Chapter 6

HP System Insight Manager (HP SIM)

HP SIM

HP System Insight Manager (HP SIM) is a hardware-management environment for all HP systems. With HP SIM, you can manage various systems including HP Integrity and HP 9000 servers running HP-UX, HP Integrity Servers running Windows and Linux; ProLiant servers running Windows, Linux, and NetWare; and monitor Alpha servers running Tru64 UNIX and OpenVMS. Although this chapter focuses on HP-UX system management with HP SIM, you can manage many more systems with HP SIM.

The *Central Management Server (CMS)* for HP SIM can run on HP-UX, Linux, or Windows. To manage HP-UX systems, you don't need a separate Windows or Linux system. You can run CMS right on one of your HP-UX systems, which I'll cover in this chapter.

There is one CMS per management domain. The CMS executes HP SIM software and initiates all HP SIM-related operations within the management domain. The CMS also maintains a database for storage of persistent objects. An HP-UX and Linux CMS uses PostgreSQL. A Windows CMS uses Microsoft SQL Server Desktop Engine (MSDE), which ships with HP SIM or Microsoft SQL Server. The CMS also manages itself as part of the management domain or makes it a managed system within another management domain.

Systems in the management domain are *managed systems*. Managed systems are any devices on the network that communicate with HP SIM. These can be devices such as servers (which will be part of the example in this chapter) desktops, workstations, hubs, routers, printers, laptops, and so on. Most of these devices have one or more IP addresses associated with them.

Every managed system must run one or more management agents. In the case of our HP-UX systems Event Management System (EMS) is running.

HP SIM uses *system lists,* which provide a way to search the database for systems that share common attributes such as running HP-UX. Standard system lists are provided in an upcoming example.

System groups are a way of organizing managed systems in terms of authorizations. Authorizations can be assigned to multiple systems at the same time using system groups.

Network clients access HP SIM using either a browser, to access the HP SIM Graphical User Interface (GUI), or Secure Shell (SSH), to access the HP SIM Command Line Interface (CLI).

HP CLI uses the operating system login to identify HP SIM users. This book doesn't cover the CLI. To access the HP SIM CMS from a browser, log in using the secure HTML login page. The user name and password are the same as those on the CMS operating system. The user name and password are transmitted using Secure Socket Layer (SSL) which provides data encryption and server authentication using public and private key technology.

SSH plays a large role in HP SIM for outbound connections such as running **dir** or **ls** on managed nodes.

Figure 6-1 shows some of the components in an HP SIM environment:

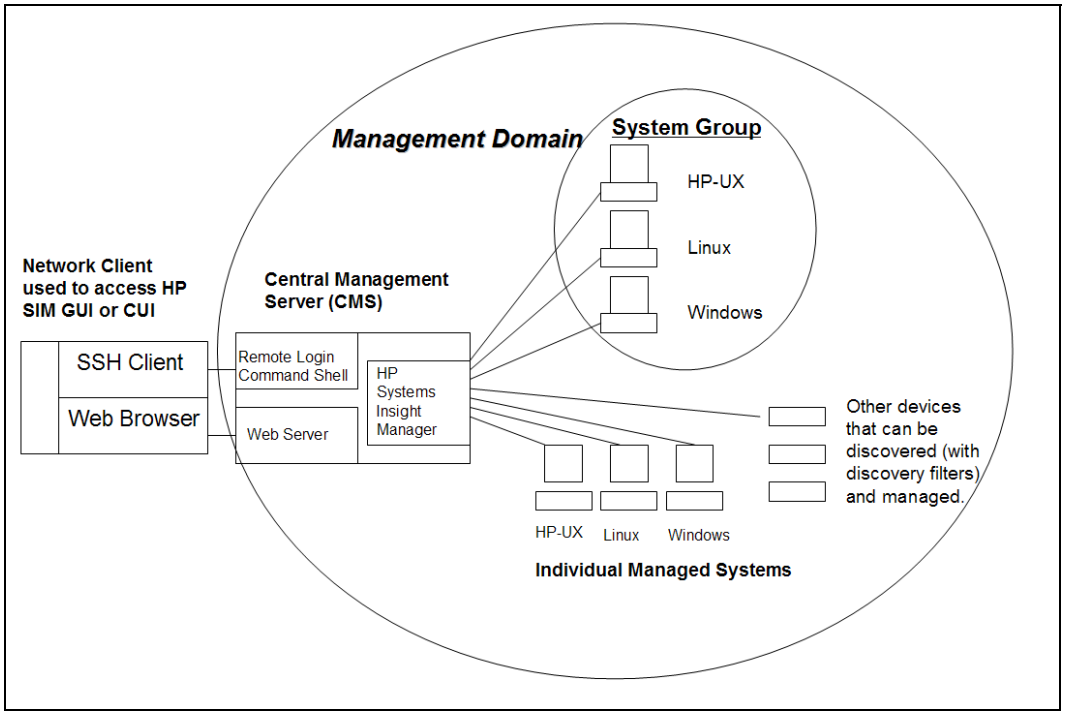

Figure 6-1 HP SIM Environment

Figure 6-1 is a simplified HP SIM environment, but it contains many of the components that you would typically manage in an HP SIM environment.

HP SIM grew out of several existing HP tools. It contains features from Insight Manager, HP Servicecontrol Manager (SCM) on HP-UX, and HP Toptools. This chapter covers a subset of HP SIM capabilities. Some HP-UX functionality of HP SIM is provided in the following list:

- Run the CMS on HP-UX, Linux, or Windows.
- Manage many systems running many operating systems, including HP-UX on HP Integrity and HP 9000 Servers, and Windows and Linux on HP Integrity Servers.
- Automatic discovery and identification of managed devices.
- Event management and notification services.

• Web browser and command line interface.

• Role-based security. You can define which users can perform which tasks.

• Integration with additional applications, including custom commands that you write.

• Upgrade SCM user accounts, devices, queries, tasks, and other customized settings to HP SIM.

• Plug-ins for many HP-UX tools, such as Ignite-UX, ServiceGuard, PRM and WLM, kernel configuration, storage, and others.

HP SIM and associated documentation can be downloaded from *http://www.hp.com/go/hpsim*. The *HP Systems Insight Manager Installation and User Guide* is available on this URL which is an invaluable tool for installing and setting up HP SIM on any platform.

Obtaining and Installing HP SIM

HP SIM can be downloaded for HP-UX, Windows, and Linux from the URL listed at the end of the previous section. The plug-ins, documentation, and other tools can be downloaded from the URL as well. When you download HP SIM for a given platform, it is a self-contained exercise in which all the tools you need are included in the download. In the case of HP-UX, for example, a depot was produced that was roughly 264MB in size and contained all the programs need to run HP SIM on an HP-UX system.

HP SIM will be installed in a Virtual Partition on a Superdome in the upcoming example. It can be installed in any type of partition or independent server provided the requirements are met as described in *HP Systems Insight Manager Installation and User Guide*.

Prior to installing HP SIM, you must perform a number of steps. The *HP Systems Insight Manager Installation and User Guide* contains many kernel parameter setting recommendations. These can be set using **kcweb**, described in the kernel chapter, which is a Web-based kernel tool. At the time of this writing, the parameter settings specified in the manual are as follows:

```
max_thread_proc=3000
maxdsize=2063835136
maxfiles=2048
```

maxfiles_lim=2048
maxusers=512
ncallout=6000
nfile=4097
nkthread=6000
nproc=2048
tcp_conn_request_max=2048

You also have to check to see if Servicecontrol Manager (SCM) is installed. If so, it has to be removed, which you'd do if you haven't used SCM, or upgrade it to HP SIM, which is described in *HP Systems Insight Manager Installation and User Guide.*

A depot was previously downloaded to install HP SIM. Using Software Distributor, I installed the depot by selecting *Local Directory* and the name of the file to which I saved the depot as shown in the following listing:

```
 ==================SD Install - Software Selection (rx2600M) (1)===============
¦File View Options Actions                                                Help ¦
¦                        Press CTRL-K for keyboard help.                      ¦
¦Source: rx2600M:/tmp/HPSIM-HP-UX_C.05.00.01.00.06_11.23.depot                ¦
¦Target:  rx2600M:/                                                           ¦
¦                                                                             ¦
¦Only software compatible with the target is available for selection.         ¦
¦-----------------------------------------------------------------------------¦
¦Top (Bundles and Products)                                 0 of 4 selected¦
¦-----------------------------------------------------------------------------¦
¦  Marked?    Name                  Revision        Information                ¦
¦+-----------------------------------------------------------------------+    ¦
¦¦            B8465BA          ->   A.02.00.08      HP WBEM Services for HP- ^ ¦
¦¦            HPSIM-HP-UX      ->   C.05.00.01.00   HP Systems Insight Manag   ¦
¦¦            JAVAOOB          ->   2.03.03         Java2 Out-of-box for HP-   ¦
¦¦            T1471AA          ->   A.04.00.003     HP-UX Secure Shell         ¦
¦+-----------------------------------------------------------------------+    ¦
```

The figure shows the source is the host name and target of *rx2600M*. In this **swinstall** window, select the HP SIM components you want to install. In this case, I select all the components. Several products in the depot make up all the components required for HP SIM.

After installation, the HP SIM setup required in *HP Systems Insight Manager Installation and User Guide* includes the following steps:

• Run the prerequisite tool with **/opt/mx/bin/mxinitconfig -l** which produces the following output:

```
[rx2600M] /roothome # /opt/mx/bin/mxinitconfig -l
Listing current status of server components (16):
  1. Check Kernel Parameters
    - Requisite : Acceptable
    - Status    : Unconfigured
  2. Node Security File
    - Requisite : Acceptable
    - Status    : Unconfigured
  3. Server Property File
    - Requisite : Acceptable
    - Status    : Unconfigured
  4. Server Authentication Keys
    - Requisite : Acceptable
    - Status    : Unconfigured
  5. SSH Keys
    - Requisite : Acceptable
    - Status    : Unconfigured
  6. Status Property File
    - Requisite : Acceptable
    - Status    : Unconfigured
  7. Task Results Output Cleanup
    - Requisite : Acceptable
    - Status    : Unconfigured
  8. Database Configuration
    - Requisite : Acceptable
    - Status    : Unconfigured
  9. Database Content
    - Requisite : Acceptable
    - Status    : Unconfigured
  10. Setup Property File
    - Requisite : Acceptable
    - Status    : Unconfigured
  11. Web Server
    - Requisite : Acceptable
    - Status    : Unconfigured
  12. Setup Property File
    - Requisite : Acceptable
    - Status    : Unconfigured
  13. JBoss Setup
    - Requisite : Acceptable
    - Status    : Unconfigured
  14. Agent Configuration
    - Requisite : Acceptable
    - Status    : Unconfigured
  15. Management Services
    - Requisite : Acceptable
    - Status    : Unconfigured
  16. Database Population
    - Requisite : Acceptable
    - Status    : Unconfigured
Completed all tasks successfully.
Details can be found in the log file at /var/opt/mx/logs/initconfig.log
[rx2600M] /roothome #
```

This tool caught the fact that I got lazy and didn’t update the kernel parameters to the value specified by issuing a warning in step 1 for the kernel parameters. All other checks produced an acceptable output.

• Initialize HP SIM with **/opt/mx/bin/mxinitconfig -a**. This command can take a long time to execute. In the case of this example, it took more than one hour to populate the database:

```
[rx2600M] /roothome # /opt/mx/bin/mxinitconfig -a

  1. Check Kernel Parameters
    - Successful
  2. Node Security File
    - Successful
  3. Server Property File
    - Successful
  4. Server Authentication Keys
    - Successful
  5. SSH Keys
    - Successful
  6. Status Property File
    - Successful
  7. Task Results Output Cleanup
    - Successful
  8. Database Configuration
    - Successful
  9. Database Content
    - Successful
  10. Setup Property File
    - Successful
  11. Web Server
    - Successful
  12. Setup Property File
    - Updating
    - Successful
  13. JBoss Setup
    - Successful
  14. Agent Configuration
    - Successful
  15. Management Services
    - Updating
    - Successful
  16. Database Population
    - Waiting for HPSIM service to start ...
    - Current Status, % Completed : 20%

                .
                .
                .
    - Current Status, % Completed : 100%
    - Successful
Completed all tasks successfully.
Details can be found in the log file at /var/opt/mx/logs/initconfig.log
[rx2600M] /roothome #
```

The *Database Configuration* in step 8 of this listing took about an hour to complete. This was the configuration of PostgreSQL, which is the default database for HP SIM on HP-UX PostgreSQL that was loaded as part of the depot. Continual status was provided during this configuration in the form of percentage complete. All the steps completed successfully, although the kernel parameter warning still exists, so I move to the next step.

• Verify the daemons for HP SIM are running: **mxagent**, **mxdomain-mgr**, and **mxdtf** . You can run: **ps -ef |grep mx**. If the agents are not running, you can start them with **/opt/mx/bin/mxstart**. You can also stop the agents using the command **/opt/mx/bin/mxstop**. The following listing shows the output of looking for processes with *mx* in them after all the steps in this bullet list were run:

```
[rx2600M] /roothome # ps -ef | grep mx
 root 10543     1  0 05:06:22 ?        0:18 /opt/mx/lbin/mxinventory -WBEM 1149937830
 root 10494     1  0 04:54:45 ?        3:12 /opt/mx/lbin/mxdomainmgr
 root 10495     1  0 04:54:45 ?        0:27 /opt/mx/lbin/mxdtf
 hpsmdb 10507 10475  0 04:55:56 pts/0  4:56 postgres: mxadmin insight_v1_0 127 idle
 root 10542     1  0 05:06:22 ?        0:18 /opt/mx/lbin/mxinventory -DMI 1149937581838
 hpsmdb 10544 10475  0 05:06:26 pts/0  0:01 postgres: mxadmin insight_v1_0 127 idle
 hpsmdb 10538 10475  0 05:06:14 pts/0  0:01 postgres: mxadmin insight_v1_0 127 idle
 root 10996 10092  1 08:24:26 pts/0    0:00 grep mx
[rx2600M] /roothome #
```

• Stop the SNMP agent on the CMS with **/sbin/init.d/SnmpMaster stop**.

• Edit **/etc/SnmpAgent.d/snmpd.conf** and add the CMS address with **trap-dest** *CMS_address*.

• Start the SNMP daemon with **/sbin/init.d/SnmpMaster start**.

• Use the GUI to add the default WBEM user name and password to the *Options-Protocol Settings-Global Protocol Settings* page. To initiate an HP SIM session using a browser, use *http:/hostname:280/*. (The next section covers using the GUI.) You may notice that this switches to port 50000, which runs over HTTP/S using SSL.

• In the *Default WBEM settings* section, check the *Enable WBEM* box.

• Install and configure agents on managed systems. This can be a time consuming process and requires work on all the systems that you want to manage with HP SIM.

• Perform additional HP SIM setup, such as adding managed systems and users, specifying user authorizations, configuring event handling, and other setup.

HP Systems Insight Manager Installation and User Guide does a great job of walking you through installation, configuration, and upgrading from Insight Manager and SCM to HP SIM.

Now that HP SIM is installed on an HP-UX system, the next section covers working with the regions of the GUI.