DIGITAL Server 9100 Series

Site Preparation Guide

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Digital Equipment Corporation

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DIGITAL Server 9100 Series Site Preparation Guide

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Preface

Who Should Read This Book

This book is written for the person who plans for server installation and who transports, installs, and turns on the server.

How To Use This Book

This book provides specific information on selecting and preparing your site for server installation, how to handle the server during transport and installation, basic procedures for turning on and booting up the server, and instructions on what to do before using the server.

Conventions Used

The following conventions are used throughout this guide to help you understand the text.

Symbols

The symbol > is used in showing you how to select a menu item. For example, the entry **System Config Utils>Execute SCU** instructs you to select the **Execute SCU** item in the **System Config Utils** menu.

Acronyms

The first time an acronym is used in a chapter, it is spelled out. Subsequent uses in the chapter show only the acronym. For example, the first time “System Configuration Utility” is used in the chapter, it is shown as System Configuration Utility (SCU). Later references to System Configuration Utility use SCU.

Typography

In this document, special typefaces are used to distinguish certain kinds of information.

`Courier`
Used for operator entry, commands, and screen messages.

Bold
Used for utility names and for emphasis in instructions.

Italics
Used for document names, path names, and file names.

CAPS
Keys are displayed in capital letters.

“Quotes”
Used for chapter and section references within the guide and for menu selections.

Special Notices

This book may contain special notices to the user, which are labeled and described below:

Warnings – Text marked as WARNINGS alert users to situations where personal injury is possible

Cautions – CAUTIONS indicate situations where equipment damage or data loss is possible

Important – Text marked as IMPORTANT notifies users of significant and consequential information.

Related Publications

For additional information, refer to the following books.

- *DIGITAL Server 9100 Series User’s Guide*
- *DIGITAL Server 9100 Series Installation Guide*
- *DIGITAL Server 9100 Series System Software Guide*
- *AMIDiag User’s Guide (available on the Quick Launch CD-ROM)*

Chapter 1

Getting Started

This chapter contains information to help you set up your server and turn it on. It includes the following topics:

- Selecting a site
- Preparing the site
- Turning on your server
- Before beginning to use your server

Use the information in this chapter in conjunction with the *DIGITAL Server 9100 Series Installation Guide* you received with your server.

Terms, Conventions, and Related Documents

Refer to the “Preface” of this document for important information on how to use this book, terms and conventions, and related documents.

When used in this chapter, the term “configuration utility” refers to the System Configuration Utility (SCU).

Selecting a Site

The following table shows requirements that you must consider when selecting the location for your server.

Requirement	Description
Near grounded, three-pronged power outlet(s)	United States and Canada: NEMA 5-15R outlet for 100-120 Vac or a NEMA 6-15R outlet for 200-240 Vac. The minimum requirement for a dual system board configuration is 200-240 Vac, single phase. Other international sites: three-pronged outlet applicable for the electrical code of the region. Refer to “Power Cord and Receptacle Options” later in this chapter for information on power cord and receptacle standards for all countries. **CAUTION:** Be sure that the power service connection is through a properly grounded outlet.
Environmental quality	Choose an area that is clean, relatively free of excess dust, and well-ventilated. Keep front and rear ventilating openings free of obstructions. Keep the server away from sources of heat and away from sources of vibration or physical shock (refer to “Operational Vibration and Shock Limits” later in this chapter).
Electromagnetic fields and electrical noise	Isolate the server from strong electromagnetic fields and electrical noise produced by electrical devices (such as elevators, copy machines, air conditioners, large fans, large electric motors, radio and TV transmitters, and high frequency security devices).
Clearance for cooling	Provide sufficient clearance behind and around the server to ensure proper cooling and airflow. Allow a minimum of 13 centimeters (about 5 inches) of clearance at the back of the server and 8 centimeters (about 3 inches) on each side. Refer to the “Service Clearance Specifications” section in this chapter.
Room for maintenance	Plan access space for server maintenance as needed. Make sure there is convenient access to disconnect the AC power cords from wall outlets or from the power supplies. Disconnecting the cords is the main way to turn off power to the server before doing maintenance or upgrade procedures. Pressing the DC push-button on/off switch on the front panel does NOT turn off system AC power. For detailed information on removing AC power, refer to the *DIGITAL Server 9100 Series User’s Guide*.

Preparing the Site

This section provides information that you need to prepare the site for your server. It includes the following:

- Physical dimensions
- Installation clearance specifications
- Service clearance specifications
- Flooring specifications
- Floor loading specifications
- Handling instructions
- Heat specifications
- Acoustical noise specifications
- Air flow specifications
- Environmental requirements
- Storage and transit requirements
- Operational vibration and shock limits
- Non-operational vibration and shock limits
- Power requirements
- Electromagnetic emission regulations
- Safety regulations

Physical Dimensions

The following table shows the physical dimensions of the server.

Dimension	Value
Height	27.5 inches/69.8 centimeters
Width	18 inches/45.7 centimeters
Depth	29.5 inches/74.9 centimeters
Minimum configuration shipping weight	150 lb/68.2 kg
Minimum configuration installed weight	100 lb/45.4 kg
Maximum configuration shipping weight	322 lb/146 kg
Maximum configuration installed weight	272 lb/124 kg

Installation Clearance Specifications

The following table shows installation clearances for the server.

Side	Clearance Required
Top	1 inch/2.54 centimeters
Front	12 inches/30.5 centimeters
Right side	3 inches/7.6 centimeters
Left side	3 inches/7.6 centimeters
Rear	5 inches/12.7 centimeters

Service Clearance Specifications

The following table shows clearances needed to service the server.

Side	Clearance Required
Top	5 inches/12.7 centimeters
Front	30 inches/76.2 centimeters
Right side	30 inches/76.2 centimeters
Left side	30 inches/76.2 centimeters
Rear	30 inches/76.2 centimeters

Flooring Specifications

The following are permitted:

- Raised floor
- Solid floor

Floor Loading Specifications

The following table shows floor loading specifications for the server.

Floor Loading Type	Specifications
Distributed	71 lbs/ft^2; 348 kg/m^2
Concentrated	300 lbs/ft^2; 1470 kg/m^2

Handling Instructions

Note the following when handling the server:

- Maximum degree of tip permitted is 25° from vertical.
- Do not upend the server.
- A dolly is recommended to move the server.
- Two people are required to move the installed unit for service.

Heat Specifications

A fully configured server generates 4352 British Thermal Units (BTU) of heat in a single system board configuration and 6071 BTU in a dual system board configuration.

Acoustical Noise Specifications

The following table shows acoustical noise specifications for the server.

Status	Noise Generated
Idle	< 65 dBA
Operating	< 65 dBA

Air Flow Specifications

The following table shows the air flow specifications for the server.

Description	Specifications
Air flow	200 cfm/5.7 m^3m
Temperature rise inlet to exhaust	18°F/10°C

Environmental Requirements

The following table shows the environmental requirements for the server.

Requirement	Description
Temperature range (dry bulb)	+5°C to +35°C (40°F to 95°F)
Maximum temperature change	10°C (50°F) per hour
Relative humidity range	10-90% non-condensing
Maximum humidity change	15% per hour
Maximum operational altitude	10,000 feet (3,048 meters)

Storage and Transit Requirements

The following table shows the environmental requirements for storing or transporting the server.

Requirement	Description
Temperature range	-40°C to +70°C (-40°F to 158°F)
Maximum temperature change	10°C (50°F) per hour
Humidity range	10-90% non-condensing for storage 5-95% non-condensing for transport
Maximum humidity change	15% per hour
Maximum transit altitude	50,000 feet (15,240 meters)

Operational Vibration and Shock Limits

The operational vibration limit for the server is 0.25g input, 3-150-3Hz, three-axis.

The server continues to operate without hard errors during and after a half sine wave shock of 2 G with 11 millisecond (ms) duration.

Non-Operational Vibration and Shock Limits

The non-operating vibration limit for the server is 0.5 G, 3-150-3 Hz, three-axis.

The non-operating shock limit is 65 G @ 3.75 ms triangular pulse, one shock base position **or** 20 G @ 8 ms square pulse, one shock each direction.

Power Requirements

The single system board configuration can operate from 100-120 Vac, or 200-240 Vac, at 50 or 60 Hz. The power supply is auto-ranging. The dual system board configuration can operate **only** from 200-240 Vac, at 50 or 60 Hz. The server operates with line source interruptions not to exceed 10 milliseconds at nominal line conditions and full power supply output load.

No damage occurs from an AC surge ring wave up to 3.0 KV/500 A.

Electrical (Nameplate Ratings)

The following table shows electrical ratings for the server (for single and dual system board configurations).

Description	Rating for Single System Board Configuration	Rating for Dual System Board Configuration
Voltage	100-120 Vac, 200-240 Vac, auto-ranging	200-240 Vac
Frequency	50/60 Hz	50/60 Hz
AC input current	12 A @ 110 Vac, 6 A @ 210 Vac	9 A @ 210 Vac
Watts (power supply output)	684	1250
BTU	4352	6071
Kilocalorie/hr.	1106	1543
Max Operating kva	1.32	1.84
Max Operating kw	1.28	1.79
Power Factor (lead or lag)	lag .97	lag .97
Max. Surge Current	70 A (inrush current only)	70 A (inrush current only)

Power Cord and Receptacle Options

The power cord length is 6 feet (1.85 meters).

The system requires two AC power receptacles, one for each of the following:

- Server: 110 or 220 Vac for single system board configuration, 220 Vac for dual system board configuration
- Monitor: 110 or 220 Vac

The following table shows the types of power cords and receptacles used for the server in different countries:

Countries	Power Cord Type	Receptacle Type
Brazil, Bermuda, Canada, Colombia, Japan, Korea, Mexico, Peru, Philippines, Taiwan, United States	FR-PCM2P-AA* (120 Vac, 15A)	NEMA 5-15R (100-120 Vac)
	FR-PCM2P-AB** (208 Vac)	NEMA 6-15R (200-240 Vac)
Austria, Belgium, Finland, France, Germany, Greece, Hungary, Netherlands, Norway, Portugal, Spain, Sweden, Turkey	FR-PCM2P-AE	CEE 7/7
Switzerland	FR-PCM2P-AG	SEV 1011
Chile, Italy	FR-PCM2P-AI	CEI 23-16/VII
Bermuda, Guatemala, Hong Kong, Cyprus, Kenya, Malaysia, Singapore, Zimbabwe, United Kingdom	FR-PCM2P-AD	BS 1363
Denmark	FR-PCM2P-AC	Afsnit 107-2-01
South Africa	FR-PCM2P-AJ	SABS 16
Argentina, Australia, New Zealand	FR-PCM2P-AH	AS 3112
Israel	FR-PCM2P-AF	SI 32

* The 120 Vac, 15A NEMA 5-15R power cord (FR-PCM2P-AA) is valid for the DIGITAL Server 9100 (FR-M2A2W-AX) only and cannot be used on the DIGITAL Server 9105 (FR-M2A2W-BX).

** A NEMA 6-15R (200 - 240 Vac) power cord (FR-PCM2P-AB) must be used on the DIGITAL Server 9105 (FR-M2A2W-BX).

Grounding

Server grounding requirements are as follows:

- A dedicated circuit is not required.
- An insulated ground wire is required.
- The insulated grounding source must be from a building ground source.

Electromagnetic Emission Regulations

The server complies with the following regulations for electromagnetic (EMC) emissions:

- FCC CFR 47 Part 15, Class A
- Canadian D.O.C. Class A Digital Apparatus
- CE compliant EMC Directive 89/336/EEC
- CISPR 22 Class A
- VCCI Class 1 limits (CISPR Class A limit)

Safety Regulations

The server complies with the following safety regulations:

- UL 1950 without D3 deviations
- CSA C22.2 No. 950-M89 without D3 deviations
- EN 60 950 by TUV with Baurt License and by at least one of the following:
  - NEMKO
  - SEMKO
  - SETI

Turning on Your Server

WARNING: The DC push-button on/off switch on the front panel does NOT turn off the system AC power.

To turn on your server:

1. Make sure that all external devices, such as a monitor, keyboard, and mouse, have been connected.
2. Remove drive protection cards and packing material (if present) from the diskette and tape drives.
3. Plug the female end of the AC power cord into the power input receptacle on the back of the chassis.
4. Plug the male end of the cord into a grounded, three-pronged power outlet.
   - In the United States and Canada, this means a NEMA 5-15R outlet for 100-120 Vac systems (DIGITAL Server 9100, FR-M2A2W-AX) or a NEMA 6-15R outlet for 200-240 Vac systems (DIGITAL Server 9105, FR-M2A2W-BX).
   - For international sites, this means a three-pronged power outlet applicable for the electrical code of the region. Anticipated over-current is 13 A or less. For more information, refer to the “Power Cord and Receptacle Options” section earlier in this chapter.
5. Turn on your video monitor.
6. Turn the server on by pressing the DC on/off push-button switch on the front panel.
7. Verify that the power-on light on the front panel is lit. After a few seconds the power-on self-test (POST) begins.

Power-On Self-Test (POST)

Each time you turn on the server, POST checks the system board, CPU modules, Error Checking and Correction (ECC) memory module, keyboard, and most installed peripheral devices.

During the memory test, POST displays the amount of memory that it is able to access and test. Depending on the amount of memory installed on the ECC memory module, POST may take several minutes to complete the memory test. Memory test on boot is controlled through the BIOS Setup Utility, and is disabled by default.

POST Messages

As part of the boot process, the following types of POST messages display:

- BIOS Setup Utility message
- SCSI*Select* Utility message – use to configure the onboard SCSI II AIC-7880 controllers
- Miscellaneous boot messages

These messages are described in the following sections.

BIOS Setup Utility Message

During the boot process the following message displays:

```
Press <F2> for BIOS Setup
```

If you do not press F2, the message remains a few seconds until the memory test completes, then the boot process continues.

If you press F2, the following message displays:

```
Entering Setup...
```

After this message is shown, the boot process continues. When the boot process is complete, the BIOS Setup Utility runs.

SCSI*Select* Utility Message

During the boot process, the following message displays once for each onboard SCSI controller:

```
Press <Ctrl><A> for SCSISelect(TM) Utility!
```

Press CTRL+A to configure the onboard SCSI-2 AIC-7880 host adapters to support SCSI devices in your server. When the utility displays, follow the instructions on your monitor to configure the SCSI-2 AIC-7880 host adapter settings and run the SCSI disk utilities. See Chapter 5, “Configuring Adapters,” in the *DIGITAL Server 9100 Series System Software Guide* for more information.

Miscellaneous Boot Messages

During the boot process, the message “Press <Ctrl><A> ...” displays up to three times – once for each instance of an onboard SCSI-2 AIC-7880 chip.

For each SCSI-2 AIC-7880 that does not have bootable drives, the following message displays:

```
No SCSI Boot Device Found
```

For each SCSI-2 AIC-7880 that does not have hard drives connected, the following text displays:

```
BIOS not installed!
```

If the server halts before POST completes running, the system beeps, indicating a fatal system error that requires immediate attention. Write down the audible beep code (number of beeps and sequence); this information is useful to your service representative. For a listing of beep codes and error messages that POST can generate, see Chapter 5, “Troubleshooting,” in the *DIGITAL Server 9100 Series User’s Guide.*

If the configuration utility has not yet been run, the following message displays:

```
Please run the configuration utility
```

Booting the Operating Environment

When the BIOS POST process and the adapter BIOS scan completes, the system displays the following prompt:

```
Press <D> to boot the Diagnostic Partition
Press <F1> for normal boot, <F2> for BIOS Setup
Otherwise, <F1> is selected in 30 seconds
```

The following table shows your options in responding to the prompt.

If you...	Then...
Press the D key	The server boots to the Diagnostic Partition.
Press F1	With Diagnostic Partition installed, the server boots to your operating system environment. If booting from the Platform CD-ROM, the MS-DOS Startup Menu appears.
Press F2	The BIOS Setup Utility appears.
Press F3	The last 25 lines of the adapter BIOS scan messages appear.
Press a key other than D, F1, F2, or F3	The server ignores keystrokes other than D, F1, F2, or F3.
Do not respond to the prompt	The server boots to your normal operating environment after 30 seconds.

When the server "boots to your normal operating environment," it boots the first device found in the Device Scan Order. See the related section in Chapter 5 of the *DIGITAL Server 9100 Series System Software Guide*.

Note: If you do not receive the prompt mentioned above, you need to reboot from the Platform CD-ROM and install the Diagnostic Partition. For information on booting from the Platform CD, refer to Chapter 2, "Diagnostic Partition Installation and Overview," in the *DIGITAL Server 9100 Series System Software Guide.*

Before Using Your Server for the First Time

Before you use the server for the first time, you should:

- Create a backup diskette of the configuration utility
- Create a backup BIOS Flash Utility diskette

You need to make a configuration utility backup diskette whenever you change your configuration so that it will reflect the updated configuration.

You need to create a configuration utility backup diskette and create a backup BIOS Flash Utility diskette if you upgrade your Diagnostic Partition.

Creating a Backup System Configuration Diskette

A system configuration backup diskette enables you to:

- Run the configuration utility if the Diagnostic Partition and Platform CD-ROM are unavailable.
- Restore your current system configuration information.

For instructions on creating a backup diskette for the system configuration utility, refer to the Chapter 3 of the *DIGITAL Server 9100 Series System Software Guide.*

Creating a Backup BIOS Flash Utility Diskette

You must create a backup BIOS Flash Utility diskette before you update the system BIOS.

If there is a power failure before the system BIOS update completes successfully, you cannot reboot your server from the Diagnostic Partition or the Platform CD-ROM. If this situation occurs, you must use the backup BIOS Flash Utility diskette to boot your server and restore the BIOS. If you do not have a backup BIOS Flash Utility to use, you cannot get your server back up.

IMPORTANT: The backup diskette is to be used solely for BIOS Flash backup purposes, in the event you need to perform a Flash recovery operation. You are not authorized to copy program files, nor to use this backup diskette on any other system.

BIOS Flash Utility Diskette Backup Procedure

To create a backup BIOS Flash Utility diskette:

1. Turn on your video display monitor and your server or, if your server is already running, reboot it.

   When the BIOS POST process completes, the server displays the following prompt:

   ```
   Press <D> to boot the Diagnostic Partition
   Press <F1> for normal boot, <F2> for BIOS Setup
   Otherwise, <F1> is selected in 30 seconds
   ```

2. When the MS-DOS Startup menu displays, select “Run Utilities and Diagnostics” and press ENTER.
3. When the Diagnostic Partition Main menu displays, select “BIOS Flash Utilities” and press ENTER.
4. When the BIOS Flash menu displays, select “Create Flash Backup” and press ENTER.
5. Insert a diskette into the server diskette drive and press ENTER.

The system formats the diskette and copies the BIOS Flash Utility to the diskette.

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