers* domain.

For a complete list of **p3subs** operations and options, see "The p3subs Utility" section on page 7-22.

Managing Subscribers, Mappings, and Properties—Examples

The following sections present examples for managing subscribers, mapping, and properties.

Managing Subscribers

The following examples show how to manage subscribers.

Example 1:

The following example shows how to add a subscriber with the specified IP address.

```
p3subs --add --subscriber=xyz --ip=96.142.12.7
```

Example 2:

The following example shows how to overwrite subscriber information. Because the subscriber named "xyz" already exists, the add operation would fail; however, the overwrite option enables you to overwrite IP address.

```
p3subs --add --subscriber=zyz --ip=96.128.128.42 --overwrite
```

Managing Mappings

The following example shows how to remove all the mappings for a specified subscriber.

```
p3subs --remove-all-mappings --subscriber=xyz
```

Mappings Specification

You can specify the following mapping types for each subscriber:

- IP address or range—Use the **--ip-address** option. For an IP address, use the dotted notation. Enter a range to specify several consecutive mappings. For example, the notation 1.1.1.0/30 specifies the IP addresses 1.1.1.0 to 1.1.1.3. You can specify multiple mappings by using a comma.

Note   You cannot specify different types of mappings for the same subscriber.

Managing Properties

The application property names depend on the application running on your system. To find descriptions of the application property names and values, see the documentation provided with the application installed on your system.

This example shows how to set a property value for a specified subscriber.

```
p3subs --set --property=packageId=1 --subscriber=xyz
```

Clearing the Subscriber Applicative State

This example shows how to clear the applicative state of the specified subscriber. Note that this command clears only the backup copy at the Subscriber Manager. It does not clear the applicative state record in the SCE platform.

```
p3subs --clear-state --subscriber=xyz
```

Managing VPN Entities

Note   VPN and VLAN are not supported for IPv6 subscribers.

Use the **p3vpn** utility to manage VPNs. You can add or remove VPNs.

Step 1   From the shell prompt run the **p3vpn** CLU command.

The command should be in the following format:

```
p3vpn operation [--vpn=VPN-NAME] [--mpls-vpn=RT@PE,...] [--vlan=VLAN-ID]
[--domain=domain-name]
```

For a full list of **p3vpn** operations and options, see "The p3vpn Utility" section on page 7-33.

Managing VPN Entities—Examples

Insertion of a VPN Using a VLAN-ID: Example

The following example shows how to add a VPN with the specified VLAN.

```
p3vpn --add -vpn=myVpn --vlan-id=10
```

Insertion of a VPN Using MPLS/VPN: Example

The following example shows how to add a VPN with the specified MPLS/VPN mappings.

```
p3vpn --add --vpn=myVpn --mpls-vpn=1:100@96.142.12.7
```

Managing the Subscriber Database

Use the **p3subsdb** utility to manage the Subscriber Manager database. You can import subscriber information for a group of subscribers from a CSV file into the Subscriber Manager database. You can also export subscriber information from the Subscriber Manager database to a CSV file.

Note   The format of the CSV file depends on the application. The documentation of a specific application specifies the CSV file format for that application.

For a complete list of **p3subsdb** operations and options, see "The p3subsdb Utility" section on page 7-26.

Step 1   From the shell prompt, enter a command of the format **p3subsdb operation** [**--domain**=*domain-name*] [*filename*]

Managing the Subscriber Database—Examples

List all Subscribers: Example

The following example shows how to list all subscribers in a specified domain.

```
p3subsdb --show-domain --domain=mainDomain
```

Importing Subscribers from a CSV File: Example

The following example shows how to import subscribers from the specified CSV file.

```
p3subsdb --import --file=goldSubscriberFile.csv
```

Exporting Subscribers to a CSV File: Example

The following example shows how to export subscribers with filtering options to a specified CSV file.

```
p3subsdb --export --prefix=a --output=silverSubscriberFile.csv
```

Viewing and Connecting Network Elements

Use the **p3net** utility to view the connection status of network elements and to try to reconnect disconnected elements.

For a complete list of **p3net** operations and options, see "The p3net Utility" section on page 7-12.

Step 1   From the shell prompt, enter a command of the format **p3net operation** [**--ne-name**=*logical-name*].

The following example shows how to display a network element's connection status.

```
p3net --show --ne-name=mainNE
```

Viewing Subscriber Domains

Use the **p3domains** utility to view the subscriber domains. As explained in the "Cisco Service Control Subscriber Manager Overview" section on page 2-1, subscriber domains are groups of SCE devices that serve the same subscribers.

For a complete list of **p3domains** operations and options, see "The p3domains Utility" section on page 7-8.

Step 1　From the shell prompt, enter a command of the format `p3domains operation` [`--domain`=*domain-name*]

Managing the Cable Support Module (p3cable)

Use the p3cable utility to manage the cable support module.

Managing the Cable Support Module

In the cable environment, the Subscriber Manager supports two modes of operation: Cable Modem as Subscriber and CPE as Subscriber, as described in Appendix 8, "CPE as a Subscriber in a Cable Environment."

This section describes the support of the *CPE as Subscriber* mode. In this mode, the CPE is modeled as the subscriber, and it inherits its policy and domain from the cable modem through which it connects to the network. Each cable modem is linked with one or more CPEs. (For background information about special characteristics of the *CPE as Subscriber* mode in the cable environment, see Appendix 8, "CPE as a Subscriber in a Cable Environment."

Use the **p3cable** utility commands to import cable modem information from a CSV file to the Subscriber Manager, and to export the cable modem information from the Subscriber Manager to a CSV file. You can also use this utility to clear the repository of all cable modems, and to show whether to allow or deny the login of CPEs that belong to unfamiliar cable modems; that is, cable modems that do not exist in the Subscriber Manager database. However, for specifying whether to allow or deny such a login, use the Cable Adapter section of the **p3sm.cfg** configuration file. (See the "Cable Adapter Section" section on page 6-20.)

For a complete list of **p3cable** operations and options, see "The p3cable Utility" section on page 7-5.

Step 1　From the shell prompt, enter a command of the format `p3cable operation` [`--cm`=*CM-name*]
[*filename*] [*other cable modem options*].

Managing the Cable Support Module—Examples

This section presents examples of tasks for managing a cable support module.

Importing Cable Modems from a CSV File

The following example shows how to import cable modems from a CSV file.

```
p3cable --import-cm --file=CMFile.csv
```

Clearing the Repository

The following example shows how to clear the repository of all cable modems:

```
p3cable --clear-all-cm
```

Displaying the Login Status of CPEs

The following example shows how to display login status (allow/deny) of CPEs that belong to cable modems that do not exist in the Subscriber Manager database:

```
p3cable --show-dynamic-mode
```

Viewing Information of the PRPC Interface Server (p3rpc)

Cisco provides a proprietary remote procedure call (PRPC) interface to the Subscriber Manager. Use the **p3rpc** utility to view the configuration and statistics of the PRPC server.

For a complete list of **p3rpc** operations and options, see .

Step 1 From the shell prompt, enter a command of the format **p3rpc operation.**

Examples for Viewing Information of the PRPC Interface Server

The following example displays the statistics of the PRPC server.

```
p3rpc --show-statistics
```

Managing a Cluster of Two Subscriber Manager Nodes (p3cluster)

Use the **p3cluster** utility to view the redundancy state of the Subscriber Manager and its components. This utility also supports operations that alter the redundancy state of the Subscriber Manager. These operations are used by the Subscriber Manager Cluster Agent and for administrative tasks.

For a complete list of **p3cluster** operations and options, see .

Step 1 From the shell prompt, enter a command of the format **p3cluster operation.**

Examples for Managing a Cluster of Two Subscriber Manager Nodes

The following example displays the redundancy status of the Subscriber Manager and it components.

```
p3cluster --show
```

Managing the User Log (p3log)

Use the **p3log** utility to configure and manage the user log. All user-related events and errors are directed to the Subscriber Manager user log. You can extract the contents of the user log to a specified file to read and save its contents. You can also clear the user log.

For a complete list of **p3log** operations and options, see .

Step 1 From the shell prompt, enter a command of the format **p3log operation.**

Examples for Managing the User Log

The following example shows how to extract the user log to a specified file.

```
p3log --extract --output=myfile
```

Viewing Statistics of the RADIUS Listener (p3radius)

Use the **p3radius** utility to view the statistics of the RADIUS Listener LEG. For information about this CLU, see the *Cisco SCMS SM LEGs User Guide*.

Step 1 From the shell prompt, enter a command of the format **p3radius operation.**

Utilities

This section describes the following utilities:

Running a Batch File (p3batch)

Use the **p3batch** utility to run a batch file and execute its commands. Using any text editor, you can create a batch file that contains a series of CLU commands, one command per line. This operation (**p3batch**) enables you to run multiple operations on a single connection to the Subscriber Manager.

For a complete list of **p3batch** operations and options, see .

Step 1   From the shell prompt, enter a command of the format **p3batch [file-options] [error-options].**

Running a Batch File—Examples

This section presents examples of how to run a batch file.

Running a Batch File (Halt on Error)

The following example shows how to run a batch file that will halt if an error occurs.

```
p3batch --file=mainBatchFile.txt
```

Running a Batch File (No Halt on Error)

The following example shows how to run a batch file that will not halt if an error occurs.

```
p3batch --file=mainBatchFile.txt --skip-errors
```

Printing General Help About CLU Commands (p3clu)

Use the **p3clu** utility to print a list of all supported CLU utilities and operations.

Step 1   From the shell prompt, type **p3clu --help.**

All CLU commands are listed.

Database Operations

Use the **p3db** utility to manage and monitor the Subscriber Manager database database. The CLU exposes capabilities of some of Subscriber Manager database CLUs for specific needs of the Subscriber Manager.

For a complete list of **p3db** operations and options, see .

Step 1   From the shell prompt, enter a command of the format **p3db operation [options].**

Examples for Database Operations

The following example shows how to request the status of the replication agent, and also lists a typical response:

```
p3db --rep-status

Peer name         Host name                Port     State   Proto
---------------   ------------------------ ------   ------- -----
PCUBE_SM_REPOSITORY  SM_REP1         Auto    Start      11
Last Msg Sent Last Msg Recv Latency TPS     RecordsPS Logs
------------- ------------- ------- ------- --------- ----
```

```
00:00:02      00:00:00          1.15    2723      5447    1
the subscriber DB is ok
Command terminated successfully
```