



Sun N1 System Manager 1.2 Site Preparation Guide

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054
U.S.A.

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Preface

The *Sun N1 System Manager 1.2 Installation and Configuration Guide* describes the requirements, network and hardware connections and preparation processes, and the procedures for installing and configuring the base operating system and then the Sun N1™ System Manager system.

Who Should Use This Book

This guide is intended for system administrators who are responsible for installing or upgrading the N1 System Manager software and hardware. The system administrators must have extensive knowledge and experience in the following areas:

- The Linux and Solaris™ operating systems, and the network administration tools provided by each operating system
- Network equipment and network devices from a variety of vendors such as Sun and Cisco
- DNS, DHCP, IP addressing, subnetworks, VLANs, SNMP, and mail configuration
- Network device interconnections and cabling
- Linux Kickstart™ installation
- Solaris JumpStart™ installation

How This Book Is Organized

- [Chapter 1](#) provides an overview of the N1 System Manager system preparation work flow.
- [Chapter 2](#) lists the hardware and software required for a successful installation of the N1 System Manager, and provides references and guidelines describing how to connect the N1 System Manager management server to servers that are to be managed and to external Ethernet switches.
- [Chapter 3](#) describes how to install an OS on the N1 System Manager system.
- [Appendix A](#) provides an overview and reference configuration diagrams for an alternative method of connecting Sun Fire™ V20z and V40z provisionable servers to the N1 System Manager networks.

Related Documentation

This guide is part of a six-volume implementation reference set. The set should be read in the following order:

- *Sun N1 System Manager 1.2 Release Notes*
- *Sun N1 System Manager 1.2 Introduction*
- *Sun N1 System Manager 1.2 Installation and Configuration Guide*
- *Sun N1 System Manager 1.2 Administration Guide*
- *Sun N1 System Manager 1.2 Command Line Reference Manual*

Documentation, Support, and Training

The Sun web site provides information about the following additional resources:

- Documentation (<http://www.sun.com/documentation/>)
- Support (<http://www.sun.com/support/>)
- Training (<http://www.sun.com/training/>)

Typographic Conventions

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

TABLE P-1 Typographic Conventions

Typeface	Meaning	Example
AaBbCc123	The names of commands, files, and directories, and onscreen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. <code>machine_name%</code> you have mail.
AaBbCc123	What you type, contrasted with onscreen computer output	<code>machine_name%</code> su Password:
<i>aabbcc123</i>	Placeholder: replace with a real name or value	The command to remove a file is <i>rm filename</i> .
<i>AaBbCc123</i>	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the <i>User's Guide</i> . <i>A cache</i> is a copy that is stored locally. Do <i>not</i> save the file. Note: Some emphasized items appear bold online.

Shell Prompts in Command Examples

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

TABLE P-2 Shell Prompts

Shell	Prompt
C shell	<code>machine_name%</code>
C shell for superuser	<code>machine_name#</code>
Bourne shell and Korn shell	<code>\$</code>

TABLE P-2 Shell Prompts *(Continued)*

Shell	Prompt
Bourne shell and Korn shell for superuser	#

Site Preparation Overview

This chapter provides a summary of the steps required to prepare your site for installation and configuration of the Sun N1 System Manager1.2 system, and security issues you need to consider when preparing your site for the first-time installation of the Sun N1 System Manager software.

Note – If you are going to upgrade an existing installation of the N1 System Manager, see Chapter 2, “Upgrading the Sun N1 System Manager Software and Provisionable Server Management Agents,” in *Sun N1 System Manager 1.2 Installation and Configuration Guide*.

Summary of Major Tasks

The following diagram provides a high-level overview of the tasks required to prepare a site for Sun N1 System Manager1.2 installation.

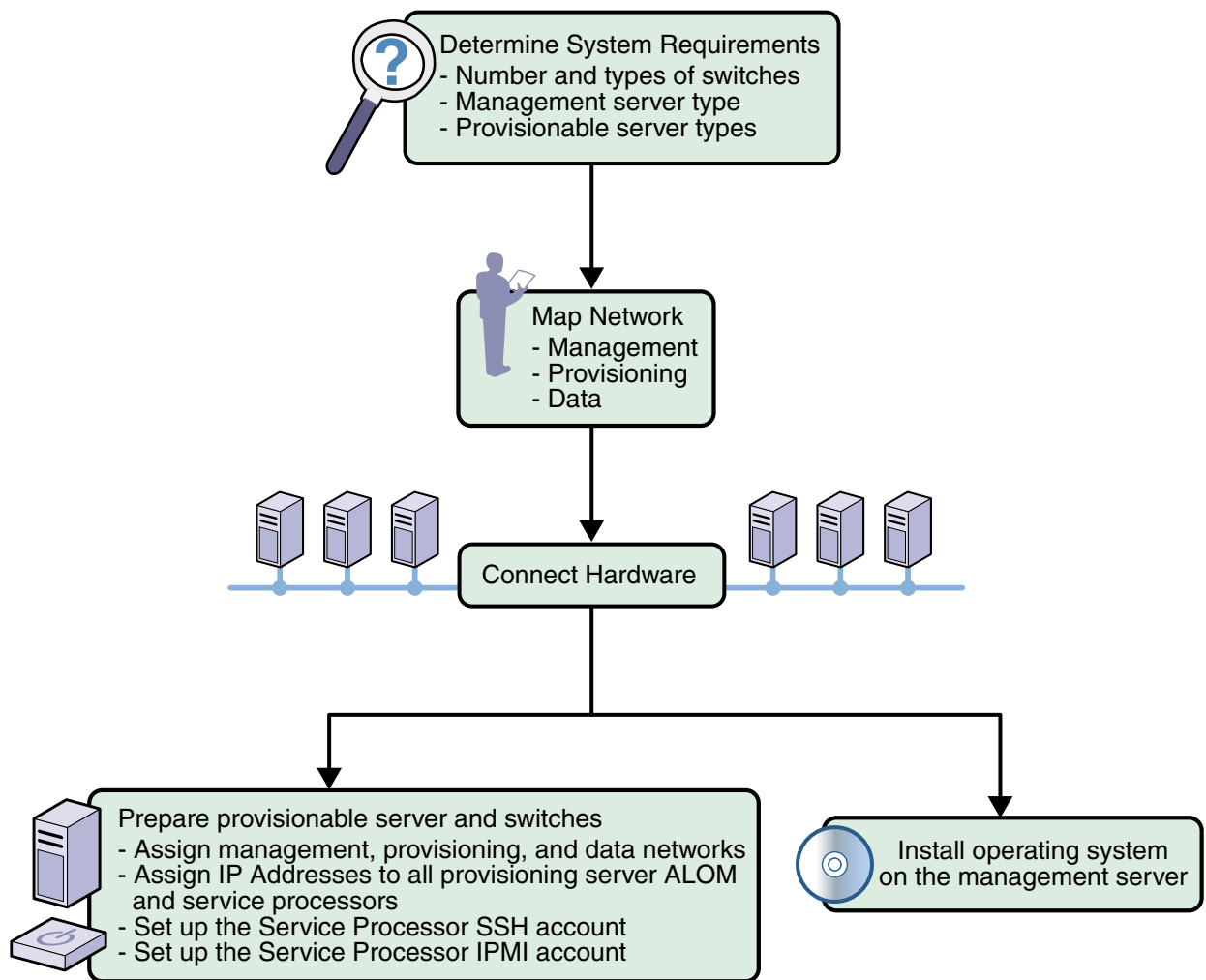


FIGURE 1-1 Site Preparation Task Flow

Summaries of each of the above tasks are provided in the following list.

■ Determine system requirements

This task involves the following actions:

- Inventory the equipment you want to use with the Sun N1 System Manager
- Compare the inventory to the system requirements, and if desired, purchase additional equipment
- Determine which server you will use as the management server and which operating system you will install on the management server
- Determine which servers you will use as provisionable servers and, based on the total, determine your switch requirements

References:

- [“Sun N1 System Manager Hardware and OS Requirements” on page 17](#)
- [“Sun N1 System Manager Connection Information” on page 24](#)
- [“Reference Configurations” on page 26](#)
- [“Management Server Considerations” on page 38](#)
- [“Switch Considerations” on page 40](#)

■ Map network

This task involves the following actions:

- Determine the IP addressing scheme for the management, provisioning, and data networks.
- Whether you will use a single-switch configuration in which all connections are on a single switch, or a two-switch configuration, in which the management network is isolated on one switch and the data and provisioning networks are on the second switch.
- Determine the VLAN assignments

References:

- [“Reference Configurations” on page 26](#)
- [“Site Planning” on page 38](#)

- Connect the hardware based on the information and decisions you have made in the preceding steps.
- Install and configure an operating system on the management server

This task can be performed at the same time as provisionable server preparation.

References:

- [“Installing the Solaris OS on the Management Server” on page 45](#)
- [“Installing the RedHat Enterprise Linux OS on the Management Server” on page 48](#)
- [“Enabling FTP on the Management Server” on page 56](#)
- [“Updating the /etc/hosts File” on page 57](#)
- [“Configuring the Management Server Mail Service and Account” on page 58](#)

■ Prepare the provisionable servers

This task involves the following actions:

- Assign IP addresses to the management port of each provisionable server
- Set up the provisionable server management processor account credentials where applicable

References:

- Provisionable server hardware documentation
- [“Setting Up Provisionable Servers” on page 42](#)

Security Considerations

The following list provides general security considerations that you should be aware of when you are using the N1 System Manager:

- The Java™ Web Console that is used to launch the N1 System Manager's browser interface uses self-signed certificates. These certificates should be treated with the appropriate level of trust by clients and users.
- The terminal emulator applet that is used by the browser interface for the serial console feature does not provide a certificate-based authentication of the applet. The applet also requires that you enable SSHv1 for the management server. For certificate-based authentication or to avoid enabling SSHv1, use the serial console feature by running the `connect` command from the `n1sh` shell.
- SSH fingerprints that are used to connect from the management server to the provisioning network interfaces on the provisionable servers are automatically acknowledged by the N1 System Manager software. This automation might make the provisionable servers vulnerable to "man-in-the middle" attacks.
- The Web Console (Sun ILOM Web GUI) autologin feature for Sun Fire X4100 and Sun Fire X4200 servers exposes the server's management processor credentials to users who can view the web page source for the Login page. To avoid this security issue, disable the autologin feature by running the `n1smconfig` utility. See "Configuring the N1 System Manager System" in *Sun N1 System Manager 1.2 Installation and Configuration Guide* for details.

Sun N1 System Manager System and Network Preparation

This chapter provides the Sun N1 System Manager hardware and software requirements, reference architectures, and procedures for preparing your N1 System Manager components.

The tasks provided in this chapter can be performed in parallel with the management server preparation as described in Chapter 3 of this manual, *“Installing and Configuring the Sun N1 System Manager Software”* and in Chapter 1, *“Installing and Configuring the Sun N1 System Manager Software,”* in *Sun N1 System Manager 1.2 Installation and Configuration Guide*.

Note – Do not run discovery or use the N1 System Manager system until all provisionable servers have been configured as described in the following sections.

This chapter discusses the following topics:

- [“Sun N1 System Manager Hardware and OS Requirements” on page 17](#)
- [“Sun N1 System Manager Connection Information” on page 24](#)
- [“Reference Configurations” on page 26](#)
- [“Site Planning” on page 38](#)
- [“Setting Up Provisionable Servers” on page 42](#)

Sun N1 System Manager Hardware and OS Requirements

The information in this section will help you determine what operating system, hardware, and storage resources must be allocated or acquired to implement the N1 System Manager system.

This section discusses the following topics:

- “Management Server Requirements” on page 18
- “Provisionable Server Requirements” on page 20
- “Recommended Switch Configuration” on page 22

Management Server Requirements

N1 System Manager management server hardware and operating software minimum requirements are listed in the following table. See [Table 2–5](#) for specific management server sizing information based on the number of provisionable servers to be managed.



Caution – Dedicate the management server only to N1 System Manager software. Do not install other applications on the management server.

TABLE 2–1 SPARC-based Management Server Hardware and Operating System Requirements

Type	Management Port Type	Operating System	Disk Space	RAM
Netra™ 240, 440	ALOM	Solaris 10 GA and later	72 Gbytes minimum	4 Gbytes minimum
Sun Fire™ V210, V240, V440	ALOM	Solaris 10 GA and later		
Sun Fire T1000 and T2000	ALOM	Solaris 10 HW2 and later		

TABLE 2-2 X86-Based Management Server Hardware and Operating System Requirements

Type	Management Port Type	Operating System	Disk Space	RAM
Sun Fire X2100 with the 8081A IPMI 1.5 Remote Management Card: Part Number: 371-0743	SP	Solaris x86 Version 10 HW1 and later Red Hat Enterprise Linux 3.0 AS Updates 2 through 5, 32-bit and 64-bit	72 Gbytes minimum	4 Gbytes minimum
Sun Fire X4100 and X4200	ILOM	Solaris x86 Version 10 HW1 and later Red Hat Enterprise Linux 3.0 AS Update 5, 32-bit and 64-bit		
Sun Fire V20z and V40z	SP	Solaris x86 Version 10 and later Red Hat Enterprise Linux 3.0 AS Updates 2 through 5, 32-bit and 64-bit		

A minimum of 3.0 Gbytes should be allocated for each OS distribution you plan to provision.

- On a Solaris-based management server, OS distributions are stored as follows:
 - Linux OS distributions are stored in `/var/opt/SUNWscs/share/allstart`
 - Solaris OS distributions are stored in `/var/js`
- On a Linux-based management server, OS distributions are stored as follows:
 - Linux OS distributions are stored in `/var/opt/sun/scs/share/allstart/`
 - Solaris OS distributions are stored in `/var/opt/sun/scs/share/allstart/jumpstart/`

Note – If the server you have chosen for the management server has only two network interfaces, consider installing a third 10/100 NIC in the N1 System Manager. A third NIC enables you to assign the management, provisioning, and data networks to separate network interfaces, and simplifies administrative tasks. The example diagrams and configurations in this document assume that an additional NIC has been installed in the management server.

Provisionable Server Requirements

N1 System Manager provisionable server hardware and operating software requirements are listed in the following tables.

TABLE 2-3 SPARC-Based Provisionable Server Hardware and Operating System Requirements

Type	Management Port Type	Provisionable OS	Disk Space Requirements	RAM Requirements
Sun Netra 240 and 440	ALOM	Solaris 10 GA and later Solaris 9 Update 7 and Update 8	12 Gbytes minimum for all provisionable servers	512 Mbytes minimum, 1-Gbyte recommended for all provisionable servers
Sun Fire V210, V240, and V440	ALOM	Solaris 10 GA and later Solaris 9 Update 7 and Update 8		
Sun Fire T1000 and T2000	ALOM	Solaris 10 HW2 and later		

TABLE 2-4 X86-Based Provisionable Server Hardware and Operating System Requirements

Type	Management Port Type	Provisionable OS	Disk Space Requirements	RAM Requirements
Sun Fire X2100 with the 8081A IPMI 1.5 Remote Management Card: Part Number: 371-0743	SP	Solaris x86 Version 10 HW1 and later	12 Gbytes minimum for all	512 Mbytes minimum, 1-Gbyte recommended
		Red Hat Enterprise Linux 3.0 WS, ES, and AS Update 5, 32-bit and 64-bit		
		Red Hat Enterprise Linux 4.0 WS, ES, and AS update 1, 32-bit and 64-bit		
		SUSE Linux Professional 9.2, 64-bit only		
Sun Fire X4100 and X4200	ILOM	SUSE Linux Professional 9.3, 64-bit only		
		Solaris x86 Version 10 HW1 and later		
		Red Hat Enterprise Linux 3.0 WS, ES, and AS Update 5, 32-bit and 64-bit		
		Red Hat Enterprise Linux 4.0 WS, ES, and AS update 1, 64-bit only		
		SUSE Linux Enterprise Server 9 SP1, 64-bit only		

TABLE 2-4 X86-Based Provisionable Server Hardware and Operating System Requirements *(Continued)*

Type	Management Port Type	Provisionable OS	Disk Space Requirements	RAM Requirements
Sun Fire V20z and V40z	SP	Solaris x86 Version 10 and later		
		Solaris x86 Version 9 update 7 and update 8		
		Red Hat Enterprise Linux 3.0 WS, ES, and AS, Updates 1 through 5 for 32-bit only		
		Red Hat Enterprise Linux 3.0 WS, ES, and AS, Updates 3 through 5, 64-bit only		
		Red Hat Enterprise Linux 4.0 WS, ES, and AS, 64-bit only		
		Red Hat Enterprise Linux 4.0 WS, ES, and AS update 1, 32-bit and 64-bit		
		SUSE Linux Enterprise Server 9, 32-bit and 64-bit		
		SUSE Linux Enterprise Server 9 SP1, 32-bit and 64-bit		
		SUSE Linux Professional 9.2 , 32-bit and 64-bit		
		SUSE Linux Professional 9.3, 32-bit and 64-bit		

Recommended Switch Configuration

You can use a single VLAN-programmable switch to provide the management, provisioning, and data network infrastructure. However, for ease of management, you should install one VLAN-programmable switch for the management network, and a second VLAN-programmable switch for the provisioning and data network. Each management, provisioning, and data network should be assigned to separate subnets and VLANs.

Note – In order to support firmware updates for the Sun Fire V20z and V40z provisionable servers, the management network switch should be configured to auto-negotiate link speed.

The management switch and the provisioning and data network switch should support the following Ethernet connectivity.

■ **Management Network Switch**

- 10/100-megabit per second connectivity from the management server to the management switch to provide connectivity to each provisionable server's management port
- 10/100-megabit per second connectivity from each provisionable server's management port to the management switch

The management network should be on a private subnet, and must provide connectivity to a management port on each provisionable server

■ **Provisioning and Data Network Switch**

- 1 gigabit per second connectivity from the management server ETH1 port to the provisioning and data switch
- 1 gigabit per second connectivity from each provisionable server ETH0 port to the provisioning and data switch
- 1 gigabit per second connectivity from each provisionable server ETH1 port to the provisioning and data switch
- 1 gigabit per second connectivity from the provisioning and data switch to the corporate network

Considerations:

- The provisioning network should be on a private subnet.
- The data network should be on a public subnet accessible by the management server, provisionable servers, and the corporate network.

Due to the use of the DHCP protocol and the bandwidth requirements for OS provisioning, isolating the data network from the provisioning network might be required.

- OS provisioning of Linux might fail if a delay occurs in the transmission of data between the management server and the provisionable server. A long delay can result if the spanning tree option is enabled for the switch port connected to the ETH0 port of the provisionable server. To address this issue, you can disable the spanning tree option for the switch or for the switch ports connected to the provisionable servers. Refer to your switch documentation for instructions about how to disable the spanning tree feature on your switch.

Sun N1 System Manager Connection Information

This section provides the connectivity requirements for the Sun N1 System Manager servers.

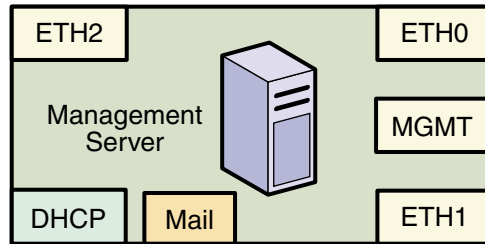
Management Server Connections

A SPARC or x86 based server can be used as the management server. Each server provides at least one 10/100/1000 (1-Gbit) network interface port, but adding additional Gbit network interface cards to the management server increases ease of management and physical separation of the corporate and provisioning networks. If you do not install additional NICs in your management server, you can configure your network to route the corporate and provisioning networks through a single 1-Gbit port as illustrated by the diagrams in [“Reference Configurations” on page 26](#).

Each server also provides one or two system management ports depending on server architecture, labeled Net Mgmt (Network Management), ALOM (Advanced Lights Out Manager port), or ILOM (Integrated Lights Out Manager port) on single management port provisionable servers, and labeled SP0 and SP1 (Service Processor 1 and 2) on dual management port provisionable servers. The management server requires only a single management port to provide connectivity with the corporate network. In this document, the management port is always shown as MGMT.

Note – Depending on the system architecture and the operating system installed, the operating system refers to the Ethernet ports by different names. For example, the first Ethernet port on a machine is referred to as ETH0, HME0, or BGE0 depending on the operating system. This document refers to the lowest order Ethernet port on a machine as ETH0, the next port as ETH1 and so on regardless of architecture and operating system.

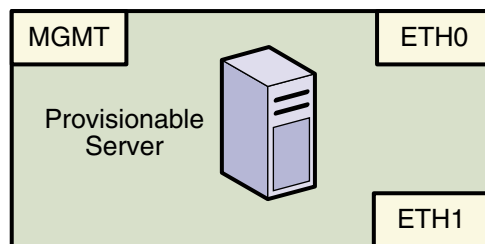
The following illustration provides the logical diagram for a management server with three 1-Gbyte NICs, and is used in subsequent sections to illustrate the reference architecture diagrams.



Provisionable Server Connections

A SPARC or x86-based server can be used as a provisionable server as described in [“Management Server Requirements” on page 18](#). Each server provides one or two 10/100/1000 network interface ports. Each server also provides one or two system management ports depending on server architecture, labeled ALOM or ILOM on single management port provisionable servers, and labeled SP0 and SP1 on dual management port provisionable servers. In this document, the management port is always shown as MGMT.

The following illustration provides the logical diagram for a provisionable server with two 1-Gbyte NICs, and is used in subsequent sections to illustrate the reference architecture diagrams.



Reference Configurations

This section provides reference configuration diagrams and connectivity information for each reference configuration that will assist you in designing and connecting your N1 System Manager equipment.

Other configurations are possible, such as using separate switches for each network. You can implement your network using any combination of VLANs and switches. Each network, whether management, provisioning or data, should be assigned to separate VLANs.

Note – In each of the following reference configurations, corporate access is shown as a connection to the management server. Alternatively, corporate access to the N1 System Manager can be provided through a switch instead of the management server.

Separate Management, Provisioning, and Data Networks

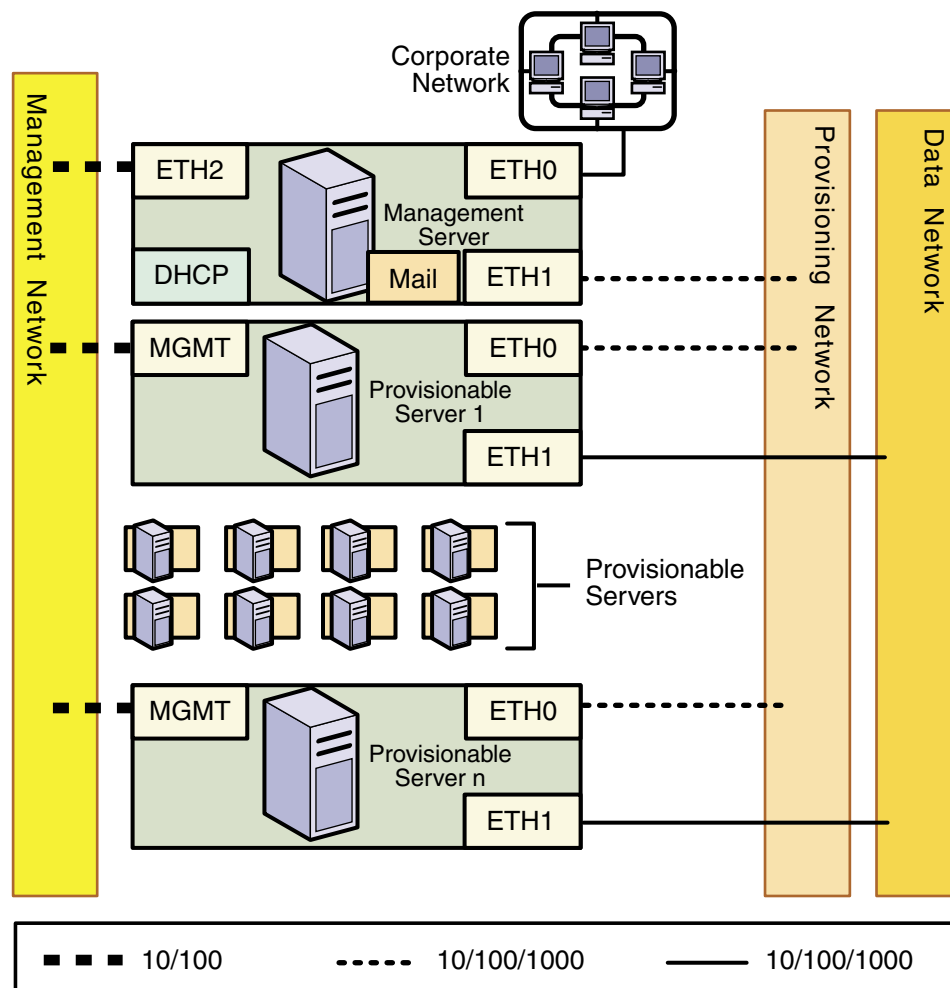


FIGURE 2-1 Separate Management, Provisioning, and Data Networks

When designing a network, keep the following information in mind:

- Configuring separate management, provisioning, and data networks is the best practice
- Separate networks provide the highest security and the lowest number of points of failure
- The data center DHCP service can be used to assign IP addresses to provisioned servers

Note – The management server DHCP service does not provide DHCP services for the data network. If you plan to dynamically configure IP services on the data network, you must provide an external DHCP server for the data network. You must not have another DHCP server on the same provisioning network.

- You might need to install additional NICs in the management server and some provisionable servers to support this configuration

The following list summarizes the connectivity requirements for the separate management, provisioning, and data networks configuration.

- **Management Server**

The management server should provide connectivity to the management network, provisioning network, and corporate network as follows:

- ETH0 connects the management server to the corporate network to provide external access to the management server. The management server ETH0 IP address, netmask, and gateway should be configured to meet your corporate environment connectivity requirements. DNS configuration is performed during the N1 System Manager configuration process. ETH0 should be a 1-Gbit NIC interface.
- ETH1 connects the management server to the provisioning network and should be on the same switch and network as the ETH0 connections of the provisionable servers. The management server ETH1 IP address, netmask, and gateway can be configured to support hundreds of provisionable servers. No devices other than the management server and the provisionable servers should reside on the provisioning network. ETH1 should be a 1-Gbit NIC interface.
- ETH2 connects the management server to the management network and should be on the same switch and network as the management port connections of the provisionable servers. The management server connection is not required to be on the same switch as the management port connections of the provisionable servers as long as connectivity to the provisionable servers management port is provided. The management server ETH2 IP address, netmask, and gateway should be configured to enable connectivity to the provisionable server's management port IP addresses. ETH2 should be a 100-megabit NIC interface.
- The management server DHCP service allocates IP addresses to the provisionable servers for loading operating systems.
- The management server mail service enables ALOM architecture provisionable servers to send hardware monitoring information to the N1 System Manager over the management network.

- **Provisionable Server**

Each provisionable server should provide connectivity to the management network, provisioning network, and data network as follows:

- The management port connects the provisionable server to the management network and should be on the same switch and network as the ETH2 connection of the management server. The provisionable server management port connection is not required to be on the same switch as the ETH2 connection of the management server as long as connectivity to the management server ETH2 port is provided.

The management port should be a 100-megabit connection.

- ETH0 connects the provisionable server to the provisioning network and must be on the same switch and network as the ETH1 connection of the management server.

ETH0 should be a 1-Gbyte connection.

- ETH1 connects the provisionable server to the data network through the switch to provide external corporate network access to the provisionable server.

ETH1 should be a 1-Gbyte connection.

Combined Management and Provisioning Network, and a Separate Data Network

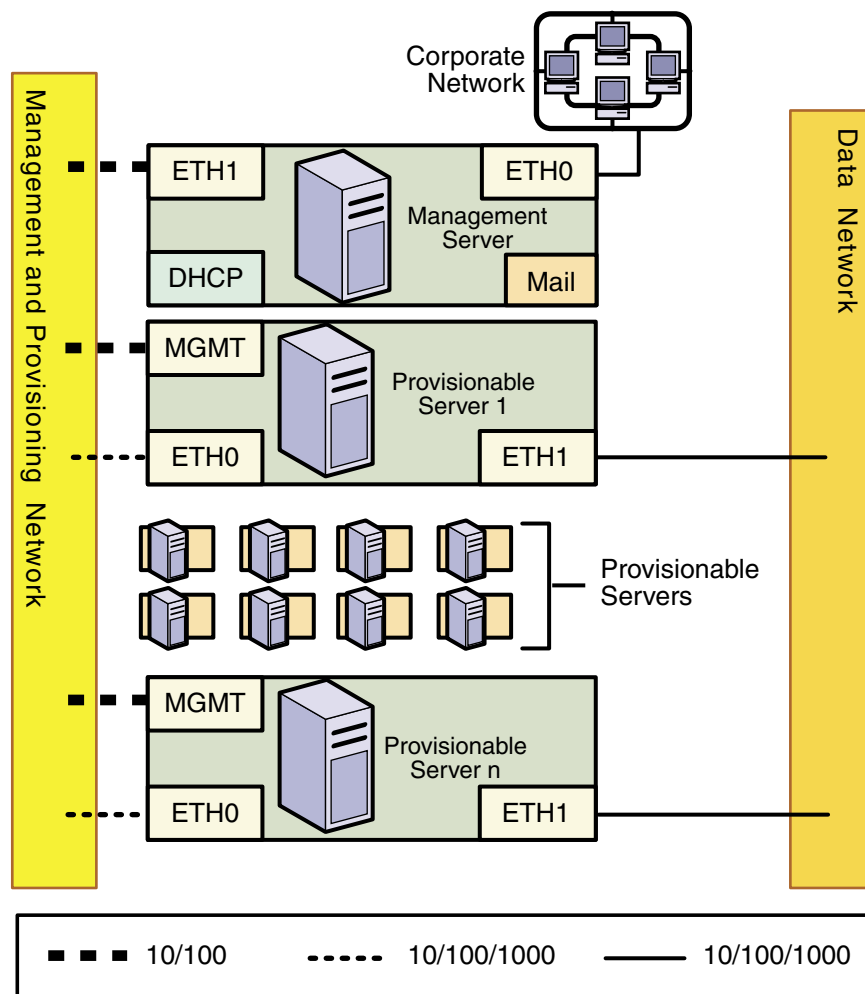


FIGURE 2-2 Combined Management and Provisioning Networks, and a Separate Data Network

For this configuration:

- An additional NIC does not need to be installed on the management server
- The combined management and provisioning network reduces system and network security
- The data center DHCP service can be used to assign IP addresses to provisioned servers

Note – The management server DHCP service does not provide DHCP services for the data network. If you plan to dynamically configure IP services on the data network, you must provide an external DHCP server for the data network. You must not have another DHCP server on the management and provisioning network.



Caution – The statically-assigned management IP addresses and the dynamically assigned IP addresses used during OS provisioning are part of the same network. The N1 System Manager does not manage IP addresses. You must ensure that the IP addresses used during provisioning do not conflict with the management network IP addresses.

The following list summarizes the connectivity requirements for the combined management and provisioning network and the separate data network configuration.

■ **Management Server**

The management server should provide connectivity to the management and provisioning network as follows:

- ETH0 connects the management server to the corporate network to provide external access to the management server. The management server ETH0 IP address, netmask, and gateway should be configured to meet your corporate environment connectivity requirements. DNS configuration is performed during the N1 System Manager configuration process.
ETH0 should be a 1-Gbit NIC interface.
- ETH1 connects the management server to the management and provisioning network and should be on the same switch and network as the MGMT and ETH0 connections of the provisionable servers. The management server ETH1 IP address, netmask, and gateway can be configured to support hundreds of provisionable servers. No devices other than the management server and the provisionable servers should reside on the management and provisioning network.

The management server ETH1 connection is not required to be on the same switch as the management port connections of the provisionable servers as long as connectivity to the provisionable server's management port is provided. The management server ETH1 IP address, netmask, and gateway should be configured to enable connectivity to the provisionable server's management port IP addresses.

ETH1 should be a 1-Gbit NIC interface.

- The management server DHCP service allocates IP addresses to the provisionable servers for loading operating systems.

- The management server mail service enables ALOM architecture provisionable servers to send hardware monitoring information to the N1 System Manager over the management network.

- Provisionable Server

Each provisionable server should provide connectivity to the management and provisioning network and the separate data network as follows:

- The management port connects the provisionable server to the management and provisioning network and should be on the same network as the ETH1 connection of the management server. The provisionable server management port connection is not required to be on the same switch as the ETH1 connection of the management server as long as connectivity to the management server ETH1 port is provided.

The management port should be a 100-megabit connection.

- ETH0 connects the provisionable server to the management and provisioning network and must be on the same switch and network as the ETH1 connection of the management server.

ETH0 should be a 1-Gbyte connection.

- ETH1 connects the provisionable server to the data network through the switch to provide external corporate network access to the provisionable server.

ETH1 should be a 1-Gbyte connection.

Combined Provisioning and Data Network, and a Separate Management Network

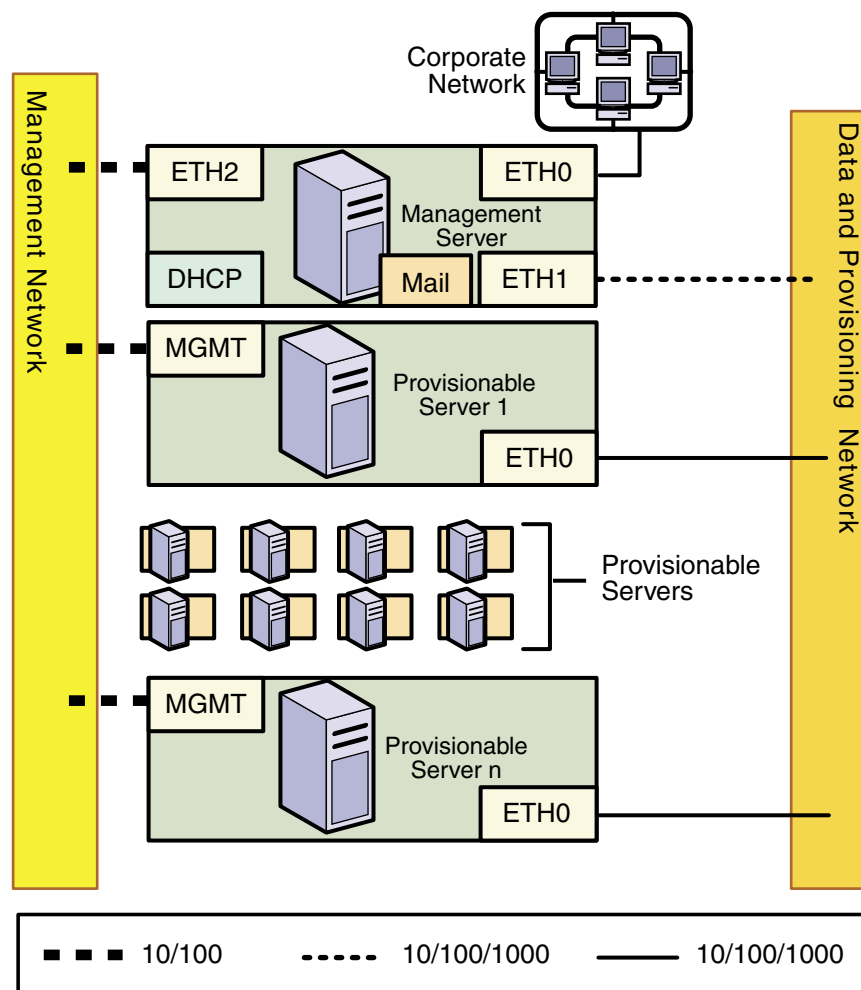


FIGURE 2-3 Combined Provisioning and Data Network, and a Separate Management Network

For this configuration:

- The combined provisioning and data network reduces system and network security
- The data network must use the N1 System Manager DHCP service



Caution – The N1 System Manager DHCP service must be the only DHCP service on the data network.

The following list summarizes the connectivity requirements for the combined data and provisioning network and the separate management network configuration.

■ **Management Server**

The management server should provide connectivity to the provisioning and data network and to the separate management network as follows:

- ETH0 connects the management server to the corporate network to provide external access to the management server. The management server ETH0 IP address, netmask, and gateway should be configured to meet your corporate environment connectivity requirements. DNS configuration is performed during the N1 System Manager configuration process.

ETH0 should be a 1-Gbit NIC interface.

- ETH1 connects the management server to the provisioning and data network and should be on the same switch and network as the ETH0 connections of the provisionable servers. The management server ETH1 IP address, netmask, and gateway can be configured to support hundreds of provisionable servers. No devices other than the management server and the provisionable servers should reside on the data and provisioning network.

ETH1 should be a 1-Gbit NIC interface.

- ETH2 connects the management server to the management network and should be on the same switch and network as the management port connections of the provisionable servers. The management server connection is not required to be on the same switch as the management port connections of the provisionable servers as long as connectivity to the provisionable server's management port is provided. The management server ETH2 IP address, netmask, and gateway should be configured to enable connectivity to the provisionable server's management port IP addresses. ETH2 should be a 100-megabit NIC interface.
- The management server mail service enables ALOM architecture provisionable servers to send hardware monitoring information to the N1 System Manager over the management network.
- The management server DHCP service allocates IP addresses to the provisionable servers for loading operating systems.

■ **Provisionable Server**

Each provisionable server should provide connectivity to the management network and to the combined data and provisioning network as follows:

- The management port connects the provisionable server to the management network and should be on the same network as the ETH2 connection of the management server. The provisionable server management port connection is not required to be on the same switch as the ETH2 connection of the management server as long as connectivity to the management server ETH2 port is provided.

The management port should be a 100-megabit connection.

- ETH0 connects the provisionable server to the data and provisioning network to enable deployment of an operating system to the provisionable server, and to provide external corporate network access to the provisionable server. The provisionable server ETH0 connection must be on the same network as the ETH1 connection of the management server.
ETH0 should be a 1-Gbyte connection.

Combined Provisioning, Data, and Management Network

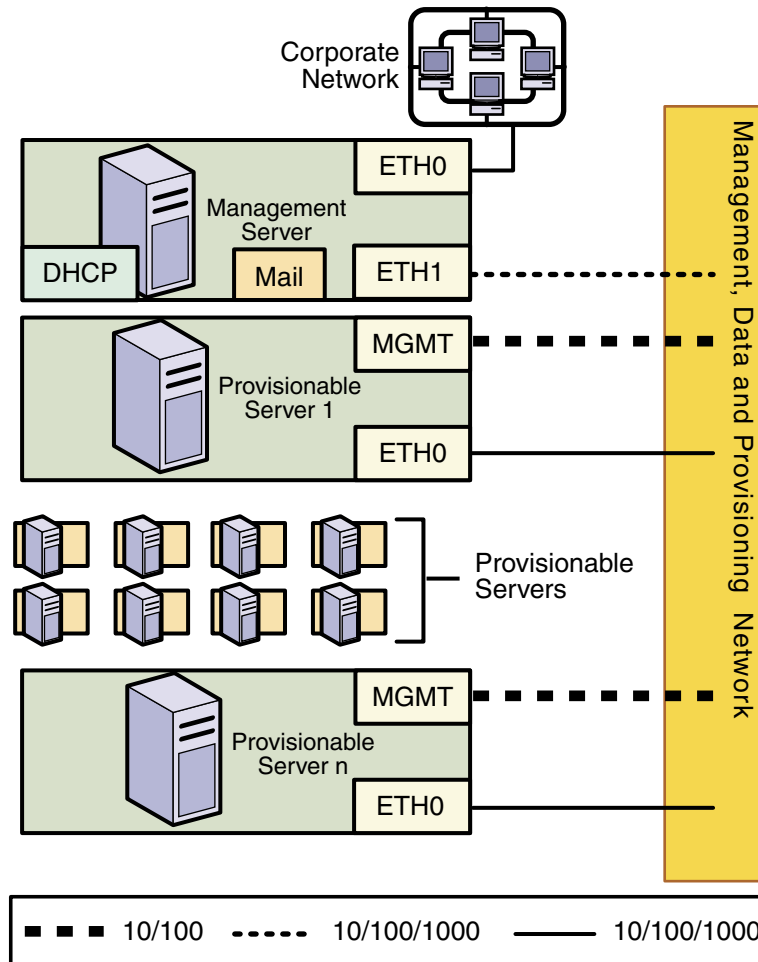


FIGURE 2-4 Combined Provisioning and Data Network, and a Separate Management Network

For this configuration:

- An additional NIC does not need to be installed on the management server
- The combined management, provisioning, and data networks greatly reduces system and network security
- The data network must use the N1 System Manager DHCP service



Caution – The N1 System Manager DHCP service must be the only DHCP service on the data network.

The following list summarizes the connectivity requirements for the separate management, provisioning, and data networks configuration.

■ **Management Server**

The management server should provide connectivity to the combined management, provisioning, and data network and to the corporate network as follows.

- ETH0 connects the management server to the corporate network to provide external access to the management server. The management server ETH0 IP address, netmask, and gateway should be configured to meet your corporate environment connectivity requirements. DNS configuration is performed during the N1 System Manager configuration process. ETH0 should be a 1-Gbit NIC interface.
- ETH1 connects the management server to the combined management, provisioning, and data network and should be on the same network as the MGMT and ETH0 connections of the provisionable servers. The management server ETH1 IP address, netmask, and gateway should be configured to enable connectivity to the provisionable servers management port IP addresses, and can be configured to support hundreds of provisionable servers. The management server connection is not required to be on the same switch as the management port connections of the provisionable servers as long as connectivity to the provisionable server's management port is provided. No devices other than the management server and the provisionable servers should reside on the provisioning network. ETH1 should be a 1-Gbit NIC interface.
- The management server mail service enables ALOM architecture provisionable servers to send hardware monitoring information to the N1 System Manager over the management network.
- The management server DHCP service allocates IP addresses to the provisionable servers for loading operating systems.

■ **Provisionable Server**

Each provisionable server should provide connectivity to the management network, provisioning network and data network as follows:

- The management port connects the provisionable server to the management, provisioning, and data network and should be on the same switch and network as the ETH1 connection of the management server. The provisionable server management port connection is not required to be on the same switch as the ETH1 connection of the management server as long as connectivity to the management server ETH1 port is provided.

The management port should be a 100-megabit connection.

- ETH0 connects the provisionable server to the management, provisioning, and data network, and must be on the same network as the ETH1 connection of the management server. ETH0 also connects the provisionable server to the data network through the switch to provide external corporate network access to the provisionable server.
ETH0 should be a 1-Gbyte connection.

Site Planning

This section provides guidelines for determining your management server and switch needs. The following topics are discussed:

- [“Management Server Considerations” on page 38](#)
- [“Switch Considerations” on page 40](#)

Management Server Considerations

Hard drive capacity and the number of provisionable servers to be managed are the primary considerations for your management server.

- Hard drive capacity is affected by two factors: the number of OS distributions that are to be provisioned, and the log files generated by each N1 System Manager job. OS distributions are stored in the `/var` file hierarchy on the management server. Allocate 3 Gbytes for each OS distribution and its associated profiles and scripts.

Sufficient disk space should also be allocated for the N1 System Manager event logs. Log file size depends on how you set up event monitoring and the amount of detail chosen for each log. The `n1smconfig` utility is used to configure logging during initial N1 System Manager configuration, and can subsequently be used after the system is in production to reconfigure logging. For further information, see Chapter 5, “Monitoring Your Servers,” in *Sun N1 System Manager 1.2 Administration Guide*.

- System processing is affected by three major factors: The number of provisionable servers being managed, the types of monitoring being performed on the provisionable servers, and the number of jobs running on the management server.

The following table provides sizing guidelines for the management server.

TABLE 2-5 Management Server Hardware Sizing Guidelines

Small scale deployment: 1 to 128 provisionable servers	
Total number of processors	1 or more single-core AMD Opteron processors 1 or more 1x1 Ghz Ultra SPARC IIIi minimum
Total memory	4 Gbytes minimum
Total file system space	73 Gbytes minimum
Media	1 DVD ROM drive
Qualified Models	Sun Fire V20z, V40z, X2100, X4100, X4200, V210, V240, V440, and T1000
Sample Configuration	Sun Fire V20z Single Processor (single-core) Opteron processor, 4 GB RAM, 1x73 GB HDD, DVD ROM Drive
Medium scale deployment: 129 to 256 provisionable servers	
Total number of processors	2 or more single-core AMD Opteron processors, or 1 or more dual-core AMD Opteron processors 2 or more 1x1 Ghz Ultra SPARC IIIi minimum
Total memory	8 Gbytes minimum
Total file system space	146 Gbytes minimum
Media	1 DVD ROM drive
Qualified Models	Sun Fire V20z, V40z, X4100, X4200, V210, V240, V280, V440, and T2000
Sample Configuration	Sun Fire V40z Dual Processor (dual-core), 8 GB RAM, 1x146 GB HDD, DVD ROM Drive
Large scale deployment: 257 to 512 provisionable servers	
Total number of processors	4 single-core AMD Opteron processors, or 2 or more dual-core AMD Opteron processors 4 1x1 Ghz Ultra SPARC IIIi minimum
Total memory	16 Gbytes minimum
Total file system space	300 Gbytes minimum
Media	1 DVD ROM drive
Qualified Models	Sun Fire V20z, V40z, X4100, X4200, V440, and T2000

TABLE 2-5 Management Server Hardware Sizing Guidelines <i>(Continued)</i>	
Sample Configuration	Sun Fire V40z Dual Processor (dual-core), 16 GB RAM, 1x300 GB HDD, DVD ROM Drive

Switch Considerations

Switch requirements are determined by the following factors:

- Whether you have added a third 1-Gbit NIC to the management server
- The number of management ports on each provisionable server
- The number of provisionable servers to be connected to the switch

The Sun Fire V20z and V40z servers have two management ports, and subsequently can be daisy-chained. For further information, see [Appendix A](#).
- The network topology you have chosen

The following worksheet can assist you in determining the total number of switch ports by type that you will need on your switch or switches.

TABLE 2-6 Switch Port Requirements Worksheet

Server Type	10/100 Ports	10/100/1000 Ports
Management Server		
10/100 Management port: 1	Total: 1	Total: _____
If you have not installed a third 1-Gbit NIC in the management server, enter 1 in the 10/100/1000 port column.		
If you have installed a third 1-Gbit NIC, enter 2 in the 10/100/1000 column.		
Provisionable Servers		
<div>■ Separate management, provisioning, and data networks: Total the number of provisionable servers and enter that number in the 10/100 column Double the number of provisionable servers and enter that number in the 10/100/1000 column.</div>	Total: _____	Total: _____
<div>■ Separate management network, and combined data and provisioning networks: Total the number of provisionable servers and enter that number in the 10/100 column and in the 10/100/1000 column.</div>		
<div>■ Combined management, provisioning, and data networks: Total the number of provisionable servers and enter that number in the 10/100/1000 column.</div>		
10/100/100 connection for the corporate network:		Total: 1
Total the number of ports for each column:	10/100 ports: Total: _____	10/100/1000 ports: Total: _____

Use the above totals to determine your switch requirements, and then connect the servers and switches according to your site plan.

Setting Up Provisionable Servers

Before you can use the N1 System Manager to discover provisionable servers, each provisionable server must be set up as follows:

- An IP address must be assigned to each provisionable server's management port.
Refer to your provisionable server documentation for management port IP address assignment. You can also locate the server documentation online at http://sunsolve.sun.com/handbook_pub/Systems/.
- The `telnet` account credentials must be configured for the management processor of SPARC architecture provisionable servers.
Refer to your provisionable server documentation for configuring the `telnet` management processor credentials on SPARC architecture servers.

Automatic configuration of credentials is supported for Sun Fire V20z and V40z servers if they are in the factory default state. If you do specify the login accounts and passwords for discovery of a Sun Fire V20z or V40z, the discovery process configures the Sun Fire V20z or V40z using the credentials you provide.

Discovery of a provisionable server will fail if the server's management port has not been assigned an IP address.

Discovery of a SPARC architecture provisionable server will fail if the management processor `telnet` credentials have not been configured.

If provisionable server credentials are not specified when running discovery, the discovery process uses the default credentials shown in the following tables.

TABLE 2-7 SPARC Architecture Provisionable Server Default Credentials

Type	Telnet Login	Telnet Password
Netra 240 and 440	admin	admin
Sun Fire V210, V240, and V440	admin	admin
Sun Fire T1000 and T2000	admin	admin

TABLE 2-8 x86 Architecture Provisionable Server Default Credentials

Type	SSH Login	SSH Password	IPMI Login	IPMI Password	SNMP Read Community String
Sun Fire V20z and V40z	admin	admin	-	admin	public
Sun Fire X2100	-	-	Admin	admin	-

TABLE 2-8 x86 Architecture Provisionable Server Default Credentials *(Continued)*

Type	SSH Login	SSH Password	IPMI Login	IPMI Password	SNMP Read Community String
Sun Fire X4100 and X4200	root	changeme	root	changeme	public

If only one credential is specified for x86 architecture provisionable servers, the missing credential is configured with one of the defaults specified above.

ALOM-based provisionable servers do not support SNMP, and therefore use the mail service on the management server to send hardware notifications to the N1 System Manager.

Although the Sun Fire X2100 does not support SNMP, the X2100 does support IPMI platform event trap (PET), which generates SNMP V1 traps for IPMI events. The N1 System Manager listens for the X2100 IPMI events.

Installing and Configuring an OS on the Management Server

This chapter provides the procedures for installing and configuring an operating system on the Sun N1 System Manager management server.

This chapter discusses the following topics:

- [“Installing the Solaris OS on the Management Server” on page 45](#)
- [“Installing the RedHat Enterprise Linux OS on the Management Server” on page 48](#)
- [“Enabling FTP on the Management Server” on page 56](#)
- [“Updating the /etc/hosts File” on page 57](#)
- [“Configuring the Management Server Mail Service and Account” on page 58](#)

To ensure that you select the correct operating system for the management server, see [Table 2-1](#).

Installing the Solaris OS on the Management Server

This section provides procedures for installing and configuring the Solaris OS on your management server. The Solaris OS must be installed on the management server before you can install the N1 System Manager system software.

This section discusses the following topics:

- [“Disk Drive Considerations” on page 46](#)
- [“Installing the Solaris OS Using the JumpStart File” on page 46](#)
- [“Installing the Solaris OS Manually” on page 47](#)

Disk Drive Considerations

The Solaris OS must be installed on an empty hard drive that contains no partitions or data. If the hard drive contains partitions, delete the partitions before installing the Solaris OS.

The following table provides the partitioning information for SPARC and x86 architecture management server, based on the minimum requirement of a 73-gigabyte hard drive.

TABLE 3-1 Solaris-based Management Server Partitioning

Partition	Mbytes
swap	4 Gbytes minimum
/var	1-Gbyte for system logging plus 3 Gbytes for each OS distribution you plan to provision.
/	All remaining space

Note – Allocate 3 Gbytes of free space for each distribution you plan to provision. If needed, upgrade the management server to a larger hard drive before continuing.

Installing the Solaris OS Using the JumpStart File

This section provides an example of the JumpStart configuration file required to use JumpStart to install Solaris 10 on your management server.

Refer to your Solaris 10 documentation for the procedures for configuring a JumpStart server, and for the procedures to configure the JumpStart start and finish scripts for your environment. When you have completed JumpStart configuration, install Solaris 10 on your management server using JumpStart.

EXAMPLE 3-1 JumpStart Configuration File

```
install_type    initial_install
system_type     standalone
partitioning    explicit
filesystems c1t1d0s1      4096      swap
filesystems c1t1d0s0      free      /
cluster SUNWCXall
```

After you have installed Solaris 10 on your management server:

- If you plan to manage ALOM-based provisionable servers, install and enable the Solaris mail service on the management server. The mail service package is located on the Solaris Complementary CD-ROM. For information about which

provisionable servers are ALOM-based, see [Table 2–3](#). You must also configure the mail service as described in [“To Configure the Mail Service on a Solaris Management Server”](#) on page 60.

- If you plan to manage SPARC-based provisionable servers, enable FTP as described in [“Enabling FTP on the Management Server”](#) on page 56. For information about which provisionable servers are SPARC-based, see [Table 2–3](#).
- If you do not plan to manage SPARC-based provisionable servers, update the `/etc/hosts` file as described in [“Updating the `/etc/hosts` File”](#) on page 57.

Installing the Solaris OS Manually

This section provides the procedures for installing the Solaris OS manually on the management server.

▼ To Install Solaris Manually

Before You Begin Ensure the partitions on all disks on the management server have been deleted.

- Steps**
1. **Insert the Solaris installation DVD-ROM in the DVD drive of the N1 System Manager and reboot the system.**
Respond to each prompt according to the requirements of your environment.
 2. **When prompted for the Type of Install, select Custom Install.**
Respond to each prompt according to the requirements of your environment.
 3. **When prompted for the Software Group, select Entire Group Plus OEM.**
 4. **When prompted for disk selection, select all available disks.**
 5. **When prompted to lay out file systems, remove the `/export/home` directory, allocate 1-Gbyte plus 3 Gbytes per OS distribution that you plan to provision to the `/var` file hierarchy, and assign all remaining free space to `/` (the system root directory).**

- Next Steps**
- If you plan to manage ALOM-based provisionable servers, install and enable the Solaris mail service on the management server. The mail service package is located on the Solaris Companion CD-ROM. For information about which provisionable servers are ALOM-based, see [Table 2–3](#). You must also configure the mail service as described in [“To Configure the Mail Service on a Solaris Management Server”](#) on page 60.
 - If you plan to manage SPARC-based provisionable servers, enable FTP as described in [“Enabling FTP on the Management Server”](#) on page 56. For information about which provisionable servers are SPARC-based, see [Table 2–3](#).
 - If you do not plan to manage SPARC-based provisionable servers, update the `/etc/hosts` file as described in [“Updating the `/etc/hosts` File”](#) on page 57.

Installing the RedHat Enterprise Linux OS on the Management Server

This section provides procedures for installing and configuring the Linux OS on your management server. The Linux OS must be installed on the management server before you can install the N1 System Manager system software.

This section discusses the following topics:

- [“Disk Drive Considerations” on page 48](#)
- [“Installing the RedHat Linux OS Using Kickstart” on page 49](#)
- [“Installing RedHat Linux Manually” on page 52](#)
- [“Installing the Internationally Compliant Perl Module” on page 55](#)

Disk Drive Considerations

Linux must be installed on an empty hard drive that contains no partitions or data. If the hard drive contains data, ensure that all partitions on the drive are deleted during the Linux OS installation by modifying the Kickstart file as described in [“To Configure the Kickstart File” on page 51](#).

The following table provides the partitioning information for the management server, based on the minimum requirement of a 73-gigabyte hard drive.

TABLE 3-2 Linux-based Management Server Partitioning

Partition	Size
/boot	102 Mbytes
swap	4096 Mbytes
/var	1-Gbyte for system logging plus 3 Gbytes for each OS distribution you plan to provision.
/	All remaining space

If your hard drive is larger than 73 Gbytes:

- Do not change the assigned space for swap.
- Allocate the space shown above for /boot.
- Allocate 1-Gbyte plus 3 Gbytes for each operating system you plan to provision to /var.
- Allocate the remaining space to /.

Installing the RedHat Linux OS Using Kickstart

This section provides example Kickstart files and the procedures to configure a Kickstart file and then use the Kickstart file to install Linux.

Sample Kickstart Files

This section provides two example Kickstart files. The first Kickstart file shown in [Example 3-2](#) is configured for a full distribution installation of Linux. The second Kickstart file shown in [Example 3-3](#) is configured to install only the RPM groups required by the N1 System Manager.

EXAMPLE 3-2 Entire Distribution Kickstart File

```
install
lang en_US.UTF-8
langsupport --default en_US.UTF-8 en_US.UTF-8
keyboard us
mouse genericwheels/2 --device psaux
nfs --server 10.0.0.50 --dir /export/images/RHEL3U2
skipx
timezone America/Denver
rootpw --iscrypted $1$Rig3dbXb$OWcv00J/V2WsBGcgx0bmp1
network --device eth0 --bootproto static --ip 10.0.0.100
--netmask 255.255.255.0 --gateway 10.0.0.254 --nameserver 10.0.0.200
--hostname sun-ms
network --device eth1 --bootproto static --ip 192.168.200.254
--netmask 255.255.255.0 --gateway --nameserver 10.0.0.200
--hostname sun-ms-prov
network --device eth2 --bootproto static --ip 192.168.100.254
--netmask 255.255.255.0 --gateway --nameserver 10.0.0.200
--hostname sun-ms-admin
firewall -disabled
authconfig -enablemd5 -enablesshadow
bootloader -location=mbr
clearpart --all -drives=hda
part /boot --fstype ext3 --size=102 -ondisk=sda
part / --fstype ext3 --size=1024 --grow -ondisk=sda
part swap --size=4096 --grow --maxsize=1024 -ondisk=sda
reboot
%packages
@ everything
grub
kernel
kernel-smp
%post
echo "RHEL3U2 installed `bin/date`" > /etc/motd
cat << EOF > /etc/resolv.conf
nameserver 10.0.0.200
search Customer.Com
EOF
cat << EOF > /etc/hosts
```

EXAMPLE 3-2 Entire Distribution Kickstart File *(Continued)*

```
127.0.0.1          localhost.localdomain  localhost
10.0.0.100         sun-ms
192.168.200.254    sun-ms-prov
192.168.100.254    sun-ms-admin
EOF
```

EXAMPLE 3-3 Required RPMs Only Kickstart File

```
install
lang en_US.UTF-8
langsupport --default en_US.UTF-8 en_US.UTF-8
keyboard us
mouse genericwheelp/2 --device psaux
nfs --server 10.0.0.50 --dir /export/images/RHEL3U2
skipx
timezone America/Denver
rootpw --iscrypted $1$Rig3dbXb$OWcv00J/V2WsBGcgx0bmp1
network --device eth0 --bootproto static --ip 10.0.0.100
--netmask 255.255.255.0 --gateway 10.0.0.254 --nameserver 10.0.0.200
--hostname sun-ms
network --device eth1 --bootproto static --ip 192.168.200.254
--netmask 255.255.255.0 --gateway --nameserver 10.0.0.200
--hostname sun-ms-prov
network --device eth2 --bootproto static --ip 192.168.100.254
--netmask 255.255.255.0 --gateway --nameserver 10.0.0.200
--hostname sun-ms-admin
firewall -disabled
authconfig -enablemd5 -enablesshadow
bootloader -location=mbr
clearpart --all --drives=hda
part /boot --fstype ext3 --size=102 --ondisk=sda
part / --fstype ext3 --size=1024 --grow --ondisk=sda
part swap --size=4096 --grow --maxsize=1024 --ondisk=sda
reboot
%packages --resolvedeps
@ office
@ engineering-and-scientific
@ editors
@ system-tools
@ base-x
@ web-server
@ development-tools
@ printing
@ text-internet
@ legacy-network-server
@ gnome-desktop
@ admin-tools
@ server-cfg
@ mail-server
@ ftp-server
@ network-server
@ graphical-internet
```

EXAMPLE 3-3 Required RPMs Only Kickstart File *(Continued)*

```
@ compat-arch-support
grub
kernel
kernel-smp
%post
echo "RHEL3U2 installed `/bin/date`" > /etc/motd
cat << EOF > /etc/resolv.conf
nameserver 10.0.0.200
search Customer.Com
EOF
cat << EOF > /etc/hosts
127.0.0.1          localhost.localdomain localhost
10.0.0.100         sun-ms
192.168.200.254    sun-ms-prov
192.168.100.254    sun-ms-admin
EOF
```

▼ To Configure the Kickstart File

Steps 1. **Log in to a machine that is accessible to the management server using NFS or HTTP.**

2. **Create the Linux Kickstart configuration file.**

Choose whether to use the entire distribution Kickstart file shown in [Example 3-2](#), or the required-RPMs-only Kickstart file shown in [Example 3-3](#). Copy the chosen configuration data into a file, for example, `nlgc-ks.cfg`.

Note – If you chose the required-RPMs-Kickstart file, you must also manually install additional RPMs as described in [“To Install RPMs Required by the N1 System Manager From the CD-ROMs”](#) on page 55.

3. **Configure the Kickstart installation file for your environment.**

- If you plan to use dynamic IP addressing, replace each network statement in the Kickstart file using the following syntax:

```
network --device ethx --bootproto dhcp
```

where *ethx* is the port, for example, *eth0*.

- If you plan to use static IP addressing, make the following changes in each of the *network* statements.
 - Replace *ip* with the Ethernet port IP address.
 - Replace *nameserver* with the IP address of the corporate name server. If you want to use more than one name server, separate each name server IP address with a comma. For example: `--nameserver 110.112.113.11,110.112.113.22`.
 - Replace *hostname* with the name of your management server.

If desired, you can combine static and dynamic IP addressing for the *ETH* ports. Modify the network settings according to your chosen reference architecture.

4. Save the Kickstart file to an NFS or HTTP directory on the Kickstart server.

- Next Steps**
- Install Linux on the management server using the Kickstart file you created.
 - Install the internationally compliant Perl module as described in [“Installing the Internationally Compliant Perl Module”](#) on page 55
 - Configure the mail service as described in [“Configuring the Management Server Mail Service and Account”](#) on page 58.
 - Enable FTP as described in [“Enabling FTP on the Management Server”](#) on page 56.
 - Update the */etc/hosts* file as described in [“Updating the */etc/hosts* File”](#) on page 57.

Installing RedHat Linux Manually

This section provides the procedures for installing Linux manually on the management server.

The following topics are discussed:

- [“To Install RedHat Linux Manually”](#) on page 52
- [“To Install RPMs Required by the N1 System Manager From the CD-ROMs”](#) on page 55

▼ To Install RedHat Linux Manually

- Steps**
1. Insert the RedHat Linux installation CD-ROM 1 of 4 in the DVD drive of the N1 System Manager management server and reboot the system.

At the boot: prompt, start either a text-based or graphical user interface-based installation.

- Press Return to install using the graphical interface.

- Type **text** to install using the text-based interface.

Respond to each prompt according to the requirements of your environment. You are prompted for the language selection, keyboard configuration, and mouse type. Provide the requested information.

2. When prompted for partitioning information, choose Automatically Partition.

You are prompted to choose whether to remove all Linux partitions, remove all partitions, or keep all partitions. Choose Remove all partitions. The partitioning values are displayed.

Compare the displayed values to the required values listed by [Table 3–2](#).

- If the partitioning values match, choose Next.
- If the partitioning values do not match, update the partitioning values to match [Table 3–2](#).

3. When prompted for the boot loader, choose Grub.

4. When prompted to provide the Ethernet port selections, assign the IP addresses, netmask, and gateway values as described in the following guidelines.

- a. Configure ETH0 to connect to the corporate network to provide external access to the management server.**

- b. Configure ETH1 to connect to the provisioning network.**

ETH1 must be on the same broadcast domain as ETH0. The IP addresses must be on the same broadcast domain as the provisionable servers' ETH0 interfaces, and can be configured to support hundreds of provisionable servers.

- c. Configure ETH2 to connect to the management processor interface port (SP0) of all provisionable servers.**

The netmask and gateway values must allow access to the management network.

Note – If you have not installed a separate ETH2 gigabit NIC card in the management server, ETH0 and ETH2 functionality can be provided solely by ETH0. ETH0 must be configured to provide access to and from the management processor interfaces of the provisionable servers.

5. When prompted for the firewall configuration, choose No firewall.

You are prompted in sequence for additional language support, your time zone, and the root password. Provide the requested information.

6. When prompted to accept the default packages or to customize the set of packages to install, choose Customize.

7. Choose the packages required by the N1 System Manager system.

- Office
- Engineering and Scientific
- Editors
- System Tools
- X-Windows (base-x)
- Web Server
- Development Tools
- Legacy Software Development
- Printing
- Text-based Internet
- Legacy Network Server
- Gnome Desktop
- Administration Tools
- Server Configuration
- FTP Server
- Mail Server
- Network Server
- Graphical-based Internet
- Compatibility Architecture Support (graphical install) or Legacy Software Development (text install)

When you have completed the package selection, continue the installation. When Linux installation completes, you are prompted for additional system information such as graphics, monitor type, and screen resolution after which the system reboots. You are then prompted for additional startup information.

8. Answer the System information prompts.

When you have completed responding to the prompts, the login screen appears.

9. Log in as root.

- Next Steps**
- If you have installed RedHat Enterprise Linux 3.0 AS or ES Update 2 on the management server, install the additional RPMs required by the N1 System Manager as described in the next section, [“To Install RPMs Required by the N1 System Manager From the CD-ROMs”](#) on page 55.
 - Install the internationally compliant Perl module as described in [“Installing the Internationally Compliant Perl Module”](#) on page 55
 - Enable FTP as described in [“Enabling FTP on the Management Server”](#) on page 56.
 - Update the `/etc/hosts` file as described in [“Updating the `/etc/hosts` File”](#) on page 57.

- Configure the mail service as described in “Configuring the Management Server Mail Service and Account” on page 58.

▼ To Install RPMs Required by the N1 System Manager From the CD-ROMs

If you have installed RedHat Enterprise Linux 3.0 AS or ES Update 2 on the management server, you must also install the additional RPMs required by the N1 System Manager system.

- Steps**
1. Log in as root to the N1 System Manager management server.
 2. Install the following RPMs from your RedHat installation CD-ROMs.

- perl-CGI-2.81-88.4.i386.rpm
- anaconda-runtime-9.1.2-2.RHEL.i386.rpm
- perl-DBI-1.32-5.i386.rpm
- perl-DBD-Pg-1.21-2.i386.rpm
- rh-postgresql-7.3.6-1.i386.rpm
- rh-postgresql-server-7.3.6-1.i386.rpm
- imap-2002d-8.i386.rpm

The location of the RPMs on the installation CD-ROMs varies depending on your RedHat Linux version.

A DSA signature:nokey warning is displayed during RPM installation. This warning message is generated only because the RPMs do not have a DSA security signature. All DSA signature:nokey warning messages can be safely ignored.

- Next Steps**
- Download and install the internationally compliant Perl module as described in the next section.

Installing the Internationally Compliant Perl Module

This section provides the procedure for downloading and installing the internationally compliant Perl module.

▼ To Download and Install the Internationally Compliant Perl Module

- Steps**
1. Log in as root on the N1 System Manager management server.

2. Open a web browser and find a site that provides the `perl-5.8.3-16.i386.rpm` file for download.
3. Download the `perl-5.8.0-88.4.i386.rpm` file to a directory on the management server.
4. In a terminal window, change directory to the location where you saved the RPM file.
5. Type `rpm -i perl-5.8.3-16.i386.rpm` to install the Perl module.

Next Steps Enable FTP on the management server as described in the next section.

Enabling FTP on the Management Server

If you plan to manage SPARC-based provisionable servers, you must enable the FTP service on the management server.

▼ To Enable FTP on a Solaris Based Management Server

Steps 1. Log in to the management server as root.

2. Type the command `svcadm -v enable network/ftp`.

The FTP service is enabled, and starts when the management server is rebooted. After the system is rebooted, you can verify whether the FTP service has start using the `inetadm` command:

```
# inetadm
enabled   online      svc:/network/telnet:default
enabled   online      svc:/network/nfs/rquota:default
disabled  disabled    svc:/network/echo:dgram
disabled  disabled    svc:/network/time:stream
enabled   online      svc:/network/ftp:default
```

Next Steps Update the `/etc/hosts` file as described in [“Updating the /etc/hosts File” on page 57](#)

▼ To Enable FTP on a Linux Based Management Server

Steps 1. Log in to the management server as root.

2. Create symbolic links to the `/etc/init.d/vsftpd` file in the `/etc/rc3.d` and `/etc/rc5.d` directories.

For example:

```
# ln -s /etc/init.d/vsftpd /etc/rc3.d/S99vsftpd
# ln -s /etc/init.d/vsftpd /etc/rc5.d/S99vsftpd
```

The FTP service is enabled, and starts when the management server is rebooted. After the system is rebooted, you can verify whether the FTP service has started by using the `ps` and `grep` commands:

```
# ps -eaf | grep ftp
root      3035      1  0   16:27 ?        00:00:00 /usr/sbin/vsftpd /etc/vsftpd/vsf
```

Next Steps Update the `/etc/hosts` file as described in the next section.

Updating the `/etc/hosts` File

The IP address and the name of your management server must be added to the `/etc/hosts`. Failure to add the IP address and name will cause Sun N1 System Manager installation to fail.

▼ To Update the `/etc/hosts` file

- Steps**
1. Log in as root to the Sun N1 System Manager management server.
 2. Verify that the `/etc/hosts` file has entries for loopback and the management server.

- a. Make certain that either of the following loopback entries is in the `/etc/hosts` file.

```
127.0.0.1    localhost
```

or

```
127.0.0.1    localhost.localdomain  localhost
```

- b. Make certain that an entry exists for the management server and its IP address. For example:

```
111.11.111.11 n1mgmt.domain n1mgmt.domain
```

where `111.11.111.11` is the IP address of the management server, and `n1mgmt` is the name of the management server and `domain` is your company domain name.

Your `/etc/hosts` should be similar to the following example:

```
127.0.0.1    localhost.localdomain  localhost
10.5.157.123 n1mgmt.company.com
```

c. **Save and close `/etc/hosts`.**

3. **Reboot the N1 System Manager management server.**

Next Steps Configure the management server mail service as described in [“Configuring the Management Server Mail Service and Account”](#) on page 58.

Configuring the Management Server Mail Service and Account

This section provides the procedures for configuring system files on the management server can receive email event notifications from ALOM-based provisionable server. Certain management server system files are common to both the Solaris OS and the Linux OS, whereas others are specific to the operating system. The procedures in this section first address the configuration of the common files, and then address operating system specific file configuration.

The following topics are discussed:

- [“To Configure the System Files and Account for the Mail Service”](#) on page 58
- [“To Configure the Mail Service on a Solaris Management Server”](#) on page 60
- [“To Configure the Mail Service on a Linux Management Server”](#) on page 61

▼ To Configure the System Files and Account for the Mail Service

Steps 1. **Log in as root to the management server.**

2. **Update the `hosts` entry in the file `/etc/nsswitch.conf`.**

Edit the file `/etc/nsswitch.conf` and ensure that the file contains the following line.

```
hosts:          files dns
```

3. Update the `search` and `nameserver` entries in the file `/etc/resolv.conf`.

Edit the file `/etc/resolv.conf` and ensure that the file is configured for at least one name server. For example:

```
# cat /etc/resolv.conf
search nameserver.company.com
nameserver name server IP address
```

In this example, *nameserver.company.com* is the name of a name server that is accessible by the management server, and *name server IP address* is the IP address of the name server. More than one name server can be specified, and each name server must be accessible by the management server.

4. Update the sendmail configuration SMTP IP address in the file `/etc/mail/sendmail.cf`.

Edit the file `/etc/mail/sendmail.cf` and locate the SMTP line. The SMTP line should be similar to the following:

```
# SMTP daemon options

O DaemonPortOptions=Port=smtp,Addr=127.0.0.1, Name=MTA
```

In the `DaemonPortOptions` line, change `127.0.0.1` to the IP address of the management server, and then save and close the file.

5. Configure the domains that will be accepted by the mail server in the file `/etc/mail/local-host-names`.

Edit file `/etc/mail/local-host-names` and add the fully qualified domain name of the management server and fully qualified alias domain names. You can also add the management server IP addresses.

For example, if your management server is assigned the following values:

- The management server name is `n1sm-manager` and is assigned the IP address `10.0.5.67`.
- The management server is also assigned the alias name `engineering`, which is assigned IP address `10.0.5.10`.
- Your company domain name is *company.com*

Your `/etc/mail/local-host-names` file would then contain the following entries:

```
n1sm-manager.company.com
engineering.company.com
10.0.5.67
10.0.5.10
```

6. Create a user account, user password for the account, a user directory, and a user mail inbox on the management server.

The user account, password, and mail inbox are used to receive event notifications sent by ALOM-architecture provisionable servers, and should be reserved for use

solely by the N1 System Manager. During the configuration process, you are prompted for the email user account, password, and mail inbox. ALOM event notification email is made available for viewing on the N1 System Manager browser interface Event Log tab.

Refer to your operating system documentations for mail account creation and configuration.

7. **Add the user account name and home directory names to the file `/etc/aliases`.**

Edit the file `/etc/aliases` and add the ALOM email account to the file. For example, if the ALOM email account name is `emailuser1`, you would then add the following line to the file `/etc/aliases`:

```
emailuser1:    emailuser1
```

8. **Type the command `newaliases` to refresh the system mail aliases.**

- Next Steps**
- If you are configuring the mail service on a Solaris management server, complete the mail service configuration as described in [“To Configure the Mail Service on a Solaris Management Server”](#) on page 60.
 - If you are configuring the mail service on a Linux management server, complete the mail service configuration as described in [“To Configure the Mail Service on a Linux Management Server”](#) on page 61.

▼ To Configure the Mail Service on a Solaris Management Server

- Steps**
1. **Log in as root to the management server.**

2. **Add the following lines to the file `/etc/inetd.conf`:**

```
imap      stream  tcp      nowait  root    /opt/sfw/sbin/imapd  imapd
pop2      stream  tcp      nowait  root    /opt/sfw/sbin/ipop2d  ipop2d
pop3      stream  tcp      nowait  root    /opt/sfw/sbin/ipop3d  ipop3d
```

3. **Type the command `inetconv` to generate the email service manifests.**

For example:

```
# inetconv
inetconv: Notice: Service manifest for 100235/1 already generated as
/var/svc/manifest/network/rpc/100235_1-rpc_ticotsord.xml, skipped
inetconv: Notice: Service manifest for tftp already generated as
/var/svc/manifest/network/tftp-udp6.xml, skipped
inetconv: Notice: Service manifest for 100083/1 already generated as
/var/svc/manifest/network/rpc/100083_1-rpc_tcp.xml, skipped
inetconv: Notice: Service manifest for 100068/2-5 already generated as
/var/svc/manifest/network/rpc/100068_2-5-rpc_udp.xml, skipped
```

```
imap -> /var/svc/manifest/network/imap-tcp.xml
Importing imap-tcp.xml ...Done
pop3 -> /var/svc/manifest/network/pop3-tcp.xml
Importing pop3-tcp.xml ...Done
```

4. Restart the `inetd` service.

Determine the `inetd` service process ID, and then restart the service using the command syntax `kill -hup processid`.

For example:

```
# ps -ef | grep inet
root    410      1    0 16:12:20 ?
        0:04 /usr/lib/inet/inetd start
# kill -HUP 410
```

5. Verify that the `pop3` and `imap` mail services have started.

Type the commands `inetadm | grep pop3` and `inetadmin | grep imap`. For example:

```
# inetadm | grep pop3
enabled  online          svc:/network/pop3/tcp:default
# inetadm | grep imap
enabled  online          svc:/network/imap/tcp:default
```

6. Type `/etc/init.d/sendmail` restart to restart the mail service.

Next Steps Install and configure the N1 System Manager software on your management server as described in the *Sun N1 System Manager 1.2 Installation and Configuration Guide*.

▼ To Configure the Mail Service on a Linux Management Server

Steps 1. Log in as root to the management server.

2. Configure the `pop3` mail service.

Edit the file `/etc/xinetd.d/ipop3` and ensure that the file contains the following entries:

```
# default: off
# description: The POP3 service allows remote users to access their mail \
#              using an POP3 client such as Netscape Communicator, mutt, \
#              or fetchmail.
service pop3
{
    disable = no
    socket_type = stream
    wait = no
    user = root
```

```

server                = /usr/sbin/ipop3d
log_on_success        += HOST DURATION
log_on_failure        += HOST
instances              = 50
cps                   = 70 30
}

```

3. Ensure that the `ipop3` service has been set to run at levels 3, 4, and 5 by typing the command `chkconfig --level 345 ipop3 on`.

4. Type the following commands to restart the mail service.

Wait for the first command to complete before typing the second command.

```
/etc/rc3.d/S80sendmail restart
```

```
/etc/rc3.d/S56xinetd restart
```

For example:

```

[root]# /etc/rc3.d/S80sendmail restart
Shutting down sendmail:           [ OK ]
Shutting down sm-client:         [ OK ]
Starting sendmail:               [ OK ]
Starting sm-client:              [ OK ]
[root]# /etc/rc3.d/S56xinetd restart
Stopping xinetd:                 [ OK ]
Starting xinetd:                 [ OK ]

```

5. Type the following commands to verify whether the mail service has restarted.

```
netstat -an | grep 110
```

```
netstat -an | grep 25
```

For example:

```

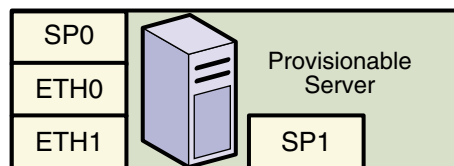
[root]# netstat -an | grep 110
tcp      0      0 0.0.0.0:110          0.0.0.0:*            LISTEN
[root]# netstat -an | grep 25
tcp      0      0 192.168.1.104:25    0.0.0.0:*            LISTEN

```

Next Steps Install and configure the N1 System Manager software on your management server as described in the *Sun N1 System Manager 1.2 Installation and Configuration Guide*.

Alternate Sun Fire V20z and V40z Reference Configuration

Sun Fire V20z and V40z provisionable servers have two management ports, SP0 and SP1, as shown by the following logical port diagram.



The Sun Fire V20z and V40z provisionable servers can be connected to a switch in either of two ways:

- Direct connections:

The SP0 port of each provisionable server connects directly to the switch for the management network. Therefore, the switch must have a 1-Mbit port for each provisionable server.

- Daisy-chaining:

- The SP0 port of the first SP-architecture provisionable server must be connected to the switch.
- The SP1 port of the first SP-architecture provisionable server must be connected to the SP0 port of the second provisionable server.
- The SP1 port of the second SP-architecture provisionable server must be connected to the SP0 port of the third provisionable server and so on.

Tip – To ensure performance, daisy-chain up to five Sun Fire V20z and V40z architecture machines. If you have more than five Sun Fire V20z or V40z management port machines, daisy-chain the machines in clusters of five.

Therefore, the switch needs only one 1-Mbit port for each group of five Sun Fire V20z and V40z provisionable servers.

The following figure illustrates a Sun Fire V20z and V40z daisy-chained configuration.

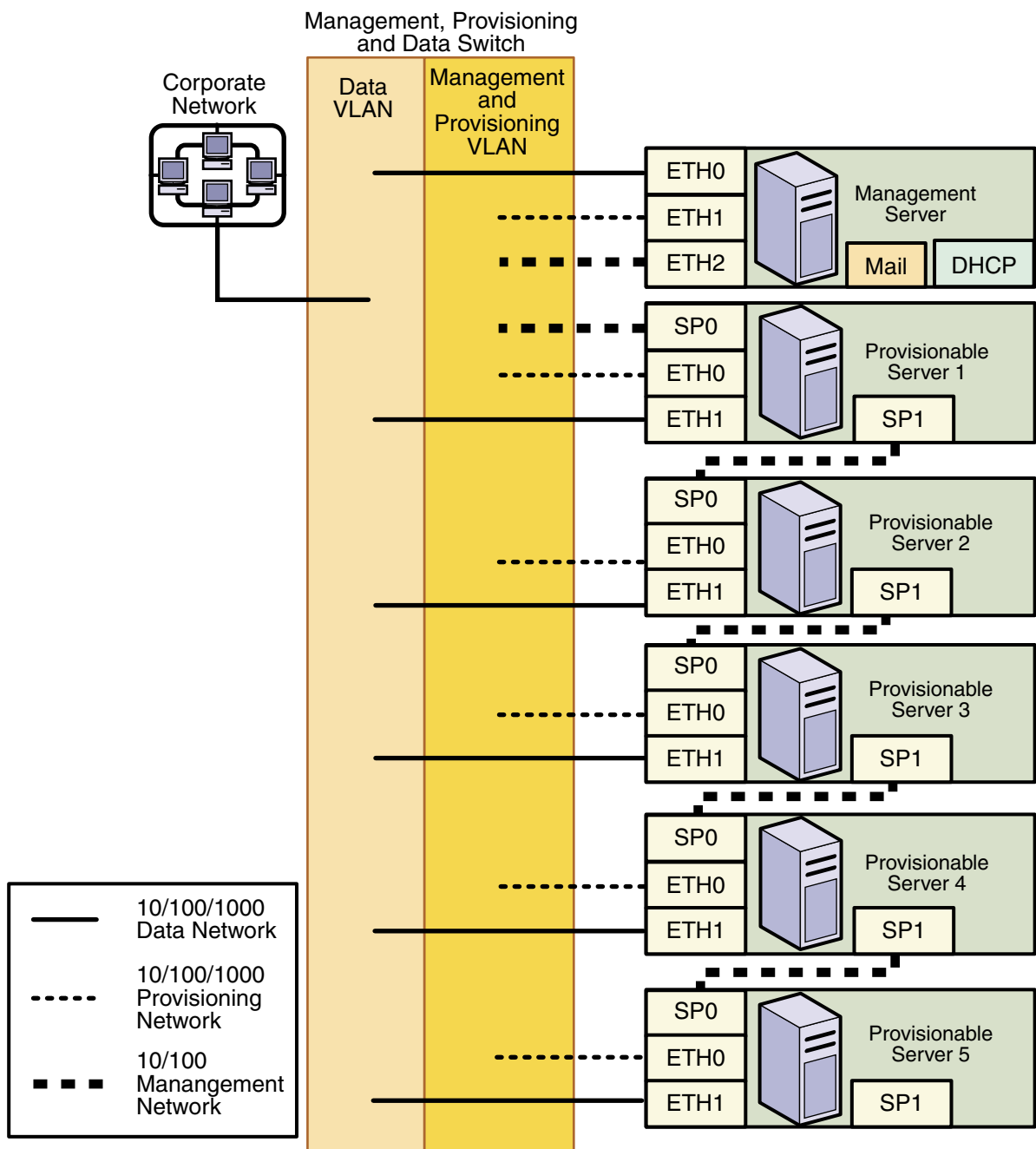


FIGURE A-1 Five Daisy-Chained SP Provisionable Servers, One Switch

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