# Sun Management Center 3.5 Update 1 Supplement for Halcyon PrimeAlert Agent for Linux

# Contents

# Preface

The Halcyon PrimeAlert® Agent for Linux (Linux Agent, for short) works with Sun™ Management Center 3.5 Update 1. The Linux Agent enables Sun Management Center to monitor hosts running the Linux operating system. This document describes how to install and use the Linux Agent for Sun Management Center 3.5 Update 1.

**Note –** In this document the term "x86" refers to the Intel 32–bit family of microprocessor chips and compatible microprocessor chips made by AMD.

# Who Should Use This Book

This document is for users and system administrators who install and use the Sun Management Center software and the Linux Agent.

# Related Books

For a list of related books for Sun Management Center 3.5 Update 1, see the *Sun Management Center 3.5 Update 1 Release Notes*. For the latest version of this document, see the Sun Management Center 3.5 Update 1 Software Collection at `http://docs.sun.com`.

# Using UNIX Commands

These notes do not contain information about basic UNIX® commands and procedures, such as shutting down the system, booting the system, or configuring devices.

See one or more of the following sources for this information:

- *Solaris Handbook for Sun Peripherals*
- Online documentation for the Solaris™ software environment (available from `http://docs.sun.com`)
- Other software documentation that you received with your system

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# Typographic Conventions

The following table describes the typographic changes that are used in this book.

**TABLE P–1** Typographic Conventions

| Typeface or Symbol | Meaning | Example |
|---|---|---|
| `AaBbCc123` | The names of commands, files, and directories, and onscreen computer output | Edit your `.login` file.<br><br>Use `ls -a` to list all files.<br><br>`machine_name% you have`<br>`mail.` |
| **`AaBbCc123`** | What you type, contrasted with onscreen computer output | `machine_name%` **`su`**<br><br>`Password:` |
| *AaBbCc123* | Command-line placeholder: replace with a real name or value | The command to remove a file is `rm` *filename*. |
| *AaBbCc123* | Book titles, new terms, and terms to be emphasized | Read Chapter 6 in the *User's Guide*.<br><br>These are called *class* options.<br><br>Do *not* save the file.<br><br>(Emphasis sometimes appears in bold online.) |

# Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

**TABLE P–2** Shell Prompts

| Shell | Prompt |
|---|---|
| C shell prompt | `machine_name%` |
| C shell superuser prompt | `machine_name#` |
| Bourne shell and Korn shell prompt | `$` |
| Bourne shell and Korn shell superuser prompt | `#` |

# Installing the Linux Agent

Halcyon PrimeAlert Agent for Linux (Linux Agent, for short) enables Sun Management Center 3.5 Update 1 to monitor hosts running the Linux operating system.

This chapter covers these topics:

# Installation Requirements and Terms

To use the Linux Agent, you must have the server and console layers of the Sun Management Center 3.5 Update 1 core product already installed.

The following table summarizes the platform support for the various components.

TABLE 1–1 Supported Platforms for the Linux Agent

| Operating System | Base Product | Agent Layer | Server Layer | Console Layer |
|---|---|---|---|---|
| Solaris™ 8 (SPARC™) and later | Sun Management Center 3.5 Update 1 | | X | |
| Solaris 2.6 (SPARC) and later | Sun Management Center 3.5 Update 1 | | | X |
| Solaris 8 (x86) and later | Sun Management Center 3.5 Update 1 | | | X |

**TABLE 1–1** Supported Platforms for the Linux Agent     *(Continued)*

| Operating System | Base Product | Agent Layer | Server Layer | Console Layer |
|---|---|---|---|---|
| Windows 98, Windows NT 4.0 SP 4 or later, Windows 2000 Professional, and Windows XP | Sun Management Center 3.5 Update 1 | | | X |
| Red Hat Linux Enterprise 2.1 - 3.0 (32–bit and 64–bit) | PrimeAlert Agent | X | | |
| Sun Java™ Desktop System 1.0 | PrimeAlert Agent | X | | |
| SUSE Linux Enterprise 8.0 (32–bit and 64–bit) | PrimeAlert Agent | X | | |
| SUSE Professional 9 (32–bit and 64–bit) | PrimeAlert Agent | X | | |

In this supplement, the following terms are used:

- Server Host – Host where the Sun Management Center server is installed and running. This host must be a Solaris host and contain the package `SUNWessrv`.
- Agent Host – Host where the PrimeAlert Agent for Linux is installed and running.
- Console Host – Host where the Sun Management Center console is installed and running. If this host is a Solaris host, it contains the package `SUNWescon`. The host can also be a host running Windows.

# Installation Procedures

To install the Linux Agent, you need to do the following tasks (also shown in the figure):

- Extract the distribution file
- Install the server layer packages (Solaris)
- Install the console layer packages (Solaris or Windows)
- Install the agent layer packages (Linux)

```
┌─────────────────────┐
│      Solaris:       │
│      Extract        │
│  distribution file  │
└─────────────────────┘
           │
           ▼
┌─────────────────────┐
│      Solaris:       │
│   Install server    │
│   layer packages    │
└─────────────────────┘
           │
           ▼
┌─────────────────────┐
│ Solaris or Windows: │
│   Install console   │
│   layer packages    │
└─────────────────────┘
           │
           ▼
┌─────────────────────┐
│       Linux:        │
│    Install agent    │
│   layer packages    │
└─────────────────────┘
```
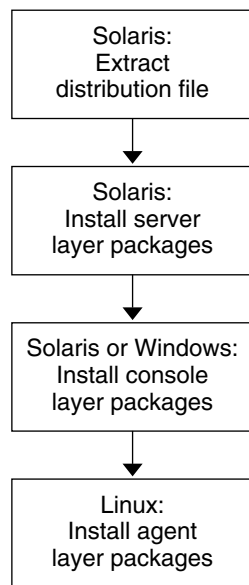
## ▼ Solaris: To Extract the Distribution File

The PrimeAlert Agent for Linux distribution file, `HALLinuxAgent_5.2.`*`x`*`.tar.gz` or `HALLinuxAgent_5.2.`*`x`*`.tar.Z` must be extracted before any packages can be installed. For this example, assume that the distribution file has been copied to the `/tmp/install` as the installation source directory, *source-dir*, and is extracted there.

**1. Log on as a super user.**

   `% su -`

**2. Change to the directory where you want to extract the files, for example:**

   `# cd /tmp/install`

**3. Uncompress the file.**

   `# uncompress HALLinuxAgent_5.2.`*`x`*`.tar.Z`

   or

   `# gzip -d HALLinuxAgent_5.2.`*`x`*`.tar.gz`

**4. Unarchive the file.**

   `# tar xvf HALLinuxAgent_5.2.`*`x`*`.tar`

   In this example, the files are unarchived in the directory
   `/tmp/install/HALLinuxAgent_5.2.`*`x`*. This directory represents the

installation source directory, *source-dir*, in the following procedures.

## ▼ Solaris: To Install the Server Layer Packages

Do this procedure on the Sun Management Center server host only. If the Sun Management Center server is installed on the same machine as the Sun Management Center console, the installer prompts you to install both the Linux console and server packages. Note that server layer packages should be installed and upgraded before agent or console layer packages are installed and upgraded.

1. **Log into the Sun Management Center server host as a super user.**

   ```
   % su -
   ```

2. **Change to the directory where you extracted the distribution files.**

   ```
   # cd source-dir
   ```

3. **Run the script `HALLinuxAgent-install.sh`.**

   ```
   # ./HALLinuxAgent-install.sh -s
   ```

   The following packages are installed or upgraded by the installation script:

   - `HALsislag`, PrimeAlert Agent for Linux (server component)
   - `HALmmsast`, PrimeAlert AgentHealth (server component)
   - `HALmmslsa`, PrimeAlert SystemMonitor (server component)
   - `HALmmsmib`, PrimeAlert MIB-II System (server component)

## ▼ Solaris: To Install the Console Layer Packages

Do this procedure for any console host from which you want to monitor the Linux Agent. If the Sun Management Center server is installed on the same machine as the Sun Management Center console, the installer prompts you to install both the Linux console and server packages. In this case, you can skip Steps 1 – 3 of the following procedure.

1. **Log into a Sun Management Center console host as a super user.**

   ```
   % su -
   ```

2. **If the console has a different host from the server, copy the distribution file and extract it in the appropriate directory.**
   See "Solaris: To Extract the Distribution File" on page 11.

3. **Run the script `HALLinuxAgent-install.sh`.**

   ```
   # ./HALLinuxAgent-install.sh -c
   ```

   If the installer detects that the Sun Management Center server is installed, it prompts you to install the Linux Agent server layer packages.

The following packages are installed or upgraded by the installation script:

- `HALmmcast`, PrimeAlert AgentHealth (console component)
- `HALmmclsa`, PrimeAlert SystemMonitor for Linux (console component)
- `HALmmcmib`, PrimeAlert MIB-II System (console component)

4. **Restart the local Sun Management Center console by typing:**

   `# /opt/SUNWsymon/bin/es-start -c`

## ▼ Windows: To Install the Console Layer Packages

Do this procedure for any Windows console host that is being used to monitor the Linux Agent.

1. **If present, remove the currently installed console package for the PrimeAlert Agent for Linux. See "Windows: To Remove the Console Layer Packages" on page 18.**

2. **Copy the Windows InstallShield installer to a convenient location (*path*) on the Windows console host. From the Solaris host where you unarchived the tar file, the Windows InstallShield installer has the path** *source-dir***/packages/win32/HALLinuxAgent_5.2.x.exe.**

   For example, if you use FTP on the Windows console host to retrieve the file from the Solaris host, the commands might look like this:

   ```
   C:\Documents and Settings\sunmc>ftp tahoe
   Connected to tahoe.mycorp.com.
   220 tahoe FTP server ready.
   User (tahoe.mycorp.com:(none)): jching
   331 Password required for jching.
   Password:
   230 User jching logged in.
   ftp> cd source-dir/HALLinuxAgent_5.2.x/packages/win32
   250 CWD command successful.
   ftp> bin
   200 Type set to I.
   ftp> ls
   200 PORT command successful.
   150 Opening ASCII mode data connection for file list.
   HALLinuxAgent_5.2.x.exe
   226 Transfer complete.
   ftp: 25 bytes received in 0.00Seconds 25000.00Kbytes/sec.
   ftp> get HALLinuxAgent_5.2.x.exe
   200 PORT command successful.
   150 Opening BINARY mode data connection for
   HALLinuxAgent_5.2.x.exe
   (1088645 bytes).
   226 Transfer complete.
   ```

3. **Run the InstallShield package.**

For example, from the command line, type:

```
C:\Documents and Settings\path\HALLinuxAgent_5.2.x.exe
```

Or choose Start > Run *path*\HALLinuxAgent_5.2.*x*.exe.

4. **Follow the on-screen instructions.**

   Besides installing a number of program files, the installation program puts a number of shortcuts in the Start Menu's Programs folder, in the subfolder Halcyon. These shortcuts provide easy and fast access to help files for the three modules included with the Linux Agent.

5. **Restart the local Sun Management Center console by double-clicking the Sun Management Center shortcut icon or by choosing Start > Programs > Sun Management Center > Console.**

## ▼ Linux: To Install the Agent Layer Packages

Do this procedure on any Linux host that is being upgraded to the latest version of the PrimeAlert Agent for Linux or that receives the Linux Agent files.

1. **Log into the Linux host as a super user.**

   ```
   % su -
   ```

2. **Copy the distribution file and extract it in the appropriate directory on the Linux host.**
   See .

3. **Run the script `HALLinuxAgent-install.sh`.**

   ```
   # cd source-dir
   # ./HALLinuxAgent-install.sh -a
   ```

4. **Type `y` and press Return.**

   A message appears explaining the information that the script requests.

   ```
   Agent Setup
   ===========
   .
   .
   .
   The following parameters are needed in order to
   set up the agent:

   - PrimeAlert Agent Hostname/IP: is the hostname or IP address of
   this host which correspond to the NIC and IP address through which
   communication with the SunMC Server occurs. The Sun MC server must be able
   to resolve the IP from hostname and vice versa. Failure to properly specify
   this entry may result in unauthenticated communication between the
   server and the agent. The default value is the output of the command
   ```

```
'hostname'.

- PrimeAlert Agent Port: This is the port used by the SunMC server
to communicate with the PrimeAlert Agent. The default value is 161.

- Trap Server Host: This is the name of the host that runs the SunMC
  Trap Server component.

- Trap Server Port: This is the port used by the PrimeAlert Agent to
  communicate with the Trap Server. The default value is 162.

- Event Server Host: This is the name of the host that runs the
SunMC Event Server component. The default value is the hostname you
provided for the Trap Server.

- Event Server Port: This is the port used by the PrimeAlert Agent
to communicate with the Event Server. The default value is 163.

- Seed: This is the seed you used when you installed the SunMC
server components. In order for the PrimeAlert Agent to function
correctly, you have to specify the same seed.

.
.
.
```

5. **Type y to continue with the script and press Return.**

   You are prompted for the agent hostname/IP.

   ```
   Configuring the PrimeAlert Agent for SunMC ...

   Please enter the following information:

   Agent Hostname/IP [caspian]:
   ```

   ---

   **Note –** If the Linux Agent has been installed before, the software uses the previous
   settings and skips the setup steps. If you want to change the configuration, you can
   reconfigure the Linux Agent by running the install script with the -setupAgent
   option from the installation source directory or by editing the domain.config.x
   file. For more information, see "Reconfiguring the Linux Agent" on page 31.

   ---

6. **Press Return to accept the default or type a different agent hostname/IP and
   press Return.**

   You are prompted for the agent port.

7. **Press Return to accept the default port, if free, or type a different agent port and
   press Return.**

   You are prompted for the trap server host. The trap server host is the same as the
   Sun Management Center server host.

8. **Type the trap server host name and press Return.**

You are prompted for the trap server port.

> **Note –** To avoid lost communication and to bind the Linux Agent, make sure you type the proper values for the trap server port and event server port. Unless the trap server port and event server port have been changed on the Sun Management Center server, you should accept the default values for the trap server port and event server port.

9. **Press Return to accept the default port, if free, or type a different trap server port and press Return.**

   You are prompted for the event server host. The event server host is the same as the Sun Management Center server host.

10. **Press Return to accept the default or type a different event server host name and press Return.**

    You are prompted for the event server port.

11. **Press Return to accept the default port, if free, or type a different event server port and press Return.**

    You are prompted for the seed.

12. **Type the seed and press Return. This must match the seed you used for your Sun Management Center server layer installation.**

    You are prompted to confirm the seed.

13. **Type the seed and press Return.**

    Progress and confirmation messages appear.

    The following packages are installed or upgraded by the installation script:

    - `HALpialag` – The PrimeAlert Agent for Linux monitors the health and statistics of the system
    - `HALpmalsa` – PrimeAlert SystemMonitor provides information about the operating system
    - `HALpmaast` – PrimeAlert AgentHealth monitors statistics about the operating system
    - `HALpmamib` – PrimeAlert MIB-II System provides information about the Management Information Base (MIB)
    - `HALpmakit` – PrimeAlert Agent Toolkit

    The installation of the Linux Agent is complete. No host reboot is required.

    If you have upgraded the agent or any of its bundled modules, the agent must be restarted. For an initial install, the agent must be started.

14. **Start the Linux Agent by typing:**

    ```
    # /opt/PrimeAlert/bin/pa start agent
    ```

# Installation Log Files

For information on possible installation problems, see "Installation Troubleshooting" on page 37.

To view the installation log on a Solaris host, see:

`/var/opt/SUNWsymon/install/HALLinuxAgent-install_YYYYMMDD-HHMMSS.log`

To view the installation log on a Linux host, see:

`/var/opt/PrimeAlert/install/HALLinuxAgent-install_YYYYMMDD-HHMMSS.log`

# Uninstallation Procedures

**Note –** If you uninstall the Sun Management Center core product on the server host by using the `es-uninst` with the `-X` option, the installation script uninstalls all the installed packages for the Linux Agent. You do not need to uninstall the Linux Agent packages manually.

## ▼ Solaris: To Remove Server Layer Packages

The procedure described in this section should be performed on the Sun Management Center server layer host only.

1. **Log into the Sun Management Center server host as a super user.**

   `% su -`

2. **Run the following commands:**

   ```
   # cd /var/opt/SUNWsymon/uninstall
   # ./HALUninstall.sh -module LinuxAgent server
   ```

   All or some of the following packages are removed:

   - `HALsislag`
   - `HALmmsast`
   - `HALmmslsa`
   - `HALmmsmib`

## ▼ Solaris: To Remove the Console Layer Packages

The procedure described in this section should be performed on any console host where packages for the PrimeAlert Agent for Linux are to be removed.

**1. Log into a Sun Management Center console host as a super user.**

```
% su -
```

**2. Change to the following directory.**

```
# cd /var/opt/SUNWsymon/uninstall
```

**3. Run the uninstall script:**

```
# ./HALUninstall.sh -module LinuxAgent console
```

All or some of the following packages are removed.

- HALmmcast
- HALmmclsa
- HALmmcmib

You do not need to restart the local Sun Management Center console after package uninstallation.

## ▼ Windows: To Remove the Console Layer Packages

Do this procedure on any Windows host where the Linux Agent is to be removed.

**1. Go to the Windows Start menu and select Start > Settings > Control Panel.**
A new Control Panel window appears.

**2. Double-click the Add/Remove Programs icon in the Control Panel window.**
A new window labeled Add/Remove Programs (Properties) appears.

**3. Select Halcyon PrimeAlert Agent for Linux.**

**4. Start the uninstall process.**

- Windows NT 4.0 – Click the Add/Remove button.
- Windows 2000 – Click the Change/Remove button.

An UnInstallShield session is launched.

**5. Follow the on-screen instructions.**

## ▼ Linux: To Remove Agent Layer Packages

Do this procedure on any Linux host where the Linux Agent is no longer required.

1. **Log into the Linux host as a super user.**

   ```
   % su -
   ```

2. **Stop the Linux Agent process on the Linux host by typing the following commands:**

   ```
   # cd /opt/PrimeAlert/bin
   # ./pa stop agent
   ```

3. **Change to the uninstall directory.**

   ```
   # cd /var/opt/PrimeAlert/uninstall
   ```

4. **Run the following command.**

   ```
   # ./HALUninstall.sh -module LinuxAgent agent
   ```

   The following packages are removed by this process:

   - `HALpialag`
   - `HALpmaast`
   - `HALpmalsa`
   - `HALpmamib`

## Uninstallation Log Files

To view the uninstallation log on the Solaris host, see:

`/var/opt/SUNWsymon/uninstall/log/uninstall.log.`*YYYYMMDD-HHMMSS*

To view the uninstallation log on the Linux host, see:

`/var/opt/PrimeAlert/uninstall/log/uninstall.log.`*YYYYMMDD-HHMMSS*

# Linux Agent Packages

The following table lists the packages in the Linux Agent.

**TABLE 1–2** Linux Agent Packages

| Package | Description |
| --- | --- |
| HALmmcast | PrimeAlert AgentHealth (console component) system |
| HALmmclsa | PrimeAlert SystemMonitor for Linux (console component) system |
| HALmmcmib | PrimeAlert MIB-II System (console component) system |
| HALmmsast | PrimeAlert AgentHealth (server component) system |
| HALmmslsa | PrimeAlert SystemMonitor for Linux (server component) system |
| HALmmsmib | PrimeAlert MIB-II System (server component) system |
| HALsislag | PrimeAlert Agent for Linux (server component) |
| HALpialag | PrimeAlert Agent for Linux monitors the health and statistics of the system |
| HALpmamib | PrimeAlert MIB-II System provides information about the MIB |
| HALpmaast | PrimeAlert AgentHealth monitors statistics about the system |
| HALpmalsa | PrimeAlert SystemMonitor provides information about the operating system |
| HALpmakit | PrimeAlert Agent Toolkit |

# Using the Linux Agent

The Linux Agent monitors the health and statistics of a host running Linux. The agent works with Sun Management Center so that Linux hosts running this agent can be managed and viewed from a Sun Management Center console.

This chapter covers these topics:

# Introduction to the Linux Agent

The Halcyon PrimeAlert Agent for Linux is a Sun Management Center compatible agent. It is close in architecture and functionality to a Sun Management Center 2.*x* agent.

The Linux Agent and its modules include:

- PrimeAlert SystemMonitor for Linux
- PrimeAlert MIB-II System
- PrimeAlert AgentHealth

These modules are described in "Module Features" on page 33.

The following table list some of the features that the Linux Agent supports or that are implemented differently from other Sun Management Center 3.5 Update 1 agents. The next table lists features that are not supported by the Linux Agent.

**TABLE 2–1** Features Supported Or Implemented Differently

| Category | Feature |
|---|---|
| Supported functions | Configurable alarm thresholds |
| | Agent-down alarm |
| | Host-down alarm |
| | Graphing of agent attributes |
| | History logging of agent attributes |
| | Probes for additional information (System Monitor) |
| | Online help |
| Different implementation | Starting and stopping the agent (see "Starting and Stopping the Linux Agent" on page 24) |
| | Creating an object in the console (see "To Create a Linux Object As an SNMP Ping Object" on page 25) |
| | Discovering an object in the console (see "To Discover the Linux Object" on page 27) |
| | Creating an email action script when an alarm is triggered (see "Configuring the Email Action Script for Alarms" on page 29) |
| | Reconfiguring the agent (see "Reconfiguring the Linux Agent" on page 31) |
| | Logging (see "Logging" on page 32) |
| | Accessing help (see "Module Online Help" on page 33) |

**TABLE 2–2** Features Not Supported

| Category | Features |
|---|---|
| Core functions not supported | Load and unload module |
| | View Logs tab in Sun Management console |
| | Applications tab in Sun Management console. Hardware diagnostics and Solaris process details not available |

**TABLE 2–2** Features Not Supported     *(Continued)*

| Category | Features |
| --- | --- |
| | Data views (Sun Management Center 3.*x* function) |
| | Agent update (Sun Management Center 3.*x* function) |
| | User-approved action scripts (Sun Management Center 3.*x* function) |
| | Manage Job functions (also called group operations) (Sun Management Center 3.*x* function) |
| | Hardware configuration reader (including physical and logical hardware views) from the Hardware tab of the Details window |
| | MCP (Module Configuration Propagation) |
| Optional configurations not supported | Turning off SNMPv1 and SNMPv2c |
| | Defining port range for TCP probe for setting up a firewall |
| | Configuring agent for name mode used in Network Address Translation (NAT) |
| | Encrypting the SNMP PDU (protocol data unit) |
| | Defining multiple trap hosts |
| | Audit channels for agent log file |
| | Configuring how the agent binds to the host's interface ports |
| Add-on functions not supported | Hardware Diagnostics Suite |
| | Performance Reporting Manager |
| | Advanced System Monitoring |
| | Service Availability Manager |
| | Change Manager |
| | System Reliability Manager |

# Overview of Using the Linux Agent

After you install the Linux Agent packages on the server layer, console layer, and agent layer, you need to do the following tasks (also shown in the figure):

- Start the Linux Agent
- Create a Linux object in the Sun Management Center topology
  - Create a Linux object as an SNMP ping object or discover the Linux object
  - Modify Linux object as a Sun Management Center Agent - Host
- Monitor the Linux object from the Sun Management Center console

```
┌─────────────┐
│   Start     │
│ Linux Agent │
└──────┬──────┘
       │
       ▼
┌─────────────┐
│   Create    │
│ Linux object│
│ in console  │
└──────┬──────┘
       │
       ▼
┌─────────────┐
│   Monitor   │
│ Linux object│
└─────────────┘
```
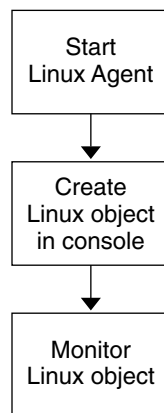
# Starting and Stopping the Linux Agent

You control the Linux Agent with the pa script. You must be a super user to use the commands. Use the following commands to control the agent.

To start the PrimeAlert Agent:
```
# /opt/PrimeAlert/bin/pa start agent
```

To stop the PrimeAlert Agent:
```
# /opt/PrimeAlert/bin/pa stop agent
```

To restart the PrimeAlert Agent (stop and start):
```
# /opt/PrimeAlert/bin/pa restart agent
```

To display the status of the PrimeAlert Agent:

```
# /opt/PrimeAlert/bin/pa status agent
```

**Note –** After starting the agent for the first time, you must wait 5 – 10 minutes for the server and agent to authenticate with one another before you manage the host through the console.

# Monitoring the Linux Host With the Sun Management Center Console

This section provides instructions on how to configure your Sun Management Center console to monitor hosts running the Linux Agent. The following examples assume that you are logged into a Sun Management Center console and an administrative domain is available.

Before you can monitor the Linux Agent, you need to create a Linux object in the Sun Management Center topology. You can create the Linux object in either of these ways:

- Create the Linux object as an SNMP Ping object
- Use Discovery Manager to populate the domain

After creating the object, you need to modify the object as a Sun Management Center Agent - Host.

## ▼ To Create a Linux Object As an SNMP Ping Object

1. **In the hierarchy view of the main console window, select the administrative domain in which to create the new object.**

   Select the lowest level group of the administrative domain where the new object should be created.

2. **Choose Create Object from the Edit menu.**

   The Create Object window appears with the Node tab selected.

3. **If the Node tab is not displayed, select the Node tab in the Create Object window.**

4. **Select SNMP Ping from the Monitor Via list.**

   A window similar to the following appears.
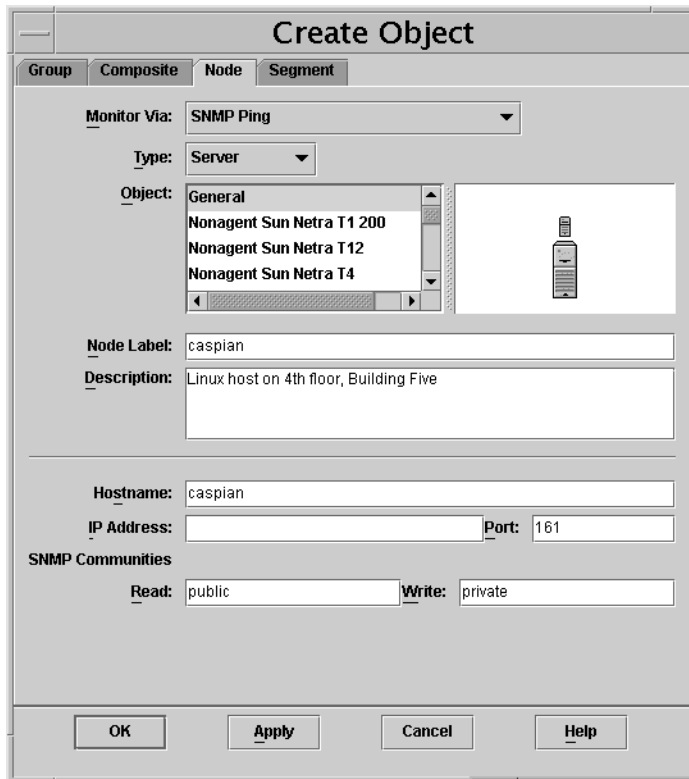
5. **Type a node label, for example, `caspian`.**

6. **(Optional) Type a description, for example, `Linux Host on 4th floor, Building Five`.**

7. **Type a hostname, for example, `caspian`.**

8. **(Optional if the hostname is provided in Step 7) Type the IP address in the IP Address field, for example, `192.1.4.58`.**

9. **Verify or change the port number.**

   The default number is the port number that you provided during installation of the Linux Agent. The default is 161. If you had to install the Linux Agent on another port, for example, because there was already an agent using port 161, then specify that port.

10. **Click OK.**

   A new object is inserted into the topology window. It has a generic icon.

**11. Go to "To Modify the Linux Object As a Sun Management Center Agent - Host" on page 27.**

## ▼ To Discover the Linux Object

1. **Follow the procedure, "To Define and Initiate a Discover Objects Request" in the** *Sun Management Center 3.5 User's Guide* **(Chapter 4, page 76).**

2. **Go to "To Modify the Linux Object As a Sun Management Center Agent - Host" on page 27.**

## ▼ To Modify the Linux Object As a Sun Management Center Agent - Host

1. **In the hierarchy view of the main console window, select the Linux Agent host that was just added to the current domain.**

2. **Choose Modify Object from the Edit menu.**

3. **In the Node tab, from the Monitor Via list, select Sun Management Center Agent - Host.**

4. **Click OK.**

   The object icon in the topology window changes from the generic icon to an icon that looks like a personal computer.
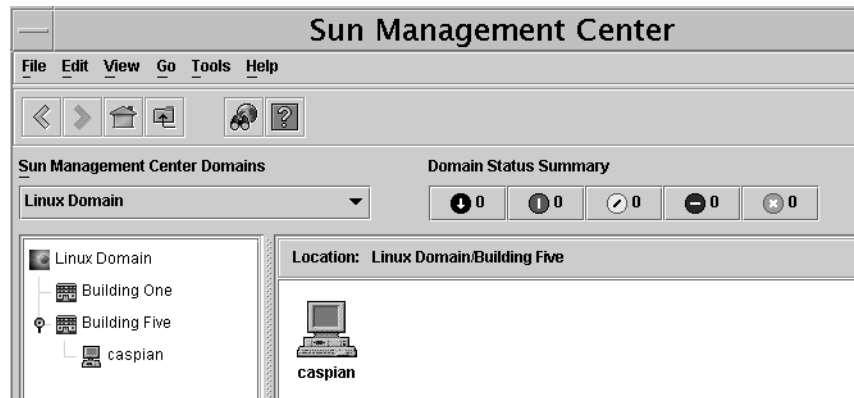


After you have created the Linux object, you can monitor the host.

## ▼ To Monitor the Linux Object

**1. Select the Linux object in the topology window of the console.**

**2. Double-click the selected Linux object.**

The Details window appears.

By default, the three modules bundled with the Linux Agent are loaded. These modules appear in the Operating System and Local Applications groups. To access help for the modules, see "Module Online Help" on page 33 .
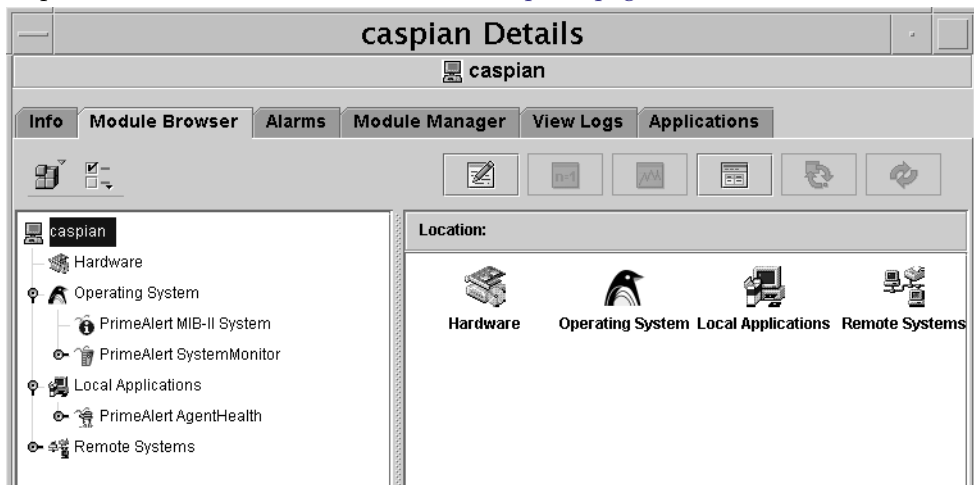


**3. Click the tabs relevant to the information you want to display about the Linux host.**

- Info tab – This tab shows general information about the object, including the name, IP address, polling type, and so on.

- Module Browser tab – This tab appears by default. It shows which modules are loaded by category: Hardware, Operating System, Local Applications, and Remote Systems.

- Alarms tab – This tab shows alarm status messages and alarm controls for the current host. Provides the ability to acknowledge or delete alarms. Because alarm actions run automatically, the Run Action option is not used.

- Module Manager tab — This tab enables you to load and unload the modules. You see the message "This agent version is earlier than 3.0. Some features may not be supported."

- View Logs tab — Because the Log Viewer is not installed for this agent, the tab does not apply. For information about logs, see "Logging" on page 32.

- Applications tab — This tab shows messages about the Solaris process details module that do not apply. Ignore the messages.

# Configuring the Email Action Script for Alarms

You can configure an alarm to send email to a specific address for an abnormal event, such as exceeding a certain percentage of CPU busy time.

## ▼ To Send Email When an Alarm Is Triggered

The following procedure sets up an email action script when an alarm is triggered. In this example, the alarm is triggered when the system exceeds a CPU busy time threshold.

1. **Select the Linux object in the topology window of the console.**

2. **Double-click the selected Linux object.**

   The Module Browser tab of the Details window appears.

3. **Click the expansion icon next to the Operating System icon or the Local Applications icon in the hierarchy tree view to access the module desired.**

| To Access this Module | Click the Expansion Icon Next to | For more information, see |
|---|---|---|
| PrimeAlert SystemMonitor | Operating System | "PrimeAlert SystemMonitor for Linux" on page 34 |
| PrimeAlert AgentHealth | Local Applications | "PrimeAlert AgentHealth" on page 35 |
| PrimeAlert MIB-II System | Operating System | "PrimeAlert MIB-II System" on page 35 |

   For example, expand the PrimeAlert SystemMonitor module by clicking its expansion icon.

   The hierarchy tree view shows the items monitored by the module.

4. **Double-click the CPU Usage item.**

   The CPU Usage table appears.

5. **Select the CPU Busy Time (%) value in the right column.**

   The cell is highlighted.

6. **Click mouse button 3 (right-click) on the cell.**

   A pop-up menu appears.

**7. Click Attribute Editor from the pop-up menu.**

The Attribute Editor window appears.

**8. Click the Actions tab.**

**9. Type `email` followed by the address in the text box for the alarm level desired (Critical, Alert, Caution, and so on), for example:**

`email` *name@domain*

| Attribute Editor |
|---|

Object Label: **CPU Busy Time (%)**
Object Location: **Operating System/PrimeAlert SystemMonitor/CPU Usage**

| Info | Alarms | Actions | Refresh | History |
|---|---|---|---|---|

Folder: CPU Usage
Variable: CPU Busy Time (%)

Critical Action:
Alert Action:
Caution Action: email admin@linux.sun.com
Indeterminate Action:
Close Action:
Action on Any Change:

| OK | Apply | Reset | Cancel | Help |
|---|---|---|---|---|

---

**Note –** You can type multiple addresses by using a space as a delimiter, for example:

email *name@domain  name2@domain*

---

**10. Click Apply.**

**11. Click the Alarms tab to enter a threshold for when the alarm is triggered.**

**12. Type the threshold for the alarm level desired (Critical, Alert, Caution, and so on).**

For example, for a Caution alarm, type the value 75 for CPU busy time.

**13. Click Apply.**

# Reconfiguring the Linux Agent

You configure the Linux Agent during installation. However, you can change settings, such as host names or port numbers, after installation by one of the following methods:

- Running the install script
- Editing domain-config.x

## Reconfiguring by Running the Install Script

You can re-enter all the agent setup information by typing the following command:

# *source-dir***/HALLinuxAgent-install.sh -setupAgent**

where *source-dir* is the installation source directory.

The install script prompts you for the settings and reseeds the Linux Agent if needed.

## Reconfiguring by Editing the domain-config.x File

You can specify different settings after installation, by logging into the Linux Agent host and editing the text file /var/opt/PrimeAlert/cfg/domain-config.x. Edit this file only when you want to change the server context or server ports. You must reseed after changing host names or port numbers, see .

The following lines can be specified in domain-config.x:

```
agent = {
        snmpPort = "161"
        agentServer = "caspian"
}
trap = {
        trapServer = "balkan"
```

```
        snmpPort = "162"
}
event = {
        eventServer = "balkan"
        snmpPort = "163"
}
```

## Reseeding After Changing Host Names or Port Numbers

If you change the agentServer and the snmpPort values in the `domain.config.x` file of the Linux Agent host, you must reseed the Linux Agent.

▼ *To Reseed After Changing Host Names or Port Numbers*

1. **On the Linux Agent host, type the following command in a UNIX shell as a super user:**

    # **/opt/PrimeAlert/bin/pa usm-seed -s** *seed* **agent**

    *seed* is the seed you used for your Sun Management Center server layer installation

2. **Restart the Linux Agent.**

    Wait 5 –10 minutes for the server layer and the agent to authenticate before managing the agent from the console.

# Logging

The Linux Agent creates several log files that can be used for debugging purposes. These log files use a special format called clog (circular logs). Clog files remain at a fixed size. Use the following tools to view the log files:

| | |
|---|---|
| /opt/PrimeAlert/bin/ctail | Similar to the UNIX command `tail`, this command displays the last few lines of a file. New lines are displayed as they are added to the file. |
| /opt/PrimeAlert/bin/ccat | Similar to the UNIX command `cat`, this command displays the file to standard output. |

The following log files are created by the agent:

/var/opt/PrimeAlert/log/agent.log
  Contains runtime information about the PrimeAlert Agent for Linux. Lines containing critical error messages begin with `error`.

/var/opt/PrimeAlert/log/agentStatus.log
  Contains events generated by the PrimeAlert Agent for Linux.

```
/var/opt/PrimeAlert/log/history.log
```
Contains information about monitored items for which the history function has been enabled. You can enable the history function in the Sun Management Center console through the History tab of the Attribute Editor.

# Module Features

The Linux Agent modules include:

- PrimeAlert SystemMonitor for Linux
- PrimeAlert AgentHealth
- PrimeAlert MIB-II System

These Linux Agent modules are loaded by default when the Linux Agent is first started.

## Module Online Help

The Linux Agent modules have online help, which is accessed separately from the Sun Management Center online help.

To access the Linux Agent help, click the module name in the Module Browser tab. Then click mouse button 3 (right-click) and select Help from the pop-up menu that appears.

---

**Note –** The illustrations in the Linux Agent help are not current with the Sun Management Center 3.5 Update 1 console. The illustrations do not show the View Logs, Applications, and Module Manager tabs. The View Logs and Applications tabs do not apply to the Linux Agent, but the Module Manager tab is functional. Also, the illustrations show the Module Browser tab as the Browser tab.

---

The help files are on the Sun Management Center server. In the following URLs, *smc-svr*:port 8080 is the Sun Management Center server running on port 8080. All of the help files have the following path:

```
http://smc-svr:8080/help/locale/C/
```

- PrimeAlert SystemMonitor for Linux help is at:

  *path*/HALLinuxSystemAlert/HALLinuxSystemAlert-h.html

- PrimeAlert MIB-II System module help is at:

  *path*/HALMIBII/HALMIBII-h.html

- PrimeAlert AgentHealth help is at:

    *path*/HALAgentStatistics/HALAgentStatistics-h.html

The help files are also in the `doc` subdirectory of the `HALLinuxAgent_5.2.x`
directory in the tar file `HALLinuxAgent_5.2.x.tar`:

```
./doc/AgentHealth/HALAgentStatistics-h.html
./doc/LinuxSystemMonitor/HALLinuxSystemAlert-h.html
./doc/MIB-II/HALMIBII-h.html
```

# PrimeAlert SystemMonitor for Linux

The PrimeAlert SystemMonitor for Linux provides information about the operating
system and its components. It is similar to the Kernel Reader Simple module of Sun
Management Center. The following subfolders are available:

| | |
|---|---|
| User Statistics | Displays information about the current console user, the number of current users and sessions, and the primary user of the system. |
| Process Statistics | Displays information about current processes on your Linux system grouped by their state. This subfolder also shows the total number of processes and the process capacity as well as the process limit. Probe commands provide a detailed view of processes in different states and ordered by several criteria. |
| System Load | Provides information about the current system load (1–minute, 5–minute and 15–minute load averages). |
| CPU Usage | Provides information about the current usage of the CPU. Shown are idle time, busy time, system time, user time, and the average CPU usage. |
| Swap Usage | Displays information about the total and available swap space and the current usage of swap memory. A probe command provides detailed information about allocated swap space. |
| Filesystem Usage | Displays information about mounted filesystems. For each filesystem, the total size, available space, used space, and the change rate of used space are shown. |
| Network Interfaces | Lists installed network interfaces and reports input/output packet errors and collisions. Probe commands can be used to obtain information about route tables and protocols. |
| TCP Connections | Provides information about existing TCP connections. Probe commands generate a detailed view of network statistics for several protocols (for example, Inet, TCP, and UDP). |
| IPC Facilities | Displays information about IPC message queues, shared memory, and semaphores. |

# PrimeAlert AgentHealth

The PrimeAlert AgentHealth module monitors statistics about the internal state of the agent and of the agent process. It is similar to the Agent Statistics module of Sun Management Center.

---

**Note –** If the Memory Usage and Virtual Memory Size values exceed the Critical alarm thresholds, the agent exits automatically. The default is set to 70000 Kbytes for Virtual Memory Usage.

---

# PrimeAlert MIB-II System

The PrimeAlert MIB-II System module delivers data for the system description, name, and uptime, as well as contact information and location. MIB-II stands for Management Information Base for Network Management of TCP/IP-based Internets and is a standard proposed by the Internet Architecture Board (IAB). The PrimeAlert MIB-II System module is similar to the MIB-II Simple module of Sun Management Center.

# Troubleshooting

## Installation Troubleshooting

### Console or Server Cannot Communicate With the Agent

Verify that the agent has been seeded. Check for the existence of the file `/var/opt/PrimeAlert/cfg/agent-engine-d.dat` on the Linux Agent host. You must wait 5 - 10 minutes after starting a newly installed or re-seeded agent before it and the server authenticate one another.

Remember that you must add the Linux Agent to the topology first as an SNMP Ping type object, then change that object to a Sun Management Center Host type object.

To seed the Linux Agent host, see "Reseeding After Changing Host Names or Port Numbers" on page 32.

No other processes need to be restarted on any other hosts. Wait 5 – 10 minutes before using console actions. If you have changed the IP address or SNMP Port of the agent process, you might need to delete the existing topology host object and re-create it.

The console or server cannot communicate with the agent.

# Runtime Troubleshooting

This list describes some of the problems you might encounter.

## Objects Have Long Cryptic Strings

**Problem:** When you view the Linux Agent in the console, you might see objects with long cryptic strings, such as `ca.halycon.`
`primealert.modules.LinuxSystemAlert.LinuxSystemAlert:moduleName`.

The server component of the Linux Agent is not installed on the Sun Management Center server host.

**Workaround:** Install the server component of the Linux Agent. See Chapter 1.

## Error Message: `Unable to load module definition`

After you select PrimeAlert SystemMonitor for Linux in the Load Module window, the Module Loader dialog box appears empty, and this message appears: `Unable to load module definition`.

**Problem:** The server component of PrimeAlert SystemMonitor for Linux is not installed on the server host that the console is connected to.

**Workaround:** Install the server component of PrimeAlert SystemMonitor for Linux. See Chapter 1.

## Linux Agent Cannot Be Added to the Domain

**Problem:** When you try to add a Linux Agent to a Sun Management Center domain, the Linux Agent cannot be added to the Domain.

This error message appears: `Error occurred during node create`.

**Workaround:** Follow the procedure for creating a Linux object in"To Create a Linux Object As an SNMP Ping Object" on page 25.

## Cannot Create a Sun Management Center Host Type Object

**Problem:** You cannot create a Sun Management Center host type object for the Linux Agent in the console topology.

**Workaround:** This issue has multiple possible causes and solutions:

- Ensure that you are creating an SNMP Ping type object first and then changing that object to a Sun Management Center Host type topology object.

- Ensure that you are logged into the Sun Management Center server layer as a user with sufficient privileges to create a topology object.

- Ensure that you have waited long enough to give the Sun Management Center server and the Linux Agent a chance to authenticate with one another. This period might be longer in a larger environment. Start with 5 minutes, then increase to 15 minutes if all else fails.

- Verify that you can ping the Linux host from the Sun Management Center server layer using both the IP address and the host name.

- Verify that you can ping the Sun Management Center server host from the Linux host using both the IP address and the host name.

- Verify that the host name resolves to the correct IP address on the Sun Management Center server.

- Verify that the IP address that you provided to the Sun Management Center server layer is on the same subnet as the Ethernet card containing the IP address being used by the Linux Agent.

- If the Linux host has multiple NIC cards, ensure that the host name on the Linux host resolves to the IP address for the proper NIC. If that resolution fails, modify the agent subsection of the file
  `/var/opt/PrimeAlert/cfg/domain-config.x` on the Linux Agent host:

  `agentServer = `*IP-address*
  where *IP-address* is the IP address of the appropriate NIC.

---

# Runtime Issues and Bugs

Issues include information that you should know about, such as prerequisites, tips, troubleshooting hints, and bugs. Bugs are a subset of issues. Bugs have tracking numbers that are shown in parentheses. For updates on bugs and to obtain patches, see the SunSolve[SM] web site at `http://sunsolve.sun.com`.

## Runtime Issues

### Attempting to Stop the Agent With the `pa stop` Command Results in the Message `agent process` (*PID*) `error waiting for process to exit: child process lost (is SIGCHLD ignored or trapped?)`

**Workaround:** You can safely ignore this message. To confirm that the agent has been stopped, run the command `ps -elf | grep paAgent | grep -v grep`.

### Selecting PrimeAlert System Monitor > User Statistics > Console User *value* Always Reports None

The user whose TTY device is `console`, `tty1`, or `:0` is reported as the console user. Either no user is logged into the console, or the TTY is not `console`, `tty1`, or `:0`.

**Workaround:** None.

### The `pa stop` Command Indicates That the Agent Has Been Stopped, But the `paAgent` Process Still Exists

This rare condition is linked to multiple simultaneous attempts to start the agent.

**Workaround:** Kill the *PID* of the `paAgent` process. If that fails, use the `kill -9` command.

## Runtime Bugs

### When PrimeAlert System Monitor Reports on Idle Processes, the Number of Sleeping Processes Does Not Match the Number Reported as State `S` in `ps -elf` (5009340)

The number of idle processes as reported in the PrimeAlert System Monitor module is the number of sleeping processes that are swapped in `ps -elf`. The arguments of such processes are encased in brackets ([] ). The number of sleeping processes reported in the System Monitor module is the number of sleeping processes *minus* the number of sleeping processes swapped out.

## The Info Tab for the Linux Agent Host Is Missing Information (5010084)

The Info tab for the Linux Agent host in the Sun Management Center console is missing information. The netmask information is missing. Timezone is shown as unknown.

**Workaround:** None.

## No `es-setup` Command on the Linux Agent to Change the Agent Setup After Installation (5007871)

**Workaround:** You can change settings for the Linux Agent by running the install script from the installation source directory or editing the `domain-config.x` file. For more information, see "Reconfiguring the Linux Agent" on page 31.

## Linux Agent Does Not Support an Optional Install Directory (5010061)

**Workaround:** The agent is installed in `/opt/PrimeAlert` with configuration files in `/var/opt/PrimeAlert`. If another directory is more suitable, use a symbolic link.

## If a DataView Table Is Made for a Linux Agent Property (such as Filesystem Usage/System Load), the Property Column Does Not list the Property Name But Shows `N/A` (5009314)

**Workaround:** None.

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