Sun Enterprise™ 10000 System Site Planning Guide

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Preface

The *Sun Enterprise 10000 System Site Planning Guide* helps management and site preparation personnel identify suitable environments for the Sun Enterprise™ 10000 system. It describes configurations, electrical requirements, power consumption, environmental requirements, and remote support equipment.

Due to the amount of time required to plan and properly prepare a site for installation of a Sun Enterprise 10000 system, you must fulfill all of the requirements outlined in this manual before your equipment arrives. Your Sun Microsystems™ account manager is available to help. Use FIGURE P-1 as a guide to plan for a system installation.

Once the site is prepared, your account manager will physically verify the site while completing the site planning checklists in Chapter 5.

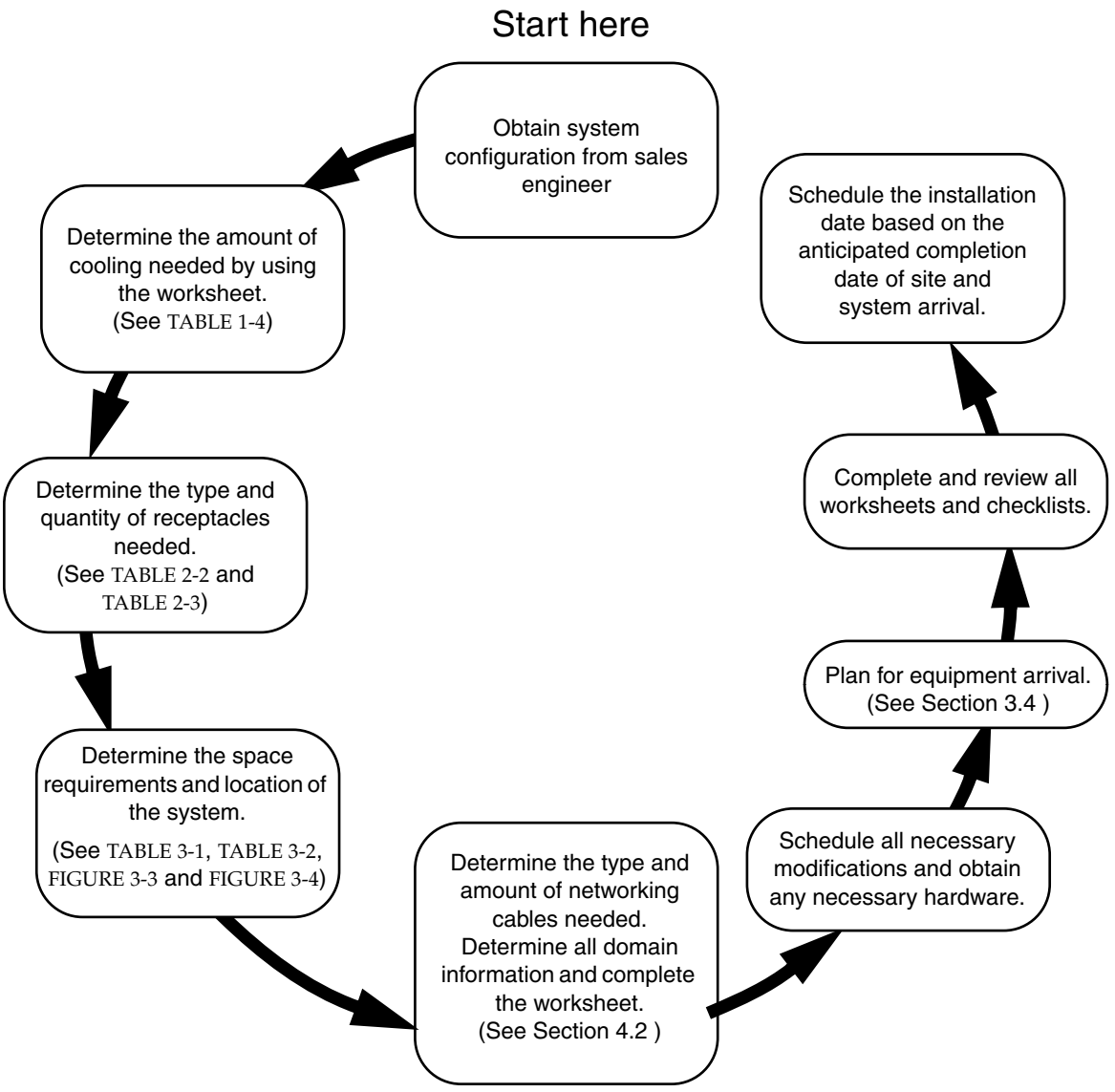

FIGURE P-1 Site Preparation Process

Typographic Conventions

Typeface	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type `rm` *filename*.

Shell Prompts

Shell	Prompt
C shell	*machine-name*`%`
C shell superuser	*machine-name*`#`
Bourne shell and Korn shell	`$`
Bourne shell and Korn shell superuser	`#`

Related Documents

The following documents contain topics that relate to the information in the *Sun Enterprise 10000 System Site Planning Guide*.

Application	Title	Part Number
Service	*Sun Enterprise 10000 System Read Me First*	805-2913
	Sun Enterprise 10000 System Unpacking Guide	805-2915
	Sun Enterprise 10000 System Overview	805-0310
	Sun Enterprise 10000 Hardware Installation and De-Installation Guide	805-4651
	Sun Enterprise 10000 System Service Manual	805-2917
	Sun Enterprise 10000 System Service Reference I	805-3622
	Sun Enterprise 10000 System Service Reference II	805-3623
	Sun Enterprise 10000 System Service Processor Quick Reference	805-3827

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CHAPTER 1

Environmental Requirements

The design of your environmental control system (such as computer room air-conditioning units) must ensure that intake air to the system meets the requirements specified in this section. Air enters the cabinet through the access panels and through an air intake that is located underneath each cabinet. The exhaust air is directed out the top of each cabinet. Overheating can occur if warm air is directed underneath a cabinet or toward the access panels. The optimal parameters of temperature and humidity shown in TABLE 1-1 will create the optimal environment for your equipment.

If the system is significantly colder [40°F (4°C) or colder] than the environment in which you will install it, leave the system in its shipping crate (at its final destination) for 24 hours to prevent thermal shock and condensation.

The remaining tables in this section provide air conditioning information for the various components in the Sun Enterprise 10000 system. After determining your configuration, use the tables to fill in the power and cooling section of the worksheet in TABLE 1-4. This will assist you in calculating your total system power consumption (in watts) and the total amount system air conditioning required in British thermal units (Btus). The amount of air conditioning required depends upon your configuration.

TABLE 1-1 Environmental Requirements

Environmental Factor	Optimal	Operating[2]	Nonoperating[3]
Temperature	70° to 74°F (21° to 23°C)	50° to 88°F (10° to 31°C)	-40° to 149°F (-40° to 65°C)
Relative Humidity	45% to 50%	20% to 80% (noncondensing) 27°C max wet bulb	up to 93%
Altitude[1]	up to 10,000 ft (3,048 m)	up to 10,000 ft (3,048 m)	up to 40,000 ft (12,192 m)

1. For altitudes outside these ranges please consult your Sun Microsystems representative.
2. Temperature ramp rate not to exceed 68° F (20° C) per hour, humidity ramp rate not to exceed 30 percent relative humidity per hour.
3. Temperature ramp rate not to exceed 59° F (15° C) per hour, humidity ramp rate not to exceed 20 percent relative humidity per hour.

1.1 Basic Cooling Requirements

The Sun Enterprise 10000 system uses CMOS technology. CMOS is a dynamic technology with fast transient current characteristics. Site planning requirements are listed for the measurable current spikes with allowances for the calculable current spikes. These systems have been designed to accommodate future system performance upgrades and to prevent system failure should one of the power supplies fail.

The dynamics of the power dissipation depend on the application and configuration. The dynamics described in this manual are based on a rigorous code condition set that has been verified in a lab environment. During these tests, all measurements were taken with the latest-technology, high-speed current probe connected to the 48-volt side of the power supply. The numbers were then backed out to account for efficiency loss and power factor correction.

From a power perspective, after the rigorous code is invoked, the system becomes very sensitive to the code based on processor and memory activity interaction and can cause the power to swing hundreds of watts in either direction. For site planning, rigorous code numbers are employed because systems must be able to handle these potential high current conditions.

Note – I/O power should be calculated on the number and types of trays being configured. These numbers represent the maximum requirements, and as such may not represent your configuration. Refer to your peripherals documentation for additional information.

After the wall power has been determined (based on the number of system boards), the ambient maintenance and environmental control must be calculated. It is important that the site is able to accommodate the appropriate global environmental variations. The values provided in this manual account for these variations.

This manual provides specifications for half- and full-configured systems (TABLE 1-2, TABLE 1-3, and TABLE 1-4). TABLE 1-5 provides specifications for systems configured with fewer power cords. This can lead to problems because there is no failsafe mechanism to indicate that more power is needed as new components are added. To assist future upgrades, always provide sufficient power and cooling, not just for the purchased system boards, but for the total *number of power cords* to be used.

For example, if planning for four system boards, a minimum of three power cords are required. However, three power cords can effectively provide power for up to eight system boards. Therefore, provide enough power and cooling for the maximum configuration permitted by the three power cords: eight system boards or 7.215 kVA. When upgrading beyond the eight system boards, additional power supplies will be needed, which will require new site planning for power and cooling.

Note – The power cords provided with all Sun products, including the Sun Enterprise 10000 system, are not classified as "plenum-rated." According to UL and CSA guidelines, the provided power cords can be routed and connected under a raised tile floor space used for cooling air if the air is cooled by a dedicated system separate from that used for personnel comfort and breathing.

TABLE 1-2 Processor Cabinet Electrical and Cooling Requirements

Quantity of System Boards	Power Consumption (watts)	Air Conditioning (Btu/hr)
Up to 8	6,136	20,656
Up to 16	11,041	37,165

TABLE 1-3 I/O Electrical and Cooling Requirements

Cabinet	Power (watts)	Air Conditioning (Btu/hr)
Processor cabinet I/O expansion area for three RSM trays (maximum), or two Sun StorEdge D1000 arrays, or 16 Unipack, or combination, and one or two Hubs	2,520	8,566
I/O expansion cabinet (at maximum configuration)	4,740	16,000

TABLE 1-4 Power Dissipation and Air Conditioning Worksheet

System Configuration				Power				Air Conditioning
Device	**Qty**		**VA per unit**	**Total VA**	**Power Factor**	**Watts per unit[2]**		**Btu/hr**
Processor cabinet configured for 1-8 system boards	1	X	6,136	6,136	x .99 =	6,075	x 3.4 =	20,654
Additional requirements for a processor cabinet configured for 9-16 system boards		X	4,905		x .99 =		x 3.4 =	
Processor Cabinet I/O		X	2,652		x .95 =		x 3.4 =	
I/O Cabinets		X	4,705[1]		x .95 =		x 3.4 =	
System Service Processor (SSP)		X			x .95 =		x 3.4 =	
			Total Volt Amps				Total Btu/hr	

1. This number represents the maximum requirements, and as such may not accurately depict your configuration. Refer to the documentation for your peripherals for additional information.
2. This number represents the maximum requirements. See Section 1.2, "Expanded Current Draw and Cooling Requirements" on page 1-5" for specific requirements.

1.2 Expanded Current Draw and Cooling Requirements

TABLE 1-5 provides detailed information based on incremental system board requirements.

TABLE 1-5 Cooling Requirements Based on Number of System Boards

Number of system boards	Number of front end power supplies for N+2 redundancy[1]	Number of 30 amp single phase service cords[2]	System with power supplies and fans (VA)	System board (VA)	Service requirement system (kVA)	System power load plus efficiency loss (kW)	Cooling requirement system (Btu/hr)
1	4	2	2,311[3]	479	2.789	2.761	9.389
2	4	2	2,311	956	3.267	3.235	10.997
3	5	3	2,311	1,434	3.745	3.708	12.608
4	5	3	2,311	1,913	4.224	4.182	14.218
5	5	3	2,311	2,391	4.702	4.655	15.826
6	6	3	2,311	2,869	5.180	5.128	17.437
7	6	3	2,311	3,347	5.658	5.601	19.045
8	6	3	2,311	3,825	6.136	6.075	20.656
9	7	4	3,390[4]	4,304	7.694	7.617	25.898
10	7	4	3,390	4,782	8.172	8.090	27.506
11	7	4	3,390	5,260	8.650	8.563	29.117
12	8	4	3,390	5,739	9.129	9.037	30.728
13	8	4	3,390	6,216	9.606	9.510	32.336
14	8	4	3,390	6,695	10.085	9.984	33.946
15	8	4	3,390	7,173	10.563	10.457	35.555
16	8	4	3,390	7,651	11.041	10.931	37.165

1. The Dual Grid Power configuration has 16 power supplies. The cooling requirements remain the same as for eight power supplies.
2. See page 1-3.
3. System configured for 1-8 system boards.
4. System configured for 9-16 system boards.

CHAPTER 2

Facility Power Requirements

To prevent catastrophic failures, the design of your power system must ensure that adequate power is provided to your Sun Enterprise 10000 system. All power circuits that supply power to the Sun Enterprise 10000 system should be supplied by dedicated electrical distribution panels. Electrical work and installations must comply with applicable local, state, or national electrical codes.

Sun Microsystems makes every effort to minimize the effects of power failures and interruptions to the hardware. However, if the computer equipment is subjected to repeated power interruptions and fluctuations, it will be susceptible to a higher component failure rate than would result from using a stable power source. Consider installing an uninterruptable power supply (UPS) to reduce the possibility of component failure.

2.1 Facility Power Quality Tolerances

The quality of the incoming power can be instrumental in maintaining appropriate conditions and avoiding unplanned outages. Some factors affecting power quality are listed below.

- high frequency
- high amplitude noise
- high ground currents
- low power factors
- surges or sags in voltage
- harmonic distortion

Numerous other factors can also affect correct functioning of electronic components. TABLE 2-1 is a guide regarding the tolerances for power quality for the Sun Enterprise 10000 system.

TABLE 2-1 Facility Power Quality Tolerances

Environmental Attribute	Limit	Components Affected and Comments
Input voltage	190–254 VAC Single Phase	All system electrical components
Power frequency	47–63 Hz	
Line frequency	0.3%	Disk packs, tape drives, regulators
Rate of frequency change	0.3 Hz/s	Disk packs
Over/under voltage	3%	Unregulated power supplies
Phase imbalance	3% max	Polyphase rectifiers, motors
Power source – tolerance to low-power factor	<0.6 lagging or 0.9 leading	Indirectly limits power source or requires greater capacity unit with reduced overall efficiency
Tolerance to high steady-state peak current	>2.5 peak/rms	1.414 normal; departures cause wave shape distortion
Voltage harmonics	5% max total 3% largest	Voltage regulators, signal circuits
DC load current capability of power source	As low as 0.5%	Half-wave rectifier load can saturate some power sources and trip circuits
Voltage deviation from sine wave	3–5%	Affects regulators, signal circuits
Voltage modulation	1% max	Voltage regulators, servo motors
Transient surges/sags	+5%, -5%	Regulated power, motor torques
Transient impulses	Varies: 200 - 500V typical	Memory, disks, tape drives having data transfer rates, low-level data signals
RFI/EMI and "tone bursts" – normal and common modes	Varies widely: 0.3 typical	Same as above
Ground currents[1]	0.0035A or less	May trip GFI devices, violate code, introduce noise in signal circuits

1. Earth leakage current values for Sun Enterprise 10000 system are:
   22.4mA @ 254VAC, 60 Hz - standard power configuration
   44.8mA @ 254VAC, 60 Hz - dual power grid configuration

2.2 Facility Power Requirements

Each Sun Enterprise 10000 system cabinet and peripheral cabinet requires its own customer-supplied circuit breaker and receptacles.

- The Sun Enterprise 10000 system cabinet requires up to four receptacles for the main system components (eight with the Dual Grid Power installation) and an additional receptacle for the AC sequencer (two with the Dual Grid Power installation) that provides power to the peripherals.
- Each peripheral cabinet requires one or more receptacles.
- An International Electrotechnical Commission 309 (IEC 309) connector, supplied by Sun Microsystems, connects power to the system.

Each piece of support equipment requires its own customer-supplied circuit breaker and receptacle(s).

- The System Service Processor (SSP) requires one customer-supplied receptacle per unit.
- The modem requires one customer-supplied receptacle per unit.

TABLE 2-2 lists the electrical specifications for the processor cabinet or peripheral cabinet, the SSP, and the optional modem. See FIGURE 2-1 for an illustration of possible system power connections.

TABLE 2-2 Facility Power Requirements

Electrical Service	Specification
Sun Enterprise 10000 system cabinet for 1-8 system boards requires: Note: Does not include I/O area.	
Voltage	190–254 VAC, single phase
Frequency	47–63 Hz
Circuit breaker (1 per AC input module)	Three 30-amp breakers
Current	7412 VA (maximum for three line cords or six for Dual Grid Power installation)
Total harmonic distortion (THD)	Less than 9% at full load Less than 1.07% at the third harmonic
Power cords	14.7 ft (4.5 m) connector-compatible drop cord [allow for approximately 8 ft (2.5 m) of usable length]
Receptacle: North America and Japan (three required or six for Dual Grid Power installations)	NEMA #L6-30R, single phase, 32 amps
Receptacle: International (three required or six for Dual Grid Power installation)	IEC 309, single phase, 32 amps

TABLE 2-2 Facility Power Requirements *(Continued)*

Electrical Service	Specification
Sun Enterprise 10000 system cabinet for 9-16 system boards requires: Note: Does not include I/O area.	
Voltage	190–254 VAC, single phase
Frequency	47–63 Hz
Circuit breaker (1 per AC input module)	Four 30-amp breakers (Eight 30-amp breakers with Dual Grid Power installation)
Current	13,592 VA (maximum for four line cords or eight for Dual Grid Power installation)
Total harmonic distortion (THD)	Less than 9% at full load Less than 1.07% at the third harmonic
Power cords	14.7 ft (4.5 m) connector-compatible drop cord [allow for approximately 8 ft (2.5 m) of usable length]
Receptacle: North America and Japan (four required)	NEMA #L6-30R single phase, 32 amps
Receptacle: International (four required)	IEC 309 single phase, 32 amps
Processing cabinet AC sequencer requires:	
Voltage	190–254 VAC, single phase
Frequency	47–63 Hz
Circuit breaker	30 amps
Current	24 amps
Power cord (one or more required; configuration-dependent)	14.7 ft (450 cm) connector-compatible drop cord [allow for approximately 8 ft (2.5 m) of usable length]
Receptacle: North America and Japan Receptacle: International	NEMA #L6-30R single phase, 32 amps IEC 309 single phase, 32 amps

TABLE 2-2 Facility Power Requirements *(Continued)*

Electrical Service	Specification
Peripheral cabinet AC sequencer requires:	
Voltage	190–254 VAC, single phase
Frequency	47–63 Hz
Circuit breaker	30 amps
Current	24 amps (for each line cord)
Total harmonic distortion (THD)	Configuration-dependent
Power cord (one or more required; configuration dependent)	14.7 ft (4.5 m) connector-compatible drop cord [allow for approximately 8 ft (250 cm) of usable length]
Receptacle: North America and Japan	NEMA #L6-30R single phase, 32 amps
Receptacle: International	IEC 309 single phase, 32 amps
SSP requires:	
Voltage	95–130 VAC or 190–254 VAC, single phase
Frequency	50 or 60 Hz
Circuit breaker	15 amps
Power cord	Refer to the SSP manual for your country

TABLE 2-2 Facility Power Requirements *(Continued)*

Electrical Service	Specification
Optional modem requires:	
Voltage:	100–120 VAC, single phase
Frequency	60 Hz
Circuit breaker	15 amps
Power consumption	See TABLE 1-4 for a detailed worksheet
Power cord (one)	6 ft (1.8 m) connector-compatible drop cord
Receptacle: North America (one)	NEMA #5-15R or equivalent

TABLE 2-3 Power Cord Requirements Worksheet

Device	Qty	Number of 30-amp Single-phase Power Cords Per Device			Qty
AC input modules[1]		x	1	=	
AC sequencer in Sun Enterprise 10000 system cabinet[2]		x	1	=	
AC sequencers in external I/O cabinets		x		=	
Other 30-amp devices		x		=	

Device	Qty	Number of 15-amp Single-phase Power Cords Per Device			Qty
Modem		x	1	=	
SSP[3]		x		=	
Customer-provided hubs		x	1	=	
Other 15-amp devices		x		=	

Total number of 30 amp single-phase power receptacles needed

Total number of 15 amp single-phase power receptacles needed

1. Typically three or four. Eight required for Dual Grid Power installation (four for each independent power source).
2. One or two.

3. Typically one cord. Two cords are necessary to support SSP with Dual Grid Power capability.

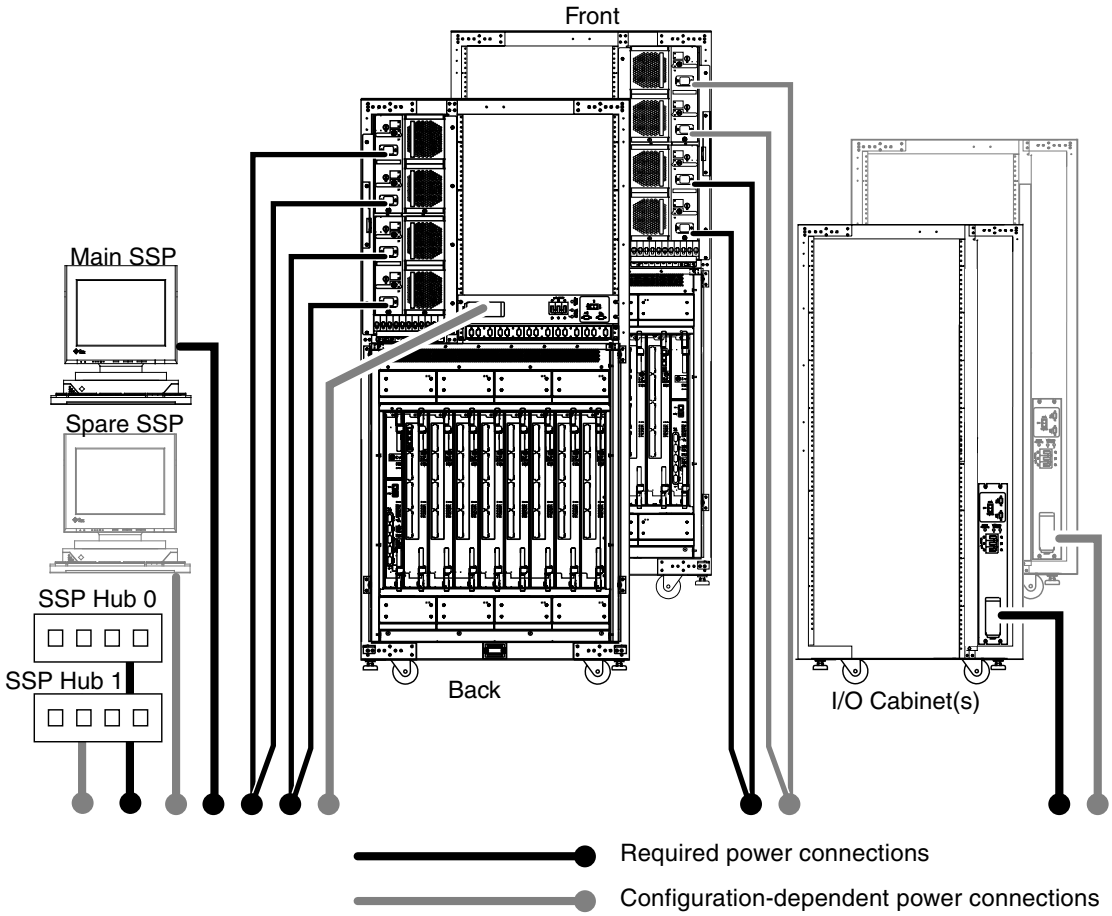

FIGURE 2-1 System Power Connections

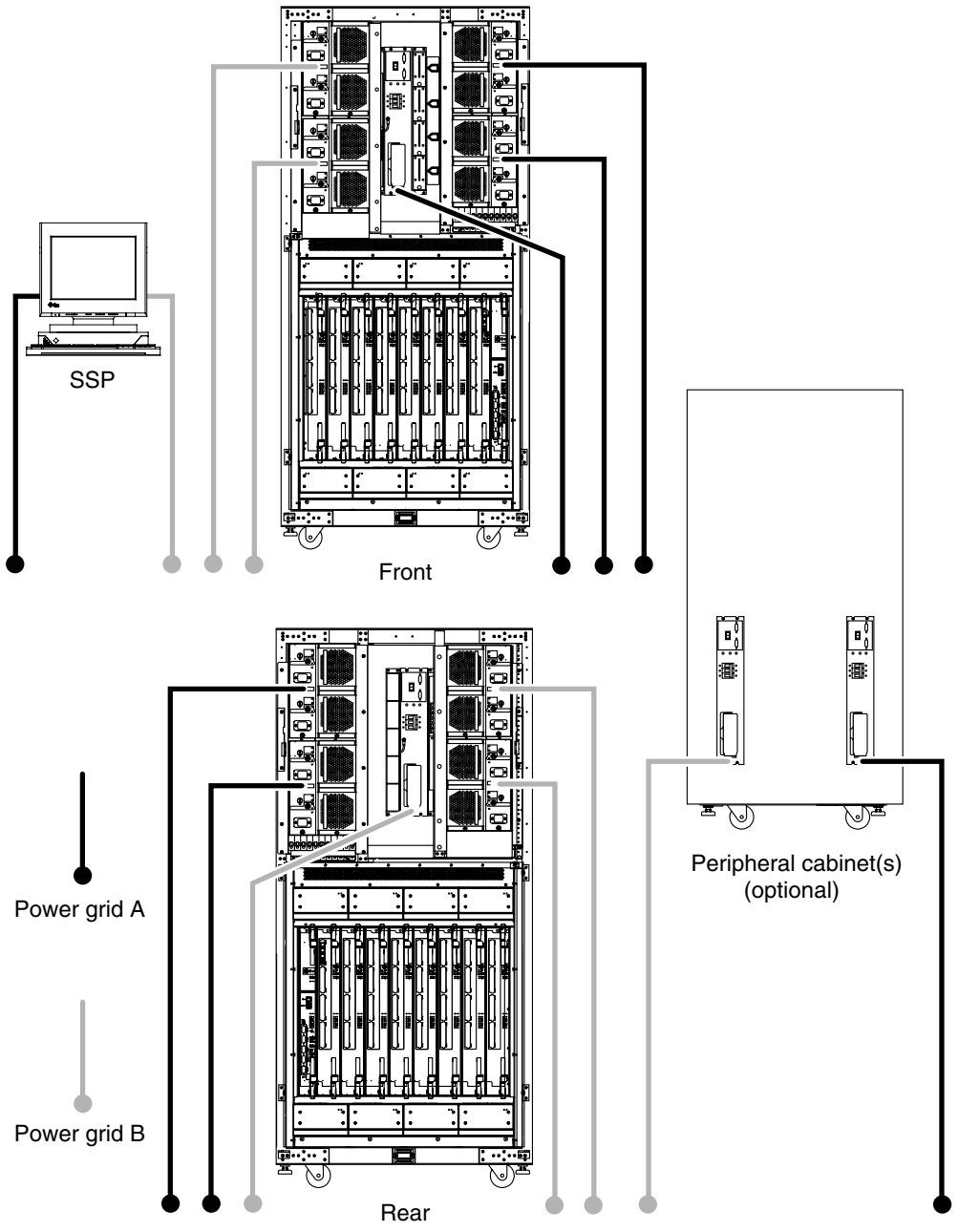

FIGURE 2-2 System Power Connections With Dual Grid Power Installation

CHAPTER 3

Physical Specifications

This chapter describes Sun Enterprise 10000 system components and the weights and dimensions of the packed and unpacked processor cabinet.

3.1 System Components

The Sun Enterprise 10000 system consists of one or more air-cooled cabinets that are configured to meet customer-specified requirements. Minimum configurations use only one cabinet which houses system components as well as peripherals. System components include:

- System board
- SBus boards
- Processor modules
- Memory SIMMs
- Centerplane
- Centerplane support board
- Control board
- Power and cooling subsystems

Systems that are ordered with eight or less system boards may have any combination of boards located in the front and rear of the chassis. If the boards are not located in just one side of the chassis, then a full complement of fans, front and rear, are required. The number of system boards determines how many processors, memory, and I/O modules can be configured into the system. The Dual Grid Power option (if installed) requires 8 AC input modules and 16 power supplies.

Multiple-cabinet configurations (FIGURE 3-1) could include additional peripheral cabinets. The only limiting factor for the number of peripheral cabinets is the maximum permissible length of SCSI cabling. Peripheral cabinets house additional I/O disk or tape subsystems. Additionally, each peripheral cabinet contains AC distribution subsystems for use with the I/O subsystems.

To determine the space, cooling, and power requirements, determine what system and I/O components will be used in your system. To begin the process of preparing the site for your Sun Enterprise 10000 system, record your configuration on the worksheet on TABLE 1-4.

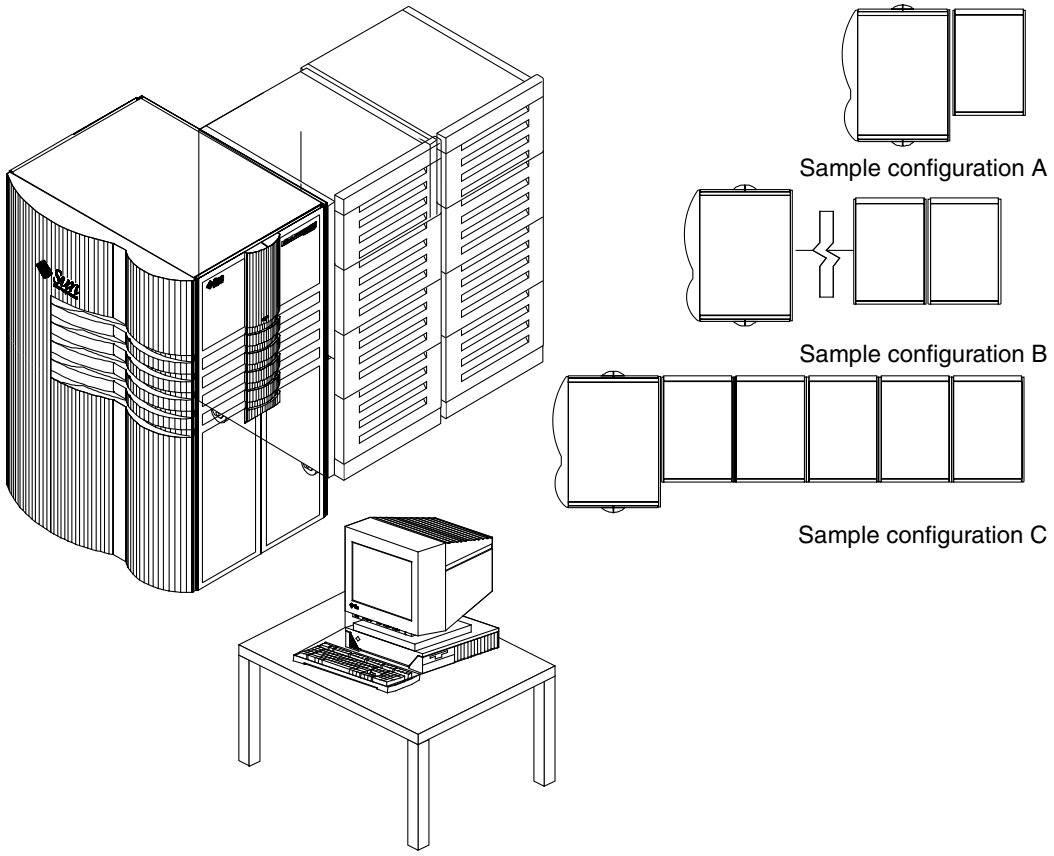

FIGURE 3-1 Sample Sun Enterprise 10000 System Cabinet Configurations

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Note – Only one processor cabinet is used per system configuration; all other cabinets are peripheral expansion cabinets. Additional peripheral expansion cabinets may be used, provided SCSI cable length requirements are not compromised. The processor cabinet may be located in any position within the system configuration.

3.2 Processor Cabinet and Component Physical Specifications

TABLE 3-1 Physical Specifications of the Processor Cabinet

Characteristics	Specifications
Shipping height Shipping width Shipping depth	78.75 in. (2000.3 mm) 48.75 in. (1238.3 mm) 61.25 in. (1555.8 mm)
Shipping weight (maximum per cabinet)	2,200 lbs (1000 kg)
Height	70.0 in. (1778 mm)
Width	38.25 in. (971.55 mm)
Depth	49.94 in. (1268.48 mm)
Weight (fully loaded):	2,000 lbs (909 kg)
System board	26.4 lbs (12.0 kg)
AC input module	15.6 lbs (7.1 kg)
Power supply	9.9 lbs (4.5 kg)
Access requirement for front and rear	16.00 in. (406 mm) if no peripheral is over 20 in. (508 mm). If a peripheral is over 20 in. (508 mm), add additional access space to accommodate the excess length.

TABLE 3-2 Physical Specifications of the System Service Processor

Characteristics	Specifications
Height	19.85 in. (504 mm)
Width	20.00 in. (508 mm)
Depth	25.50 in. (648 mm)
Weight	79 lbs (36 kg)

TABLE 3-3 Physical Specifications of the SSP Hubs

Characteristics	Specifications
Height	1.00 in. (25 mm)
Width	9.0 in. (229 mm)
Depth	5.5 in. (140 mm)

FIGURE 3-2 shows the dimensions of the Sun Enterprise 10000 system shipping crate.

FIGURE 3-3 shows the dimensions of the unpacked Sun Enterprise 10000 system cabinet.

FIGURE 3-4 shows the clearance dimensions of the Sun Enterprise 10000 system.

See TABLE 2-2 for processor cabinet and peripheral cabinet electrical specifications and receptacle information.

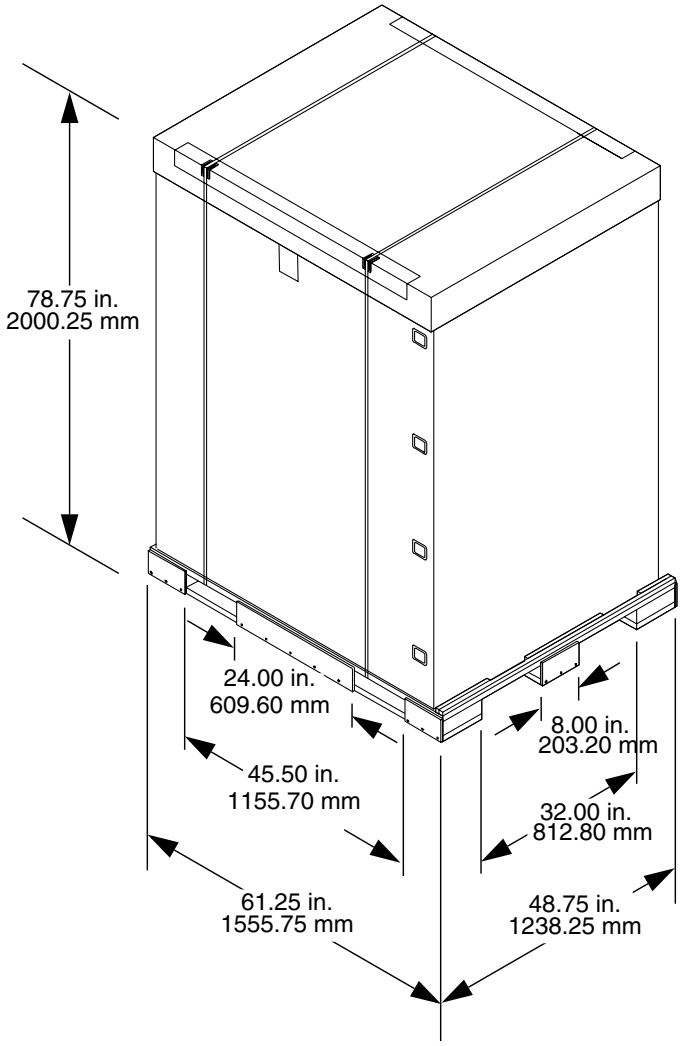

FIGURE 3-2 Processor Cabinet Shipping Crate Dimensions

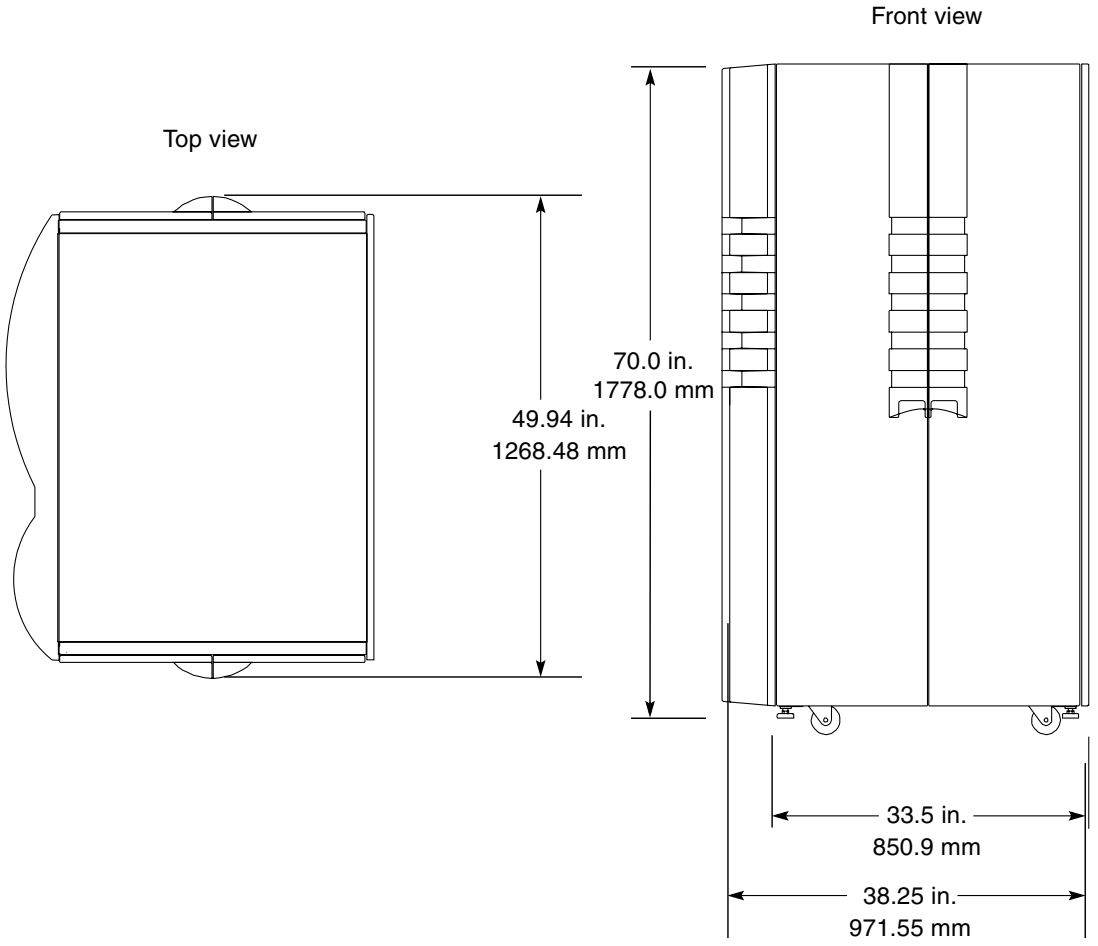

FIGURE 3-3 Sun Enterprise 10000 System Cabinet Dimensions—Top and Front Views

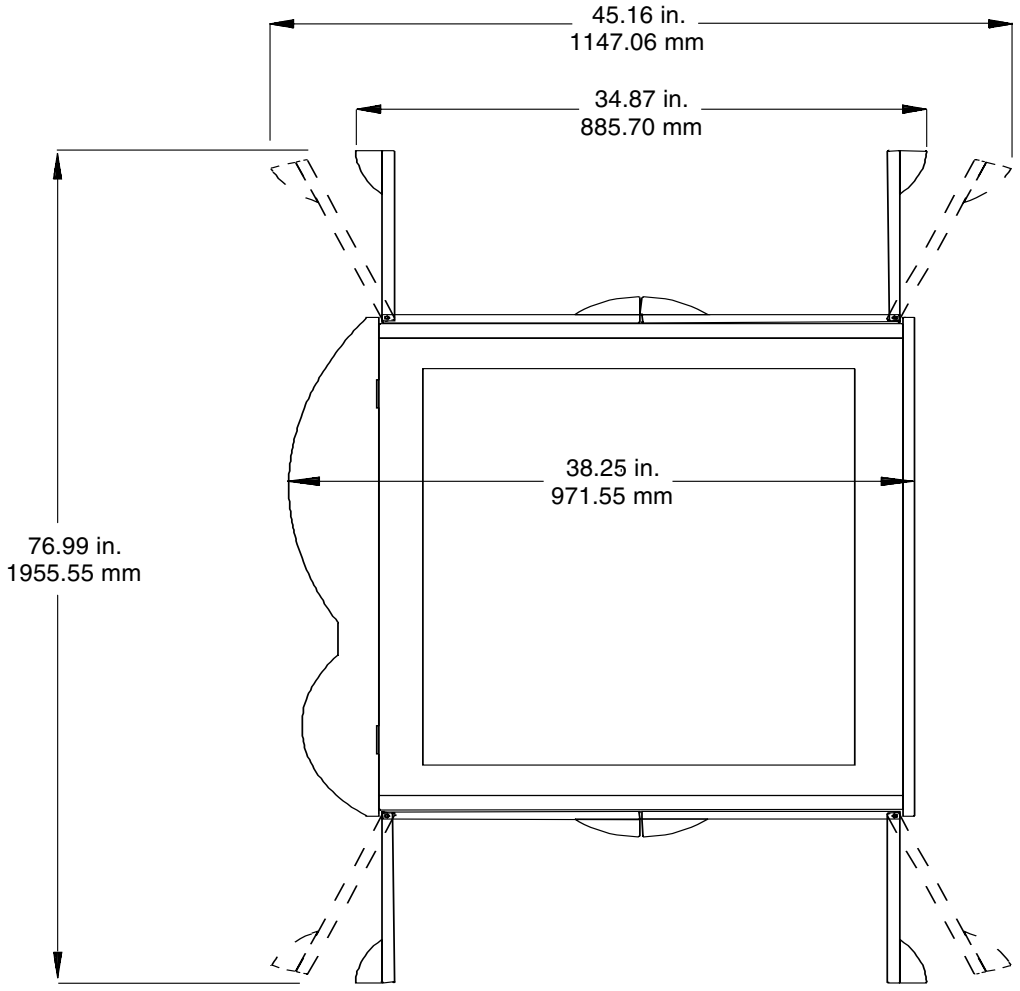

FIGURE 3-4 Sun Enterprise 10000 System Cabinet Clearance Dimensions—Top View

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Note – For any peripheral tray in the processor cabinet over 20 in. (508 mm) in length, allow additional space for access in front of the access doors on the side where the peripheral will be installed.

3.3 Raised-Floor Installations

The optimal raised-floor installation provides a convenient way to duct cooling air and to route power and communication cabling. If planning to install your system on a raised floor, ensure that sufficient cooling will be available to the system.

Note – The power cords provided with all Sun products, including the Product Name, are not classified as "plenum-rated." According to UL and CSA guidelines, the provided power cords can be routed and connected under a raised tile floor space used for cooling air if the air is cooled by a dedicated system separate from that used for personnel comfort and breathing.

The computer room floor must be able to support the weight of the system cabinets (see TABLE 3-1). Each cabinet rests on four feet that concentrate the weight of the cabinet on a small surface area.

Place perforated floor panels or floor grilles at the base of the system, directly under it. FIGURE 3-5 illustrates the floor cutouts for cables and suggested locations for perforated floor panels or floor grilles. Use the floor layout diagram of the proposed location shown in FIGURE 3-5 to determine the exact area required.

Note – For best performance, maximize the amount of cool air that is below the air-intake screen.

The raised-floor height should be at least 12 in. (305 mm). If you have questions concerning the structural capabilities of your floor, contact a qualified structural engineer. If you are not installing your system on a raised floor, use flat cable covers to protect cables and to protect personnel from a tripping hazard.

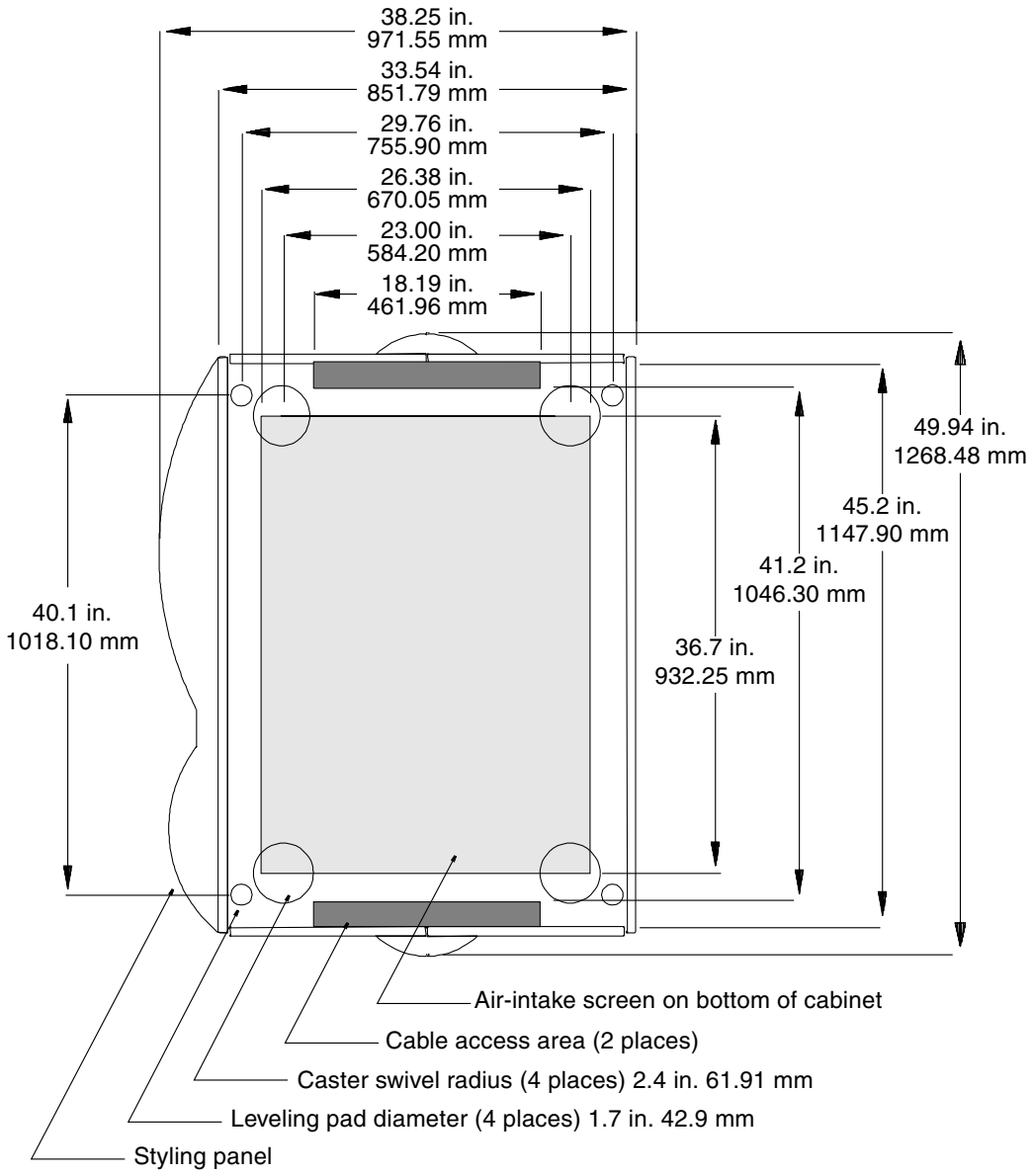


FIGURE 3-5 Sun Enterprise 10000 System Floor Cutout Diagram

3.4 Planning Your Access Route

If your existing loading dock meets height or ramp requirements for a standard freight truck, you can use a pallet jack to unload the system. If not, you must provide a standard forklift[1] or other means to unload the system. Alternatively, request the system be shipped in a truck with a lift gate.

See FIGURE 3-2 for an illustration of the Sun Enterprise 10000 system cabinet shipping crate and its dimensions. Other cabinets will be shipped in separate crates. A pallet jack is required to move each shipping crate to the system location.

Leave each system cabinet in its shipping crate until it reaches its final destination. If the crate does not fit through the planned access route, you can partially disassemble the crate.

The entire access route to your computer room should be free of raised floor patterns that could cause vibration. The access route must meet the following requirements.

TABLE 3-4 Access Route Clearances

	With Shipping Pallet	Without Shipping Pallet	
		With Styling Panel	Without Styling Panel
Minimum door height	80.00 in. (2032.0 mm)	71.00 in. (1803 mm)	71.00 in. (1803 mm)
Minimum hallway and door width	49.0 in. (1244.6 mm)	42.0 in. (1066.8 mm)	36.0 in. (914.4 mm)
Maximum incline	15°	15°	15°

1. A standard forklift has a maximum outside tine dimension of 27 in. (685.8 mm) and a minimum inside tine dimension of 15 in. (381 mm).

CHAPTER 4

Network Planning

This section provides sample network configurations and details for setting up domains.

4.1 Network Connections

The Sun Enterprise 10000 system requires 10BASE-T or 100BASE-T Ethernet connections on the customer network for the SSP and each host domain.

Additional Ethernet connections will be required if any of the following Sun Enterprise 10000 options are ordered:

- Optional redundant control board
- Optional redundant SSP
- Additional domains
- Alternate pathing (AP)

To prevent general purpose Ethernet traffic from negatively affecting the SSP-to-Sun Enterprise 10000 system host communication, comply with the following configuration rules:

- Connect the SSP and control boards by a private 10BASE-T network (separate subnets). This will connect the one (or two) SSPs with the one (or two) control boards.
- Connect the SSP and each of the host domains through a second network. To facilitate net booting a domain from the SSP, the network between the domain and the SSP must be either 10BASE-T or 100BASE-T Ethernet.

FIGURE 4-1, FIGURE 4-2, and FIGURE 4-3 illustrate three possible network configurations. All configurations use the hubs that are packaged with the control boards during manufacturing and the SSP that is pre-configured with an additional quad Fast Ethernet card. However, customer networks and hubs are the site owner's responsibility.

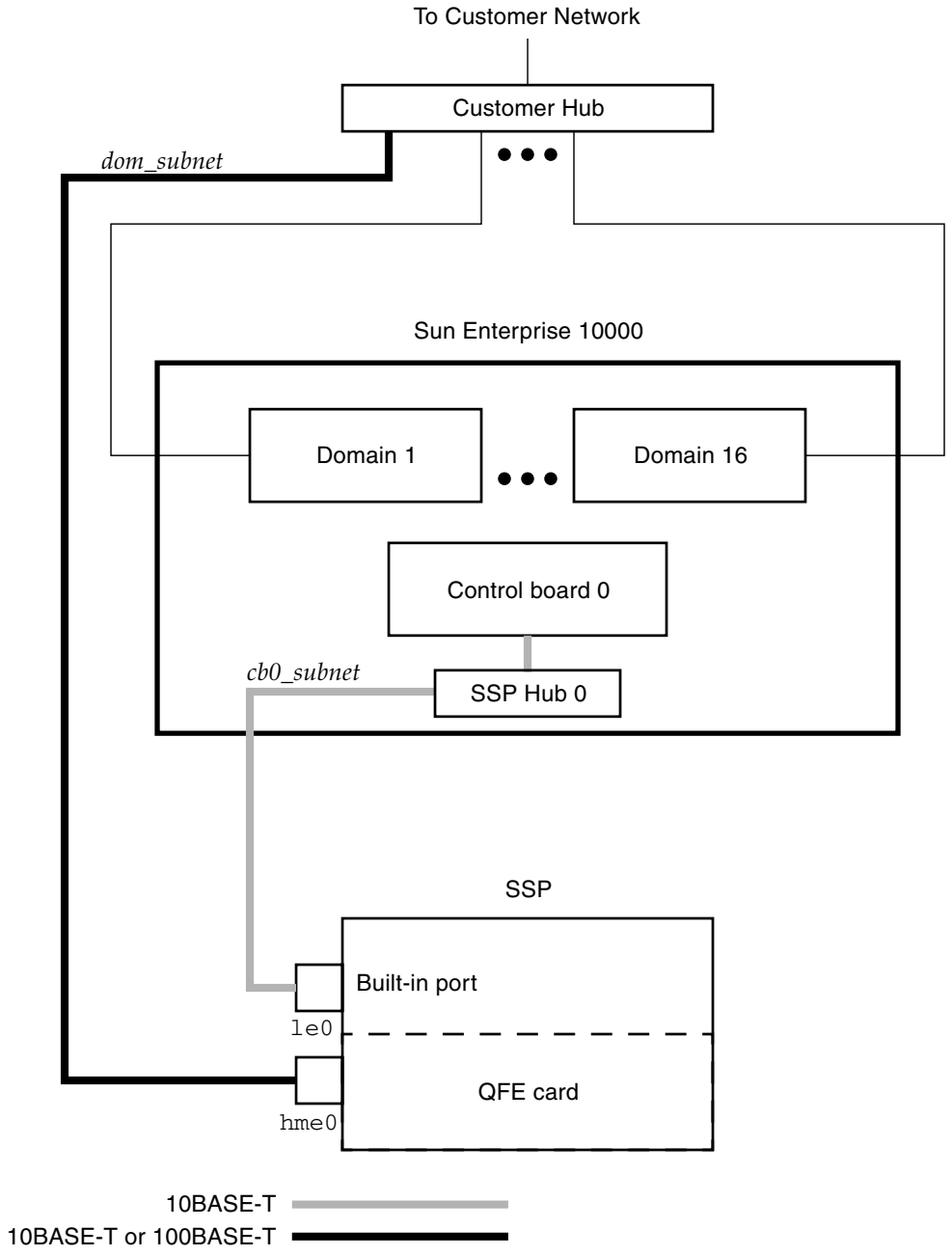


FIGURE 4-1 Network Configuration—Base

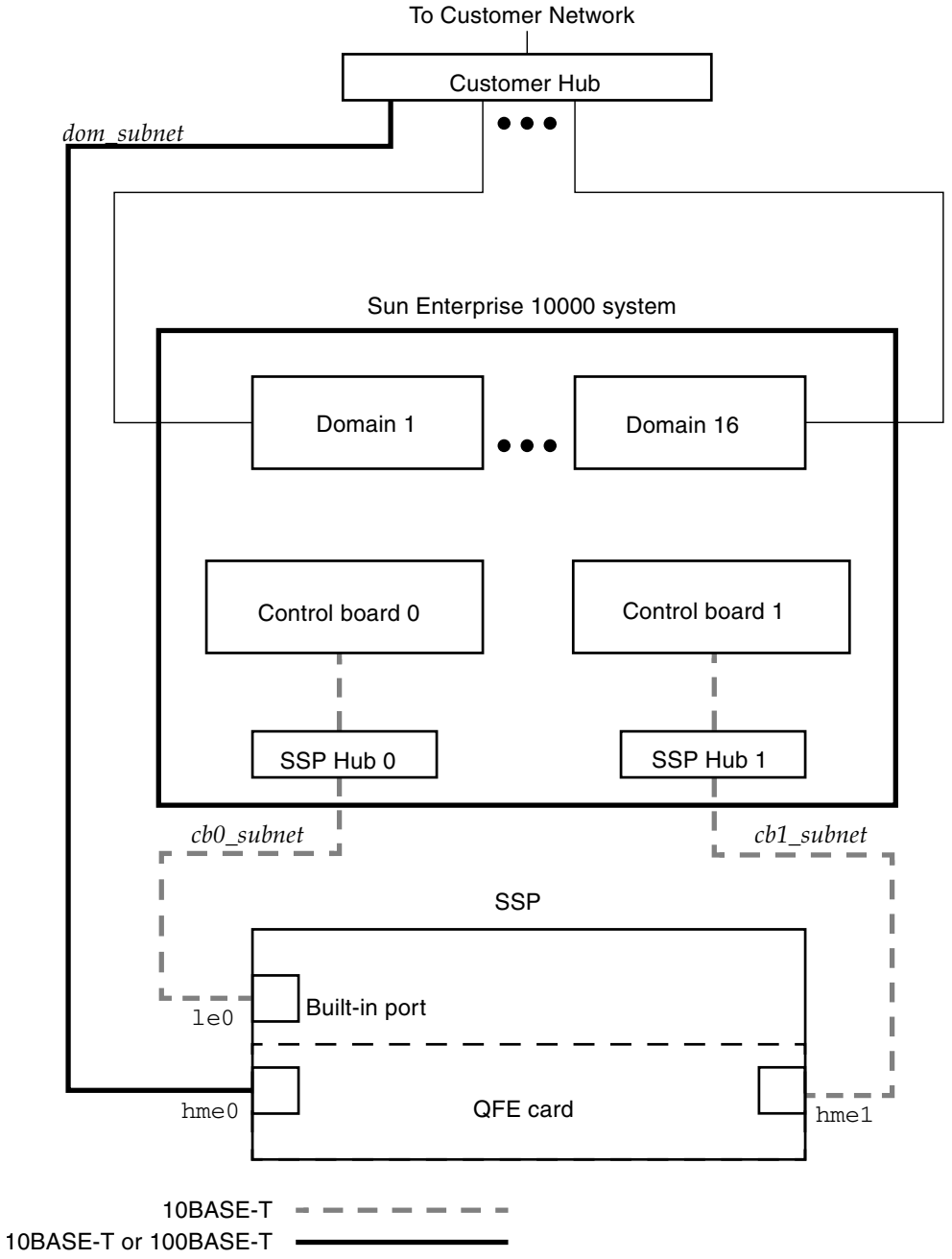


FIGURE 4-2 Network Configuration With Redundant Control Board

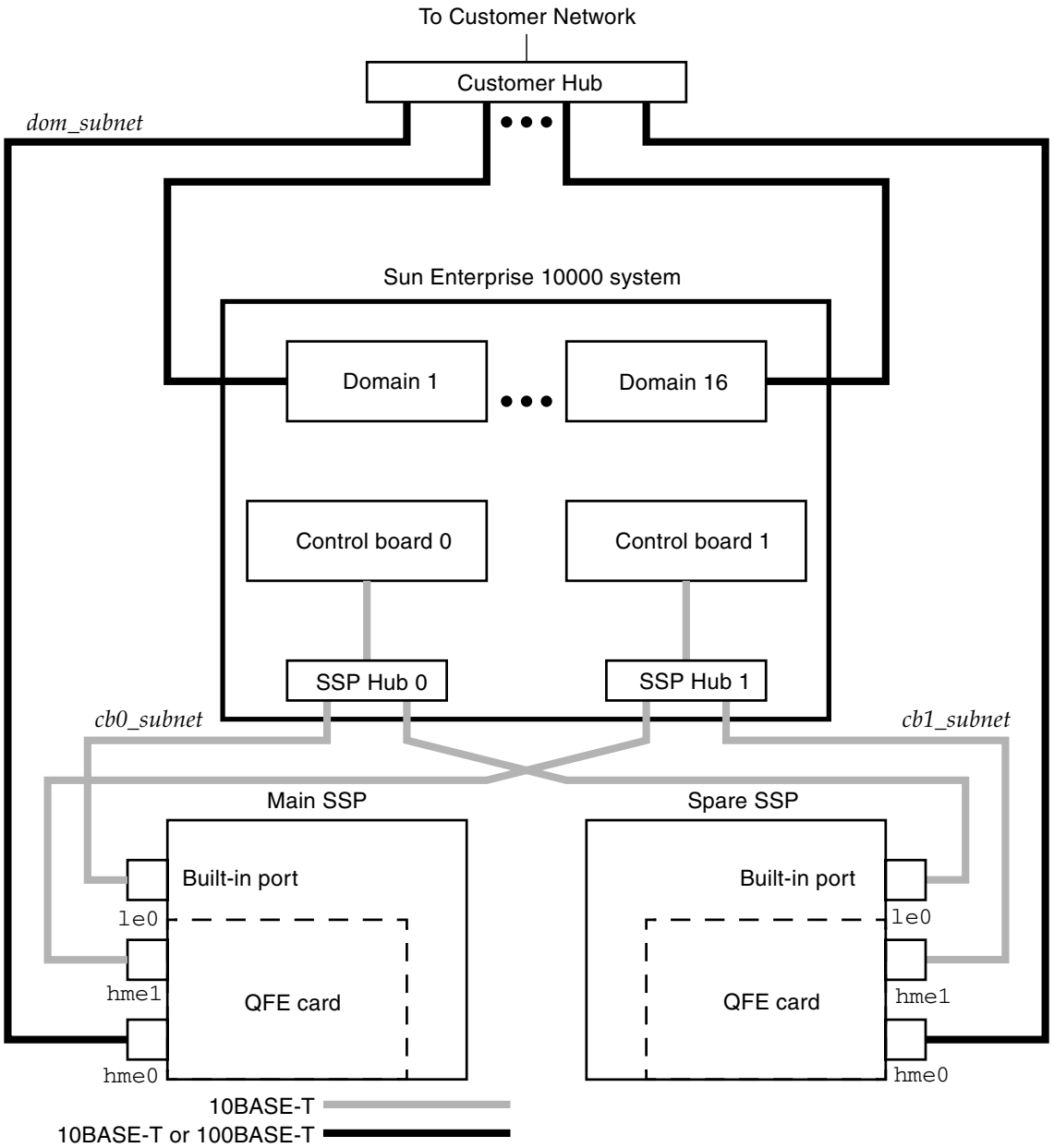


FIGURE 4-3 Network Configuration With Redundant Control Board and Spare SSP

4.2 Domain Setup Information

The following information must be determined prior to installation of the Sun Enterprise 10000 system. Most of this information is network-related and can only be provided by the customer. Therefore, fill in the spaces in the appropriate worksheet so that this information can be referred to during the software setup procedure.

- Use TABLE 4-1 with FIGURE 4-1.
- Use TABLE 4-2 with FIGURE 4-2.
- Use TABLE 4-3 with FIGURE 4-3.

TABLE 4-4 provides a more graphic illustration of how the network parameters are connected. This can be used as an alternative to any of the other software configuration setup parameter worksheets.

Note – The domains and SSP may require additional host names, IP addresses, and netmasks if you are planning to configure a private network.

TABLE 4-1 Software Configuration Setup Parameters for FIGURE 4-1

Platform Name[1]:			
	Host Name	**IP Address**	**Netmask Value**
Domain 1 (Sun Enterprise 10000 Host)			
Domain 2 (Sun Enterprise 10000 Host)			
Domain 3 (Sun Enterprise 10000 Host)			
Domain 4 (Sun Enterprise 10000 Host)			
Domain 5 (Sun Enterprise 10000 Host)			
Domain 6 (Sun Enterprise 10000 Host)			
Domain 7 (Sun Enterprise 10000 Host)			
Domain 8 (Sun Enterprise 10000 Host)			
Domain 9 (Sun Enterprise 10000 Host)			
Domain 10 (Sun Enterprise 10000 Host)			
Domain 11 (Sun Enterprise 10000 Host)			
Domain 12 (Sun Enterprise 10000 Host)			
Domain 13 (Sun Enterprise 10000 Host)			
Domain 14 (Sun Enterprise 10000 Host)			
Domain 15 (Sun Enterprise 10000 Host)			
Domain 16 (Sun Enterprise 10000 Host)			

TABLE 4-1 Software Configuration Setup Parameters for FIGURE 4-1 *(Continued)*

Platform Name[1]:			
	Host Name	**IP Address**	**Netmask Value**
Control Board 0 (CB0)			
SSP (`le0` to private hub 0)			
SSP (`hme0` to customer hub)			
NIS/NIS+ Domain (if applicable)			
DNS Domain (if applicable)			

1. The platform name is a logical name given to a Sun Enterprise 10000 system. A platform name does not correspond to any host on the network.

TABLE 4-2 Software Configuration Setup Parameters for FIGURE 4-2

Platform Name[1]:			
	Host Name	**IP Address**	**Netmask Value**
Domain 1 (Sun Enterprise 10000 Host)			
Domain 2 (Sun Enterprise 10000 Host)			
Domain 3 (Sun Enterprise 10000 Host)			
Domain 4 (Sun Enterprise 10000 Host)			
Domain 5 (Sun Enterprise 10000 Host)			
Domain 6 (Sun Enterprise 10000 Host)			
Domain 7 (Sun Enterprise 10000 Host)			
Domain 8 (Sun Enterprise 10000 Host)			
Domain 9 (Sun Enterprise 10000 Host)			
Domain 10 (Sun Enterprise 10000 Host)			
Domain 11 (Sun Enterprise 10000 Host)			
Domain 12 (Sun Enterprise 10000 Host)			
Domain 13 (Sun Enterprise 10000 Host)			
Domain 14 (Sun Enterprise 10000 Host)			
Domain 15 (Sun Enterprise 10000 Host)			
Domain 16 (Sun Enterprise 10000 Host)			

TABLE 4-2 Software Configuration Setup Parameters for FIGURE 4-2 *(Continued)*

Platform Name[1]:			
	Host Name	**IP Address**	**Netmask Value**
Control Board 0 (CB0)			
Control Board 1 (CB1)			
SSP (`le0` to private hub 0)			
SSP (`hme0` to customer hub)			
SSP (`hme1` to private hub 1)			
NIS/NIS+ Domain (if applicable)			
DNS Domain (if applicable)			

1. The platform name is a logical name given to a Sun Enterprise 10000 system. A platform name does not correspond to any host on the network.

TABLE 4-3 Software Configuration Setup Parameters for FIGURE 4-3

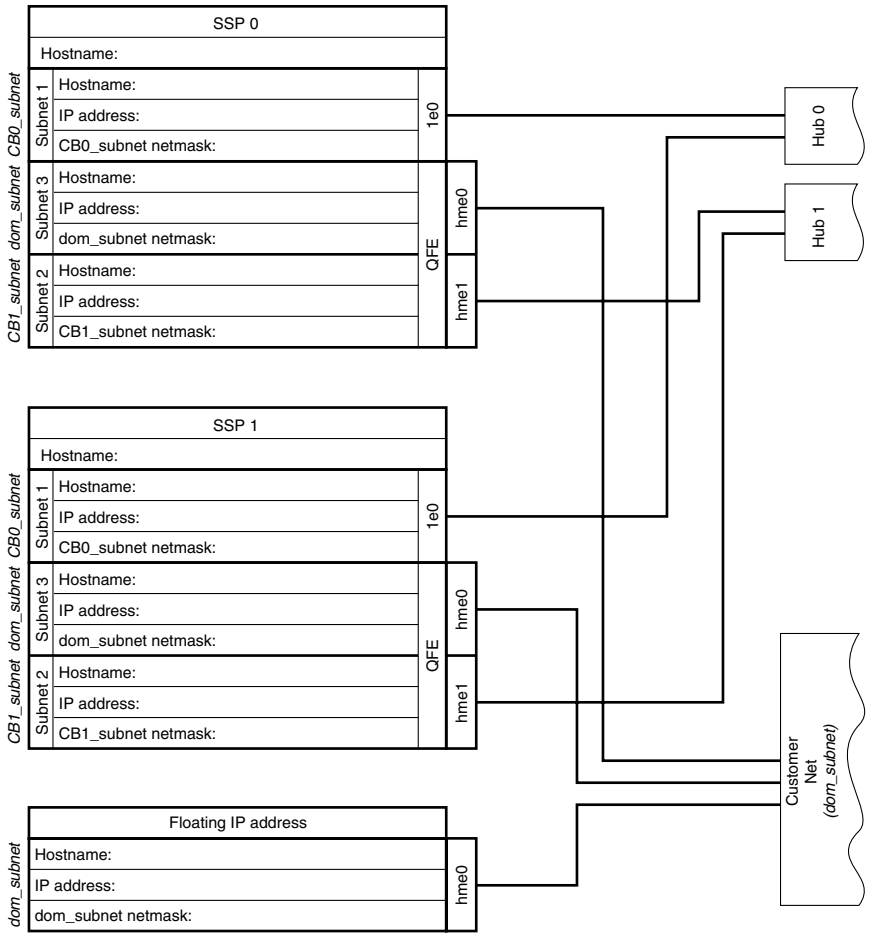
Platform Name[1]:			
	Host Name	**IP Address**	**Netmask Value**
Domain 1 (Sun Enterprise 10000 Host)			
Domain 2 (Sun Enterprise 10000 Host)			
Domain 3 (Sun Enterprise 10000 Host)			
Domain 4 (Sun Enterprise 10000 Host)			
Domain 5 (Sun Enterprise 10000 Host)			
Domain 6 (Sun Enterprise 10000 Host)			
Domain 7 (Sun Enterprise 10000 Host)			
Domain 8 (Sun Enterprise 10000 Host)			
Domain 9 (Sun Enterprise 10000 Host)			
Domain 10 (Sun Enterprise 10000 Host)			
Domain 11 (Sun Enterprise 10000 Host)			
Domain 12 (Sun Enterprise 10000 Host)			
Domain 13 (Sun Enterprise 10000 Host)			
Domain 14 (Sun Enterprise 10000 Host)			
Domain 15 (Sun Enterprise 10000 Host)			
Domain 16 (Sun Enterprise 10000 Host)			

TABLE 4-3 Software Configuration Setup Parameters for FIGURE 4-3 *(Continued)*

Platform Name[1]:			
	Host Name	**IP Address**	**Netmask Value**
Control Board 0 (CB0)			
Control Board 1 (CB1)			
SSP (`le0` to private hub 0)			
SSP (`hme0` to customer hub)			
SSP (`hme1` to private hub 1)			
Spare SSP (`le0` to private hub 0)			
Spare SSP (`hme0` to customer hub)			
Spare SSP (`hme1` to private hub 1)			
NIS/NIS+ Domain (if applicable)			
DNS Domain (if applicable)			

1. The platform name is a logical name given to a Sun Enterprise 10000 system. A platform name does not correspond to any host on the network.

TABLE 4-4 Network Configuration Worksheet

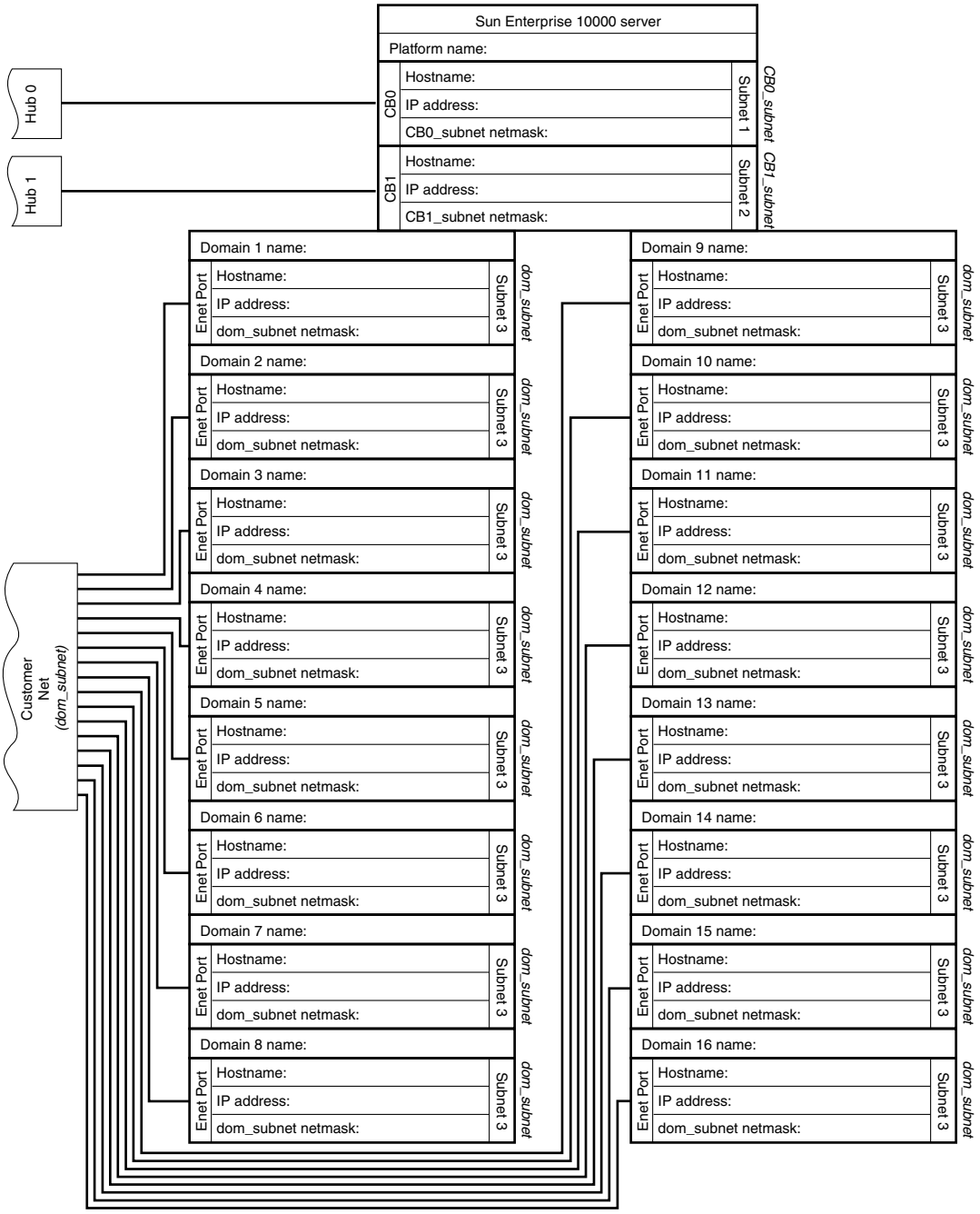


NIS/NIS+ domain name:
DNS domain:
CB0_subnet netmask:
dom_subnet netmask:
CB1_subnet netmask:

Notes:

- Netmasks must be the same within a subnet.
- Each hostname must be unique.
- Each IP address must be unique within the respective subnet.
- Each control board must be on a separate subnet.
- To avoid confusion, for each domain, the domain name and hostname should be the same.

TABLE 4-4 Network Configuration Worksheet *(Continued)*



CHAPTER 5

Site Planning Checklists

Prior to system installation, confirm that the following requirements have been met.

5.1 System Components

- Has the system configuration been determined?
- What is the total number of cabinets?

5.2 Miscellaneous

- Have system administrators and operators completed the necessary Sun Microsystems training course (Sun Enterprise 10000 Systems Administration Course)?
- Is security clearance required for this site? If so, has the local Enterprise Services been notified of the required security level?

Note – Clearances might take several months to obtain; therefore, timely notification is important.

- Was this guide provided to all relevant members of the customer staff for review during the site planning process?

5.3 Environmental Requirements

- Does the computer room environment meet the specifications for temperature and humidity as listed in TABLE 1-1?
- Can the computer room environmental specifications be maintained satisfactorily?
- Does the computer room have its own dedicated cooling system separate from that used for personnel comfort and breathing?

Note – This will be necessary if the power cords and data cables are to be routed in the raised floor air space which is used to distribute cooling air.

5.4 Facility Power Requirements

- Has TABLE 1-4 been completed?
- Is the computer room voltage between 200–240 VAC?
- Have sufficient power receptacles been ordered for the system cabinet and each peripheral cabinet (TABLE 2-3)?
- Are two independent power sources available if Dual Grid Power option is installed?
- Are the power receptacles within 8 ft (2.4 m) of the system cabinet and each peripheral cabinet location?
- Are circuit breakers for the system cabinet and each peripheral cabinet correctly installed and labeled?
- Are the power receptacles for the SSP and network hubs installed and correctly positioned to satisfy power circuit requirements? Are they correctly labeled?

5.5 Physical Specifications

- Has the system location been determined?
- Does the equipment floor layout meet the equipment maintenance access requirements?
- Is the equipment positioned so that the exhaust air of one device does not enter the air inlet of another?
- Are the floor cutouts for the system cabinet and each peripheral cabinet in place?
- Are the suggested perforated floor panels in place?
- Have a table and chair been provided for the SSP?
- Is the floor cutout for the SSP in place?
- Is the computer room floor rated for system floor loading as listed on TABLE 3-1?
- Are all I/O expansion cabinets within the maximum distance permissible for cabling?
- Are all cabinets adjacent to each other? If not, connect the Sun Enterprise 10000 processor cabinet and each peripheral expansion cabinet with the shortest possible path to a common ground.

5.6 System Remote Services

- Has TABLE 4-1 been completed?
- Are dedicated telephone lines or modems for remote maintenance installed in the correct location?
- Have all networking cables been ordered to arrive prior to installation?
- Have all network connections for each configured network controller been ordered?
- Have all IP addresses for each configured network controller been assigned?

5.7 Capacity On Demand

- Is the customer aware that the Sun Enterprise 10000 system requires monitoring through outside email?

- If not, contact Computer Systems Account/Sales Representative and Systems Engineer.
- If email is not possible, notify Enterprise Services to perform on-site inspections of the Capacity On Demand (COD) logs and forward them to the COD alias (`COD_lic@sun.com`).

Note – On-site inspections will be performed on a monthly basis by local Sun Service personnel.

- Is the local SSE familiar with Sun Enterprise 10000 system COD software installation and Sun Enterprise 10000 system service processor for email access?
  - If not, the local SSE must review the *Sun Enterprise 10000 Capacity on Demand Installation Guide and Release Notes* and *Installing and Monitoring Capacity on Demand Systems* prior to COD installation. These documents can be obtained from: `http://esp.west/pubs/starfire_user/coddocs/cod.html`
- Is the internal email network at the customer site capable of routing email from the main and spare SSPs to the Internet?
  - If not, contact Enterprise Services to perform on-site inspections of the COD logs and forward them to the COD alias (`COD_lic@sun.com`).

Note – On-site inspections will be performed on a monthly basis by local Sun Service personnel.

5.8 Access Route Requirements

- Has an access route to the final system location been identified?
- Does the access route satisfy the access requirements outlined in Section 3.4, "Planning Your Access Route" on page 3-10?
- Have provisions been made to cover irregular or engraved floor patterns along the access route to reduce vibration?
- Have personnel been assigned to unload the system during delivery?
- Does the loading dock meet the standard freight truck requirements? Trucks can be between 48 ft (14.6 m) and 61 ft (18.6 m) long, 8.5 ft (2.6 m) wide, and 14 ft (4.3 m) high.
- If the loading dock does not meet the standard freight truck requirements, has a forklift been allocated for delivery?
- Has a truck with a lift gate that can accommodate the crated system (TABLE 3-1) been requested through service liaison (`cs-10k@oregon.west`)?

- Will a pallet jack be available to move the system in its shipping crate to the final system location?
- Does the access route meet the floor-loading requirements for the system?
- Do the pallet jack fork dimensions meet requirements for the shipping crate?
- Are elevator and elevator door dimensions adequate?
- Is the elevator weight capacity adequate?
- Does each ramp in the access route have an incline that is less than 15 degrees?

5.9 Upgrade Planning

- If adding system boards, see TABLE 1-5 and TABLE 2-3.
- If the system currently contains less than eight system boards, and the upgrade will increase the system board number to more than eight, confirm that additional fans, AC input modules, and power supplies have been ordered.
- Have all networking cables, connections, and IP addresses for each configured network controller been assigned?

5.10 Installation Schedule

- Has an installation date been determined?
  Date:
- Who is the customer contact for shipment:
  Name:
  Phone:

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