

Stratus ftServer 3300, 5600, and 6600: Site Planning Guide

Stratus Technologies
R553-01

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Preface

Purpose of This Manual

The *Stratus ftServer 3300, 5600, and 6600: Site Planning Guide* (R553) documents the site requirements and customer responsibilities related to preparing a site for the installation of ftServer systems.

Audience

This manual is intended for those responsible for preparing a site for the installation of ftServer systems.

Revision Information

This manual is a revision.

This revision incorporates the following changes:

- Removes information about the Ultra160 storage enclosure, U571 One-Port 10/100/1000Base-T Ethernet PCI Adapter, and T512 DDS-4 DAT Tape Drive with Autoloader, which can no longer be purchased.
- Describes new uninterruptible power supply (UPS) models available from APC for use with a single ftServer 3300 system and for use with a single ftServer 5600 system.
- Directs you to consider the requirements for the U574 Dual-Port Fiber Gigabit Ethernet Adapters and U575 Dual-Port Copper Gigabit Ethernet Adapters.

Notation Conventions

This document uses the notation conventions described in this section.

Warnings, Cautions, and Notes

Warnings, cautions, and notes provide special information and have the following meanings:



WARNING

A warning indicates a situation where failure to take or avoid a specified action could cause bodily harm or loss of life.



CAUTION

A caution indicates a situation where failure to take or avoid a specified action could damage a hardware device, program, system, or data.

NOTE

A note provides important information about the operation of an ftServer system.

Typographical Conventions

The following typographical conventions are used in ftServer documents:

- The bold font emphasizes words in text or indicates text that you type, the name of a screen object, or the name of a programming element. For example:

Before handling or replacing the clock card, make sure that you are properly grounded by using a grounded wrist strap.

In the **System Properties** dialog box, click the **Hardware** tab.

- The italic font introduces new terms and indicates programming and command-line arguments that the user defines. For example:

Many hardware components are *customer-replaceable units* (CRUs), which can be replaced on-site by system administrators with minimal training or tools.

copy *filename1 filename2*

Getting Help

If you have a technical question about ftServer system hardware or software, try these online resources first:

- **Online support from Stratus Customer Service.** You can find the latest technical information about an ftServer system through online product support at the Stratus Technical Support Web site:

<http://www.stratus.com/support/technics.htm>

- **Online product support for Microsoft® products.** Your primary source for support is the computer manufacturer who provided your software, or an authorized Microsoft Support Provider. You can also find the latest technical information about Microsoft Windows® and other Microsoft products through online product support at the Microsoft Help and Support Web site:

<http://support.microsoft.com/>

If you are unable to resolve your questions with the help available at these online sites, and the ftServer system is covered by a service agreement, please contact the Stratus Customer Assistance Center (CAC) or your authorized Stratus service representative. For information about how to contact the CAC, see:

<http://www.stratus.com/support/cac/>

Your system administrator may have configured a Stratus Support phone number in ftServer Management Console (ftSMC), a snap-in to Microsoft Management Console (MMC). In ftSMC, under **ftServer Configuration**, click **ActiveService Network** to display the node's properties. The properties include a **Stratus Support Phone** item. The value of this property, if configured, is a telephone number you can call for support. For more information about ftSMC, see the *Stratus ftServer System Administrator's Guide* (R014W).

Chapter 1

Welcome to Site Planning for ftServer Systems

For an overview of the information you need to know and the tasks you need to perform to prepare a site for ftServer systems, see:

- [“Site Planning Overview” on page 1-2](#)
- [“Site Planning for Fault-Tolerant Systems” on page 1-3](#)
- [“Site Planning Checklist” on page 1-4](#)
- [“System Documentation” on page 1-7](#)

For detailed site planning information, see:

- [Chapter 2, “Cabinet and Monitor Requirements”](#)
- [Chapter 3, “Space Planning”](#)
- [Chapter 4, “Electrical \(AC\) Power Planning”](#)
- [Chapter 5, “UPS Planning”](#)
- [Chapter 6, “Network and Telephone Line Planning”](#)
- [Chapter 7, “ftServer Rack Configuration Planning”](#)
- [Appendix A, “System Specifications”](#)
- [Appendix B, “Specifications of Peripheral and Storage Components”](#)
- [Appendix C, “Electrical Circuit and Wiring Information”](#)

Site Planning Overview

Site planning for fault-tolerant systems includes:

- [Space planning](#)

Provide adequate space for the system or cabinet and for a desk or table to accommodate components outside a cabinet. Also provide enough space for servicing the systems and components.

- [Purchasing an appropriate cabinet and monitor](#)

If you do not purchase a cabinet from Stratus, ensure that the cabinet you plan to use meets the system's requirements. If you do not purchase a monitor from Stratus, make sure that the monitor you plan to use meets the system's requirements.

- [Electrical \(AC\) power planning](#)

Provide electrical power sources that meet the system's requirements, optionally including a qualified uninterruptible power supply (UPS).

- [Network and telephone line planning](#)

Provide sufficient network and analog telephone lines.

Use the [“Site Planning Checklist” on page 1-4](#) to track your site preparation progress.

For a list of other documents related to your ftServer system, see [“System Documentation” on page 1-7](#).

During the site planning and preparation processes, work closely with your facilities group or contractor to determine space, power, and environmental requirements. Enlist their help to provide a suitable location with sufficient alternating current (AC) power, heating, ventilation & air conditioning (HVAC) capabilities, and network and telephone connections.

If your system is covered by a service agreement and you need help with site planning, contact the Stratus Customer Assistance Center (CAC) or your authorized Stratus service representative. If you have a contract with the CAC or your authorized Stratus service representative to install the system, contact them after you have prepared the installation site and moved the system to the site. For more information about the CAC, see [Getting Help](#) in the Preface or the CAC web site at:

<http://www.stratus.com/support/cac/>

See [Appendix A, “System Specifications”](#) for ftServer system specifications and [Appendix B, “Specifications of Peripheral and Storage Components”](#) for specifications of other components.

Site Planning for Fault-Tolerant Systems

In addition to the usual site planning tasks, such as planning sufficient AC electrical power and providing network connections, consider the following specific fault-tolerant features of ftServer systems:

- Lockstep technology in ftServer systems means that the systems contain redundant hardware.

In the event of a component malfunction, the partner component is an active spare that continues normal operation. The failed component can then be removed and replaced without loss of data or service.

In addition to planning for the duplicated power supplies, fans, and disk drives, often supplied by other servers, plan for replicated core system components including motherboards, processors, memory, I/O buses, and I/O adapters.

Consequently, site planning includes planning for two or three CPU enclosures and for pairs of:

- I/O enclosures
 - Ethernet network ports
 - PCI adapters
 - Power distribution units (PDUs), if used
 - Power receptacles
- ftServer systems can connect to the Stratus ActiveService Network (ASN).

Connecting a system to the ASN allows the CAC or your authorized Stratus service representative to remotely diagnose, troubleshoot, and resolve problems online.

To enable connectivity to the Stratus ActiveService Network (ASN), which allows the CAC or your authorized Stratus service representative to remotely manage the system, the system contains one of the following:

- **An external modem.** With an external modem, ASN connectivity is only possible if the operating system is operational.
- **Two duplexed ftServer Access Adapters.** Systems that contain duplexed ftServer Access Adapters provide the highest level of availability. These adapters connect to the ASN over an internal modem and provide ASN connectivity even when the operating system is not operational. The adapter also allows internal administrators to remotely service the system over an IP network, regardless of the state of the operating system.

Site Planning Checklist

Referring to the information in this document, answer the following questions:

Planning for ActiveService Network Connectivity

- ☐ Will your system use ftServer Access Adapters to connect to the Stratus ASN?
- ☐ If your system uses ftServer Access Adapters, will you connect the adapters to a network so that you can manage the systems from a remote system? Are there maintenance network connections at the site to which you can connect the adapters?
- ☐ Do you have an external analog telephone line available for the external modem or for the modem on the ftServer Access Adapters?

NOTE

A dedicated phone line provides the most reliable service. ASN calls routed through a PBX might be slow due to the load on the PBX, or might not complete successfully due to disconnections. If you must use a PBX, do not route the telephone extension through a switchboard; instead, provide a direct-dial analog number.

- ☐ Do you have an additional telephone line and telephone near the operator's station for voice communications when calling for support?

Planning for Optional Components

- ☐ Will your system connect to external storage enclosures?
 - For connecting to a D540 storage enclosure, the ftServer system contains one or more pairs of U529 Fibre Channel PCI Adapters.
 - For connecting to EMC® CLARiiON® or EMC Symmetrix® storage systems, the ftServer system requires one or two pairs of U525 Optical Fibre Channel PCI Adapters or U526 Optical Fibre Channel PCI Adapters, provided in the AK415 and AK419 Attachment Kits.

- ☐ The system contains two 10/100/1000 megabits-per-second (Mbps) and two 10/100 Mbps Ethernet ports. Will your system additionally include any of the following optional PCI adapters for network communications? If so, indicate how many of each and plan network connections from all Ethernet ports you will use.

Adapter	Number of Adapters
U486 Eight-Port Asynchronous PCI Adapter	
U574 Dual-Port Fiber Gigabit Ethernet Adapter	
U575 Dual-Port Copper Gigabit Ethernet Adapter	

- ☐ Will you supply your own monitor or will you use a monitor supplied by Stratus? Is the monitor rack-mountable or do you need to provide a table or desk?

NOTE _____

Use the USB keyboard and mouse supplied by Stratus.

- ☐ Will your system include any tape drives? Are the tape drives rack-mountable or do you need to provide a table or desk?

Each core I/O enclosure in the ftServer system contains an external SCSI port that you can use to connect the system to tape drives. The system supports up to four tape drives.

- ☐ Will the components in the cabinet include a keyboard-video-mouse (KVM) switch?

Planning AC Power

- ☐ Will you provide power through a power distribution unit (PDU)?
- ☐ Will you provide power to the system through a UPS?
- ☐ What are the AC power requirements of your system, including all optional components?
- ☐ Is the AC power service wired properly?
- ☐ What are the lengths and types of the power cords provided with your system? What type of receptacles do you need to provide?

Planning Space for Your System

- ☐ Will your system and its external components fit where you plan to place them?
- ☐ If you are rack-mounting the system, what is the height of the cabinet you will use and what is the total height of the systems and components that will be installed in the cabinet?
- ☐ What components will be located outside the cabinet?

- ☐ What are the lengths and types of all interface and communication cables provided with your system?
- ☐ Have you created a sketch of how the system will be arranged at the installation site? Consider the available cable lengths, the placement of external devices, and the location of network and voice communication connections.

On the sketch, show the following:

- Location of the system and its external components
- Power cords, and telephone and interface cables
- Locations of AC power receptacles, phone jacks, Ethernet jacks, switches, and/or hubs

NOTE _____

Make sure that all cords and cables are long enough to reach between their respective components and connectors. Route all cables out of the way of foot traffic.

Working with Other Groups

- ☐ Have you provided your facilities group and contractors with the sketch and copies of the following?
 - [Table 4-5](#), [Table 4-6](#), and [Table 4-7](#), which provide worksheets for determining AC power requirements
 - [Tables 4-8 and 4-9](#), or [4-10 and 4-11](#), which provide worksheets for determining power outlet requirements
 - [Appendix C, “Electrical Circuit and Wiring Information”](#)
 - Any notes you have taken about site planning
- ☐ Have you reviewed and discussed the requirements with the facilities personnel and/or contractors to ensure that all site modifications are understood and implemented?

If you have any questions about the number and types of components, contact your Stratus account executive or distributor.

System Documentation

When you receive your system, you will receive a printed copy of the *Stratus ftServer 3300: Installation Guide* (R528), *Stratus ftServer 5600: Installation Guide* (R539), or *Stratus ftServer 6600: Installation Guide* (R542).

You can order additional copies of the system documentation set, consisting of these printed documents and the StrataDOC ftServer CD (part number R002FCDK).

The part numbers of the documentation sets are:

- R1200W for the ftServer 3300 system documentation set
- R1300W for the ftServer 5600 system documentation set
- R1400W for the ftServer 6600 system documentation set

To order the documentation set, customers in North America can call the CAC at (800) 221-6588 or (800) 828-8513, 24 hours a day, 7 days a week. Customers outside North America can contact the nearest Stratus Sales office, CAC office, or distributor.

The software installation program installs these and other documents in online formats on the ftServer system, and optionally, on a remote system. On the ftServer Windows desktop, the **ftServer Help and Manuals** folder contains the ftServer documents.

To gain access to the documents on the World Wide Web, point your browser to the [ftServer StrataDOC Web site](http://stratadoc4ftserver.stratus.com):

<http://stratadoc4ftserver.stratus.com>

Table 1-1 lists ftServer documents and the tasks described in each document.

Table 1-1. ftServer Documents

Document	Task
<i>Stratus ftServer 3300, 5600, and 6600: Site Planning Guide</i> (R553)	Prepare a site for installation of a system
<i>Stratus ftServer 3300: Installation Guide</i> (R528) <i>Stratus ftServer 5600: Installation Guide</i> (R539) <i>Stratus ftServer 6600: Installation Guide</i> (R542)	Install a system, including mounting the system in a cabinet Find the part number of a customer-replaceable unit (CRU) Respond to Mini-Setup questions on your new ftServer system Install ftServer System Software and Windows server software on your new ftServer system

Table 1-1. ftServer Documents (Continued)

Document	Task
<i>Stratus ftServer 3300: Operation and Maintenance Guide</i> (R527)	Start up, shut down, and operate a system
<i>Stratus ftServer 5600: Operation and Maintenance Guide</i> (R538)	Troubleshoot system hardware
<i>Stratus ftServer 6600: Operation and Maintenance Guide</i> (R545)	Remove and replace CRUs
<i>Release Notes: Stratus ftServer System Software</i> (R004W)	Learn the contents of the latest ftServer System Software release
	Learn the latest information about the product
	Learn about significant known problems and how to work around or avoid the problems
<i>Stratus ftServer Software Installation and Configuration Guide</i> (R002W)	Respond to Mini-Setup questions
	Install or reinstall ftServer System Software and Windows
	Upgrade software and BIOS, BMC, and ftServer Access Adapter firmware
	Configure ftServer System Software
	Connect a UPS to an ftServer system
<i>Stratus ftServer: ActiveService Network Configuration Guide</i> (R013W)	Configure the ftServer system for support by the Stratus ASN
	Install the ASN support modem or configure the ftServer Access Adapters
<i>Stratus ftServer Access User's Guide</i> (R003W)	Configure and use ftServer Access Console to remotely control, monitor, and troubleshoot an ftServer system
<i>Stratus ftServer System Administrator's Guide</i> (R014W)	Use tools provided in Windows or by Stratus and other vendors to manage the system
	Use ftServer Management Console (ftSMC) to administer or troubleshoot an ftServer system
<i>Stratus ftServer Software Availability Manager User's Guide</i> (R007W)	Monitor the performance of critical ftServer system components and the status of user applications

Table 1-1. ftServer Documents *(Continued)*

Document	Task
<i>Stratus ftServer: PCI Adapter Guide</i> (R461)	Install, configure, replace, or troubleshoot PCI adapters
<i>Stratus ftServer: Technical Reference Guide</i> (R550)	Consult technical reference information for ftServer systems
<i>Stratus ftServer: D540 Storage Enclosure Connection Guide</i> (R554)	Connect a D540 storage enclosure to an ftServer system

Commenting on the Documentation

Stratus welcomes any corrections and suggestions for improving its documentation. Send your feedback in one of the following ways:

- By clicking the site feedback link at the bottom of a Help topic. Information to identify the topic is supplied in the StrataDOC Web Site Feedback form.
- By email to Comments@stratus.com. If it is possible, please include specific information about the documentation on which you are commenting:
 - For a printed document or a document in PDF format, include the title and part number from the Notice page and the page numbers.
 - For online documentation, include the Help subject and topic title.

This information will assist Stratus Publications in making any needed changes to the ftServer documentation. Your assistance is most appreciated.

Chapter 2

Cabinet and Monitor Requirements

For requirements related to supplying your own cabinet and monitor for use with ftServer systems, see:

- [“Rack Requirements” on page 2-1](#)
- [“Monitor Requirements” on page 2-4](#)

Rack Requirements

If you are providing your own cabinet for the ftServer system, make sure the cabinet contains a 19-in. wide rack that meets the Electronic Industries Association (EIA) 310-D standard.

For ftServer 6600 systems, use a cabinet that is either 24U or 38U high.

For ftServer 3300 and 5600 systems, use a cabinet that is either 25U or 42U high.

Cabinet Requirements for ftServer 3300, 5600, and 6600 Systems

Make sure that:

- The cabinet contains two front and two rear vertical EIA rails, one in each corner of the cabinet, that have the EIA universal square-hole pattern as defined in the EIA 310-D specification.
- The front vertical rails extend at least 0.5 in. (1.27 cm) beyond the inside edge of the accessory leg, if present, to allow the mounting rails to be fitted. See [Figure 2-1](#).
- The distance between the front vertical rails and the inside of the front door is at least 3.0 in. (7.62 cm).
- The distance between the rear of the system chassis and the inside of the rear door is at least 6.0 in. (15.24 cm).
- The vertical mounting rails are plated or some other method is used to ensure continuity for grounding between installed equipment.
- Cable management brackets are provided to support and constrain data and power cords so that the cables do not interfere with air flow out of the rear of the enclosures, and so that the connectors do not disconnect or break.

- The cabinet provides enough stability so that system components pass Telcordia GR-63-CORE Section 5.4.2 regulations for operational vibration.
- To prevent stray voltages, all components are grounded together through the vertical mounting rails to the cabinet frame, and then to ground and also to local building ground. To ensure signal quality, use a grounding cable provided by Stratus for local building ground.
- There is a plan for maintaining cables and wires to the cabinet by either running them under the floor or placing them overhead in a power bus.
- Air flows through the cabinet from front to back.
- Air does not recirculate within the cabinet.
- Filler panels cover any unused rack space to prevent air recirculation.
- Vents are evenly distributed on the front and rear doors and comprise at least 63% of the surface area.

NOTE _____

If your cabinet does not have vented front and rear doors, you can remove the doors from the cabinet while the ftServer system is operating.

Additional Cabinet Requirements for ftServer 6600 Systems

Make sure that:

- A 24U cabinet can support at least 900 lb (410 kg) to support [allowed configurations and components](#) for a 24U cabinet.
- A 38U cabinet can support at least 1100.00 lb (500 kg) to support allowed configurations and components for a 38U cabinet.
- The distance between the front and rear vertical rails is 27 in. (68.58 cm).
- The vertical mounting rails accept 10/32 screws.

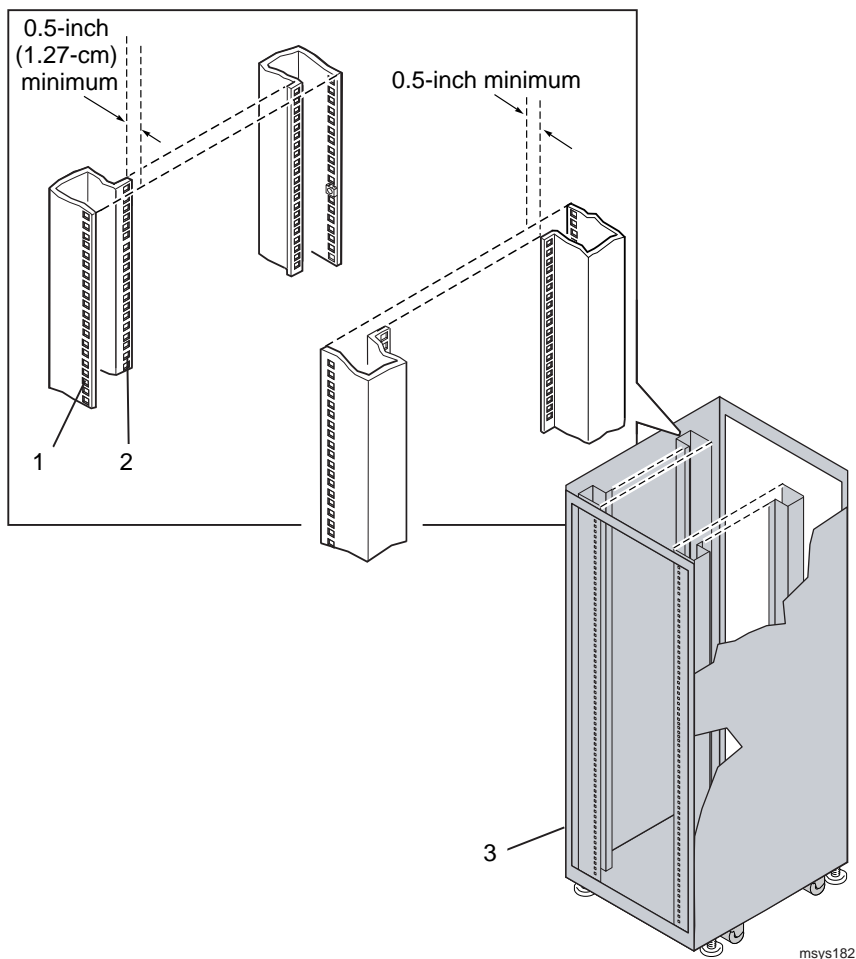
Additional Cabinet Requirements for ftServer 3300 and 5600 Systems

Make sure that:

- The distance between the front and rear vertical rails is between 25 in. and 30 in. (63.50 cm and 76.20 cm).
- The vertical mounting rails accept M-5 cage nuts and mounting hardware.

Figure 2-1 shows the required rail clearance between the front vertical rails and the inside edge of an accessory leg.

Figure 2-1. Rail Clearance



- 1 Front vertical EIA rail
- 2 Accessory leg
- 3 Front of cabinet

Monitor Requirements

If you are using a monitor that is not supplied by Stratus, make sure that:

- The monitor accepts universal 100–240 VAC, 50–60 Hz power.
- The VGA cable has a 15-pin D-sub connector.
- The power cord for the monitor is long enough to reach the power source.
- The plug type on the power cord is compatible with the external power source at the site.

Use the keyboard and mouse provided by Stratus.

Chapter 3

Space Planning

For information about planning sufficient space for your ftServer system, see:

- [“Room Requirements” on page 3-1](#)
- [“Planning for Cables” on page 3-2](#)

Room Requirements

If you have ordered an ftServer 6600 system already assembled in a Stratus cabinet, see [Table A-1](#), which provides the dimensions of the 24U and 38U cabinets. Otherwise, determine the dimensions of the cabinet in which you will install the system.

To ensure that the installation site provides a properly equipped, cooled, and sized environment, make sure that the site:

- Provides clearances for air circulation and servicing the system
Locate the front and rear of the system at least 2.5 ft (0.76m) away from walls and other obstructions.
- Maintains reasonable temperature and humidity levels and has a thermometer and humidistat to monitor room temperature and humidity
- Is as free of dust as possible
Dust buildup in the system can impede air circulation and heat transfer, causing components to become less reliable as the ambient temperature rises.
- Provides a table or desktop for external devices such as a telephone, tape drives, and an external monitor or LCD monitor, keyboard, and mouse
- Provides cutouts in the floor for routing cables, if the site has an elevated floor



CAUTION

Do not place the system in an area of high electrostatic discharge. Static electricity may damage components. Do not locate components near transformers or other electromagnetic devices.

Planning for Cables

To accommodate cables from the ftServer system, make sure to provide:

- Two telephone lines:
 - One telephone line for use when calling for service
 - One telephone line for the ASN modem or for the modem in the ftServer Access Adapters
- Ethernet jacks, switches, or hubs as needed
- Two electrically separate grounded AC wall outlets, or a UPS and a wall outlet, within reach of the power cords from the system or PDUs and any components that do not connect to a PDU

Make sure that any cables you plan to connect to the system are long enough to reach between the system and external components or connections. [Table 3-1](#) lists the cables Stratus supplies and, for space planning, specifies the lengths of each cable.

Table 3-1. Cables Supplied by Stratus

Component	Cable Description	Length
V128 1U flat-panel LCD monitor with integrated keyboard and trackpad	One VGA cable attached to the LCD monitor and which connects to the VGA port in the I/O panel	72 in. (183 cm)
	One USB cable attached to the LCD monitor and which connects to another USB cable, which is connected to the system	72 in. (183 cm)
V129 table top LCD monitor	One VGA cable attached to the LCD monitor and which plugs into the VGA port in the I/O panel	72 in. (183 cm)
	One USB cable attached to the keyboard and which plugs into a USB port in the I/O panel	72 in. (183 cm)
	One USB cable attached to the mouse and which plugs into the keyboard USB hub	72 in. (183 cm)
T521 or T522 rack-mounted tape drive enclosure	One SCSI-3 high-density cable with one 0.8 mm VHDC connector and 68-pin SCSI-3 connector, which connects to the SCSI port on the back of the I/O enclosure.	10 ft (305 cm)
First T511 or T513 external tape drive	One SCSI-3 high-density cable with one 0.8 mm VHDC connector and 68-pin SCSI-3 connector, which connects to the SCSI port on the back of the I/O enclosure.	10 ft (305 cm)
		30 ft (915 cm)

Table 3-1. Cables Supplied by Stratus (Continued)

Component	Cable Description	Length
Second tape drive in a T522 tape drive enclosure, or second T511 or T513 external tape drive	One SCSI-3 daisy chain cable with a 68-pin SCSI-3 connector at each end	3 ft (91.5 cm)
U486 Eight-Port Asynchronous PCI Adapter (optional)	One eight-port fan-out cable with DB-25 connectors	72 in. (183 cm)
		32.5 ft (10m)
ftServer Access Adapters	One Y-style modem cable that connects two modem cables to a phone jack.	10 ft (305 cm)
	One modem extension cable Global adapters are provided in the localization kit.	7 ft (2.2m)
External modem	One serial cable	N/A
	One phone cable with RJ11 connectors (for use in the United States and Canada) Global adapters are provided in the localization kit.	N/A
Cabinet ground leakage cable	10AWG ground leakage cable with 1/4 in. (6.35 mm) and M8 ring lugs	15 ft (4.6m)

Chapter 4

Electrical (AC) Power Planning

For information about planning appropriate AC electrical power for your ftServer systems, see:

- [“Redundant Power Sources” on page 4-1](#)
- [“AC Power Service Requirements” on page 4-2](#)
- [“Power Outlet Requirements” on page 4-5](#)
- [“Connecting a System Directly to Two Separate Power Sources” on page 4-7](#)
- [“Stratus-Supplied Power Cords” on page 4-9](#)

Related Topics

- [Chapter 5, “UPS Planning”](#)
- [Chapter 7, “ftServer Rack Configuration Planning”](#)

Redundant Power Sources

ftServer systems and storage enclosures require at least two separate and independent AC power sources: an *A-side* power source and the *B-side* power source. Either side must be capable of continuing to provide power if power to the other side is lost.

The A-side power source provides power to each system and to one half of each storage enclosure, as well as to components that do not require two sources of power: a modem, tape drive, or monitor. If you use a universal power supply (UPS), the UPS is the A-side power source.

The B-side power source also provides power to each system, in stand-by mode (the B-side power source is used if power to the A-side source is interrupted), and provides power to the other half of each storage enclosure.

The wattage required from the A-side power source will always be equal to or greater than the wattage required from the B-side power source.

AC Power Service Requirements

Tables 4-3 through 4-4 describe the nominal AC input line voltage – volts (V), and frequency (Hz) required for ftServer systems and optional components, and specify the receptacle you must provide at the site for each item or provide a reference to a table that lists the receptacles you must provide.

Table 4-1. ftServer 6600 Systems: AC Power Service Requirements

Component	Nominal Input Voltage; Frequency Range	Receptacle
System	200–240V; 50–60 Hz Locking receptacle	See Table 4-12 .
PDU	200–240V; 50–60 Hz	NEMA L6-30 or IEC 309 32A

Table 4-2. ftServer 5600 Systems: AC Power Service Requirements

Component	Nominal Input Voltage; Frequency Range	Receptacle
Single system in North America or Japan without using PDUs	100–127V; 50–60 Hz	NEMA 5-15
All other installations	200–240V; 50–60 Hz High leakage current	See Table 4-14 .
PDU	200–240V; 50–60 Hz	See Table 4-22 .

Table 4-3. ftServer 3300 Systems: AC Power Service Requirements

Component	Nominal Input Voltage; Frequency Range	Receptacle
Pedestal system or Rack-mountable system that does not connect to a PDU	100–127V; 50–60 Hz	See Table 4-16 .
Pedestal system	100–127V; 50 Hz	For Japan, NEMA 5-15. For other countries, see Table 4-17 .
Rack-mountable system	200–240V; 50 Hz	
Rack-mountable system that does not connect to a PDU	100–127V; 50 Hz 200–240V; 50 Hz	For Japan, NEMA 5-15. For other countries, see Table 4-17 .

Table 4-3. ftServer 3300 Systems: AC Power Service Requirements *(Continued)*

Component	Nominal Input Voltage; Frequency Range	Receptacle
Rack-mountable system that does not connect to a PDU	200–240V; 50–60 Hz High leakage current	See Table 4-17 or Table 4-18 .
PDU	200–240V; 50–60 Hz	See Table 4-22 .

Table 4-4. Optional Components: AC Power Service Requirements

Component	Nominal Input Voltage; Frequency Range	Receptacle
V129 LCD monitor	90–265V; 47–63 Hz	See Table 4-25 .
V128 LCD monitor	90–265V; 47–63 Hz	See Table 4-25 .
KVM switch	90 to 264V; 47–63 Hz	See Table 4-25 .
D540 storage enclosure	100–240V; 50–63 Hz	See Table 4-25 .
T521 and T522 rack-mounted tape drive enclosure	100–250V; 47–60 Hz	See Table 4-25 .
T511 and T513 external tape drives .	110–240V; 50–60 Hz	See Table 4-25 .
External modem power transformer	100–240V; 50–60 Hz	See Table 4-26 .

**WARNING**

The power cords for ftServer 6600 systems have locking connectors. Use locking connectors to ensure that excess current is safely conducted to ground.

**WARNING**

When ftServer 3300 or 5600 systems operate at voltages greater than 120V, the systems have high leakage current (greater than 3.5 mA). Stratus ships power cords with locking connectors for voltages higher than 120V. These locking connectors ensure that the excess current is safely conducted to ground.

Use the following worksheets to determine AC power requirements for the site.

- In [Table 4-5](#), determine the power requirements at the A-side power source.
- In [Table 4-6](#), determine the power requirements at the B-side power source.
- In [Table 4-7](#), determine the power requirements for components outside of the cabinet. These components can share a power source with the A-side or B-side components.

The power service must be properly wired and grounded according to local standards and regulations. See [Appendix C](#) for electrical circuit and wiring information.

To determine power receptacle requirements

1. In the Quantity column, write the number of each type of component.
2. Multiply the entry in the Quantity column by the number in the @ Power (Watts) column, and enter the result in the AC Power (Extended) column.
3. Add the values in the AC Power (Extended) column, and enter the sum on the bottom line. This value indicates the maximum power requirement for each power source.

Table 4-5. Worksheet for Determining A-Side Power Requirements

System Component	Quantity		@ Power (Watts)		AC Power (Extended)
ftServer 6600 system		x	1300	=	
ftServer 5600 system		x	650	=	
ftServer 3300 system		x	500	=	
D540 storage enclosure		x	300	=	
V128 1U LCD unit		x	21	=	
KVM switch		x	20	=	
T521 and T522 tape drive enclosure		x	500		
TOTAL A-SIDE POWER REQUIREMENTS					

Table 4-6. Worksheet for Determining B-Side Power Requirements

System Component	Quantity		@ Power (Watts)		AC Power (Extended)
ftServer 6600 system		x	900	=	
ftServer 5600 system		x	650	=	
ftServer 3300 system		x	500	=	
D540 storage enclosure		x	300	=	
TOTAL B-SIDE POWER REQUIREMENTS					

Table 4-7. Worksheet for Determining External Power Requirements

System Component	Quantity		@ Power (Watts)		AC Power (Extended)
V129 LCD monitor and V115 keyboard and mouse		x	30	=	
T511 tape drive		x	21	=	
T513 tape drive		x	56	=	
External modem power transformer		x	5	=	
User-supplied components					
TOTAL EXTERNAL POWER REQUIREMENTS					

Power Outlet Requirements

If you use a pair of PDUs in the cabinet, use Tables 4-8 and 4-9 to determine the total number of power outlets required **outside the cabinet**.

1. In the Quantity column, write the number of each type of component.
2. Multiply the value in the Quantity column by the value in the Outlets column, and enter the total in the Subtotal column.
3. Add the values in the Subtotal column and enter the sum next to TOTAL NUMBER OF EXTERNAL POWER OUTLETS.

Table 4-8. Worksheet: A-Side External Power Outlet Requirements - PDUs Used

Component	Quantity		Outlets	Subtotal
PDUs		x	2	
External monitors		x	1	
External tape drive		x	1	
Other external components				
TOTAL NUMBER OF A-SIDE POWER OUTLETS				

Table 4-9. Worksheet: B-Side External Power Outlet Requirements - PDUs Used

Component	Quantity		Outlets	Subtotal
PDUs		x	2	
External monitors		x	1	
External tape drive		x	1	
Other external components				
TOTAL NUMBER OF B-SIDE POWER OUTLETS				

If you do not use PDUs in the cabinet, use Tables [4-10](#) and [4-11](#) and to determine the number of power outlets required **outside the cabinet**.

1. In the Quantity column, write the number of each type of component.
2. Multiply the value in the Quantity column by the value in the Outlets column, and enter the total in the Subtotal column.
3. Add the values in the Subtotal column and enter the sum next to TOTAL NUMBER OF EXTERNAL POWER OUTLETS.

Table 4-10. Worksheet: A-Side External Power Outlet Requirements - No PDUs

Component	Quantity		Outlets	Subtotal
Systems		x	1	
Monitors		x	1	
Storage enclosures		x	1	
T521 and T522 tape drives		x	1	
TOTAL NUMBER OF A-SIDE POWER OUTLETS				

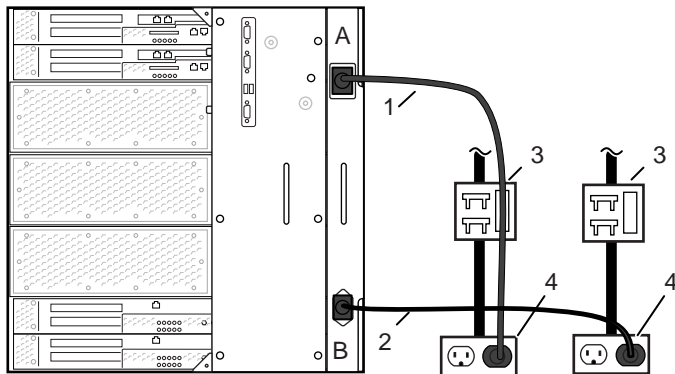
Table 4-11. Worksheet: B-Side External Power Outlet Requirements - No PDUs

Component	Quantity		Outlets	Subtotal
Systems		x	1	
Monitors		x	1	
Storage enclosures		x	1	
T521 and T522 tape drives		x	1	
TOTAL NUMBER OF B-SIDE POWER OUTLETS				

Connecting a System Directly to Two Separate Power Sources

If you do not connect the ftServer system or PDUs to a UPS, provide two AC power sources that are as electrically independent of each other as the installation site allows. At a minimum, the two power sources must be powered by separate circuit breakers to an AC power and, if possible, be independent of each other beyond that level. The more electrical separation between the two power sources, the less likely they will both fail at the same time. Due to redundancy in ftServer systems, power to either side of the system keeps duplexed components of the system in operation.

Figure 4-1 shows the power connections for an ftServer 6600 system directly connected to two separate AC power sources.

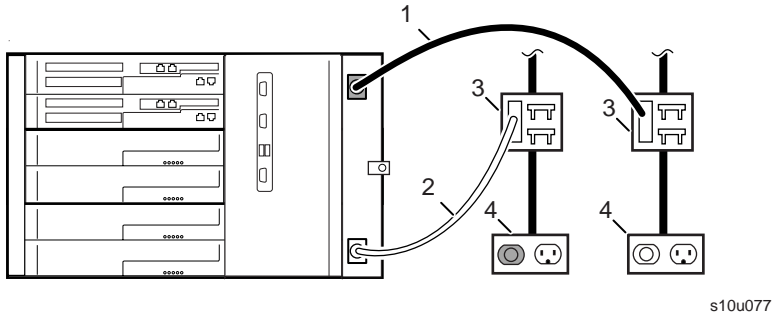
Figure 4-1. ftServer 6600 System Connected Directly to AC Power

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- | | | | |
|---|--------------------------|---|---------------------------------------|
| 1 | A-side system power cord | 3 | AC power distribution circuit breaker |
| 2 | B-side system power cord | 4 | AC power outlet |

Figure 4-2 shows an ftServer 5600 system directly connected to two separate AC power sources. The connections for rack-mountable ftServer 3300 systems are identical.

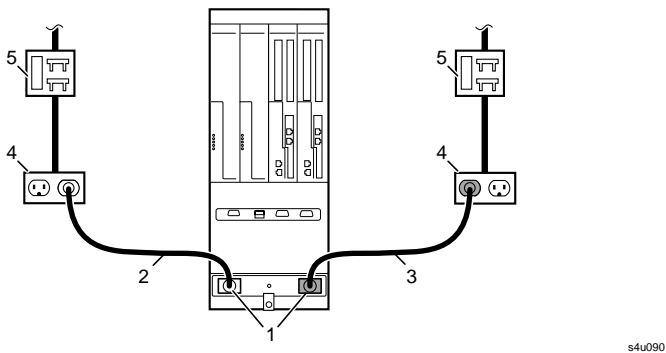
Figure 4-2. ftServer 5600 System Connected Directly to AC Power



- 1 B-side power cord
- 2 A-side power cord
- 3 AC power distribution circuit breaker
- 4 AC power outlets

Figure 4-3 shows the power connections for a pedestal ftServer 3300 system connected directly to two separate power sources.

Figure 4-3. Pedestal ftServer 3300 Systems Connected Directly to AC Power



- 1 System power receptacles
- 2 A-side system power cords
- 3 B-side system power cords
- 4 AC power outlet
- 5 AC power distribution circuit breaker

Stratus-Supplied Power Cords

Stratus supplies power cords for:

- [ftServer 6600 systems](#)
- [ftServer 5600 systems](#)
- [ftServer 3300 systems](#)
- [PDUs for ftServer 6600 systems](#)
- [PDUs for ftServer 3300 and 5600 systems](#)
- [Monitors, KVM switches, tape drives, and storage enclosures](#)
- [External modems](#)



WARNING

Place all power cords out of the way of foot traffic.

ftServer 6600 System Power Cords

[Table 4-12](#) lists the power cords that connect ftServer 6600 systems, which are rated at 200–240V and 50–60 Hz, directly to AC power. The first marketing ID in each pair is the power cord for the A-side; the second marketing ID is the power cord for the B-side.

NOTE

You cannot directly connect an ftServer 6600 system to a UPS. You connect the system to a PDU, and use the power cord permanently attached to the PDU to connect it to a UPS.

Table 4-12. ftServer 6600 System Power Cord Sets

Locale	Voltage Rating	Current Rating	Plug Type	Length	Marketing ID
North America and Japan	250V	20A	NEMA L6-20	15 ft (4.5m)	B50171-45M
					B50170-45M
Other	250V	16A	IEC 309	4.5m	B50154-45M
					B50153-45M

ftServer 5600 System Power Cords

Tables 4-13 and 4-14 list the power cords that connect ftServer 5600 systems directly to an AC power source (not to a PDU or to a UPS).

Table 4-15 lists the power cords that connect ftServer 5600 systems to APC Smart-UPS or APC Symmetra UPS models.

Table 4-13. ftServer 5600 System Power Cords: 100–127V and 50–60 Hz

Locale	Plug Type	Current Rating	Length	Marketing ID
North America (Chicago)	NEMA 5-15	15A	7 ft	B50101-07
North America Domestic	NEMA 5-15	15A	15 ft	B50104-15
Japan	NEMA 5-15	15A	15 ft (4.5m)	B50160-15

Table 4-14. ftServer 5600 System Power Cords: 200–240V and 50–60 Hz

Locale	Plug Type	Current Rating	Length	Marketing ID
International	NEMA L6-20	20A	4.5m	B50161-45M
International	IEC 309	16A	4.5m	B50153-45M

Table 4-15. ftServer 5600 System: Power Cords to Connect a System to a UPS

Locale	Voltage Rating	Plug Types	Marketing ID
North America	120V	IEC 320 C13 to NEMA 5-15	B50104-15
North America	208V	IEC 320 C13 to NEMA L6-20	B50161-45M
International	250V	IEC 320 C13 to IEC 320 C14	B50301-35M
Japan	120V	IEC 320 C13 to NEMA 5-15	B50104-15
Japan	200V	IEC 320 C13 to NEMA L6-20	B50161-45M

ftServer 3300 System Power Cords

Tables 4-16, 4-17, and 4-18 list the power cords that connect ftServer 3300 systems directly to an AC power source (not to a PDU or to a UPS).

Table 4-19 lists the power cords that connect ftServer 3300 systems to APC Smart-UPS and APC Symmetra UPS models.

Table 4-16. ftServer 3300 System Power Cords: 100–127V and 50–60 Hz

Locale	Plug Type	Current Rating	Length	Marketing ID
North America (Chicago)	NEMA 5-15	15A	7 ft	B50101-07
North America Domestic	NEMA 5-15	15A	15 ft	B50104-15
Japan	NEMA 5-15	15A	15 ft (4.6m)	B50160-15

Table 4-17. ftServer 3300 System Power Cords: 200–240V and 50 Hz

Locale	Plug Type	Current Rating	Length	Marketing ID
Australia	AS/NZS 3112:1993	10A	4.5m	B50124-45M
Continental Europe	CEE 7 VII	16A	4.5m	B50112-45M

Table 4-17. ftServer 3300 System Power Cords: 200–240V and 50 Hz *(Continued)*

Locale	Plug Type	Current Rating	Length	Marketing ID
Great Britain	BS 1363/A	13A	4.5m	B50116-45M
Israel	SI 32:1971	16A	4.5m	B50132-45M
Italy	CEI23-16	10A	4.5m	B50136-45M
Switzerland	1011-S24507	10A	4.5m	B50140-45M
South Africa/India	SABS164-1:1992 ZA/3	13A	4.5m	B50152-45M

Table 4-18. ftServer 3300 System Power Cords: 200–240V and 50–60 Hz

Locale	Plug Type	Current Rating	Length	Marketing ID
International	NEMA L6-20	20A	4.5m	B50161-45M
International	IEC 309	16A	4.5m	B50153-45M

Table 4-19. ftServer 3300 Systems: Power Cords to Connect Systems to a UPS

Locale	Voltage Rating	Plug Types	Marketing ID
North America (Chicago)	120V	IEC 320 C13 to NEMA 5-15	B50104-15
North America Domestic	250V	IEC 320 C13 to NEMA L6-20	B50161-45M
International	250V	IEC 320 C13 to IEC 320 C14	B50301-35M
Japan	120V	IEC 320 C13 to NEMA 5-15	B50104-15
Japan	200V	IEC 320 C13 to NEMA L6-20	B50161-45M

ftServer 6600 Systems: PDU Power Cords

The AA-P41105 PDU supplies power to ftServer 6600 systems. [Table 4-20](#) describes the permanently attached power cords that supply power to the AA-P41105 PDU. These cords are 12 ft (3.7m) long.

Table 4-20. PDU Power Cords

Locale	Voltage Rating	Current Rating	Plug Type	Marketing ID
United States	250V	30A	NEMA L6-30	P41105
International	250V	30A	IEC 308	P41105-I
Japan	250V	30A	NEMA L6-30	P41105-J

Also permanently attached to the PDU are two power cables that connect the PDU to A-side power connectors on ftServer 6600 systems.

PDU power cables connect the PDU to B-side power connectors on ftServer 6600 systems; to both sides of storage enclosures; and to tape drives, V128 1U LCD monitor units, and KVM switches. [Table 4-21](#) lists these power cables.

Table 4-21. ftServer 6600: Power Cables to Connect Components to the PDUs

Use	Color	Voltage Rating	Plug Types	Length	Marketing ID
A-side, except system	Gray	250V	IEC 320 C13 to IEC 320 C14	6.5 ft. (2.0m)	B50502-02M
B-side	Black	250V	IEC 320 C13 to IEC 320 C14	6.5 ft. (2.0m)	B50503-02M

ftServer 3300 and 5600 Systems: PDU Power Cords

The AA-P41104 PDU supplies power to ftServer 3300 and 5600 systems. [Table 4-22](#) lists the power cords that connect the AA-P41104 PDUs directly to an AC power source. These power cords are rated at 200–240V and 50–60 Hz.

[Table 4-23](#) lists power cords that connect the AA-P41104 PDUs to the APC Smart-UPS and APC Symmetra UPS models. These power cords are supplied for ftServer 3300 systems.

[Table 4-24](#) lists power cords that connect the AA-P41104 PDUs to the APC Smart-UPS and APC Symmetra UPS models. These power cords are supplied for ftServer 5600 systems.

Table 4-22. ftServer 3300 and 5600 Systems: Power Cords to Connect PDUs to AC Power

Locale	Plug Type	Current Rating	Length	Marketing ID
United States	NEMA L6-20	20A	15 ft	B50155-45M
United States	NEMA L6-30 (Receptacle must be fused at no more than 20A)	30A	15 ft	B50156-45M
International	IEC 309	20A	15 ft (4.6m)	B50154-45M

Table 4-23. ftServer 3300 Systems: Power Cords to Connect PDUs to a UPS

Locale	Voltage Rating	Plug Types	Marketing ID
N. America	250V	IEC 320 C19 to NEMA L6-20	B38009
International	250V	IEC 320 C19 to IEC 320 C14	B38003
Japan	250V	IEC 320 C19 to NEMA L6-20	B38009

Table 4-24. ftServer 5600 Systems: Power Cords to Connect PDUs to a UPS

Locale	Voltage Rating	Plug Types	Marketing ID
North America	208V	IEC 320 C19 to NEMA L6-20	B50155-45M
International	250V	IEC 320 C19 to IEC 320 C13	B38003
Japan	250V	IEC 320 C19 to NEMA L6-20	B50161-45M

Power Cords for Monitors, KVM Switches, and Tape Drives

Table 4-25 lists the specifications of the power cords that connect monitors, KVM switches, and tape drives directly to external AC power sources.

Table 4-25. Monitor, KVM Switch, and Tape Drive Power Cords

Locale	Voltage Rating	Current Rating	Plug Type	Length	Marketing ID
United States	120V	15A	NEMA 5-15	15 ft	B50104-15
Japan	100V	15A	NEMA 5-15	15 ft (4.5m)	B50160-15M
Continental Europe	250V	10A	CEE 7 VII	4.5m	B50112-45M
United Kingdom	250V	10A	BS1363; A:BS89	4.5m	B50116-45M
Australia and New Zealand	250V	10A	AS/NZS 3112:1993; SAA/3	4.5m	B50124-45M
Israel	250V	10A	SI 32:1971; IL3/G	4.5m	B50132-45M
Italy	250V	10A	CEI23-16; I3/G	4.5m	B50136-45M
Switzerland	250V	10A	1011-S24507; 12G	4.5m	B50140-45M
India and South Africa	250V	10A	SABS164-1:1992; ZA/3	4.5m	B50152-45M

Power Cords for External Modems

Table 4-26 lists the specifications of the power cords that connect the external modem to an external AC power source.

Table 4-26. External Modem Power Cords

Locale	Description	Length	Marketing ID
Brazil, Canada, Japan, Mexico, Philippines, Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Panama, Saudi Arabia, Venezuela, Taiwan, United States	120V/15A, plug type NEMA 5-15	6 ft (1.83m)	AK-000369
Argentina, Chile, China, Cyprus, Czech Republic, Greece, Hong Kong, Hungary, Indonesia, Korea, Liechtenstein, Luxembourg, Poland, Portugal, Bahrain, Egypt, Estonia, Israel, Ivory Coast, Jordan, Kuwait, Malaysia, Oman, Pakistan, Paraguay, Peru, Qatar, Slovak Republic, Slovenia, South Africa, Thailand, Ukraine, United Arab Emirates, Uruguay, Yemen, Russia, Singapore, Spain, Turkey	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000370
Australia	250V/10A, plug type AS/NZS 3112:1993	6.5 ft (2.0m)	AK-000371
Austria	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000372
Belgium	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000373
Denmark	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000374
Finland, Norway	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000375
France, Morocco	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000376
Germany	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000377
Iceland, Sweden	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000378
India	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000379

Table 4-26. External Modem Power Cords *(Continued)*

Locale	Description	Length	Marketing ID
United Kingdom, Ireland	250V/10A, plug type BS1363/A	6.5 ft (2.0m)	AK-000380
Italy	250V/10A, plug type CEI 23-16	6.5 ft (2.0m)	AK-000381
Netherlands	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000382
New Zealand	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000383
Switzerland	250V/10A, plug type CEE 7 VII	6.5 ft (2.0m)	AK-000384

Chapter 5

UPS Planning

For information about planning for a uninterruptible power supply (UPS) to use with your ftServer systems, see:

- [“Qualified APC UPS Models” on page 5-1](#)
- [“Communicating with a UPS over a Network” on page 5-5](#)
- [“Connecting the A-Side PDU to a UPS” on page 5-6](#)
- [“Connecting ftServer Systems Directly to a UPS” on page 5-9](#)

Qualified APC UPS Models

Stratus has qualified certain UPS models from American Power Conversion Corporation (APC) for use with ftServer systems.

For a list the qualified UPS models for ftServer 3300, 5600, and 6600 systems, see one of the following:

- [“APC UPS Models for Use with ftServer 6600 Systems” on page 5-2](#)
- [“APC UPS Models for Use with a Single ftServer 5600 System” on page 5-4](#)
- [“APC UPS Models for Use with Multiple ftServer 3300 and 5600 Systems” on page 5-4](#)
- [“APC UPS Models for Use with a Single ftServer 3300 System” on page 5-5](#)

NOTE

Site planning information for the UPS, which you must supply, is of a general nature only. Do not rely exclusively on the UPS information in this document. [Contact APC](#) at <http://www.apcc.com> for detailed UPS specifications, documentation, and ordering information.

APC UPS Models for Use with ftServer 6600 Systems

[Table 5-1](#) lists the APC Symmetra® rack-mountable (RM) UPS models to use with ftServer 6600 systems in North America.

[Table 5-2](#) lists the APC Symmetra RM UPS models to use with ftServer 6600 systems in Japan.

[Table 5-3](#) lists the APC Symmetra RM UPS models to use with ftServer 6600 systems in all other regions.

[Table 5-4](#) lists the APC Symmetra tower UPS models to use with ftServer 6600 systems.

The output rating of each UPS is specified in kilovolt-amperes (kVA).

Table 5-1. APC Symmetra RM Models for North America for ftServer 6600 Systems

APC Model	Rack Height	Output Rating; Power Draw	Output Connectors	Description
SYH4K6RMT	8U	4kVA; 2800W	(2) NEMA L6-20R (1) NEMA L6-30R	APC Symmetra RM 4kVA Scalable to 6kVA N+1 208-240V
SYH6K6RMT	8U	6kVA; 4200W	(2) NEMA L6-20R (1) NEMA L6-30R	APC Symmetra RM 6kVA Scalable to 6kVA N+1 208-240V
SYP8K12RMT	15U	8kVA; 5600W	(6) NEMA L6-20R (3) NEMA L6-30R (1) Hard Wire	APC Symmetra RM 8kVA Scalable to 12kVA N+1 or 16kVA 208-240V
SYP12K12RMT	15U	12kVA; 8400W	(6) NEMA L6-20R (3) NEMA L6-30R (1) Hard Wire	APC Symmetra RM 12kVA Scalable to 12kVA N+1 or 16kVA 208-240V

Table 5-2. APC Symmetra RM Models for Japan for ftServer 6600 Systems

APC Model	Rack Height	Output Rating; Power Draw	Output Connectors	Description
SYH4K6RMJ	8U	4kVA; 2800W	(2) NEMA L6-20R (1) NEMA L6-30R	APC Symmetra 4kVA Scalable to 6kVA N+1 200V
SYH6K6RMJ	8U	6kVA; 4200W	(2) NEMA L6-20R (1) NEMA L6-30R	APC Symmetra 6kVA Scalable to 6kVA N+1 200V

Table 5-3. APC Symmetra RM International Models for ftServer 6600 Systems

APC Model	Rack Height	Output Rating; Power Draw	Output Connectors[†]	Description
SYH4K6RMI and SYPD9 option	8U	4kVA; 2800W	(8) IEC 320 C13 (2) IEC 320 C19	APC Symmetra RM 4kVA Scalable to 6kVA N+1 220-240V
SYH6K6RMI and SYPD9 option	8U	6kVA; 4200W	(8) IEC 320 C13 (2) IEC 320 C19	APC Symmetra RM 6kVA Scalable to 6kVA N+1 220-240V
SYP8K12RMI and SYPD9 option	15U	8kVA; 5600W	(24) IEC 320 C13 (6) IEC 320 C19	APC Symmetra RM 8kVA Scalable to 12kVA N+1 or 16kVA 220-240V
SYP12K12RMI and SYPD9 option	15U	12kVA; 8400W	(24) IEC 320 C13 (6) IEC 320 C19	APC Symmetra RM 12kVA Scalable to 12kVA N+1 or 16kVA 220-240V

† To convert an output connector panel to two IEC 309 30R connectors for 30A electrical connectivity to the PDU, obtain an SYPD9 output conversion kit from APC and an AW-B50172-01M interface cable from Stratus. Contact your distributor for availability of the interface cable.

Table 5-4. APC Symmetra Tower Models for ftServer 6600 Systems

APC Model	Height	Output Rating; Power	Output Connectors[†]	Description
SY4KEXI	31 in. (79 cm)	4kVA; 2800W	(8) IEC 320 C13 (1) Hard Wire Output	APC Symmetra 4kVA Scalable to 8kVA N+1 220-240V
SY8KEXI	48 in. (122 cm)	8kVA; 5600W	(8) IEC 320 C13 (1) Hard Wire Output	APC Symmetra 8kVA Scalable to 16kVA N+1 220-240V
SY12KEXI	48 in. (122 cm)	12kVA; 8400W	(8) IEC 320 C13 (1) Hard Wire Output	APC Symmetra 12kVA Scalable to 16kVA N+1 220-240V

† To convert Hard Wire terminals to two IEC309-30R connectors for 30A electrical connectivity to the PDU, obtain an AW-B50172-01M interface cable from Stratus.

APC UPS Models for Use with a Single ftServer 5600 System

Table 5-5 lists the APC Smart-UPS® models to use when you connect a single ftServer 5600 system directly to the UPS.

Table 5-5. APC Smart-UPS Models for a Single ftServer 5600 System

Locale	APC Smart-UPS Model	AC Power Input and Output
North America	Model SUA2200RM2U	120V
Japan	Model SUA2200RMJ2U	100V
Rest of the world	Model SUA2200RMI2U	230V

APC UPS Models for Use with Multiple ftServer 3300 and 5600 Systems

Table 5-6 lists the APC Symmetra models to use when you connect PDUs or multiple ftServer 3300 or 5600 systems to the UPS.

Table 5-6. APC Symmetra Models for PDUs and Multiple ftServer 5600 Systems

Locale	APC Symmetra Model	AC Power Input	AC Power Output
North America	SYH2K6RMT-P1, SYH4K6RMT-P1, SYH6K6RMT-P1, SYH8K12RMT-P1, or SYH12K12RMT-P2	120V	120V or 208V
Japan	SYH2K6RMJ-P1, SYH4K6RMJ-P1, or SYH6K6RMJ-P1	100V	100V or 200V
Rest of the world	SYH2K6RMI, SYH4K6RMI, SYH6K6RMI, SYH8K12RMI, or SYH12K12RMI	230V	230V

APC UPS Models for Use with a Single ftServer 3300 System

Table 5-7 lists the Smart-UPS models to use with a single rack-mountable ftServer 3300 system.

Table 5-8 lists the Smart-UPS models to use with a single pedestal ftServer 3300 system.

Table 5-7. APC UPS Models for a Single Rack-Mountable ftServer 3300 System

Locale	Smart-UPS	AC Power Input	AC Power Output
North America	Model SUA1500RM2U	120V	120V
Japan	Model SUA1500RMJ2U	80V to 123V	100V
Rest of the world	Model SUA1500RMI2U	160V to 286V	120V or 208V

Table 5-8. APC UPS Models for a Single Pedestal ftServer 3300 System

Locale	Smart-UPS	AC Power Input	AC Power Output
North America	Model SUA1500	120V	120V or 208V
Japan	Model SUA1500J	80V to 123V	100V
Rest of the world	Model SUA1500I	160V to 286V	230V or 240V

Communicating with a UPS over a Network

Use the following additional tools to enable an ftServer system and a UPS to communicate over the network:

- APC Network Management Card EX (APC part number AP9617)
An APC Network Management Card EX is a standard component of the Symmetra UPS, but you must purchase the network card for the APC Smart-UPS®.
- APC PowerChute® Network Shutdown for the ftServer system

When you install your ftServer system, download PowerChute Network Shutdown from APC and install and configure the tool on the ftServer system, as described in the *Stratus ftServer Software Installation and Configuration Guide* (R002W). PowerChute Network Shutdown monitors the UPS for an imminent power loss, and initiates a shutdown of the system before power is lost.

Connecting the A-Side PDU to a UPS

When you plan for PDUs, note the following:

- Only the A-side PDU is connected to the UPS.
- The B-side PDU is connected directly to an AC power main.

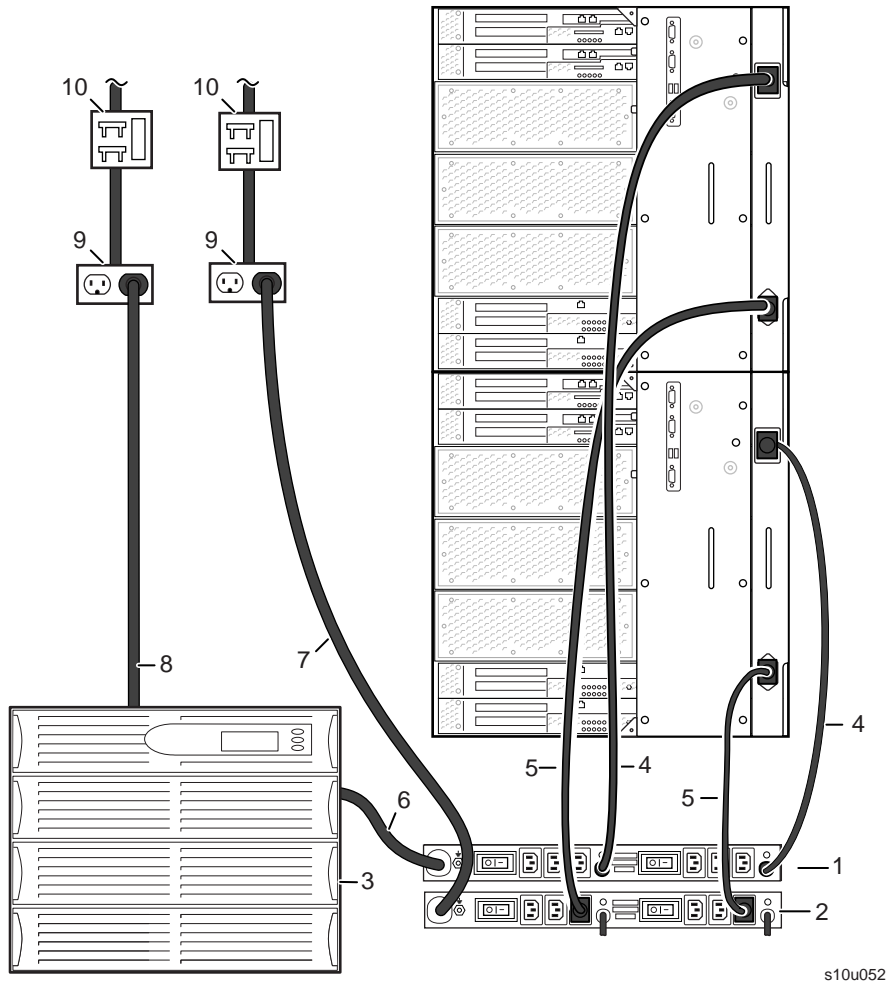
The UPS can be connected to the same AC power source (mains) as the B-side PDU or, preferably, the UPS can be connected to another AC power source (mains).

[Figure 5-1](#) shows how to connect a UPS to the A-side PDU that supplies power to ftServer 6600 systems.

NOTE

A UPS is required if you use PDUs to supply power to ftServer 6600 systems.

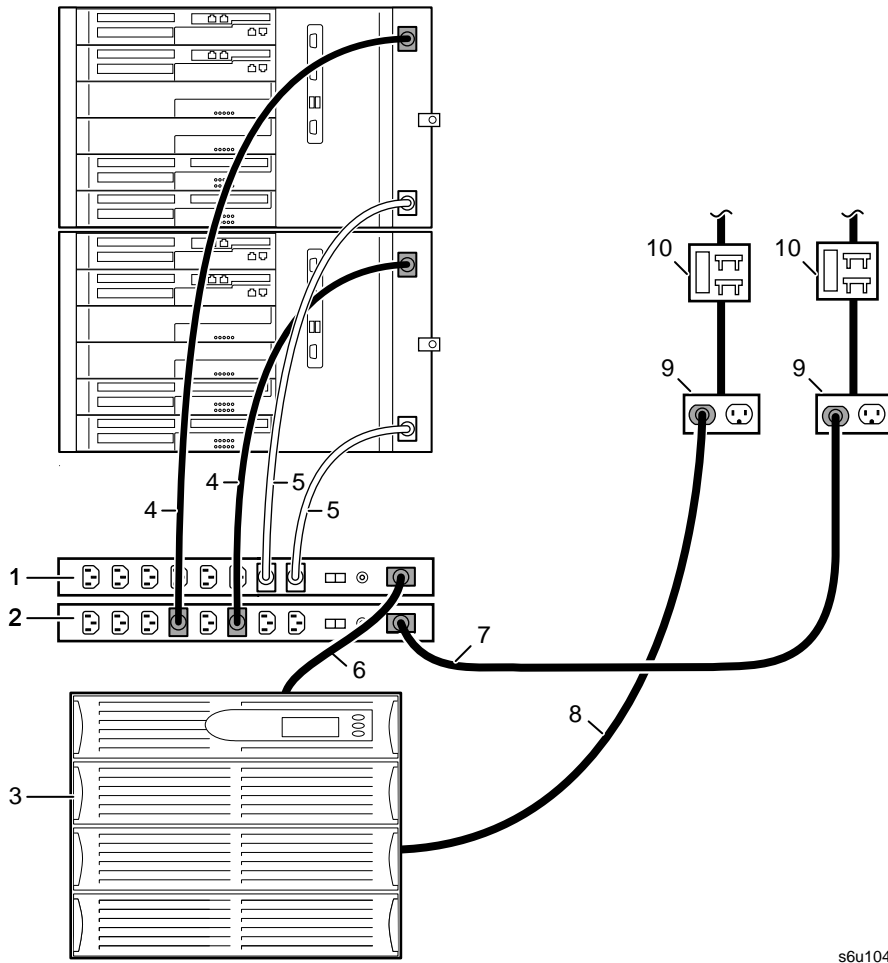
Figure 5-1. ftServer 6600 System: A-Side PDU Connected to a UPS



- | | | | |
|---|----------------------------|----|---|
| 1 | A-side PDU | 6 | A-side PDU power cord |
| 2 | B-side PDU | 7 | B-side PDU power cord |
| 3 | UPS | 8 | UPS power cable |
| 4 | A-side system power cables | 9 | AC power outlet |
| 5 | B-side system power cables | 10 | AC power (mains) distribution circuit breaker |

Figure 5-2 shows how to connect a UPS to the A-side PDU that supplies power to rack-mountable ftServer 3300 and 5600 systems.

Figure 5-2. ftServer 3300 and 5600 Systems: A-Side PDU Connected to a UPS



s6u104

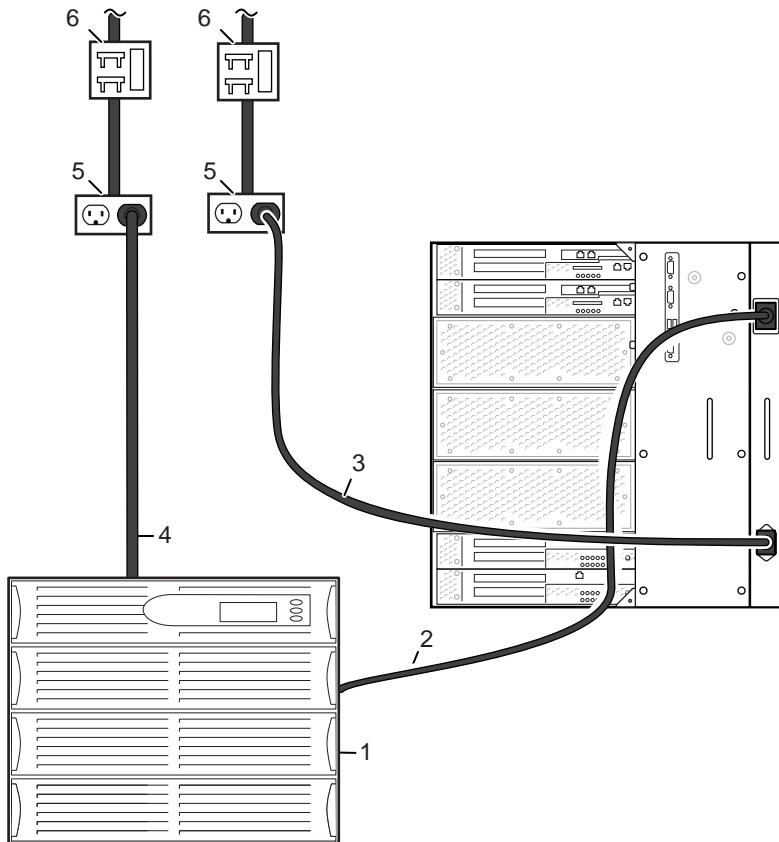
- | | | | |
|---|----------------------------|----|---|
| 1 | A-side PDU | 6 | A-side PDU power cord |
| 2 | B-side PDU | 7 | B-side PDU power cord |
| 3 | UPS | 8 | UPS power cord |
| 4 | B-side system power cables | 9 | AC power outlets |
| 5 | A-side system power cables | 10 | AC power (mains) distribution circuit breaker |

Connecting ftServer Systems Directly to a UPS

The A-side power connector of ftServer systems can be connected directly to a UPS.

Figure 5-3 shows how to connect a UPS directly to an ftServer 6600 system.

Figure 5-3. ftServer 6600 Systems: A-Side Power Directly Connected to a UPS

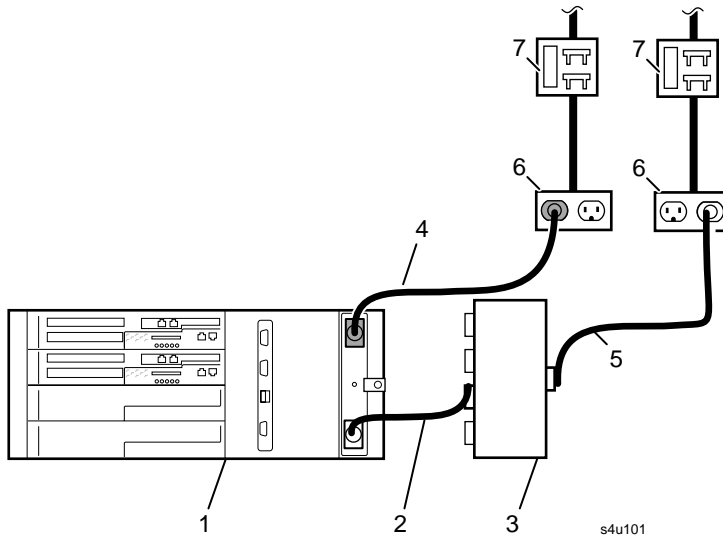


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- 1 UPS
- 2 A-side system power cord
- 3 B-side system power cord
- 4 UPS power cord
- 5 AC power outlets
- 6 AC power (mains) distribution circuit breaker

Figure 5-4 shows how to connect a UPS directly to a rack-mountable ftServer 3300 or 5600 system. (An ftServer 3300 system is shown, but the connections are identical for both systems.)

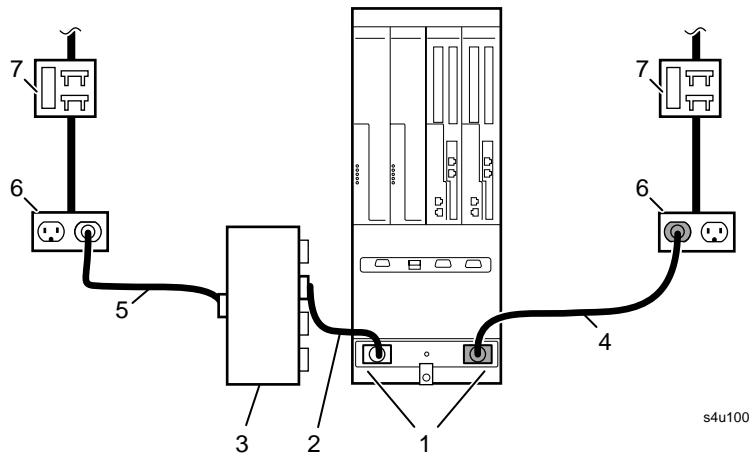
Figure 5-4. ftServer 3300 or 5600 Systems: A-Side Power Directly Connected to a UPS



- 1 System
- 2 A-side system power cord
- 3 UPS
- 4 B-side system power cord
- 5 UPS power cord
- 6 AC power outlets
- 7 AC power (mains) distribution circuit breaker

Figure 5-5 shows how to connect a UPS to a pedestal ftServer 3300 system.

Figure 5-5. Pedestal ftServer 3300 Systems: A-Side Power Directly Connected to a UPS



- 1 System power receptacles
- 2 A-side system power cord
- 3 UPS
- 4 B-side system power cord
- 5 UPS power cord
- 6 AC power outlets
- 7 AC power (mains) distribution circuit breaker

Chapter 6

Network and Telephone Line Planning

For information about planning network and telephone lines for your ftServer systems, see:

- “Network Cable Requirements” on page 6-1
- “Telephone Line Requirements” on page 6-2
- “Site Planning for Systems in an ftGateway Group” on page 6-3

Network Cable Requirements

Ethernet PCI adapters are typically supplied in pairs and teamed in software for fault tolerance. You must supply a cable for each member of the pair.



WARNING

Make sure Ethernet cables can be routed out of the way of foot traffic.

[Table 6-1](#) describes the Ethernet cables you must supply. Be sure to provide a cable of sufficient length for the distance between the system and a wall jack or hub.

NOTES

1. Software upgrade services are available from [Stratus Professional Services](#). For a list of available services, see <http://www.stratus.com/services/ps/offerings.htm>.
2. If you have a unique network requirement, contact [Stratus Professional Services](#). For a list of available services, see <http://www.stratus.com/services/ps/offerings.htm>.
3. See the *Stratus ftServer: PCI Adapter Guide* (R461) for more information about the adapters Stratus supplies for ftServer systems.

Table 6-1. Customer-Supplied Ethernet Cables

Component	Quantity	Cable
ftServer Access Adapters	2	24 AWG, 4-pair, Unshielded Twisted Pair (UTP) EIA/TIA-Verified, Category-3 or Category-5 wire, with RJ-45 modular connectors terminated with pair-wiring adhering to the EIA/TIA 568-A or EIA/TIA 568-B standard.
10/100-Mbps system Ethernet ports	2	
10/100/1000-Mbps system Ethernet ports	2	
10/100-Mbps Ethernet PCI Adapters	2 for each pair of 10/100-Mbps or 10/100/1000Base-T Ethernet PCI adapters	For connections to an Ethernet hub or switch, provide a straight-through cable.
10/100/1000Base-T Ethernet PCI Adapters (gigabit copper adapters for servers)		For 100- or 1000-Mbps (fast Ethernet) operation, provide full-duplex, or Category-5 Ethernet cables.
		The maximum allowable distance from an Ethernet port to a switch or a hub is 100 meters.
1000Base-SX Ethernet PCI Adapters (gigabit fiber-optic adapters for servers)	2 or 4 for each pair of two-port 1000Base-SX Ethernet PCI Adapters	Multimode, 62.5-micron, DUAL fiber cable with two LC-type connectors, and two connectors that are compatible with the network switch.

In addition to Ethernet cables, plan to accommodate cables from any U486 Eight-Port Asynchronous PCI Adapters in the system. The U486 PCI adapters are paired and each adapter uses an eight-port fan-out cable with DB-25 connectors, which Stratus supplies.

Telephone Line Requirements

Generally, an ftServer system requires two telephone lines:

- One telephone line for use when calling for service
- One analog telephone connection point for the external modem or Y-style modem cable from the ftServer Access Adapters

One telephone connection point accommodates both ftServer Access Adapters.

NOTES

1. Telephone connection points for each system are not required if ftGateway groups are implemented. See [“Site Planning for Systems in an ftGateway Group” on page 6-3](#) for more information.
2. A dedicated phone line provides the most reliable service. ActiveService Network (ASN) calls routed through a PBX might be slow due to the load on the PBX, or might not complete successfully because the calls can become disconnected. If you must use a PBX, do not route the telephone extension through a switchboard; instead, provide a direct-dial analog number.

Site Planning for Systems in an ftGateway Group

Multiple ftServer systems at a single site can share a single telephone connection to the ASN by implementing an *ftGateway group*. The systems in the group must be connected to a **single** physical Ethernet subnetwork. One system acts as a *gateway* for ASN connectivity. This gateway system requires an analog telephone line that connects to the ftServer Access Adapters on the gateway system. Other systems in the *gateway group*, called *gateway slaves*, connect to the gateway system over the network. In this case, Ethernet connections are required for each system, but only two analog telephone lines for each site are required.

Each ftGateway group is limited to a maximum of 20 ftServer systems. All systems in a group must connect to the same subnetwork over the system Ethernet port, over Ethernet adapters, or through ftServer Access Adapters. Using ftServer Access Adapters provides the highest level of manageability by allowing the system to be serviced even when the operating system is not operational.

Make sure that only layer 1 and layer 2 devices separate the gateway and slave systems. During a connection, the gateway system assigns the slave system a temporary IP address from an IP address range reserved by Stratus and uses that address for all traffic.

Chapter 7

ftServer Rack Configuration Planning

For information about planning a rack configuration, see:

- [“Using PDUs” on page 7-1](#)
- [“Determining Rack Space Usage” on page 7-6](#)
- [“Supported ftServer 6600 Cabinet Configurations” on page 7-7](#)

Use the information in [“Using PDUs”](#) and [“Determining Rack Space Usage”](#) to plan cabinet configurations for ftServer 3300 and 5600 systems.

Using PDUs

Systems and storage enclosures have two power receptacles. Correspondingly, two power distribution units (PDUs) provide power to the receptacles.

Use of PDUs is optional unless you have a support agreement with Stratus. If so, use pairs of power distribution units (PDUs) to provide AC power to systems and components in a cabinet **if six or more power cords would otherwise exit from the cabinet.**

The A-side (top) PDU provides power to:

- The A-side of each system
- A V128 1U rack-mounted LCD monitor unit
- A keyboard-video-mouse (KVM) switch
- One side of each supported storage enclosure
- For ftServer 3300 and 5600 systems, any rack-mounted tape drives

The B-side (bottom) PDU provides power to:

- The B-side of each system
- Any rack-mounted tape drives
- The second side of each storage enclosure
- For ftServer 6600 systems, any rack-mounted tape drives

Because the A-side PDU always uses at least as many power cords as the B-side PDU, plan the cabinet configuration so that the A-side PDU can support the configuration.

NOTES _____

1. Connect each PDU to a separate AC power source.
2. Install a maximum of two pairs of PDUs in a rack.

To plan the rack configuration for ftServer 3300 and 5600 systems, [determine the AC power requirements](#) of the A-side PDU and [determine the number of required PDU power outlets](#).

Determining PDU Power Requirements

Using the voltage rating of the power receptacle at your site and the total wattage of the components that will draw power from the A-side PDU, complete the information in [Table 7-2](#) to determine the current ftServer 3300 or 5600 systems and components will draw and whether you need a second pair of PDUs.

To determine the A-side power usage

Use the information in [Table 7-1](#) to complete the worksheet in [Table 7-2](#).

1. In column 1 of [Table 7-2](#), write the name of the component.
2. From [Table 7-1](#), obtain the wattage of the component, and write it in column 2 of [Table 7-2](#).

Table 7-1. Component Power Requirements

Component	A-Side Wattage
ftServer 3300 systems (A-side power)	500 W
ftServer 5600 systems (A-side power)	650 W
V128 1U LCD units	21 W
D540 storage enclosure (A-side power)	300 W
KVM switches	20 W
T521 or T522 tape drive enclosure	200 W

3. In [Table 7-2](#), for the first component in the table, write the same value in column 3 that you entered in column 2.

For subsequent components, add the wattage of the new component to the subtotal in the previous row and write it in column 3.

4. Obtain the voltage available at your location. Consult a facilities manager at your site to make sure you know the correct voltage.

Divide the value in column 3 (the wattage of all the components you have configured) by the voltage at your site, and write the resulting value in column 4 of [Table 7-2](#).

5. Add another pair of PDUs to the rack if the value in column 4 of [Table 7-2](#) exceeds 15A, the recommended maximum current to draw from the A-side PDU.

Table 7-2. A-Side Power Usage Calculation

1. Component	2. Watts	Subtotals	
		3. Watts	4. Wattage ÷ Voltage
			A
			A
			A
			A
			A
			A
			A
			A

Sample Power Usage Calculation

Table 7-3 illustrates a calculation for an A-side PDU that is plugged into a NEMA L6-20R receptacle in the United States, with a power voltage of 208V.

Table 7-3. Sample Power Usage Calculation for an A-Side PDU

1. Component	2. Watts	Subtotals	
		3. Watts	4. Wattage ÷ Voltage
ftServer 3300 system	500 W	500 W	2.40 A
D540 storage enclosure	300 W	800 W	3.85 A
V128 1U LCD units	21 W	821 W	3.95 A
KVM switch	20 W	841 W	4.04 A
ftServer 3300 system	500 W	1341 W	6.45 A
D540 storage enclosure	300 W	1641 W	7.89 A
ftServer 3300 system	500 W	2141 W	10.29 A
D540 storage enclosure	300 W	2441 W	11.74 A
ftServer 3300 system	500 W	2941 W	14.14 A
D540 storage enclosure	300 W	3241 W	15.58 A

In this calculation, components were added one by one, calculating the total current demanded by the components and comparing them to 15A, which is the recommended maximum current to draw from the A-side PDU. The A-side PDU can support four ftServer 3300 systems, three D540 storage enclosures, the V128 1U LCD unit, and the KVM switch. Adding the fourth D540 storage enclosure trips the 15A limit and would require a second pair of PDUs.

A similar calculation for ftServer 5600 systems determines that the one pair of PDUs can support two ftServer 5600 systems, two D540 storage enclosure, the V128 1U LCD unit, and the KVM switch.

Determining A-Side PDU Power Outlets Usage

Make sure that ftServer 3300 or 5600 systems and components consume no more than the eight power outlets supported by the A-side PDU.

To determine the number of A-side PDU power outlets used

1. In [Table 7-4](#), in the Quantity column, enter the number of each type of component.
2. Multiply the values in the A-Side Outlets Used column by the values in the Quantity column and write the resulting subtotal in the Cumulative Number of A-Side Outlets Used column.
3. Add the values in the A-Side Outlets Used (Cumulative) column together and write the resulting value in the bottom row.

Table 7-4. PDU Power Outlet Usage Calculation

Component	A-Side Outlets Used		Quantity	A-Side Outlets Used (Cumulative)
ftServer 3300 systems	1	x		
ftServer 5600 systems	1	x		
V128 1U LCD units	1	x		
Storage enclosures	1	x		
KVM switches	1	x		
Total Outlets				

If the number of outlets exceeds eight, add another pair of PDUs to the rack.

Determining Rack Space Usage

Make sure that the ftServer 3300 or 5600 systems and components fit into the vertical space available in the rack.

To determine the vertical space used

1. In the Quantity column of [Table 7-5](#), enter the number of each component.
2. In each row, multiply the value in the Component Height column by the Quantity, and enter the subtotal in the Cumulative Height column.
3. Add the values in the Cumulative Height column together and write the resulting value in the bottom row. Compare this value to the height of your rack as measured in rack units (U).

Table 7-5. Space Usage Calculation

Component	Component Height		Quantity	Cumulative Height
PDU pairs	2U (per pair)	x		
ftServer 3300 systems	4U	x		
ftServer 5600 systems	6U	x		
V128 1U LCD units	1U	x		
D540 storage enclosures	2U	x		
KVM switch	1U	x		
T521 and T522 tape drive enclosures	3U	x		
Total Height				

Supported ftServer 6600 Cabinet Configurations

The following figures show combinations of ftServer 6600 systems and optional components that are supported.

NOTES _____

1. The illustrations show where to place filler panels **between** components, but be sure to fill the rack above the components with filler panels and, if you do not use PDUs, fill the bottom 2U with filler panels.
2. Use PDUs if you have more than one system in any cabinet.
3. Each PDU supports a maximum of six power cables, in addition to the two permanently attached power cables. To ensure sufficient connections in the A-side PDU, connect any tape drives to the B-side PDU.
4. Use PDUs if you intend to use a UPS to provide power to the system.
5. Use PDUs for a simpler installation and to minimize the amount of electrical work needed.

Figures 7-1 and 7-2 show combinations of systems and components that are supported in a 24U or 38U cabinet and which do not require the use of PDUs. These configurations are limited to a single system.

Figures 7-3 through 7-4 show combinations of systems and optional components that are supported in a 24U or 38U cabinet, but which require the use of PDUs.

Figures 7-5 through 7-10 show combinations of systems and optional components that are supported in a 38U cabinet, and which require the use of PDUs. These combinations contain one or two systems and increasing numbers of optional components, such as storage and tape drive enclosures, 1U LCD units and KVM switches.

Figure 7-1. 24U and 38U Cabinet Configurations – PDUs Optional

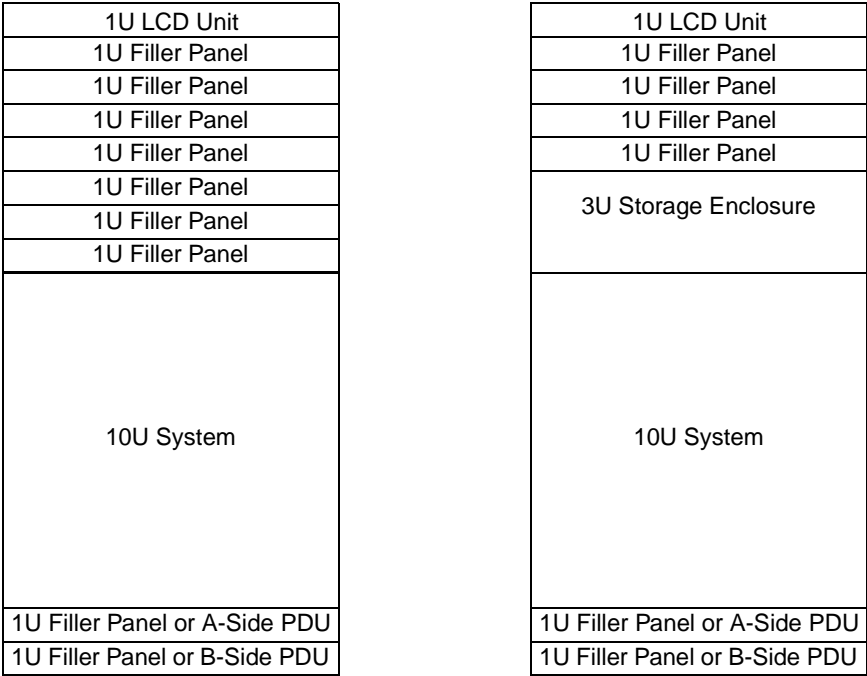


Figure 7-2. 24U and 38U Cabinet Configurations – PDUs Optional (Continued)

1U LCD Unit
1U Filler Panel
1U Filler Panel
1U Filler Panel
1U Filler Panel
1U Filler Panel
2U Storage Enclosure
10U System
1U Filler Panel or A-Side PDU
1U Filler Panel or B-Side PDU

1U LCD Unit
1U Filler Panel
1U Filler Panel
1U Filler Panel
1U Filler Panel
3U Tape Drive
10U System
1U Filler Panel or A-Side PDU
1U Filler Panel or B-Side PDU

Figure 7-3. 24U and 38U Cabinet Configurations – PDUs Required

1U LCD Unit
1U Filler Panel
3U Tape Drive
1U Filler Panel
2U Storage Enclosure
10U System
1U A-Side PDU
1U B-Side PDU

1U LCD Unit
1U Filler Panel
3U Tape Drive
3U Storage Enclosure
10U System
1U A-Side PDU
1U B-Side PDU

Figure 7-4. 24U and 38U Cabinet Configurations – PDUs Required (Continued)

		3U Tape Drive	1U LCD Monitor
			1U KVM Switch
	1U LCD Monitor	1U LCD Unit	10U System
	1U Filler Panel	1U Filler Panel	
	3U Storage Enclosure	3U Storage Enclosure	
	3U Storage Enclosure	3U Storage Enclosure	
	10U System	10U System	10U System
	1U A-Side PDU	1U A-Side PDU	1U A-Side PDU
	1U B-Side PDU	1U B-Side PDU	1U B-Side PDU

Figure 7-5. 38U Cabinet Configurations – PDUs Required

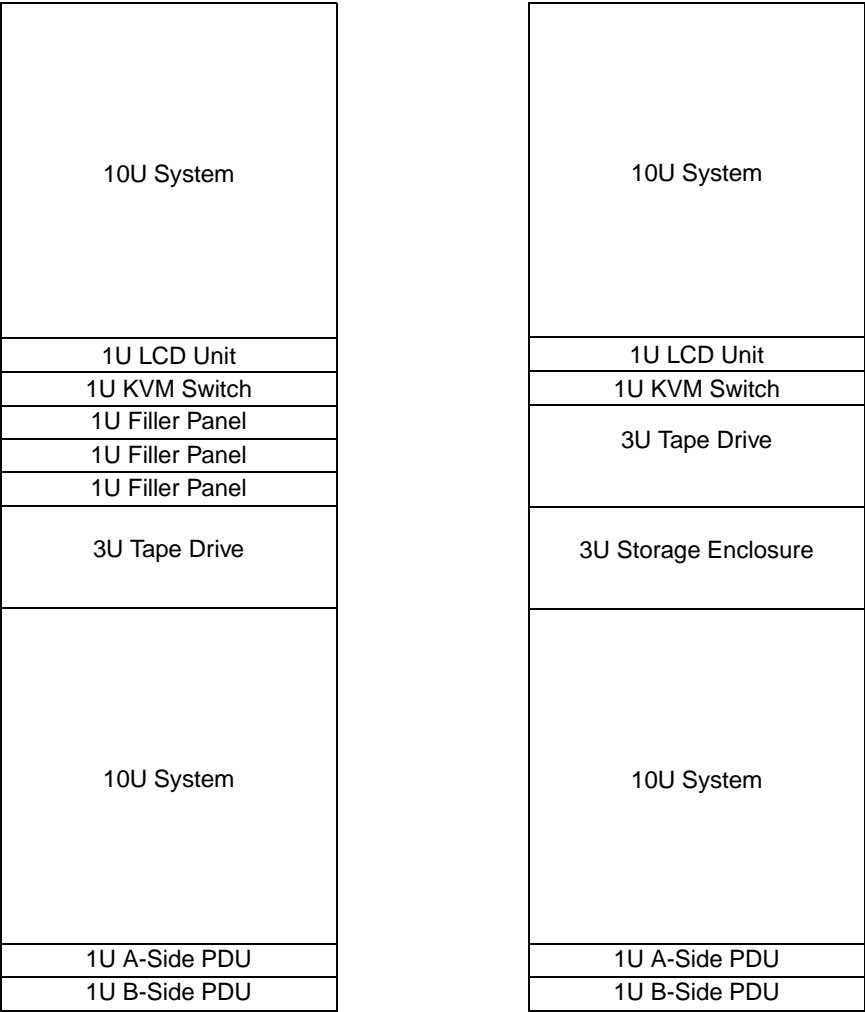


Figure 7-6. 38U Cabinet Configurations – PDUs Required (Continued)

10U System	10U System
1U LCD Unit	1U LCD Monitor
1U KVM Switch	1U KVM Switch
3U Tape Drive	1U Filler Panel
1U Filler Panel	1U Filler Panel
2U Storage Enclosure	1U Filler Panel
1U Filler Panel	1U Filler Panel
1U Filler Panel	1U Filler Panel
10U System	10U System
1U A-Side PDU	1U A-Side PDU
1U B-Side PDU	1U B-Side PDU

Figure 7-7. 38U Cabinet Configurations – PDUs Required (Continued)

1U Filler Panel	3U Storage Enclosure
2U Storage Enclosure	
10U System	10U System
1U LCD Unit	1U LCD Unit
1U KVM Switch	1U KVM Switch
Tape Drive	Tape Drive
1U Filler Panel	3U Storage Enclosure
2U Storage Enclosure	
10U System	10U System
1U A-Side PDU	1U A-Side PDU
1U B-Side PDU	1U B-Side PDU

Figure 7-8. 38U Cabinet Configurations – PDUs Required (Continued)

3U Storage Enclosure
10U System
1U LCD Monitor
1U KVM Switch
3U Storage Enclosure
3U Storage Enclosure
10U System
1U A-Side PDU
1U B-Side PDU

3U Storage Enclosure
3U Storage Enclosure
10U System
1U LCD Unit
1U KVM Switch
3U Tape Drive
3U Storage Enclosure
10U System
1U A-Side PDU
1U B-Side PDU

Figure 7-9. 38U Cabinet Configurations – PDUs Required (Continued)

1U Filler Panel
2U Storage Enclosure
10U System
1U LCD Monitor
1U KVM Switch
1U Filler Panel
1U Filler Panel
1U Filler Panel
1U Filler Panel
2U Storage Enclosure
10U System
1U A-Side PDU
1U B-Side PDU

3U Storage Enclosure
10U System
1U LCD Monitor
1U KVM Switch
1U Filler Panel
1U Filler Panel
1U Filler Panel
3U Storage Enclosure
10U System
1U A-Side PDU
1U B-Side PDU

Figure 7-10. 38U Cabinet Configuration – PDUs Required (Continued)

3U Storage Enclosure
3U Storage Enclosure
10U System
1U LCD Monitor
1U KVM Switch
3U Storage Enclosure
3U Storage Enclosure
10U System
1U A-Side PDU
1U B-Side PDU

Appendix A

System Specifications

For system specifications see:

- [“ftServer 6600 System Specifications” on page A-2](#)
- [“ftServer 5600 System Specifications” on page A-6](#)
- [“Pedestal ftServer 3300 System Specifications” on page A-10](#)
- [“Rack-Mountable ftServer 3300 System Specifications” on page A-13](#)

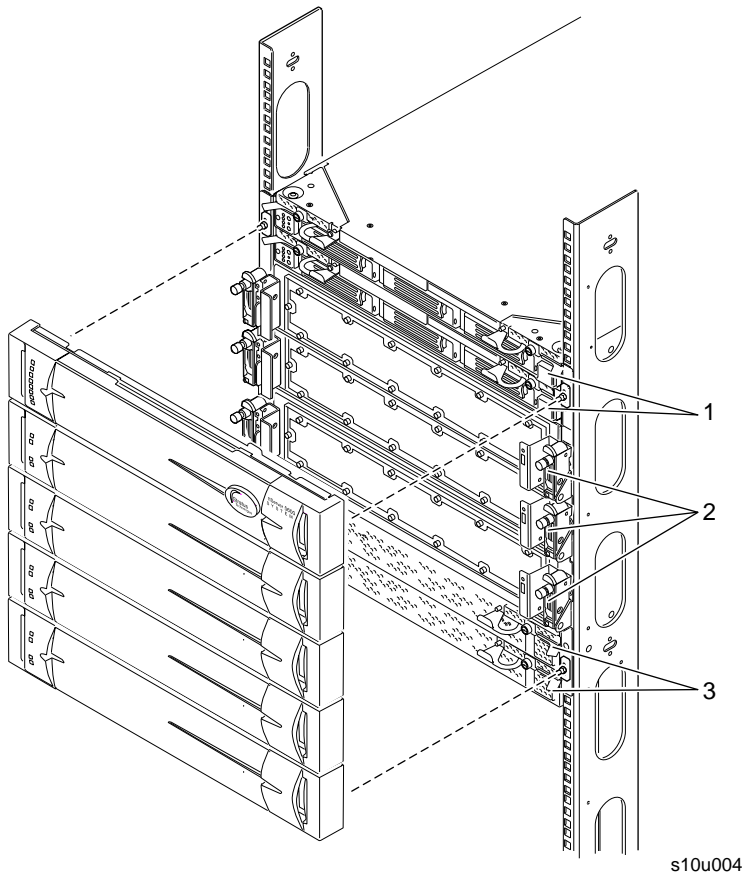
NOTE _____

The system temperature and humidity requirements, defined in [Table A-2](#), [Table A-3](#), [Table A-4](#) and [Table A-5](#) are the **minimum** requirements the site must provide. The temperature and humidity requirements for other components are provided in [Appendix B](#) for your reference.

ftServer 6600 System Specifications

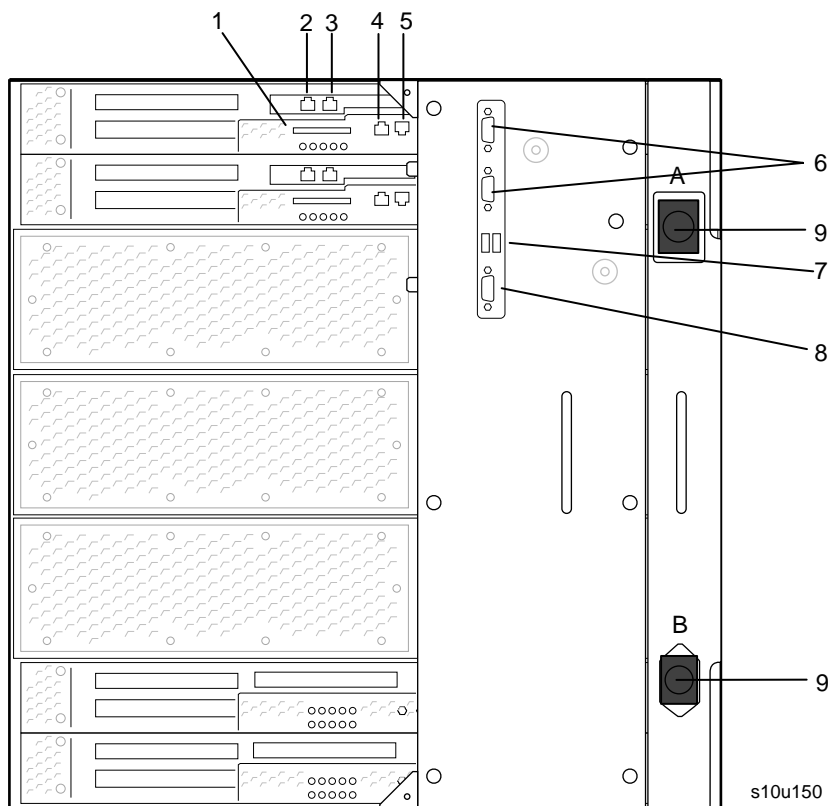
Figure A-1 shows the front of the ftServer 6600 system mounted in a rack, its bezel pulled forward. Figure A-2 shows the rear of an ftServer 6600 system, specifying the locations of the connectors at the back of the system. Table A-1 lists the dimensions of the 24U and 38U shipping container and of the unpacked 24U and 38U cabinets. Table A-2 lists specifications for the ftServer 6600 system.

Figure A-1. ftServer 6600 System - Front View



- 1 Core I/O enclosures
- 2 CPU enclosures
- 3 Expansion I/O enclosures

s10u004

Figure A-2. ftServer 6600 System - Rear View

- 1 SCSI port
- 2 ftServer Access Adapter Ethernet port
- 3 ftServer Access Adapter modem port
- 4 10/100/1000-Mbps Ethernet port
- 5 10/100-Mbps Ethernet port
- 6 Serial ports
- 7 USB ports
- 8 VGA (monitor) port
- 9 Power receptacles

Table A-1. ftServer 6600 Cabinet Dimensions

24U Shipping Container	
Height (including pallet)	56 in. (1.42m)
Width	41 in. (1.04m)
Depth	53 in. (1.35m)
38U Shipping Container	
Height (including pallet)	79.75 in. (2.03m)
Width	41 in. (1.04m)
Depth	53 in. (1.35m)
24U Cabinet	
Height (including casters)	50 in. (1.27m)
Width	27.5 in. (70 cm)
Depth	41 in. (1.04m)
Weight, empty	275 lb (125 kg)
Weight, empty with pallet and shipping container	436 lb (197.8 kg)
38U Cabinet	
Height (including casters)	74 in. (1.9m)
Width	27.5 in. (70 cm)
Depth	41 in. (1.04m)
Weight, empty	344 lb (156 kg)
Weight, empty with pallet and shipping container	512 lb (232.2 kg)

Table A-2. ftServer 6600 System Specifications

Power	
Output wattage	A-side power: 1300 W (AC) B-side power: 900 W (AC)
Nominal input voltage; Frequency	200–240 volts AC; 50-60 Hz
Physical Dimensions	
Height	17.75 in. (45 cm; 10U)

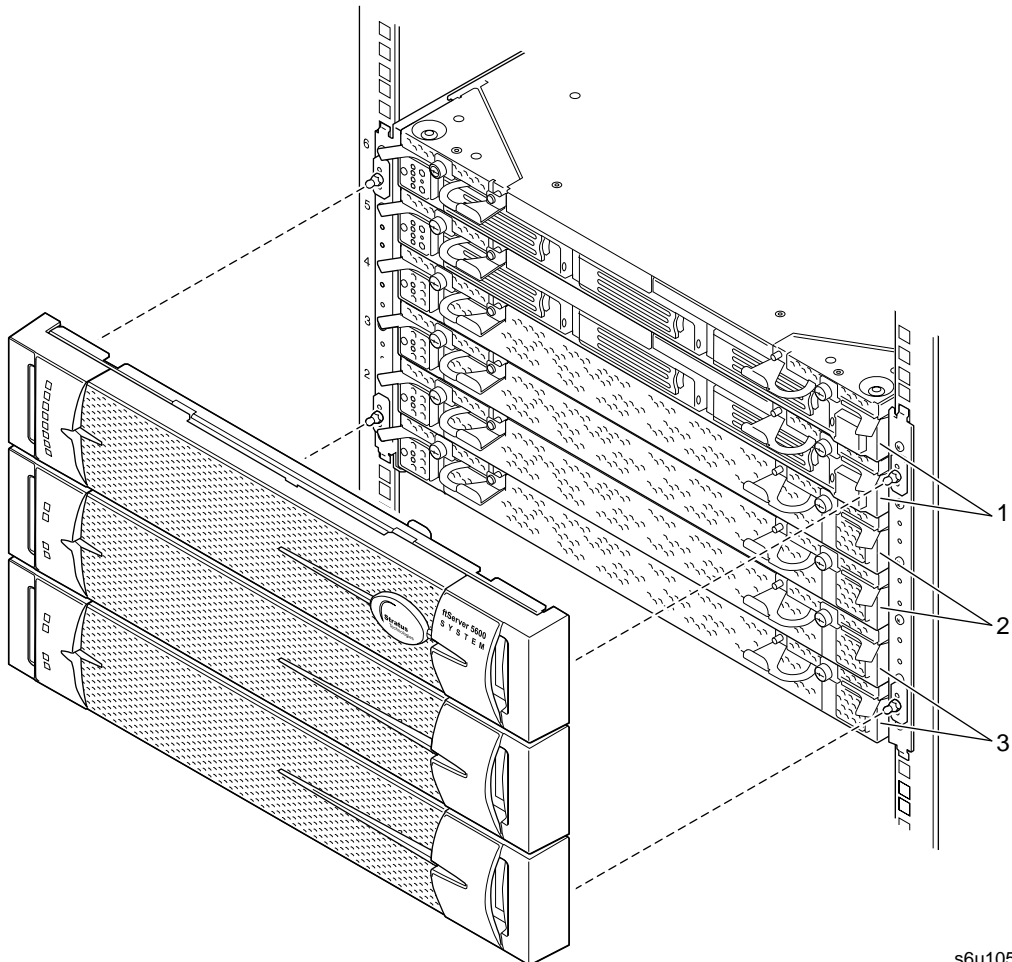
Table A-2. ftServer 6600 System Specifications *(Continued)*

Width	19 in. (48.26 cm)
Depth (including ejectors)	30.9 in. (78.5 cm)
Weight	310 lb (141 kg)
Environmental Requirements	
Operating temperature	41° F to 95° F (5° C to 35° C) For every 800 ft (243.8m) above 2,000 ft (609.6m), lower the maximum operating temperature (35° C) by 1° C.
Storage temperature	-38° F to 140° F (-39° C to 60° C)
Operating altitude	0 ft to 10,000 ft (0m to 3,048m)
Maximum rate of temperature change during operation	53.6° F/hr (12° C/hr)
Relative humidity during operation	10% to 80% (noncondensing)
Relative humidity during storage	5% to 95% (noncondensing)
Heat dissipation	7500 BTUs per hour
Features	
Processors	Two or four Intel® Xeon™ processors in each CPU enclosure
Memory	Twelve dual data rate (DDR) inline memory module (DIMM) slots in each CPU enclosure
Ports	One 10/100-Mbps Ethernet port, one 10/100/1000-Mbps Ethernet port, and one external SCSI port on each core I/O enclosure Two AC power connectors, one VGA port, two serial ports, and two USB ports
PCI slots	One 32-bit 66MHz PCI slot reserved for an ftServer Access Adapter in each core I/O enclosure Ten user-configurable PCI adapter slots: two in each core I/O enclosure operating at 64-bits and 33 MHz; three in each expansion I/O enclosure operating at 64-bits and 66 MHz

ftServer 5600 System Specifications

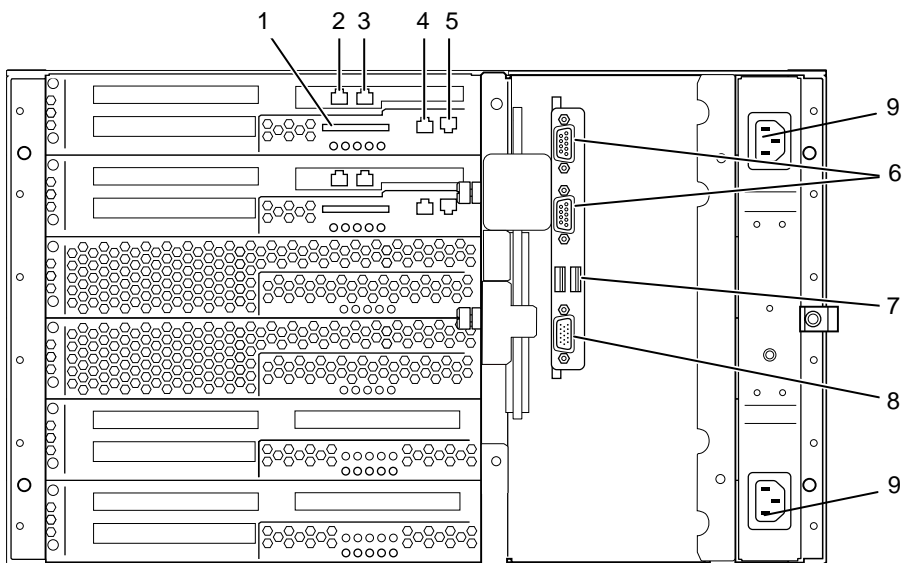
Figure A-3 shows the front of an ftServer 5600 system mounted in a rack, its bezel pulled forward. Figure A-4 shows the rear of an ftServer 5600 system, specifying the locations of the connectors at the back of the system. Table A-3 lists specifications for the ftServer 5600 system.

Figure A-3. ftServer 5600 System - Front View



s6u105

- 1 Core I/O enclosures
- 2 CPU enclosures
- 3 Expansion I/O enclosures

Figure A-4. ftServer 5600 System - Rear View

s6u089

- 1 SCSI port
- 2 ftServer Access Adapter (optional) Ethernet port
- 3 ftServer Access Adapter (optional) modem port
- 4 10/100/1000-Mbps Ethernet port
- 5 10/100-Mbps Ethernet port
- 6 Serial ports
- 7 USB ports
- 8 VGA (monitor) port
- 9 Power receptacles

Table A-3. ftServer 5600 System Specifications

Power	
Output wattage	A-side: 650W (AC) B-side: 650W (AC)
Nominal input voltage Frequency range: single system in North America or Japan without PDUs	100–127 volts AC; 50–60 Hz
Nominal input voltage Frequency range: all other installations	200–240 volts AC; 50–60 Hz
Physical Dimensions	
Height	10.5 in. (26.67 cm; 6U)
Width	19 in. (48.26 cm)
Depth (including ejectors)	30.9 in. (78.5 cm)
Weight	168 lb (76 kg) to 183 lb (83 kg)
Environmental Requirements	
Operating temperature	41° F to 95° F (5° C to 35° C) For every 800 ft (243.8m) above 2,000 ft (609.6m), lower the maximum operating temperature (35°C) by 1°C.
Storage temperature	-38° F to 140° F (-40° C to 60° C)
Operating altitude	0 ft to 10,000 ft (0m to 3,048m)
Maximum rate of temperature change during operation	53.6° F/hr (12° C/hr)
Relative humidity during operation	10% to 80% (noncondensing)
Relative humidity during storage	5% to 95% (noncondensing)
Heat dissipation	4500 BTUs per hour
Features	
Processors	One or two Intel Xeon processors in each CPU enclosure
Memory	Six dual data rate (DDR) inline memory module (DIMM) slots in each CPU enclosure

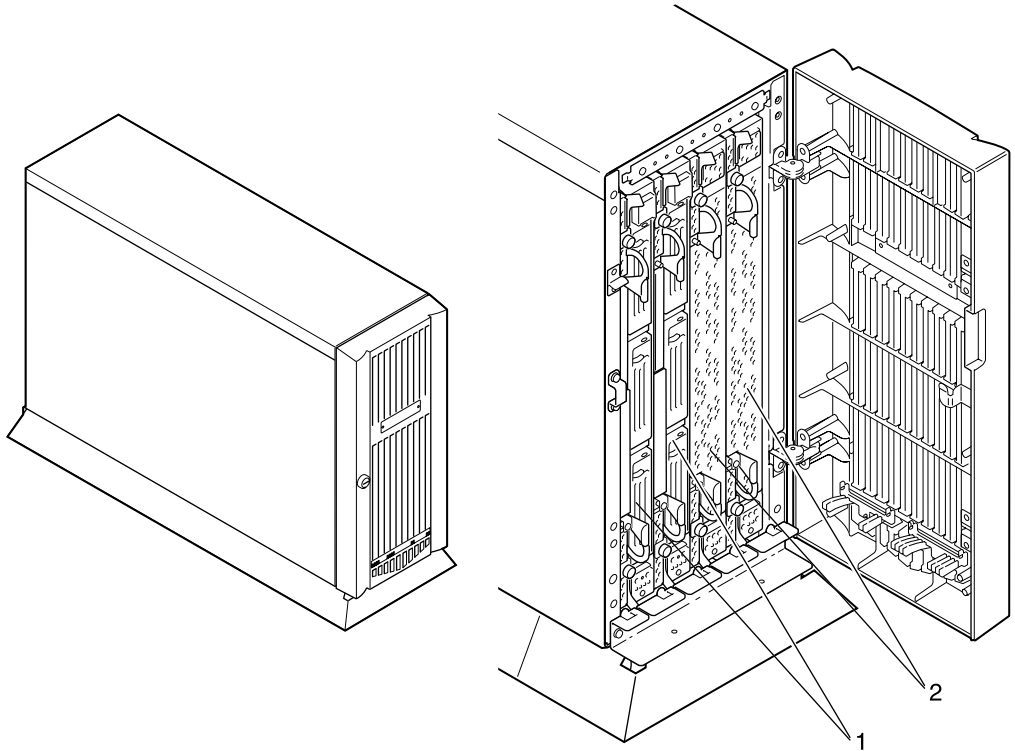
Table A-3. ftServer 5600 System Specifications *(Continued)*

Ports	<p>One 10/100-Mbps Ethernet port, one 10/100/1000-Mbps Ethernet port, and one external SCSI port on each core I/O enclosure</p> <p>Two AC power connectors, one VGA port, two serial ports, and two USB ports</p>
PCI slots	<p>One 32-bit 66MHz PCI slot for a video adapter or ftServer Access Adapter in each core I/O enclosure</p> <p>Ten user-configurable PCI adapter slots: two in each core I/O enclosure operating at 64-bits and 33 MHz; three in each expansion I/O enclosure operating at 64-bits and 66 MHz</p>

Pedestal ftServer 3300 System Specifications

Figure A-5 shows the front of a pedestal ftServer 3300 system, its bezel pulled forward. Figure A-6 shows the rear of a pedestal ftServer 3300 system, specifying the locations of the connectors at the back of the system. Table A-4 lists specifications for the pedestal ftServer 3300 system.

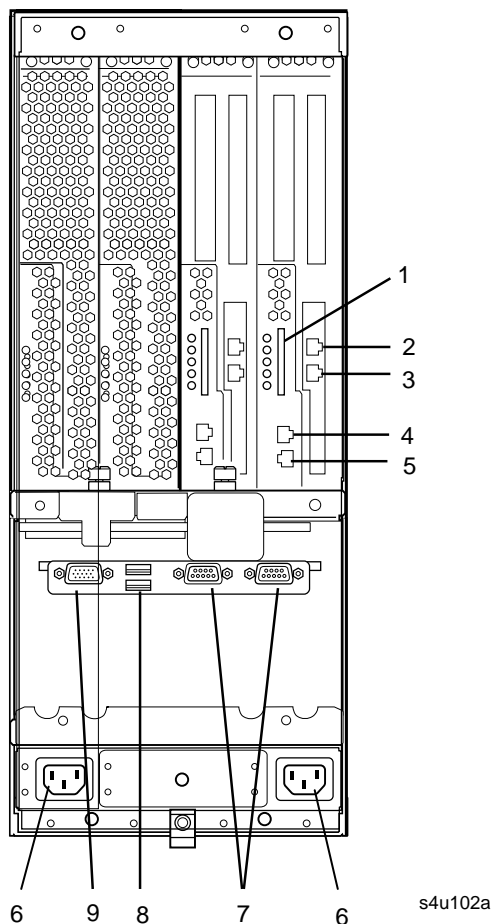
Figure A-5. Pedestal ftServer 3300 System - Front View



s4u071a

- 1 Core I/O enclosures
- 2 CPU enclosures

Figure A-6. Pedestal ftServer 3300 System - Rear View



- 1 SCSI port
- 2 ftServer Access Adapter (optional) Ethernet port
- 3 ftServer Access Adapter (optional) modem port
- 4 10/100/1000-Mbps Ethernet port
- 5 10/100-Mbps Ethernet port
- 6 Power receptacles
- 7 Serial ports
- 8 USB ports
- 9 VGA (monitor) port

Table A-4. Pedestal ftServer 3300 System Specifications

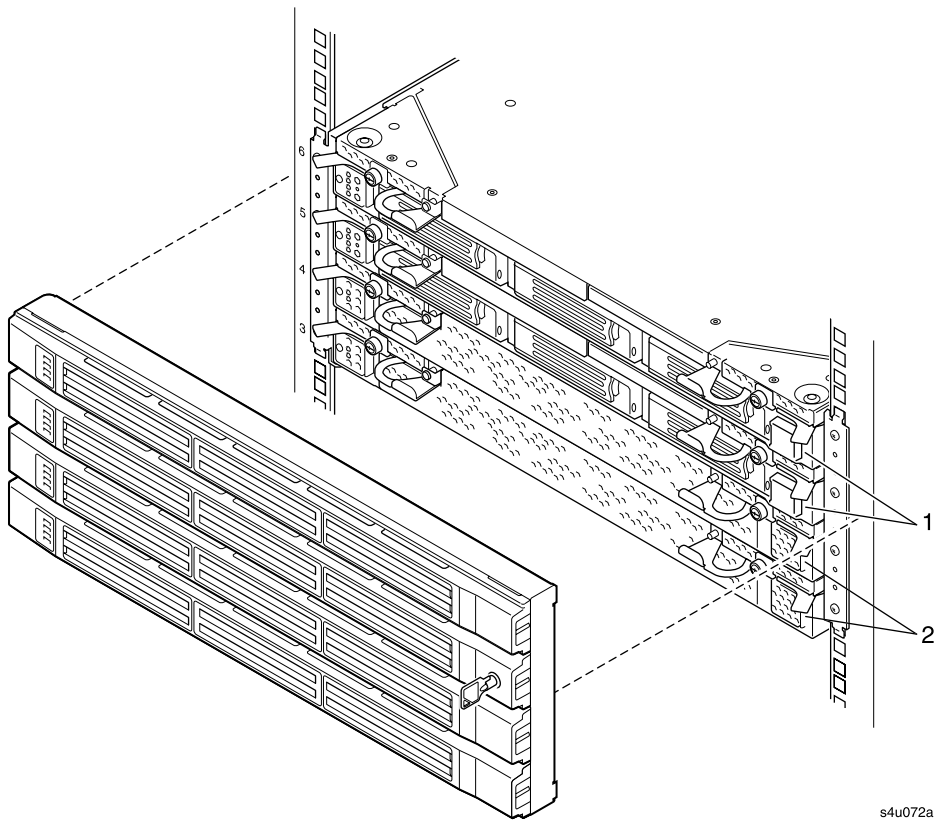
Power	
Output wattage	A-side: 500W (AC) B-side: 500W (AC)
Nominal input voltage	
Model dependent	100–127 volts AC; 50–60 Hz
Model dependent	200–240 volts AC; 50 Hz
Physical Dimensions	
Height	21.8 in. (55.4 cm.)
Width	8.75 in. (22.23 cm)
Depth (including ejectors)	30.9 in. (78.5 cm)
System weight	175 lb. (65.3 kg)
Environmental	
Operating temperature	41°F to 95°F (5°C to 35°C) For every 800 ft (243.8m) above 2,000 ft (609.6m), lower the maximum operating temperature (35°C) by 1°C.
Storage temperature	-38° F to 140° F (-40° C to 60° C)
Operating altitude	0 ft to 10,000 ft (0m to 3,048m)
Maximum rate of temperature change during operation	18°F/hr (10°C/hr) or 0.30°F/min (0.17°C/min)
Relative humidity during operation	20% to 80% (noncondensing)
Relative humidity during storage	8% to 80%
Heat dissipation	3,500 BTUs per hour
Features	
Processors	One or two Intel Xeon processors in each CPU enclosure
Memory	Six dual data rate (DDR) inline memory module (DIMM) slots in each CPU enclosure
Ports	One 10/100-Mbps Ethernet port, one 10/100/1000-Mbps Ethernet port, and one external SCSI port on each core I/O enclosure Two AC power connectors, one VGA port, two serial ports, and two USB ports

Table A-4. Pedestal ftServer 3300 System Specifications (Continued)

PCI slots	<p>One 32-bit 66MHz PCI slot for a video adapter or ftServer Access Adapter in each I/O enclosure</p> <p>Two user-configurable PCI adapter slots in each core I/O enclosure operating at 64-bits and 33 MHz</p>
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Rack-Mountable ftServer 3300 System Specifications

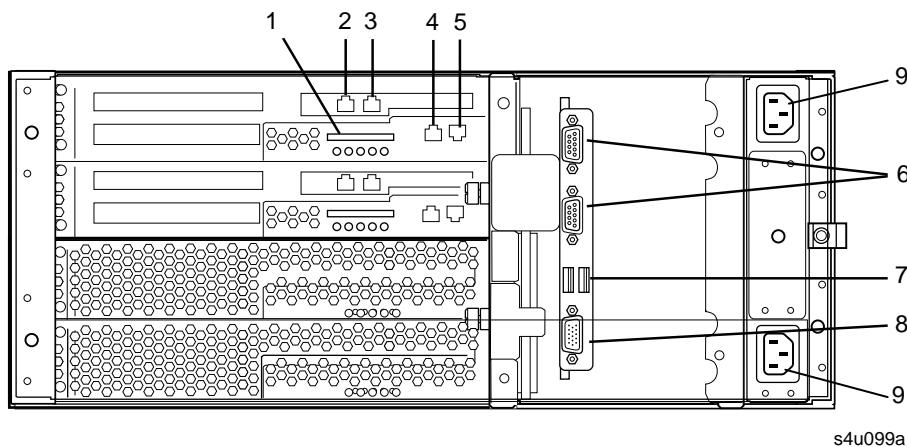
Figure A-7 shows the front of a rack-mountable ftServer 3300 system, mounted in a rack with its bezel pulled forward. Figure A-8 shows the rear of a rack-mountable ftServer 3300 system, specifying the locations of the connectors at the back of the system. Table A-5 lists the specifications for the rack-mountable ftServer 3300 system.

Figure A-7. Rack-Mountable ftServer 3300 System - Front View

s4u072a

- 1 Core I/O enclosures 2 CPU enclosures

Figure A-8. Rack-Mountable ftServer 3300 System - Rear View



- 1 SCSI port
- 2 ftServer Access Adapter (optional) Ethernet port
- 3 ftServer Access Adapter (optional) modem port
- 4 10/100/1000-Mbps Ethernet port
- 5 10/100-Mbps Ethernet port
- 6 Serial ports
- 7 USB ports
- 8 VGA (monitor) port
- 9 Power receptacles

Table A-5. Rack-Mountable ftServer 3300 System Specifications

Power	
Output wattage	A-side: 500W (AC) B-side: 500W (AC)
Nominal input voltage	
Model dependent	100–127 volts AC; 50–60 Hz
Model dependent	100–127, 200–240 volts AC; 50 Hz
Model dependent	200–240 volts AC; 50–60 Hz

Table A-5. Rack-Mountable ftServer 3300 System Specifications *(Continued)*

Physical Dimensions	
Height	7 in. (17.78 cm; 4U)
Width	17.75 in. (45 cm)
Depth	29.23 in. (75 cm)
System weight	124 lb (56.25 kg) to 137 lb (62 kg)
Environmental	
Operating temperature	41° F to 95° F (5° C to 35° C) For every 800 ft (243.8 m) above 2000 ft (609.6 m), lower the maximum operating temperature (35°C) by 1°C.
Maximum rate of temperature change during operation	18° F/hr (10° C/hr) or 0.30° F/min (0.17° C/min)
Relative humidity during operation	20% to 80% (noncondensing)
Relative humidity during storage	8% to 80%
Heat dissipation	3500 BTUs per hour
Features	
Processors	One or two Intel Xeon processors in each CPU enclosure
Memory	Six dual data rate (DDR) inline memory module (DIMM) slots in each CPU enclosure
Ports	One 10/100-Mbps Ethernet port, one 10/100/1000-Mbps Ethernet port, and one external SCSI port on each core I/O enclosure Two AC power connectors, one VGA port, two serial ports, and two USB ports
PCI slots	One 32-bit 66MHz PCI slot for a video adapter or ftServer Access Adapter in each I/O enclosure Two user-configurable PCI adapter slots in each core I/O enclosure operating at 64-bits and 33 MHz

Appendix B

Specifications of Peripheral and Storage Components

For specifications of optional components, see:

- “D540 Storage Enclosure Specifications” on page B-2
- “V128 LCD Monitors Specifications” on page B-4
- “V129 LCD Monitor Specifications” on page B-6
- “V115 Keyboard Specifications” on page B-7
- “AAP41105 PDU Specifications” on page B-8
- “AAP41104 PDU Specifications” on page B-10
- “AK470 KVM Switch Specifications” on page B-12
- “AA000400 USB Floppy Disk Drive Specifications” on page B-14
- “T521 and T522 Tape Drive Enclosure Specifications” on page B-15
- “T511 DDS-4 DAT Tape Drive Specifications” on page B-16
- “T513 DLT 8000 Tape Drive Specifications” on page B-17
- “C719 External Modem Specifications” on page B-18

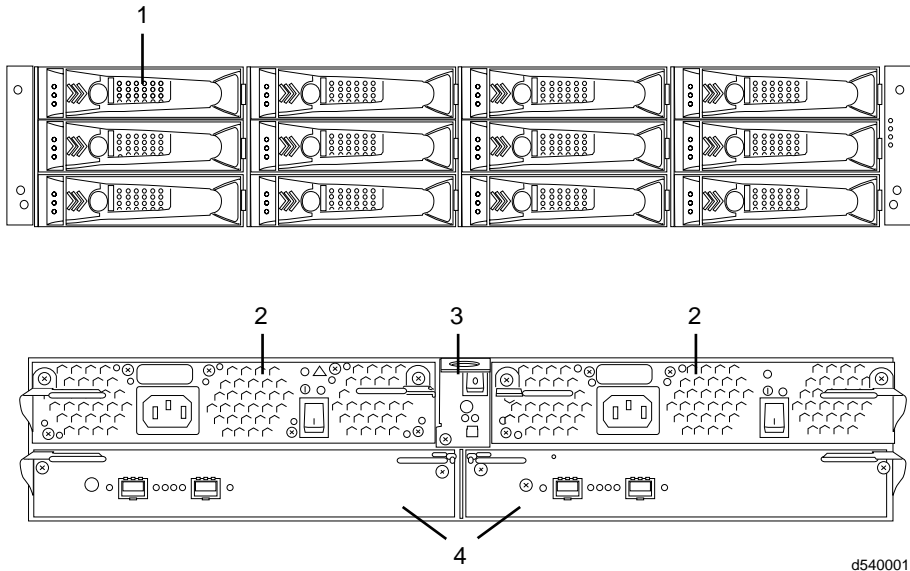
NOTE

The system temperature and humidity requirements, defined in [Appendix A, “System Specifications”](#) are the **minimum** requirements the site must provide. The temperature and humidity requirements for other components are specified for your reference.

D540 Storage Enclosure Specifications

Figure B-1 shows the front and rear of the D540 storage enclosure, the slot locations of the drive carriers, and the subassemblies of the enclosure. Table B-1 lists the specifications for the D540 storage enclosure.

Figure B-1. D540 Storage Enclosure



- 1 Disk drives
- 2 Two advanced cooling and power supply (CAPS) modules
- 3 Environmental services module (ESM)
- 4 Two loop I/O modules

Table B-1. D540 Storage Enclosure Specifications

Power	
Output wattage	300 W (AC)
Nominal input voltage; Input frequency	100–240 volts AC; 50–63 Hz
Physical	
Height	3.5 in. (8.9 cm; 2U)
Width	17.6 in. (44.7 cm)
Depth	19.5 in. (49.5 cm)
Weight, fully configured	60 lb (27 kg)
Disk drives	12
Environmental	
Operating temperature	41°F to 104°F (5°C to 40°C)
Storage temperature	-40° F to 158° F (-40° C to +70° C)
Maximum rate of temperature change	68° F (20° C) per hour
Relative humidity during operation	10% to 80% (noncondensing)
Maximum rate of humidity change during operation	10% per hour.
Relative humidity during storage	5% to 95% (noncondensing)
Operating altitude	-200 to 10,000 feet (-61m to 3.05 km)
Storage altitude	-200 to 40,000 feet (-61m to 12.2 km)
Heat dissipation	1706 BTUs per hour

V128 LCD Monitors Specifications

Figure B-2 shows the rack-mountable V128 LCD monitor, which contains an integrated keyboard and trackpad. Table B-2 lists the specifications for the V128 LCD monitor.

Figure B-2. V128 LCD Monitor

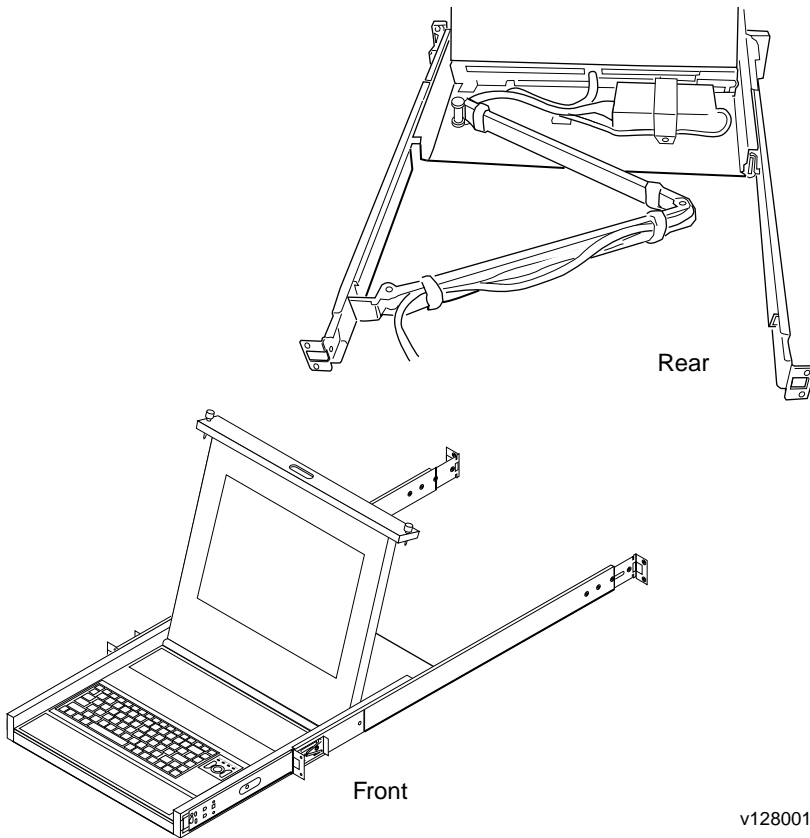


Table B-2. V128 LCD Monitor Specifications

Power	
Output wattage	21 W (AC)
Input voltage	90-265 volts AC; 47-63 Hz
Physical	
Height	1.75 in. (4.45 cm; 1U)
Width	19 in. (48.3 cm)
Depth	24 in. (61 cm)
Environmental	
Operating temperature	32°F to 104°F (0°C to 40°C)
Storage temperature	-13°F to +140°F (-25°C to +60°C)
Relative humidity during operation	10% to 80% (noncondensing)
Relative humidity during storage	5% to 95% (noncondensing)
Heat dissipation	38 BTUs per hour

V129 LCD Monitor Specifications

Figure B-3 shows the V129 LCD monitor, which requires a table or desk. Table B-3 lists the specifications for the V129 LCD monitor.

Figure B-3. V129 LCD Monitor

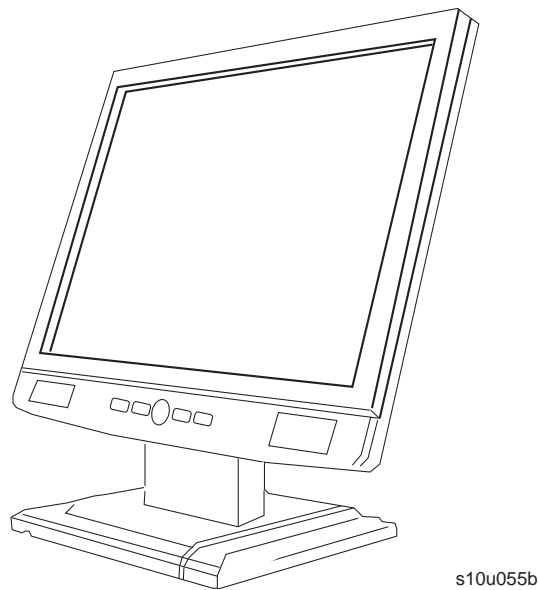


Table B-3. V129 LCD Monitor Specifications

Power	
Output wattage	30 W (AC)
Nominal input voltage; Frequency	90–265 volts AC; 47–63 Hz
Physical	
Height	14.3 in. (36.2 cm)
Width	13.6 in. (34.2 cm)
Depth	7.3 in. (18.5 cm)
Weight	5.7 lb (2.6 kg)

Table B-3. V129 LCD Monitor Specifications *(Continued)*

Environmental	
Operating temperature	41°F to 95°F (5°C to 35°C)
Storage temperature	41°F to +113°F (5°C to 45°C)
Relative humidity during operation	30% to 80% (noncondensing)
Relative humidity during storage	5% to 90% (noncondensing)
Heat dissipation	103 BTUs per hour

V115 Keyboard Specifications

[Table B-4](#) lists the specifications for the V115 keyboard.

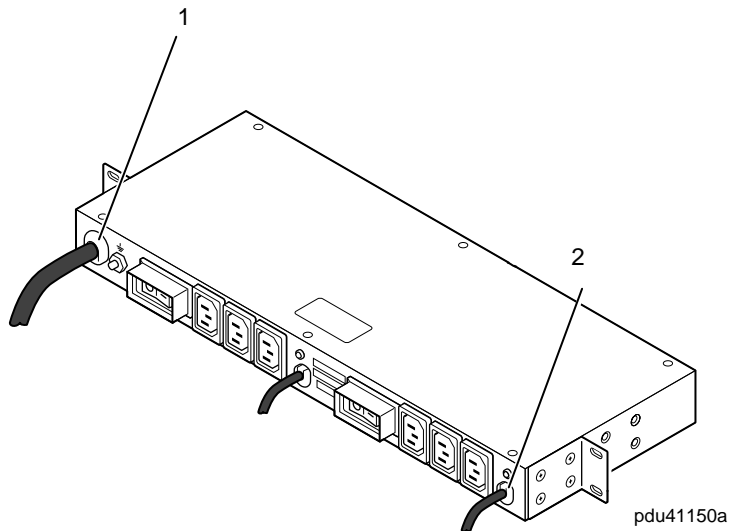
Table B-4. V115 Keyboard Specifications

Height	2.5 in. (6.4 cm; 2U)
Width	19 in. (48.3 cm)
Depth	8 in. (20.3 cm)

AAP41105 PDU Specifications

[Figure B-4](#) shows the AAP41105 power distribution unit (PDU) you can use to supply power to ftServer 6600 systems and optional rack-mountable components. [Table B-5](#) lists the specifications for the AAP41105 PDU.

Figure B-4. AAP41105 PDU



- 1 Power cord (input)
- 2 Power cord (output)

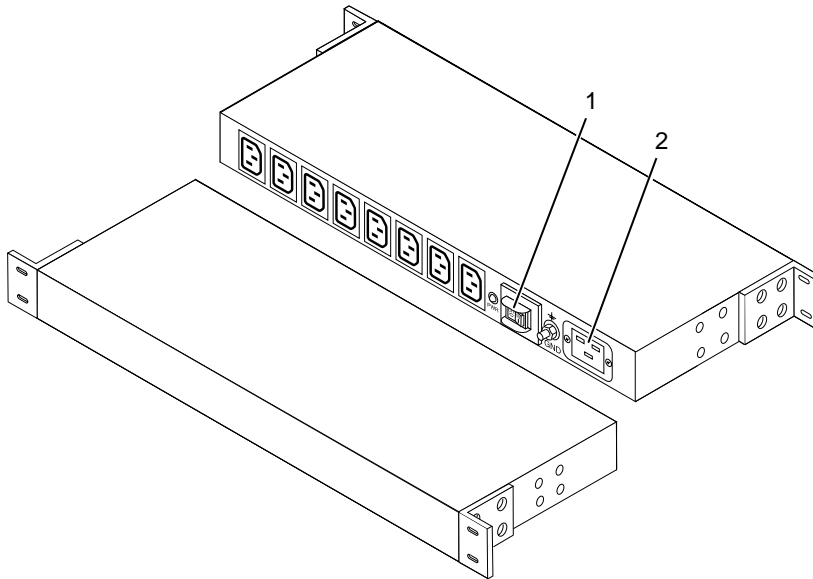
Table B-5. AA-P41105 PDU Specifications

Power	
Output wattage	N/A
Nominal input voltage; Frequency	200–240 volts AC; 50–60 Hz
Physical Dimensions	
Height	1.75 in. (4.45 cm)
Width	19.1 in. (48.51 cm)
Depth	6.75 in. (17.15 cm)
Environmental	
Operating temperature during operation	41° F to 95° F (5° C to 35° C) For every 800 ft (243.8m) above 2000 ft (609.6m), lower the maximum operating temperature (35°C) by 1°C.
Maximum rate of temperature change during operation	12°C per hour or 0.2°C per minute
Relative humidity during operation	10% to 80% (noncondensing)
Storage temperature to 40,000 ft (12.2 km)	-38° F to 140° F (-40° C to 60° C)
Relative humidity during storage	5% to 95% (noncondensing)
Maximum rate of temperature change during storage	12°C per hour or 0.2°C per minute

AAP41104 PDU Specifications

[Figure B-5](#) illustrates the AAP41104 PDU you can use to supply power to ftServer 3300 and 5600 systems and optional rack-mountable components. [Table B-6](#) lists the specifications for the AAP41104 PDU.

Figure B-5. AAP41104 PDU



ssys108

- 1 Power switch
- 2 Power receptacle (input)

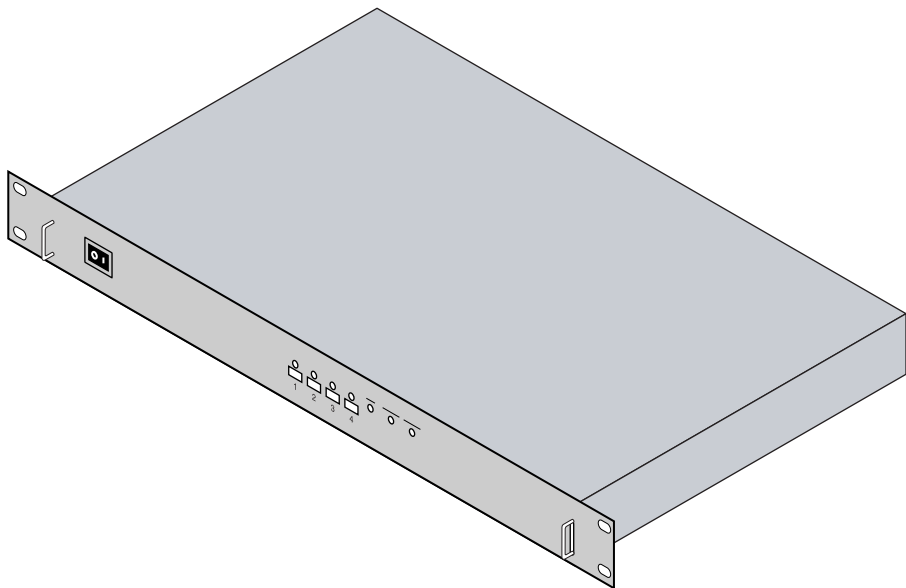
Table B-6. AAP41104 PDU Specifications

Power	
Output wattage	N/A
Nominal input voltage; Frequency range	200–240 volts AC; 50–60 Hz
Physical Dimensions	
Height	1.75 in. (4.45 cm)
Width	19.1 in. (48.51 cm)
Depth	6.75 in. (17.15 cm)
Environmental	
Operating temperature during operation	41° F to 95° F (5° C to 35° C) For every 800 ft (243.8m) above 2,000 ft (609.6m), lower the maximum operating temperature (35° C) by 1° C.
Maximum rate of temperature change during operation	12° C per hour or 0.2° C per minute
Relative humidity during operation	10% to 80% (noncondensing)
Storage temperature to 40,000 ft (12.2 km)	-38° F to 140° F (-40° C to 60° C)
Relative humidity during storage	5% to 95% (noncondensing)

AK470 KVM Switch Specifications

Figure B-6 shows the AK470 keyboard-video-mouse (KVM) switch. Table B-7 lists the specifications for the AK470 KVM switch.

Figure B-6. AK470 KVM Switch



s10u056

Table B-7. AK470 KVM Switch Specifications

Power	
Output wattage	20 W (AC)
Input voltage	90 to 264 volts AC; 47–63 Hz
Physical Dimensions	
Width (front)	19 in. (48.26 cm)
Width (rear)	16.75 in. (42.55 cm)
Depth	10 in. (25.4 cm)
Height	1.75 in. (4.45 cm; 1U)
Weight	5 lb (2.27 kg)

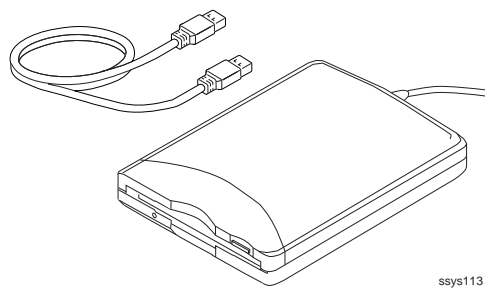
Table B-7. AK470 KVM Switch Specifications *(Continued)*

Environmental	
Operating temperature 0 to 2000 ft (0 to 609.6m)	0° F to 100.4° F (0° C to 38° C)
Storage temperature	-22° F to 140° F (-30° C to 60° C)
Relative humidity during operation	20% to 80% (noncondensing)
Relative humidity during storage	17% to 90% (noncondensing)

AA000400 USB Floppy Disk Drive Specifications

Figure B-7 illustrates the optional AA000400 floppy disk drive. Table B-8 lists the specifications for the AA000400 USB floppy disk drive.

Figure B-7. AA000400 USB Floppy Disk Drive



ssys113

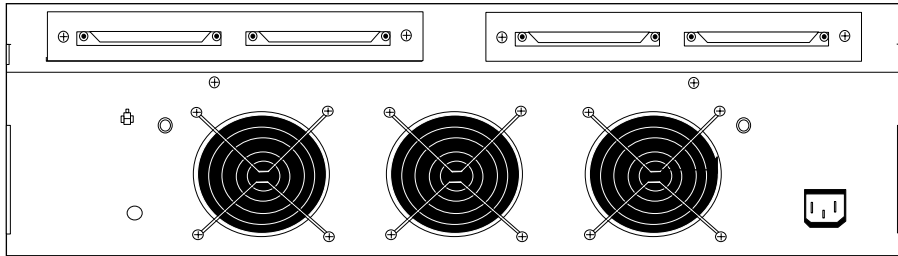
Table B-8. AA000400 USB Floppy Disk Drive Specifications

Physical Dimensions	
Width	4 in. (10.3 cm)
Depth	5.6 in. (14.2 cm)
Weight	9.9 oz. (280 g)
Disk capacity	14.4 MB
Environmental	
Operating temperature	41° F to 95° F (5° C to 35° C)
Storage temperature	-4° F to 140° F (-20° C to +60° C)
Relative humidity during operation	20% to 80% (noncondensing)
Relative humidity during storage	10% to 90% (noncondensing)

T521 and T522 Tape Drive Enclosure Specifications

Figure B-8 illustrates the T521 and T522 rack-mountable tape drive enclosures. The T521 enclosure contains a single tape drive and the T522 enclosure contains two tape drives. Table B-9 lists the specifications for the T521 and T522 tape drive enclosures.

Figure B-8. T521 and T522 Tape Drives



tape012

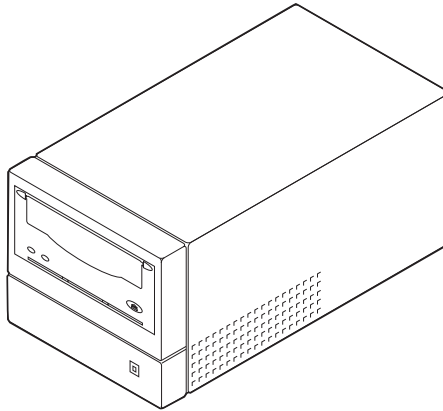
Table B-9. T521 and T522 Tape Drive Enclosure Specifications

Power	
Output wattage	500 W (AC) maximum
Nominal input voltage; Frequency	100–250 volts AC; 47–60 Hz
Physical	
Height	5 in. (127 mm; 3U)
Width	19 in. (48.26 cm)
Depth	18 in. (457.2 mm)
Weight, T521	30.25 lb (13.8 kg)
Weight, T522	35.5 lb (14.2 kg)

T511 DDS-4 DAT Tape Drive Specifications

[Figure B-9](#) illustrates the T511 tape drive. [Table B-10](#) lists the specifications for the T511 tape drive.

Figure B-9. T511 Tape Drive



s6u106

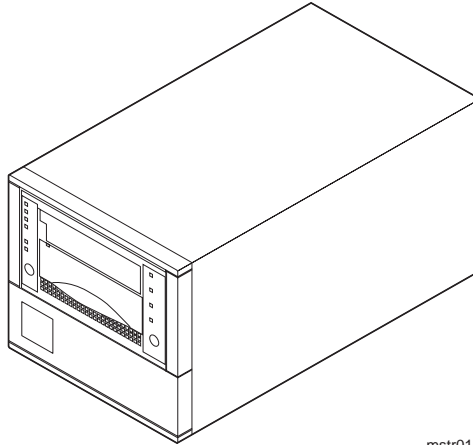
Table B-10. T511 Tape Drive Specifications

Power	
Output wattage	22.5 W (AC) max.
Nominal input voltage; Frequency	100–240 volts AC; 50–60 Hz
Physical	
Height	3.7 in. (95 mm)
Width	4.6 in. (116 mm)
Depth	8.7 in. (220 mm)
Weight	4.6 lb (2.1 kg)

T513 DLT 8000 Tape Drive Specifications

Figure B-10 illustrates the T513 DLT 8000 tape drive. Table B-11 lists the specifications for the T513 tape drive.

Figure B-10. T513 DLT 8000 Tape Drive



mstr012a

Table B-11. T513 Tape Drive Specifications

Power	
Output wattage	28 W (AC) max.
Nominal input voltage; Frequency	100–240 volts AC; 50–60 Hz
Physical	
Height	6.48 in. (164.6 mm)
Width	6.88 in. (174.8 mm)
Depth (including tape eject handle)	12.8 in. (325.1 mm)
Weight	14 lb (6.35 kg)

C719 External Modem Specifications

Table B-12 lists the specifications for the C719 external modem.

Table B-12. C719 External Modem Specifications

Power	
Output wattage	N/A
Nominal input voltage; Frequency range	100–240 volts AC; 50–60 Hz
Physical	
Height	1.00 in. (2.5 cm)
Width	4.25 in. (10.8 cm)
Depth	5.60 in. (14.2 cm)

Appendix C

Electrical Circuit and Wiring Information

For electrical circuit and wiring information you need to provide to the contractor and/or facilities personnel responsible for wiring the power at the system installation site, see:

- [“Fault Protection Requirements” on page C-1](#)
- [“Grounding Considerations” on page C-1](#)
- [“Circuit Wiring Diagrams” on page C-3](#)
- [“Electrical Power Connectors” on page C-9](#)

Fault Protection Requirements

Each enclosure in the ftServer system contains fault/overload current protection. However, the system relies on the power distribution system at your site for protection against potential faults in the power cords and the wiring in the system base.

- If you are using a pair of PDUs in the cabinet, use 30A or less circuit breakers in each power distribution branch feeding the PDUs.
- To connect a single system to power, use 20A or less circuit breakers in each power distribution branch feeding the systems.

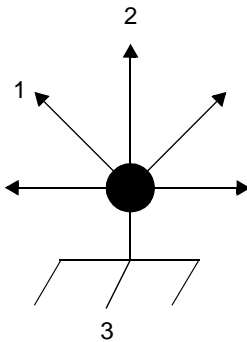
Grounding Considerations

The system obtains an earth reference ground through the power cords attached to the system. Similarly, each peripheral device connected to the system obtains ground through its power cord. For each peripheral device, you **must** ensure that a high-integrity safety-ground conductor is installed as part of the wiring system (in accordance with U.S. national electric code NFPA 70 or the equivalent). The international safety standard (EN60950) for electronic data processing (EDP) equipment also requires a ground conductor, but calls it a protective earth (PE) ground.

Depending upon local conditions, ground potentials may differ between the system base and any peripheral devices connected to the system base. All grounds in the system **must** return to the same reference point in the power distribution system, as close as possible to **zero (0) volt potential** relative to earth reference ground. Earth reference ground is typically a metal stake in the ground to which the ground conductors from one or more buildings are attached.

As shown in [Figure C-1](#), a *star ground* is often used to obtain the same earth reference ground. Each earth reference ground, such as the system base ground, is returned separately to a common point where a zero-volt (0V) earth ground exists. The star ground ensures that all equipment is at the same potential and that no noise or safety problems associated with an unpredictable or uncharacterized grounding system will occur.

Figure C-1. Star Ground Example



- 1 To monitor
- 2 To ftServer system
- 3 Earth reference ground (0V)

Circuit Wiring Diagrams

The following circuit wiring diagrams show how the hot, ground, and/or neutral AC signals should be connected to the system's power input plug:

- [Figure C-3](#) illustrates a single-phase 120V AC circuit connection (for ftServer 5600 and 3300 only).
- [Figure C-4](#) illustrates a single-phase 240V AC circuit connection.
- [Figure C-5](#) illustrates a split-phase 120/240V AC circuit connection.
- [Figure C-6](#) illustrates a three-phase 208V AC, Y-, or Δ -source circuit connection, phase-to-neutral.
- [Figure C-7](#) illustrates a three-phase 208V AC, Y-, or Δ -source circuit connection, phase-to-phase.
- [Figure C-8](#) illustrates a three-phase 380V AC, Y-, or Δ -source circuit connection, phase-to-neutral.

In the diagrams in this appendix, the power inputs for the ftServer system are labeled X and Y, as shown in [Figure C-2](#), to eliminate any ambiguities in the nomenclature. For single-phase applications, the X input is connected to the L (Line) *hot* input, and the Y input is connected to the N (Neutral) input. However, for split-phase or three-phase applications, the X and Y inputs are connected to L1, L2, or L3 (separate lines). Therefore, for split-phase or three-phase applications, both X and Y can be electrically hot with respect to the system base (earth reference ground). [Figure C-2](#) shows the physical locations of the X and Y inputs on the system base.

Figure C-2. Power Input Labeling

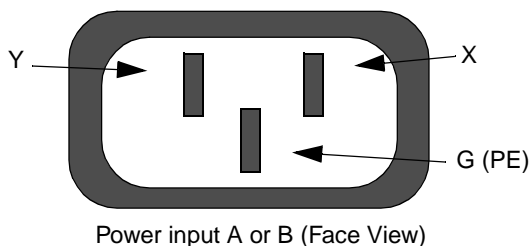


Figure C-3 shows a single-phase 120V AC circuit connection. Note that this application requires a single-pole circuit breaker.

Figure C-3. Single-Phase 120V AC Circuit Connection

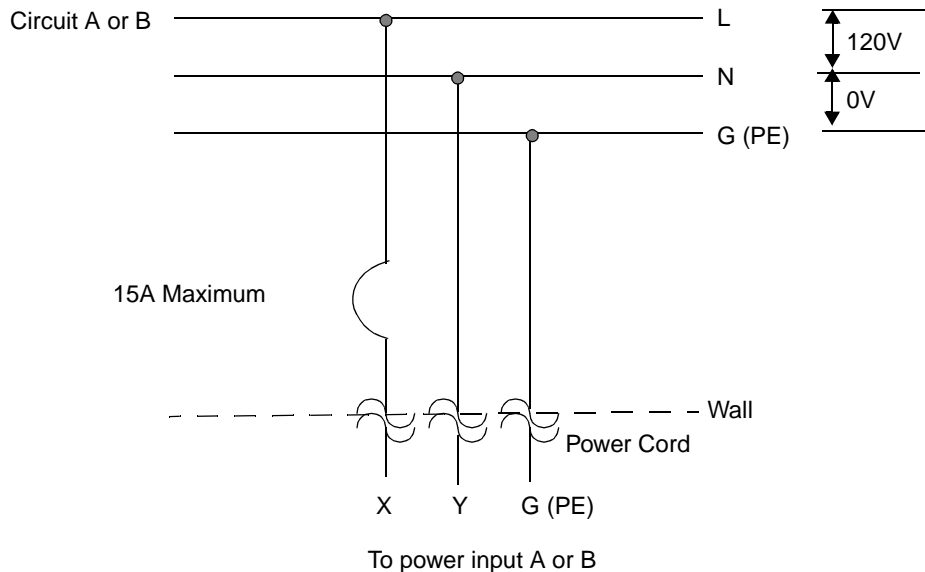


Figure C-4 shows a single-phase 240V AC circuit connection. Note that this application requires a single-pole circuit breaker.

Figure C-4. Single-Phase 240V AC Circuit Connection

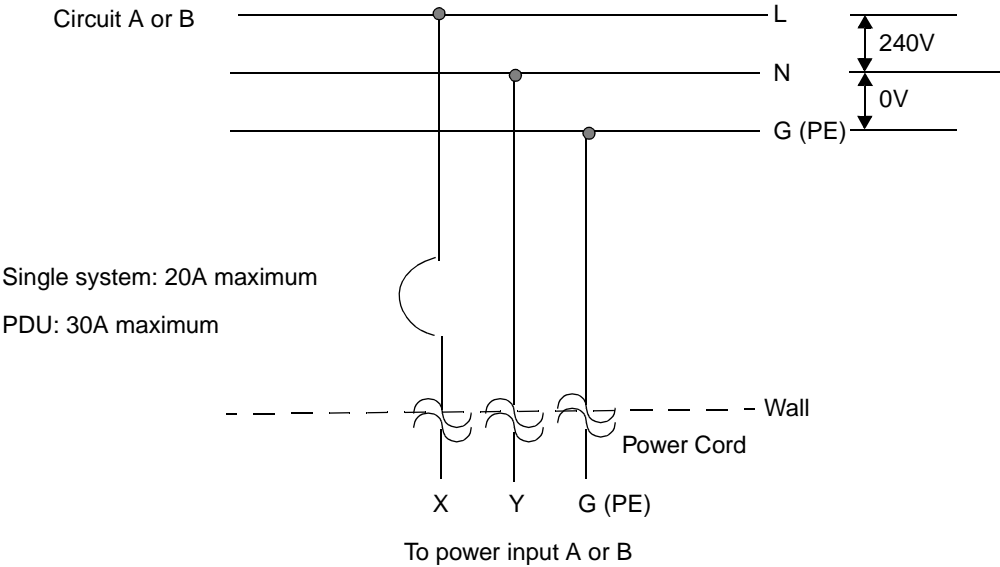


Figure C-5 shows a split-phase 120/240V AC circuit connection. Note that this application requires a double-pole circuit breaker.

Figure C-5. Split-Phase 120/240 Volts AC Circuit Connection

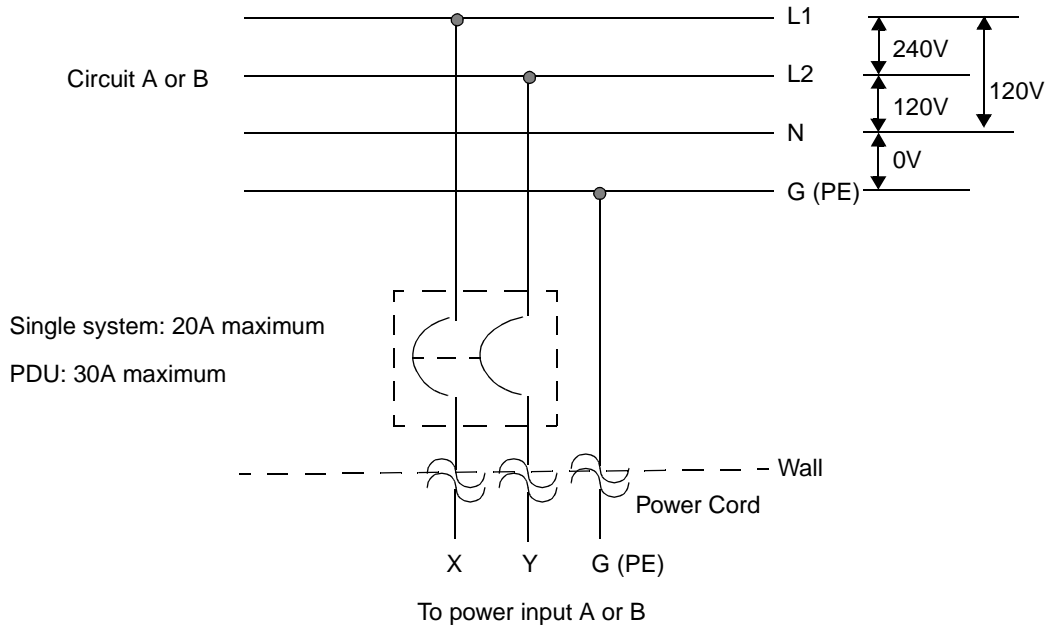


Figure C-6 shows a three-phase 208V AC, Y-, or Δ -source circuit connection, which is a phase-to-neutral source connection. Note that the ftServer X input can be connected from L1, L2, or L3. This application requires a single-pole circuit breaker.

Figure C-6. Three-Phase 208V AC, Y-, or Δ -Source Circuit Connection, Phase-to-Neutral

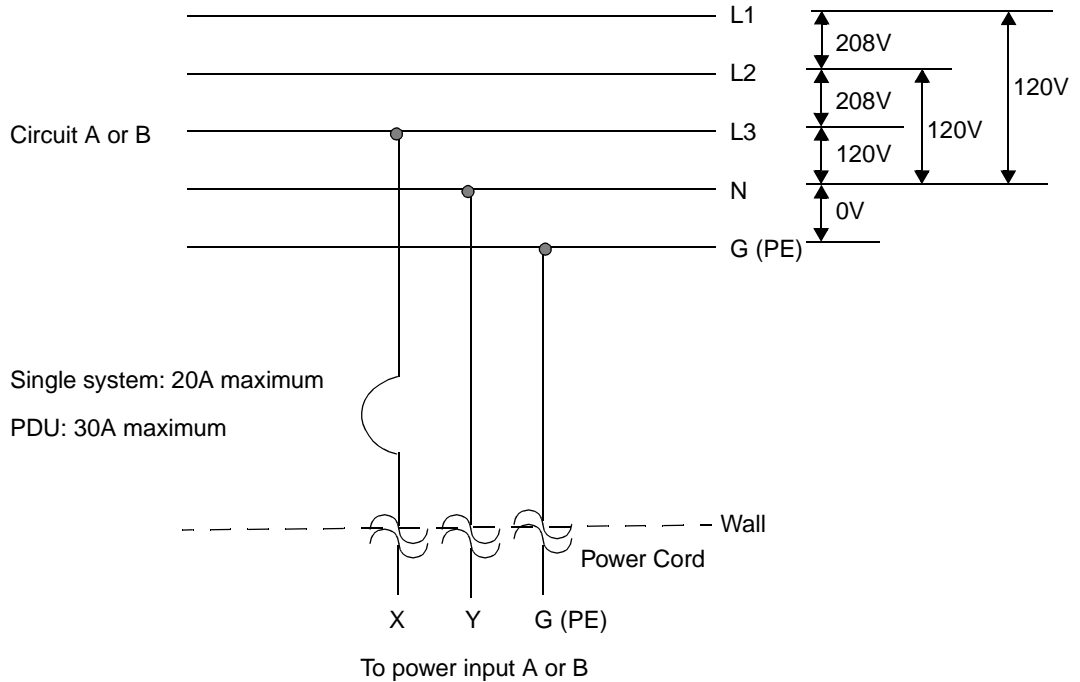


Figure C-7 shows a three-phase 208V AC, Y-, or Δ -source circuit connection, which is a phase-to-phase source connection. Note that the ftServer X and Y inputs can be connected from L1 and L2, L2 and L3, or L1 and L3. This application requires a double-pole circuit breaker.

Figure C-7. Three-Phase 208V AC, Y-, or Δ -Source Circuit Connection, Phase-to-Phase

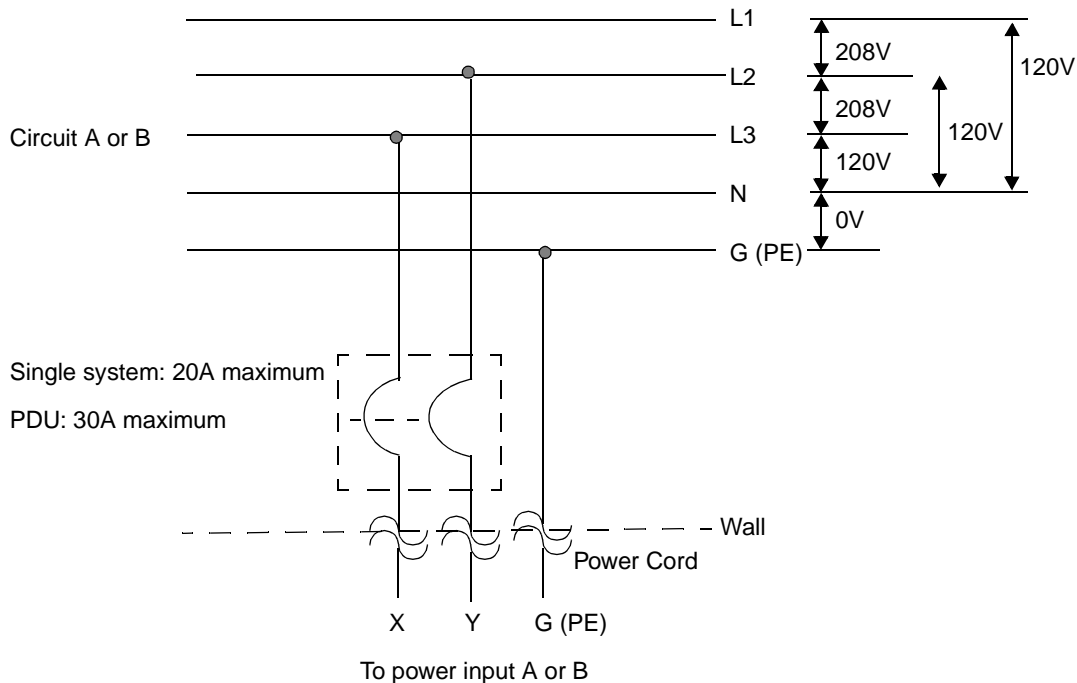


Figure C-8. Three-Phase 380V AC, Y-, or Δ -Source Circuit Connection, Phase-to-Neutral



Electrical Circuit and Wiring Information C-9

Table C-1. Connectors for AC Power Outlets


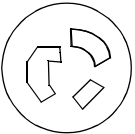
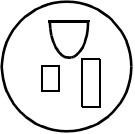
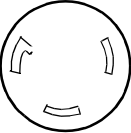
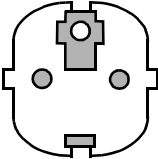
Connector	Configuration	Rating	Description
NEMA 6-15 [†]		15A, 25 volts AC	2-pole, 3-wire
NEMA L6-20		20A, 208/24 volts AC	2-pole, 3-wire
NEMA 5-15		15A, 125 volts AC	2-pole, 3-wire
NEMA L6-30		30A, 125/25 volts AC	2-pole, 3-wire
CEE (7) VII		20A, 25 volts AC	2-pole, 3-wire

Table C-1. Connectors for AC Power Outlets *(Continued)*

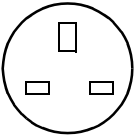
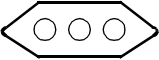
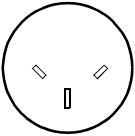
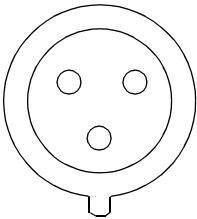
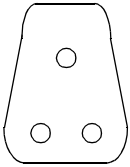
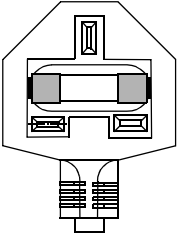
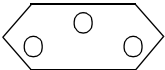
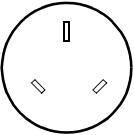
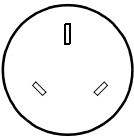
Connector	Configuration	Rating	Description
BS 89 3 [‡]		13A or 10A, 25 volts AC	2-pole, 3-wire
CEI-23-16		16A, 25 volts AC	2-pole, 3-wire
SI 32/1971		16A, 25 volts AC	2-pole, 3-wire
IEC-309		16-20A, 200-24 volts AC	2-pole, 3-wire
SABS 164-1:1992		16A, 25 volts AC	2-pole, 3-wire

Table C-1. Connectors for AC Power Outlets (Continued)

Connector	Configuration	Rating	Description
BS 1363/A [§]		13A, 250 volts AC	2-pole, 3-wire
1011-S24507 [¶]		10A, 250 volts AC	2-pole, 3-wire
AS/NZS 3112-1993 ^{††}		15A, 250 volts AC	2-pole, 3-wire
SAA/3/15 AS/NZS 3112-1993 ^{‡‡}		15A, 250 volts AC	2-pole, 3-wire

† ftServer 6600 only

‡ ftServer 6600 only

§ ftServer 3300 and 5600

¶ ftServer 3300 and 5600

†† ftServer 3300 and 5600

‡‡ ftServer 3300 and 5600

Appendix D

Standards Compliance

ftServer systems comply with the electromagnetic interference (EMI), immunity, safety, and noise regulations listed in Tables D-1 through D-4. All necessary agency labels are on the system.

NOTES _____

1. This system must be configured with the components listed and described in the product configuration specifications. Deviations from this list of components will void agency certification.
2. You must install all wiring, including power and communications cables, in compliance with local and national electrical code (in the United States, national electrical code NFPA 70). In addition, you must use shielded communications cables to remain in compliance with Federal Communications Commission (FCC) and other international Electromagnetic compatibility (EMC) regulations.
3. All EMC emissions compliance tests are performed at a third-party certified test laboratory. You can obtain compliance reports for these tests from your Stratus account representative, who will contact the Product Compliance Group in the Stratus engineering organization.

Table D-1. EMI Standards

Standard	Description	Country/Region
FCC Part 15 Class A	Code of Federal Regulations 47 (1998) Class A	North America
EN 55022	Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment	European Union

Table D-1. EMI Standards *(Continued)*

Standard	Description	Country/Region
AS/NZS 3548	Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment	Australia/New Zealand
CNS13438	Chinese National Standard 13438	Taiwan
VCCI Class A	Voluntary Control Council for Interference by Information Technology Equipment	Japan

Table D-2. Immunity Standards

Standard	Description	Country/Region
EN 50082-1	Generic Immunity Standard, Electromagnetic Compatibility, Residential, Commercial, and Light Industrial	European Union
EN 55024	Limits and methods of measurement of immunity characteristics of Information Technology Equipment	European Union

Table D-3. Safety Standards

Standard	Description	Country/Region
UL 60950	Safety of Information Technology Equipment	North America
EN 60950	Safety of Information Technology Equipment	European Union

Table D-4. Noise Standards

Standard	Description	Country/Region
ISO 9614-2	Acoustics. Determination of Sound Power Levels of Noise Source using Sound Intensity	European Union
ISO 7779	Measurements of Airborne Noise emitted by Computers and Business Equipment	European Union

VCCI Note

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

BSMI Note**警告使用者**

這是甲類的資訊產品、在居住的環境中使用時、可能會造成射頻干擾、在這種情況下、使用者會被要求採取某些適當適對策

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