Compaq ProLiantÔ ML350 Server Overview

Description

The 2nd generation ProLiant ML350 server is a dual processor capable, expandable server that comes in both non-hot-plug and hot-plug hard drive models. New features of this server include the latest 1-GHz processor, an integrated dual channel Wide Ultra3 SCSI controller, additional 64-bit PCI slots and support for USB ports. The server also has a new bezel, variable fan control, a built-in connector for Remote Insight Board Lights Out Edition , ROM-based BIOS setup and Remote ROM Flash support.

Note

The system uses the FC-PGA (flip-chip) processor which has a different socket than the previous generation ProLiant ML350 and therefore cannot be used to upgrade previous generation systems.

New Models

The following table provides the part numbers and configuration codes for the updated ProLiant ML350.

Table 1: Part Numbers and Configuration Codes

Server Model	Part Number	Configuration Code
ProLiant ML350T02 P1000-256KB 128MB HP	195471-xx1	FSJ1
ProLiant ML350T02 P1000-256KB 128MB NHP	160247-xx1	FSH1
ProLiant ML350T02 P1000-256KB 128MB 9.1GB NHP	160247-xx2	FSH2

New Features

This model brings the following changes to the ProLiant ML350 Pentium III line:

- 1-GHz FCPGA (Flip-Chip) Intel Pentium III (Coppermine) with 256KB integrated Level 2 cache
- Four 64-bit (33MHz) PCI slots (vs. two in 1st generation) but no legacy ISA slot (vs. one in 1st generation)
- Support for 4MB memory
- Two USB ports
- Internal Remote Insight Lights-Out connector
- Adaptec 7899 integrated dual channel Wide Ultra3 SCSI controller (vs. Ultra2 in 1st generation)
- Support for Compaq RAID LC2 (Zorro)
- ATI Rage XL, 4MB SDRAM Video Memory
- ROM-based BIOS setup and Remote ROM Flash support

- Compaq SmartStart 4.90 and Compaq Insight Manager 4.90
- Intelligent (variable) fan control
- Streamlines ID bezel

Figure 1 illustrates the new features on the ProLiant ML350 server feature board:

Figure 1: Feature Board

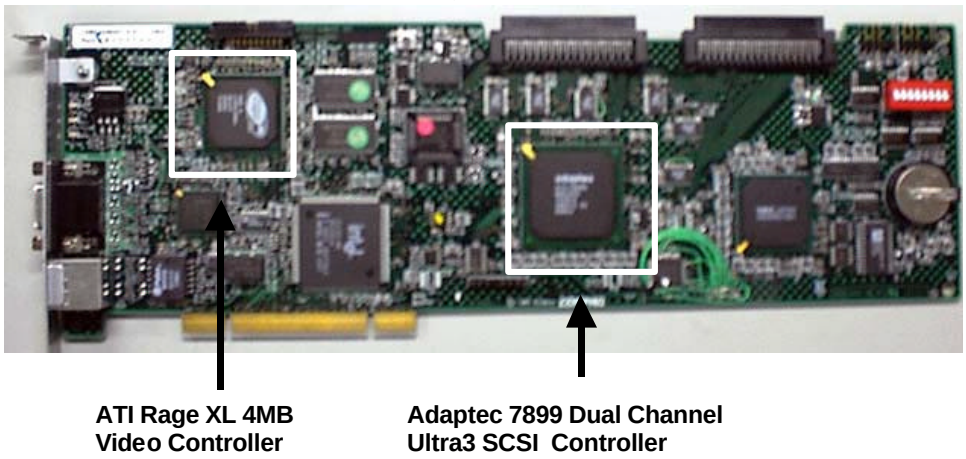
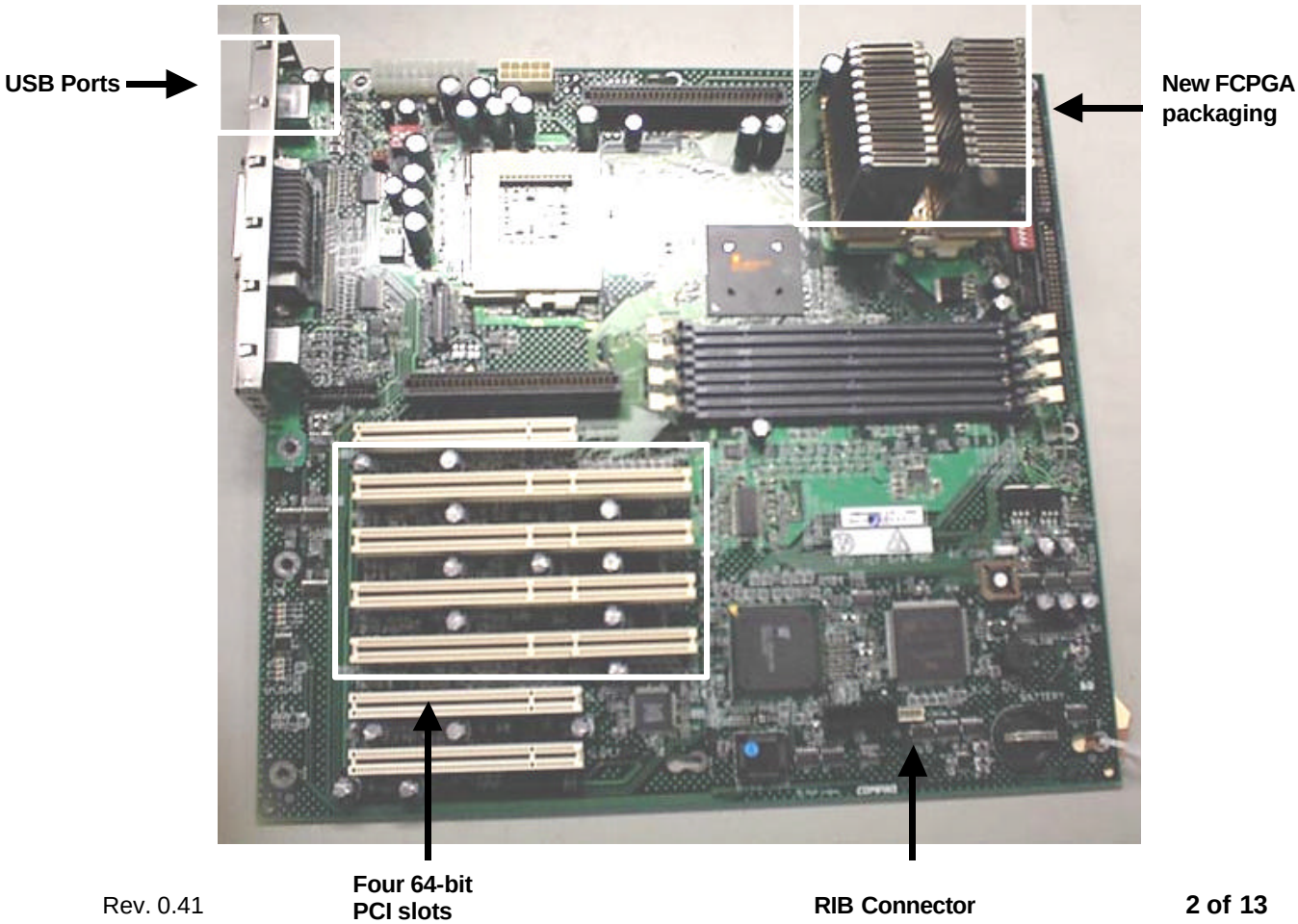


Figure 2 illustrates the new features found on the ProLiant ML350 system board:

Figure 2: System Board



Upgrade Options

Table 2 lists unique option kits that compatible with both 1st and 2nd generation ProLiant ML350's. Table 3 lists new and newly supported recommended options.

Table 2: Unique Option Part Numbers

Option	Part Number	Installation Guide
ML350 Internal to External SCSI Kit	159547-B21	174862-002
ML350 Tower-to-Rack Conversion Kit	158438-B21	201346-001
ML350 Hot-plug Hard Drive Upgrade Kit	161275-B21	159373-002

Table 3: Recommended Option Part Numbers

Option	Part Number	Installation Guide
6/1000-256K (FC-PGA) Processor Option Kit	207068-B21	203800-001
RAID LC2 Controller (U3, single internal RAID)	188044-B21	191996-021
Smart Array 5302/32 Controller (Maxwell)	166207-B21	189488-002
Wireless Hardware Access Point (11MB)	158603-XX1	
56K PCI Modem	171914-001	

Software Supported

Operating Systems

In addition to the software supported by the 1st generation system, the ProLiant ML350 now supports IBM OS/2 including:

- OS/2 Warp Server 4.0
- OS/2 Server Advanced 4.0, SMP
- OS/2 Warp Server for E-business

For a complete and up-to-date listing of supported OSs and versions, visit the Compaq OS Support Matrix FTP site:
ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf

Utilities

Following are the versions of utilities that support the 2nd generation ProLiant ML350:

Table 4 Utility Versions

Utility	Version
SmartStart	4.9
Insight Manager	4.9

OS Drivers

For an up-to-date listing of the latest drivers available for the new 1-GHz models of the ProLiant ML530, visit the Compaq website:

www.compaq.com/support/files/server/us/index.html

New Component Installation or Replacement Procedures

Processor Option and Spares Kits

The option kit contains a processor, heatsink and Processor Power Module (PPM). If you are replacing an existing processor the spares kit will contain the processor and heatsink but not a PPM. If needed, the PPM would have to be ordered separately. In the following procedures, ignore the removal steps if you are adding a second processor and are not replacing an existing processor.

Note

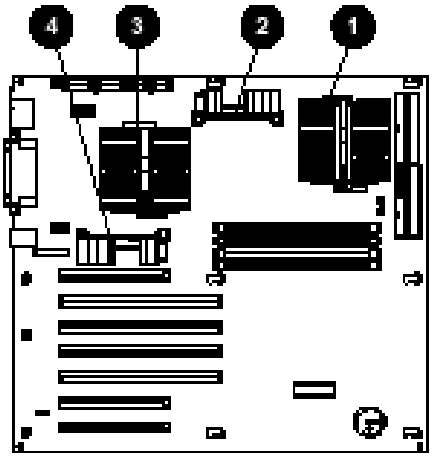
The processor option kit is for the FC-PGA (flip-chip) processor which has a different socket than the previous generation ProLiant ML350 and therefore cannot be used to upgrade previous generation systems.

Locating the Processor or Processor Power Module

Figure 3: Processor Locations

In the Figure 3 you can see the locations of the processor modules and processor power modules (PPMs). They are numbered as follows:

1. Processor socket 1
2. Processor power module socket 1
3. Processor socket 2
4. Processor power module socket 2



Removing and Replacing Processor Module

Important

Do not remove the processor heatsink unless you are replacing the processor. When the heatsink is removed, its thermal seal to the processor is broken, and the thermal effectiveness of the heatsink is compromised. You must then replace it with a new heatsink.

Figure 4: Heatsink Removal

To remove the heatsink:

1. Press one side of the heatsink retainer clip (1)to disengage the heatsink from the processor socket.
2. Unhook the opposite side of the heatsink retainer clip from the processor socket (2).
3. Lift up the heatsink from the processor socket (3).

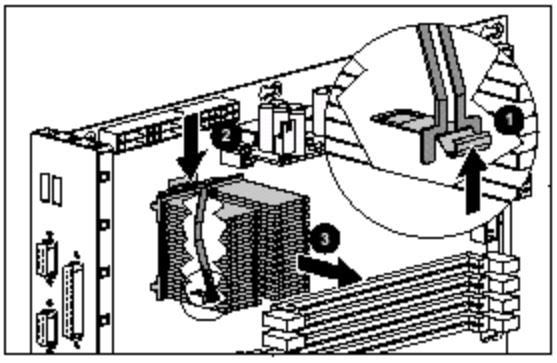


Figure 5: Processor Removal

To remove the old processor module:

1. Lift up the lever on the processor socket (1).
2. Remove the processor from the socket (2).

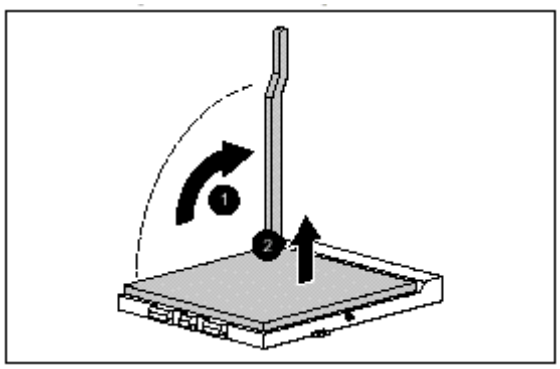


Figure 6: Processor Replacement

To install the new processor module:

1. Press the new processor into the socket aligning the marked corner with the upper left corner of the socket.
2. Lower the lever to lock the processor into place.

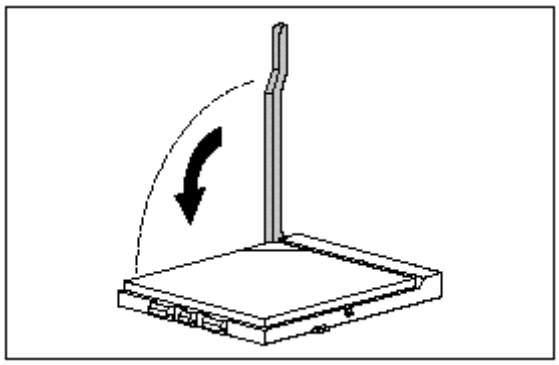


Figure 7: Heatsink Preparation

To prepare the new heatsink for installation:

1. Peel the protective covering from the thermal pad on the heatsink.
2. Align the heatsink so that it is seated in the groove on the processor socket.

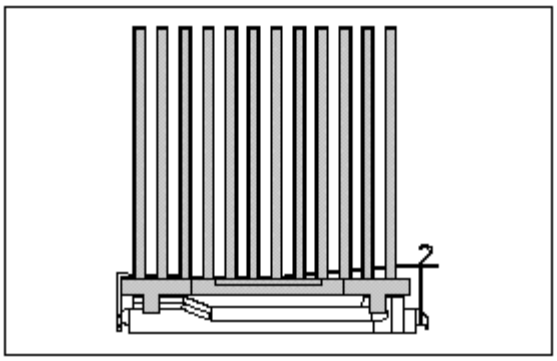
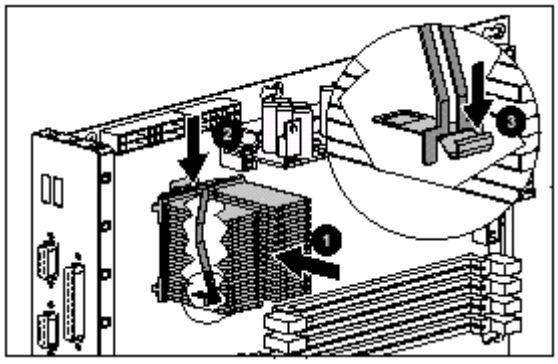


Figure 8: Heatsink Replacement

To install the new heatsink:

1. Place the heatsink (1) onto the processor.
2. Secure the heatsink retainer clip to the hook on the processor socket (3).
3. Secure the opposite side of the heatsink retainer clip (2) to the hook on the opposite side of the socket.



Removing and Replacing the Processor Power Module

Figure 9: PPM Removal

To remove the old PPM:

1. Open the latches (1) on the PPM socket.
2. Remove the module from the socket on the system board.

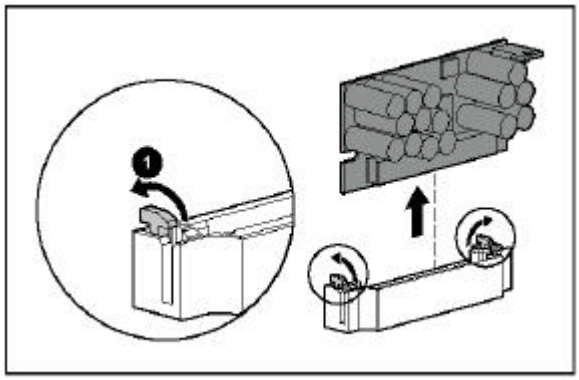
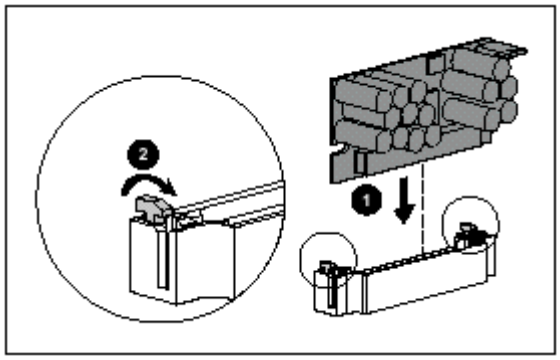


Figure 10: PPM Replacement

To install the new PPM:

1. Insert the new module (1) in the socket making sure the notch on the module aligns with a tab on the mounting bracket.
2. Close the latches (2) on the PPM socket.

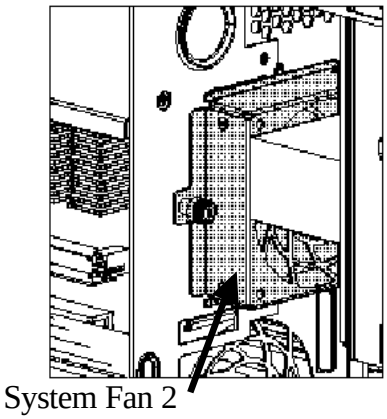


Removing and Replacing System Fan 2

Figure 11: System Fan 2 Location

Figure 12: System Fan 2 Connection

A new feature of the ProLiant ML350 is the a second system fan on the center wall. It is connected to the system board through an opening in the center wall.



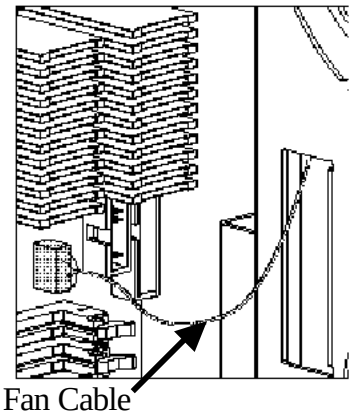
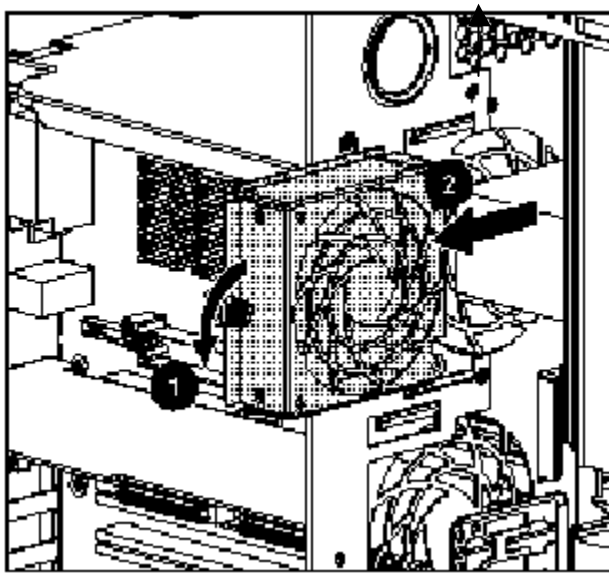


Figure 13: System Fan 2 Replacement

To remove the system fan 2 module:

1. Disconnect the fan cable from the system board (see figure 12).
2. Loosen the thumbscrew (1) securing system fan 2 to the chassis.
3. Gently pull the system fan 2 module out and away from the chassis (2).
4. Reverse steps 1 through 3 to replace system fan 2 module.



Service Considerations

SmartStart 4.9

SmartStart 4.9 Assisted OpenServer Install

Starting from SS4.9, the SmartStart assisted OpenServer install has been changed. In order to install OpenServer, the user has to input boot strings to

specify which driver should be loaded for the primary controller. Without the right boot string, OpenServer may not be able to detect the root disk.

Following are the boot strings for different controllers:

- Adaptec controllers:(Poseidon and Arsalan)

  ```
  defbootstr link=ad160 hd=Sdsk Srom=wd(0,0,0).
  ```

- Maxwell controller: (Smart Array 5300)

  ```
  defbootstr link=ciss hd=Sdsk Srom=wd(0,0,0).
  ```

- IDA controllers:(Smart 2/E, Smart 2/P, Smart 2/DH, Smart 2/SL, Smart Array 221, 3200, 3250ES)

  ```
  defbootstr disable =ida link=ida hd=ida0
  Srom=wd(0,0,0).
  ```

- ROC controllers (Embedded ROC, Smart Array 4200, 4250ES and Smart Array 431)

  ```
  defbootstr link=clad hd=Sdsk Srom=wd(0,0,0).
  ```

- Compaq SymBios SCSI Controllers(825, 875, 876, 895, 896 and non intelligent ROC):

  ```
  defbootstr link=cha hd=Sdsk Srom=wd(0,0,0).
  ```

SmartStart 4.9 Assisted Install Procedure for SCO OpenServer 5

1. Boot machine and insert the SmartStart 4.9 or later.
2. Follow the install procedure.
3. Create BTLD diskette during SS Interview process.
4. Remove floppy disk and CDROM when the system requests this action.
5. Insert SCO 5.05 CD when system requests this action.
6. The system reboots.
7. At the SCO5 boot prompt, enter the necessary boot string based on the boot controller.
8. Insert the BTLD diskette when prompted and continue with the installation.
9. During hard disk setup, select **Interactive fdisk** option to preserve the system partition created by SmartStart.

ROM-Based BIOS Setup Utility (RBSU)

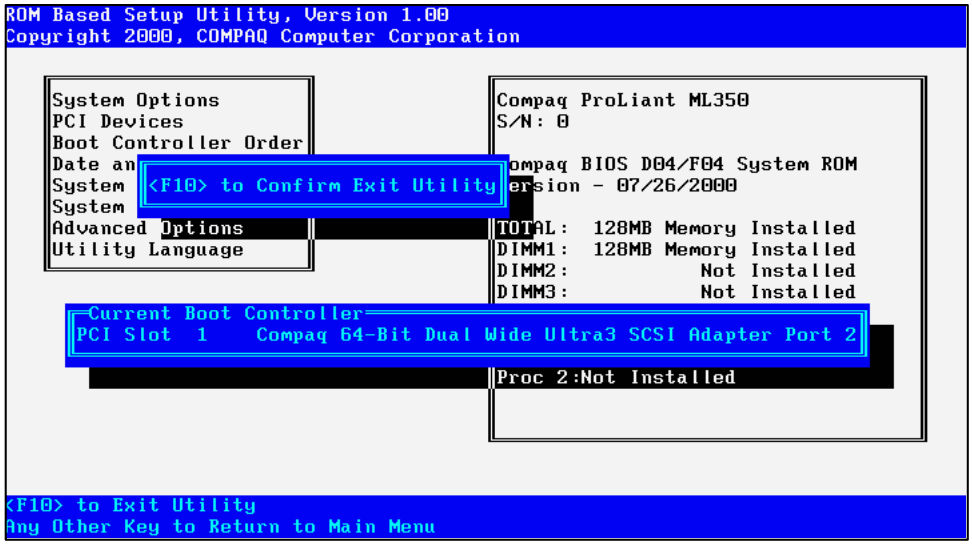
RBSU is a ROM-based configuration utility that displays and modifies the system configuration settings of a server. RBSU replaces BIOS Setup and provides a simplified setup process that is machine-specific and tailored for each type of server. RBSU Version 1.0 on the ProLiant ML350 is intended to facilitate transition to the “look and feel” of RBSU Version 2.0 which will be available on future products.

Among the configuration activities that can be performed are:

- Viewing system information
- Selecting the operating system
- Configuring system devices and installed options
- Selecting the primary boot controller
- Managing storage options.

Starting and Exiting RBSU

During initial installation when the server is not yet configured, RBSU starts automatically. After the server has been configured, you can launch RBSU by pressing *F9* during the power up. Once you are finished with configuration activities you can exit RBSU by pressing *Escape* at the main menu and confirming your intention by pressing *F10*. The current boot controller is displayed for reference purposes.



Initial Boot

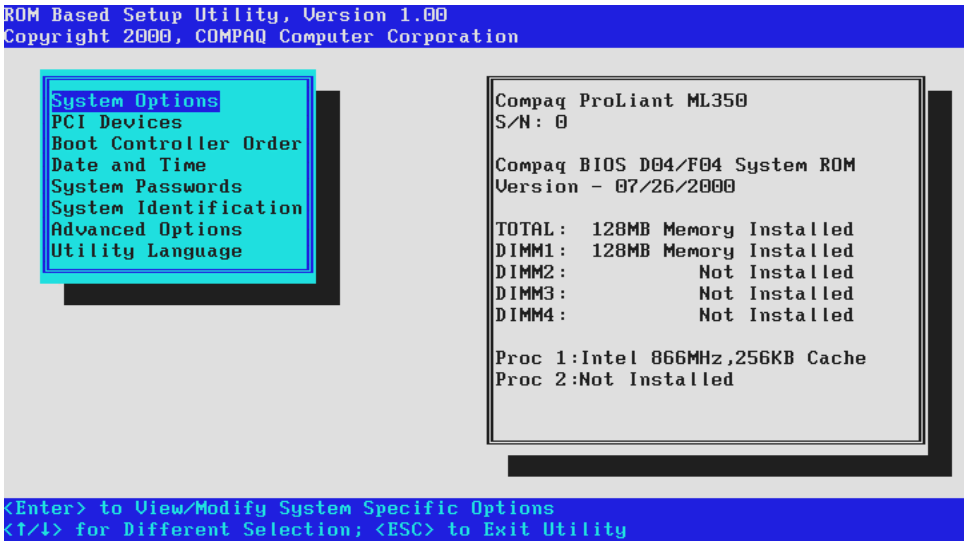
On initial boot (for a system that has not yet been configured) you will be required to enter the following information:

- Language and Operating System
- Primary boot controller
- Date and time

Note

To bypass this step you must insert a Compaq Diagnostics ROMpaq diskette into the floppy drive before booting the server. This would enable you to upgrade the ROM or run the SmartStart scripting tools.

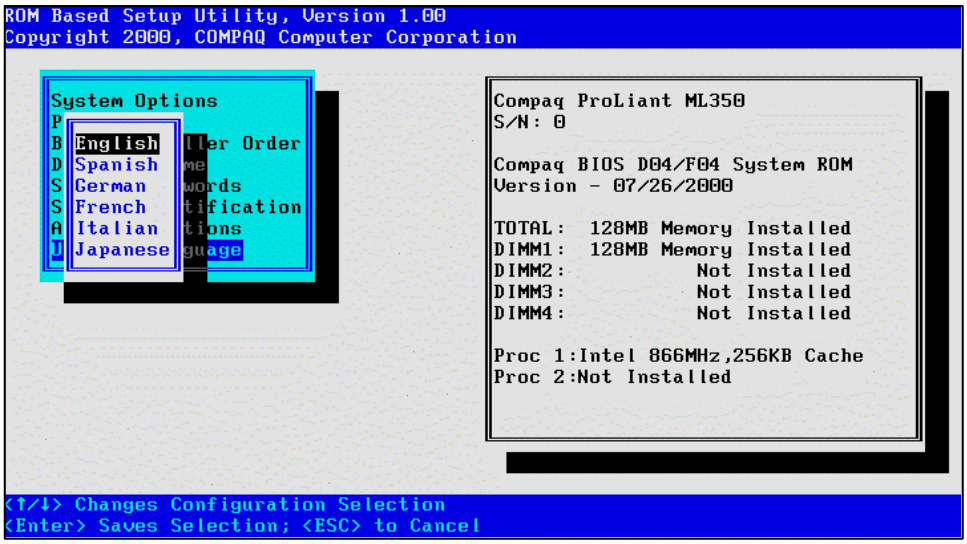
RBSU Main Menu



The main menu selects which configuration setting to view or modify. From the main menu some selections bring you directly to configuration functions while others lead to sub menus that expand the available choices.

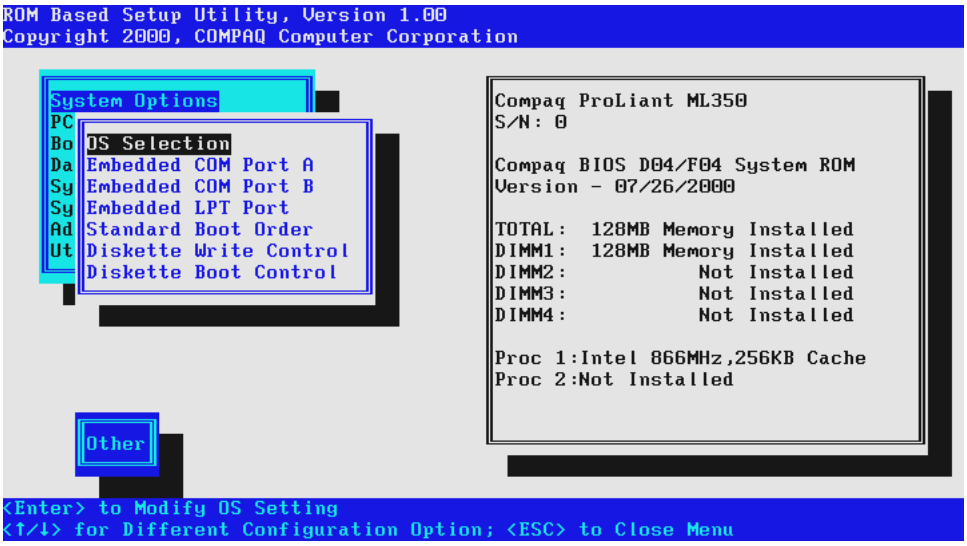
For example, selecting *System Options* on the main menu displays a sub menu of choices including *OS Selection*, *Standard Boot Order* and others. Selecting *PCI Devices***,** however, brings you directly to a screen that is used to view and assign the IRQs for all PCI devices.

RBSU Language Selection



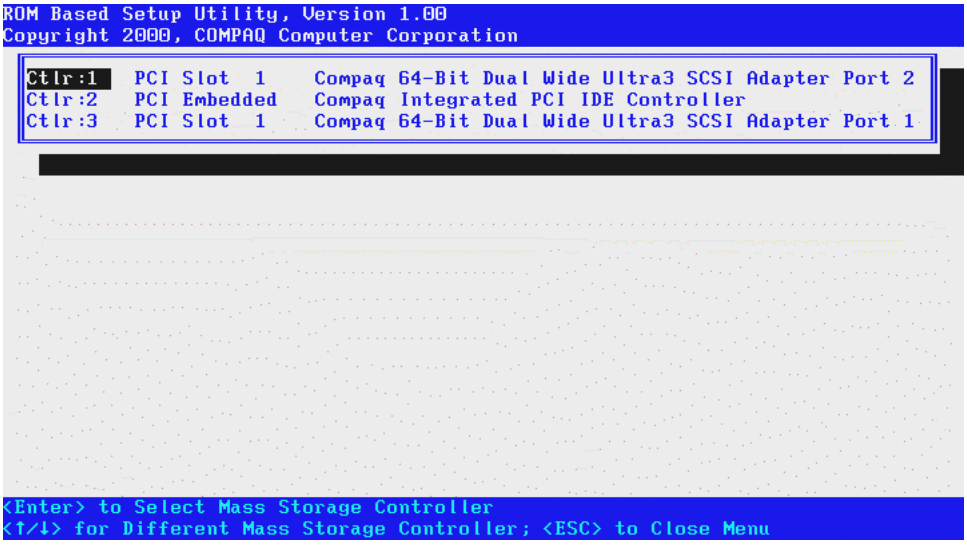
One of the selections from the main menu allows you to select the language for the setup utility. This is one of the choices you are required to make on initial boot.

RBSU OS Selection



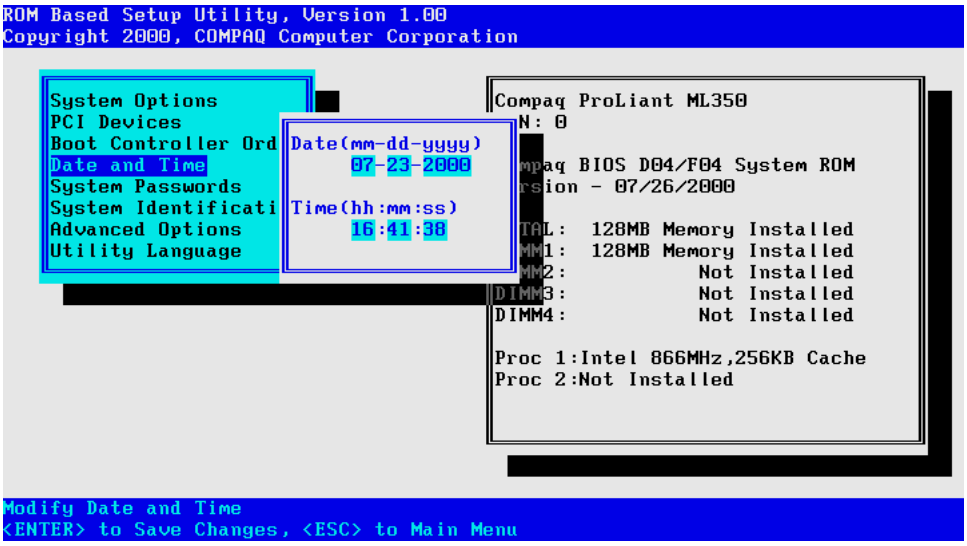
Another choice required on initial boot is which operating system will be used. *OS Selection* is one of the choices on the *System Options* menu. This option selects the primary operating system for the server and influences other settings that are specific to the operating system. More detail on these settings can be found in the *ROM Based Setup Utility User Guide* and the *Compaq ProLiant ML350 Setup and Installation Guide.*

RBSU Boot Controller



The Primary Boot Controller is set from the *Boot Controller* item on the main menu list. The user will be prompted automatically to select the boot controller on the initial boot of the system.

RBSU Date and Time Settings



The final requirement on initial boot is to set the system *Date and Time*. This is one of the selections on the main menu.