



IEI Technology Corp.



MODEL:

ECN-581A-R11/QM57-I5

Socket G1 Intel® Core™ i5 CPU Embedded System with Dual DVI, GbE, Four USB 2.0, SATA 3Gb/s, PCIe mini, Two RS-232 and Intel® AMT 6.0, RoHS Compliant

User Manual

Rev. 1.10 – 17 May 2011



Revision

Date	Version	Changes
17 May 2011	1.10	Updated for R11 version
29 July, 2011	1.00	Initial release

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WARNING

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and(2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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Chapter

1

Introduction

1.1 Overview



Figure 1-1: ECN-581A-R11/QM57-I5

The ECN-581A-R11/QM57-I5 embedded system is a fanless system with two DVI ports for dual display. It is powered by the 32 nm Intel® Core™ i5 processor, uses the Intel® QM57 chipset and has 2.0 GB of DDR3 memory. The ECN-581A-R11/QM57-I5 supports a 2.5" SATA HDD with up to 3 Gb/s data transfer rate.

1.2 Model Variations

The model variations of the ECN-581A-R11/QM57-I5 series are listed below.

Models	CPU	CPU Speed	Wireless
ECN-581A-R11/QM57-I5/2GB	Intel® Core™ i5-520M	2.4 GHz	N/A
ECN-581AW-R11/QM57-I5/2GB	Intel® Core™ i5-520M	2.4 GHz	802.11b/g/n

Table 1-1: Model Variations

1.3 Features

The ECN-581A-R11/QM57-I5 features are listed below:

- 32 nm Intel® Core™ i5 processor
- 2.0 GB of DDR3 SDRAM SO-DIMM preinstalled
- Supports 2.5" SATA HDD and PCIe mini card
- Two DVI ports for dual display
- Audio line-out, Mic-in and line-in jacks
- One Gigabit Ethernet port
- Four USB 2.0 ports
- Two RS-232 serial ports

ECN-581A-R11/QM57-I5 Multimedia Box

- Intel® AMT 6.0
- RoHS compliant

1.4 Technical Specifications

The ECN-581A-R11/QM57-I5 technical specifications are listed in **Table 1-2**.

System	
SBC	NANO-QM57A
CPU and Models	2.4 GHz 32 nm Intel® Core™ i5 processor
Chipset	Intel® QM57
Memory	2.0 GB of DDR3 SO-DIMM preinstalled
Real-time Clock	Battery backup RTC
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Ethernet Controller	One Intel® 82577 PCIe GbE controller with Intel® AMT 6.0 support
Wi-Fi	802.11b/g/n (wireless model only)
Audio	Realtek ALC888 HD 7.1 channel audio codec
Multimedia	<ul style="list-style-type: none"> ▪ MPEG-2 decoding ▪ WMV9 (VC-1) and H.264 (AVC) support ▪ Hardware acceleration for MPEG2 VLD/iDCT ▪ Blu-ray support @ 40 Mb/s ▪ DirectX 10
I/O and Indicators	
Ethernet	1 x 10/100/1000 Mb/s
Serial Ports	2 x RS-232
USB Interfaces	4 x USB 2.0 ports
Display	1 x DVI-I 1x DVI-D
Audio	One Line-out jack; one Mic-in jack; one line-in jack
Storage	
HDD	Supports one 2.5" SATA 3Gb/s HDD/SSD

Power	
Power Adapter	12 V DC input 60W power adaptor with ERP and PSE certificates
Power Supply	+12 V DC
Power Consumption	60 W
Power Connector	One locking power jack
Power Button	One power button
Environmental and Mechanical	
Operating Temperature	-20°C ~ 50°C (with HDD) with air flow* *Ambient air speed per IEC-68-2-2 standard
Shock	Half-sine wave shock 3G, 11ms, 3 shocks per axis
Vibration	Operating Random Vibration Mode (MIL-STD-810F 514.5C-2)
Chassis Construction	Aluminum Alloy
Mounting	Wall mount
Physical Dimensions	180 mm x 138 mm x 50 mm (W x D x H)
Weight (Net/Gross)	1.1 kg / 2 kg
EMC/Safety	CE, FCC class A

Table 1-2: Technical Specifications

1.5 Front Panel

The front panel of the ECN-581A-R11/QM57-I5 contains one power button to power up the system and three audio jacks. The button is also a LED indicator that shows power and HDD status:

- Blue: power on
- Orange: HDD activity
- 1 x Audio line-out
- 1 x Audio line-in
- 1 x Audio mic-in

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Figure 1-2: ECN-581A-R11/QM57-I5 Front Panel

1.6 Connector Panel

All external peripheral interface connectors are located on the front panel of the ECN-581A-R11/QM57-I5 . The peripheral interface connectors are shown in **Figure 1-3**.

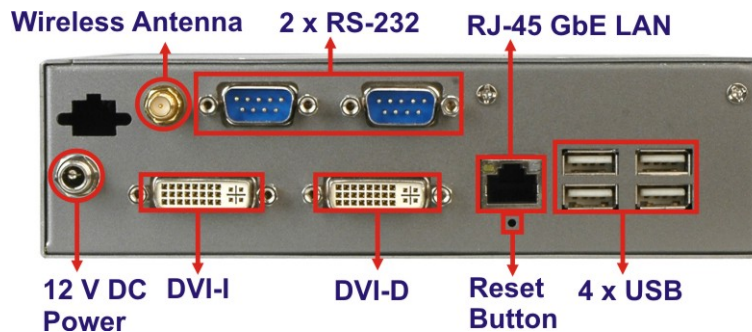


Figure 1-3: ECN-581A-R11/QM57-I5 Peripheral Connectors

Connectors and buttons on the rear panel include the following.

- 1 x 12 V DC locking power input jack
- 1 x DVI-I port
- 1 x DVI-D port
- 2 x RS-232 serial ports
- 4 x USB ports
- 1 x Gigabit Ethernet RJ-45 port
- 1 x Reset button
- 1 x Wireless antenna connector (wireless model only)

1.7 Dimensions

The physical dimensions are shown below:

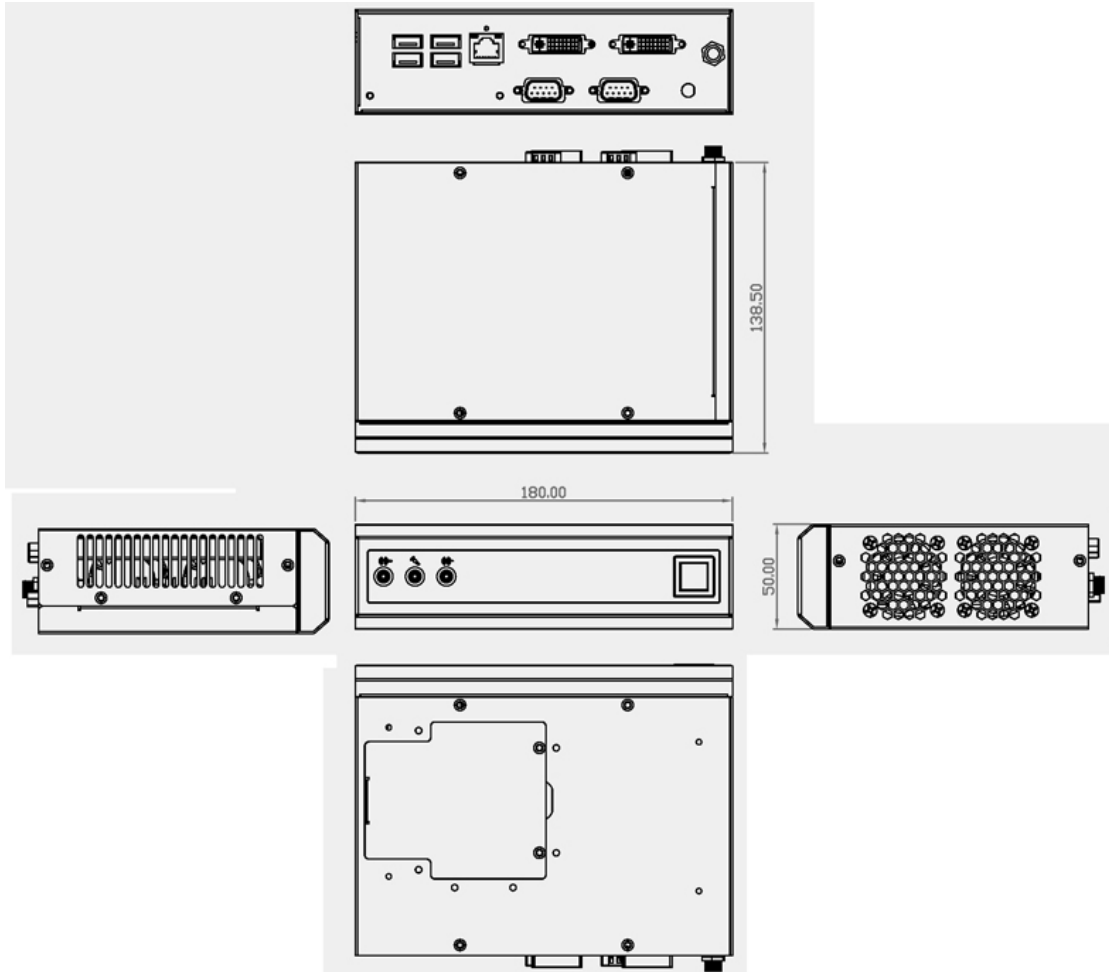


Figure 1-4: Physical Dimensions (millimeters)

Chapter

2

Unpacking

2.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the ECN-581A-R11/QM57-I5 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ECN-581A-R11/QM57-I5. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ECN-581A-R11/QM57-I5 or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- **Wear an anti-static wristband:** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- **Self-grounding:** Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad:** When configuring the ECN-581A-R11/QM57-I5, place it on an anti-static pad. This reduces the possibility of ESD damaging the ECN-581A-R11/QM57-I5.

2.2 Unpacking Precautions

When the ECN-581A-R11/QM57-I5 is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 2.1**.
- Make sure the packing box is facing upwards so the ECN-581A-R11/QM57-I5 does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

ECN-581A-R11/QM57-I5 Multimedia Box








2.3 Unpacking Checklist



NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the ECN-581A-R11/QM57-I5 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The ECN-581A-R11/QM57-I5 is shipped with the following components:

Quantity	Item and Part Number	Image
1	ECN-581A-R11/QM57-I5 multimedia box	
1	Power adapter (12 V DC, 60 W)	
1	Power cord	
2	Wall mount brackets	
4	Screws for wall mount brackets	
4	Screws for HDD installation	
1	2dbi wireless antenna (wireless model only)	


Quantity	Item and Part Number	Image
1	User manual and driver CD	

Table 2-1: Package List Contents

Chapter

3

Installation

3.1 Installation Precautions

During installation, be aware of the precautions below:

- **Read the user manual:** The user manual provides a complete description of the ECN-581A-R11/QM57-I5, installation instructions and configuration options.
- **DANGER! Disconnect Power:** Power to the ECN-581A-R11/QM57-I5 must be disconnected during the installation process, or before any attempt is made to access the rear panel. Electric shock and personal injury might occur if the rear panel of the ECN-581A-R11/QM57-I5 is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel:** The ECN-581A-R11/QM57-I5 must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- **Grounding:** The ECN-581A-R11/QM57-I5 should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the ECN-581A-R11/QM57-I5.

3.2 Hard Disk Drive (HDD) Installation

To install the hard drive, please follow the steps below:

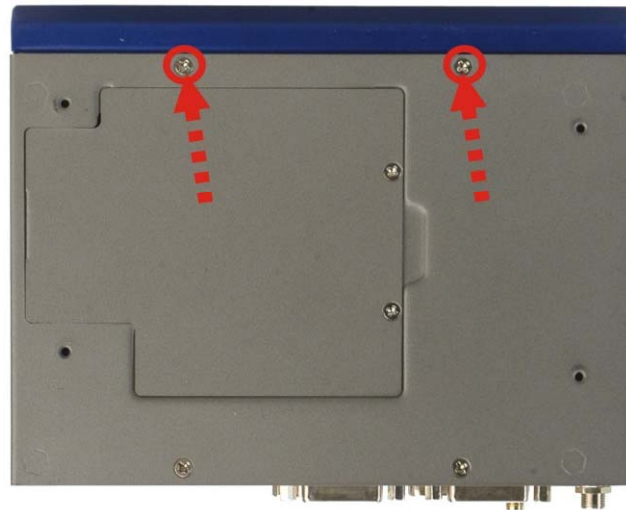
- Step 1:** Remove the top and front panels by removing four retention screws from the top panel, one from the right side, two from the bottom panel and four from the left side panel as shown in **Figure 3-1**.

ECN-581A-R11/QM57-I5 Multimedia Box

top and right side



bottom



left side

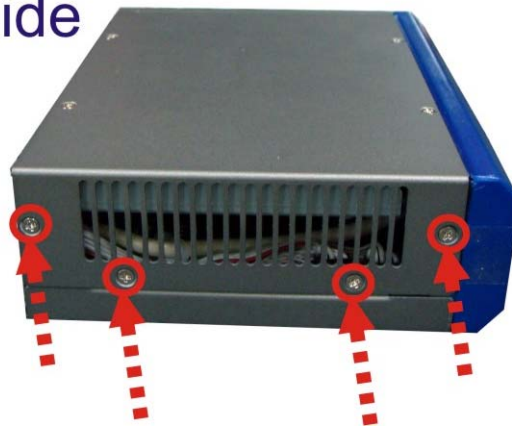


Figure 3-1: Retention Screws Removal

Step 2: Remove the four HDD bracket retention screws (**Figure 3-2**) and lift the HDD bracket out of the ECN-581A-R11/QM57-I5.



Figure 3-2: HDD Bracket Retention Screws (Inside)

Step 3: Attach the HDD bracket to the HDD. Secure the HDD with the HDD bracket by fastening four retention screws (**Figure 3-3 ①**).

Step 4: Connect the SATA cable in the ECN-581A-R11/QM57-I5 to the HDD. Secure the SATA cable with the HDD by fastening two round head screws (**Figure 3-3 ②**).

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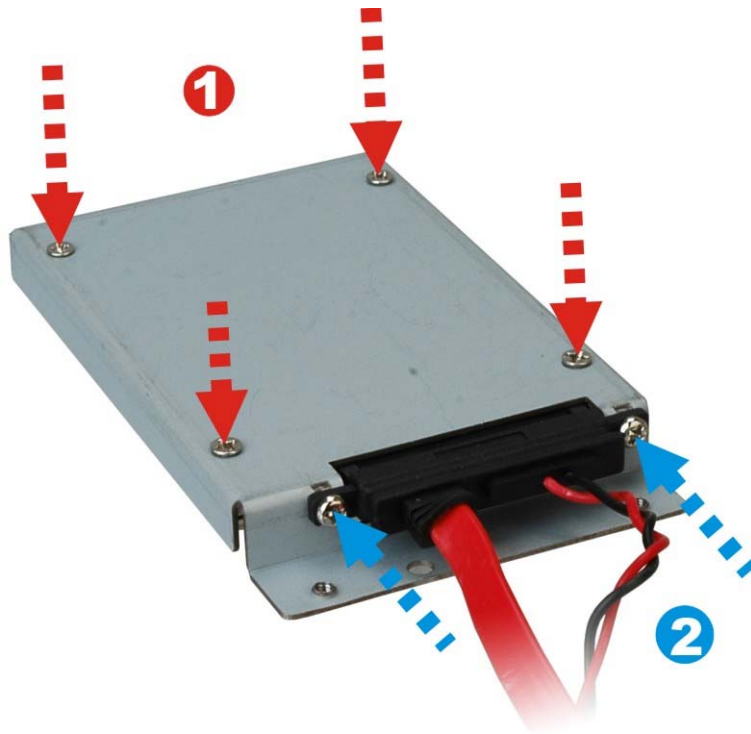


Figure 3-3: HDD Retention Screws

Step 5: Install the HDD bracket in the same position it was before.



Figure 3-4: HDD Installation

Step 6: Reinstall the front panel.

Step 7: Reinstall the top panel.

3.3 Mount the System

The ECN-581A-R11/QM57-I5 supports wall mounting. The bottom panel of the ECN-581A-R11/QM57-I5 contains four screw holes for mounting (**Figure 3-5**) the system.



Figure 3-5: Mounting Screw Holes

3.3.1 Mounting the System with Mounting Brackets

To mount the embedded system onto a wall or some other surface using the two mounting brackets, please follow the steps below.

- Step 1:** Turn the embedded system over.
- Step 2:** Align the two retention screw holes in each bracket with the corresponding retention screw holes on the sides of the bottom surface.
- Step 3:** Secure the brackets to the system by inserting two retention screws into each bracket as illustrated in **Figure 3-6**.

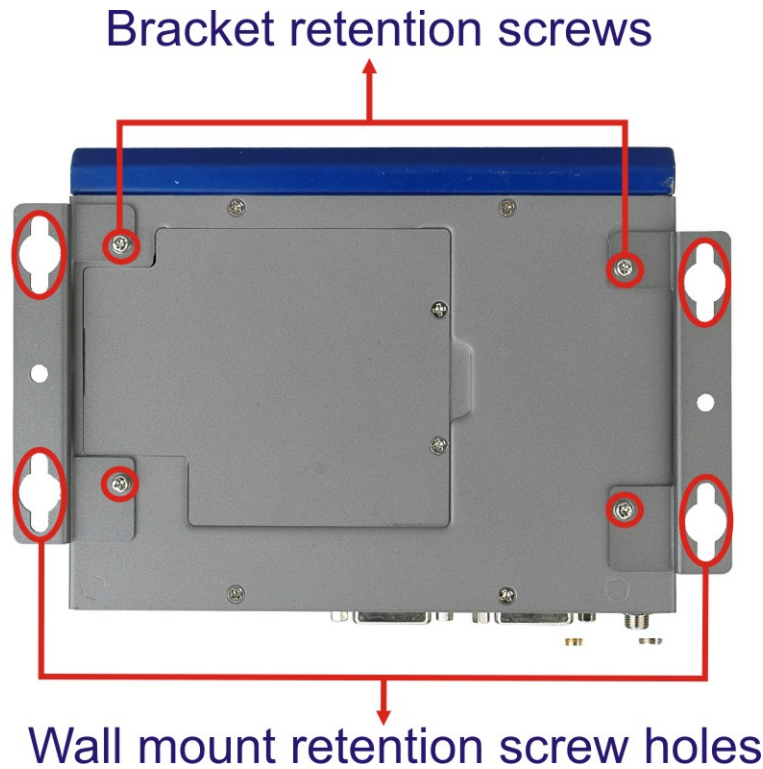


Figure 3-6: Mounting Bracket Retention Screws

Step 4: Drill holes in the intended installation surface.

Step 5: Align the mounting holes in the sides of the mounting brackets with the predrilled holes in the mounting surface.



NOTE:

To have the best system heat dissipation, please make sure to face the I/O panel downward (**Figure 3-6**) when mounting the system.

Step 6: Insert four retention screws, two in each bracket, to secure the system to the wall.



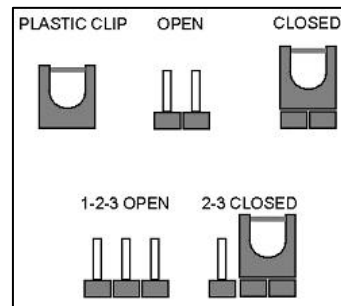
Figure 3-7: Wall Mounting

3.4 Jumper Settings



NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.



Before the ECN-581A-R11/QM57-I5 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the ECN-581A-R11/QM57-I5 are listed in **Table 3-1**. To access jumper, please remove the top cover.

Description	Type	Label
AT Auto Button	2-pin header	J_AUTOPWR1
AT/ATX Power Mode Setting	3-pin header	J_ATXCTL1
Clear CMOS	3-pin header	J_CMOS1
ME RTC Register	3-pin header	ME_RTC1
ME RTC Security Override	2-pin header	JP1

Table 3-1: Jumpers

3.4.1 AT Auto Button Power Select Jumper Settings

- Jumper Label:** J_AUTOPWR1
- Jumper Type:** 2-pin header
- Jumper Settings:** See Table 3-3
- Jumper Location:** See Figure 3-8

The AT Auto Button Power Select jumper specifies the systems auto button power mode as AT or ATX.

Setting	Description
Short	Use AT power
Open	Use ATX power

Table 3-2: AT Auto Button Power Select Jumper Settings

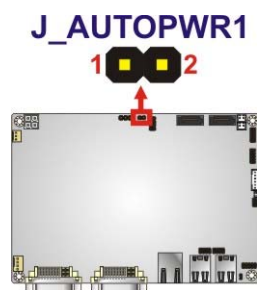


Figure 3-8: AT Auto Button Select Jumper Settings

3.4.2 AT/ATX Power Select Jumper Settings

Jumper Label:	J_ATXCTL1
Jumper Type:	3-pin header (1x3)
Jumper Settings:	See Table 3-3
Jumper Location:	See Figure 3-9

The AT/ATX Power Select jumper specifies the systems power mode as AT or ATX. AT/ATX Power Select jumper settings are shown in **Table 3-3**.

AT Power Select	Description	
Short 1 - 2	Use ATX power	
Short 2 – 3	Use AT power	Default

Table 3-3: AT/ATX Power Select Jumper Settings

The location of the AT/ATX Power Select jumper is shown in **Figure 3-9** below.

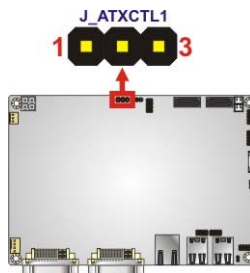


Figure 3-9: AT/ATX Power Select Jumper Location

3.4.3 Clear CMOS Jumper

Jumper Label:	J_CMOS1
Jumper Type:	3-pin header (1x3)
Jumper Settings:	See Table 3-4
Jumper Location:	See Figure 3-10

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If the ECN-581A-R11/QM57-I5 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings are shown in **Table 3-4**.

Clear CMOS	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 - 3	Clear CMOS Setup	

Table 3-4: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 3-10** below.

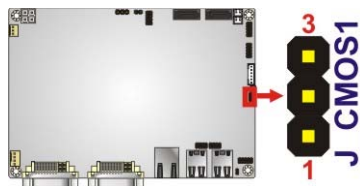


Figure 3-10: Clear CMOS Jumper

3.4.4 ME RTC Register Jumper

Jumper Label:	ME_RTC1
Jumper Type:	3-pin header
Jumper Settings:	See Table 3-5
Jumper Location:	See Figure 3-11

The ME RTC Register jumper saves or clears the ME RTC registers. The ME RTC Register jumper settings are shown in **Table 3-4**.

Setting	Description	
Short 1-2	Save ME RTC registers (normal operation)	Default
Short 2-3	Clear ME RTC registers	

Table 3-5: ME RTC Register Jumper Settings

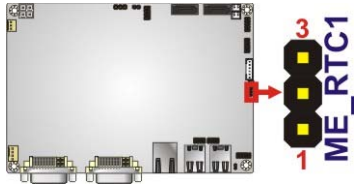


Figure 3-11: ME RTC Register Jumper Location

3.4.5 ME RTC Flash Security Override Jumper

Jumper Label:	JP1
Jumper Type:	2-pin header
Jumper Settings:	See Table 3-6
Jumper Location:	See Figure 3-12

The ME RTC Security Override jumper protects or overrides the ME RTC Flash security registers. The ME RTC Security Override jumper settings are shown in **Table 3-4**.

Setting	Description	
Open	Flash Security On	Default
Short	Flash Security Override	

Table 3-6: ME RTC Security Override Jumper Settings

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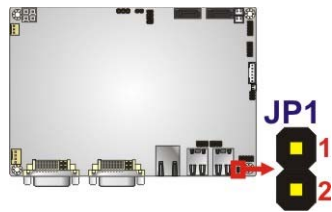


Figure 3-12: ME RTC Security Override Jumper Location

3.5 External Peripheral Interface Connectors

The following external peripheral devices can be connected to the external peripheral interface connectors.

- Audio devices
- DVI devices
- RJ-45 Ethernet cable connector
- Serial devices
- USB devices
- VGA monitor
- Wireless antenna

To install these devices, connect the corresponding cable connector from the actual device to the corresponding ECN-581A-R11/QM57-I5 external peripheral interface connector making sure the pins are properly aligned.



Figure 3-13: Peripheral Connectors (Front Panel)

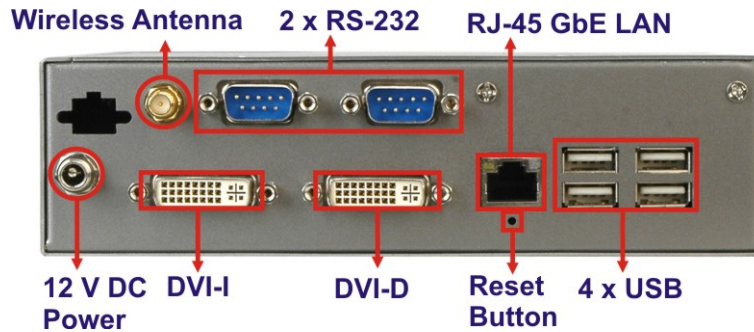


Figure 3-14: Peripheral Connectors (Rear)

3.5.1 Audio Connector

The audio jacks on the front panel enable the ECN-581A-R11/QM57-I5 to be connected to a stereo sound setup. To install the audio devices, follow the steps below.

- Step 1: Identify the audio plugs.** The plugs on your home theater system or speakers may not match the colors on the rear panel. If audio plugs are plugged into the wrong jacks, sound quality will be very bad.
- Step 2: Plug the audio plugs into the audio jacks.** Plug the audio plugs into the audio jacks. If the plugs on your speakers are different, an adapter will need to be used to plug them into the audio jacks.
- **Line In port (Light Blue):** Connects a CD-ROM, DVD player, or other audio devices.
 - **Microphone (Pink):** Connects to a microphone.
 - **Line Out port (Lime):** Connects to headphones or speakers.

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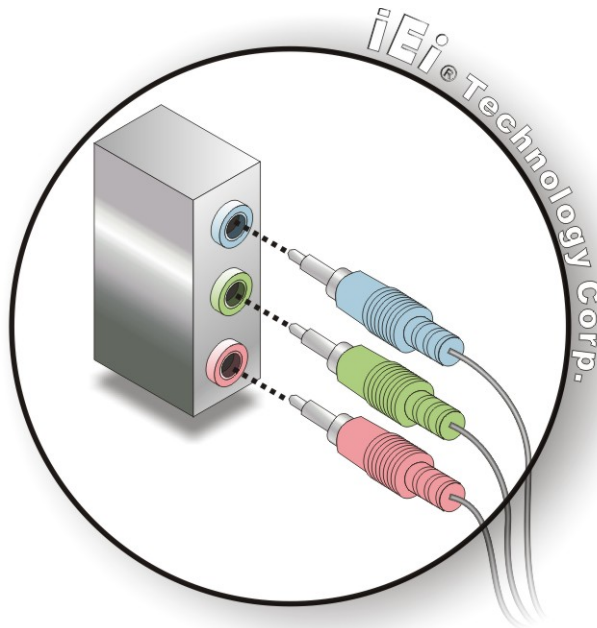


Figure 3-15: Audio Connector

Step 3: Check audio clarity. Check that the sound is coming through the right speakers by adjusting the balance front to rear and left to right.

3.5.2 DVI Display Device Connection

The ECN-581A-R11/QM57-I5 has one female DVI-I connector and one female DVI-D connector on the external peripheral interface panel. The DVI connectors are connected to digital display devices. To connect a digital display device to the ECN-581A-R11/QM57-I5, please follow the instructions below.

Step 1: Locate the DVI-I connector. The location of the DVI-I connector is shown in another chapter.

Step 2: Align the DVI-I connector. Align the male DVI-I connector on the digital display device cable with the female DVI-I connector on the external peripheral interface.

Step 3: Insert the DVI-I connector Once the connectors are properly aligned with the male connector, insert the male connector from the digital display device into the female connector on the ECN-581A-R11/QM57-I5. See Figure 3-16.

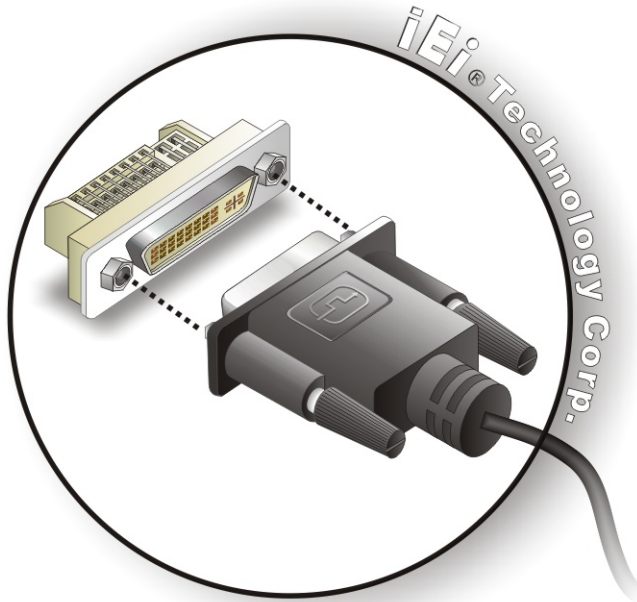


Figure 3-16: DVI Connector

Step 4: Secure the connector. Secure the DVI-I connector from the digital display device to the external interface by tightening the two retention screws on either side of the connector.

3.5.3 LAN Connection (Single Connector)

There is one external RJ-45 LAN connector. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: Locate the RJ-45 connectors. The location of the LAN connector is shown in Chapter 4.

Step 2: Align the connectors. Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the ECN-581A-R11/QM57-I5. See Figure 3-17.

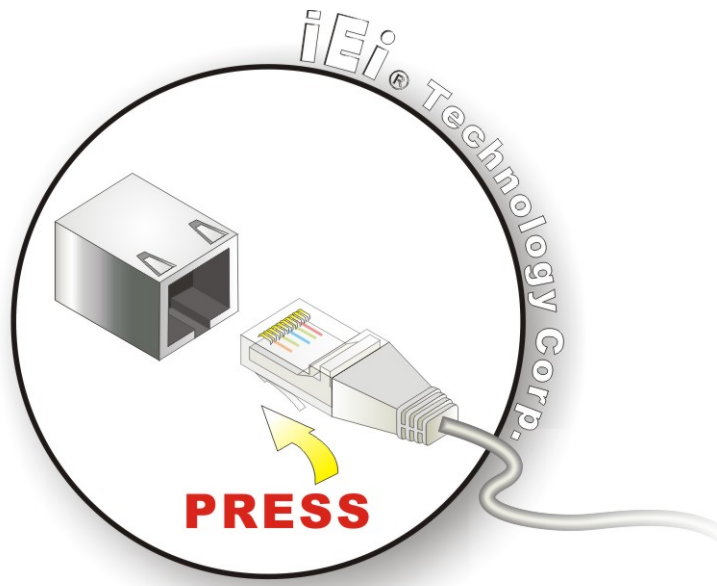


Figure 3-17: LAN Connection

Step 3: Insert the LAN cable RJ-45 connector. Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector.

3.5.4 Serial Device Connection

The ECN-581A-R11/QM57-I5 has two female DB-9 connectors on the external peripheral interface panel for connecting to serial devices. Follow the steps below to connect a serial device to the ECN-581A-R11/QM57-I5.

Step 1: Locate the DB-9 connector. The location of the DB-9 connector is shown in Figure 3-13.

Step 2: Insert the serial connector. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See Figure 3-18.

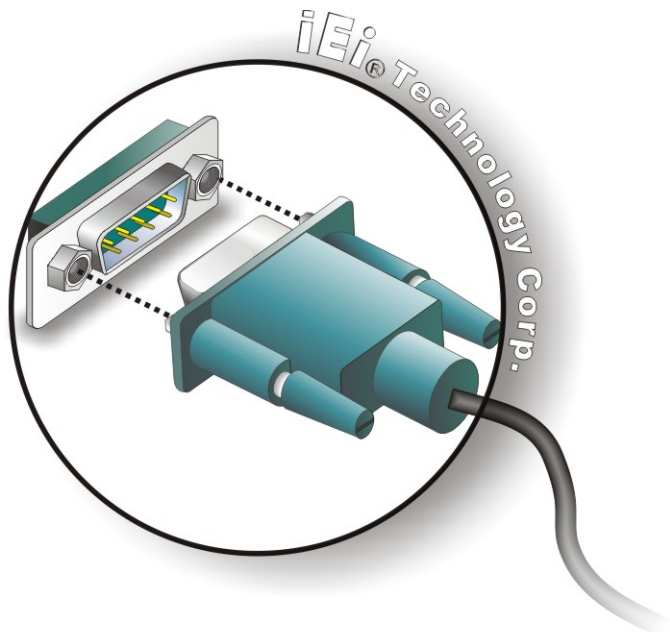


Figure 3-18: Serial Device Connector

Step 3: Secure the connector. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

3.5.5 USB Connection (Dual Connector)

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the ECN-581A-R11/QM57-I5.

Step 1: Locate the USB Series "A" receptacle connectors. The location of the USB Series "A" receptacle connectors are shown in **Figure 3-13**.

Step 2: Insert a USB Series "A" plug. Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See **Figure 3-19**.

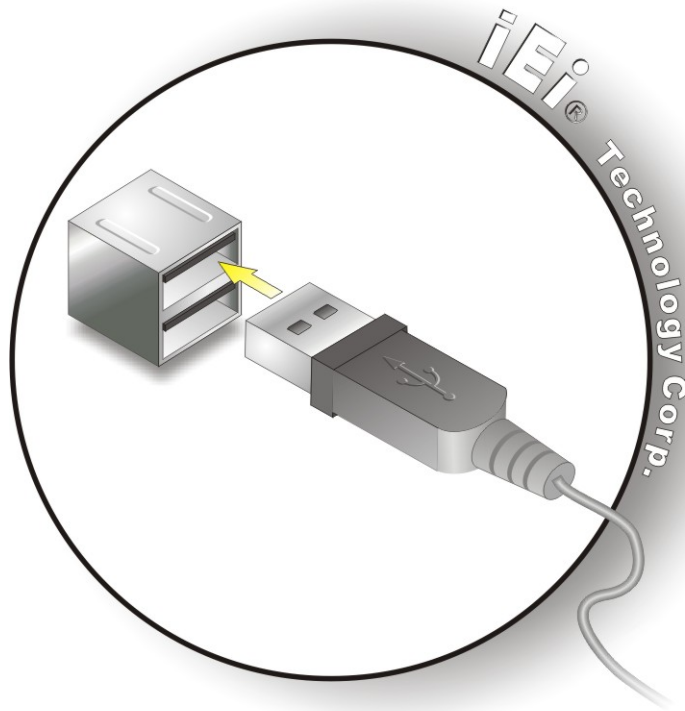


Figure 3-19: USB Connector

3.5.6 VGA Monitor Connection

The ECN-581A-R11/QM57-I5 is shipped with a DVI-I (male) to VGA adapter (female DB-15 connector). The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the ECN-581A-R11/QM57-I5, please follow the instructions below.

- Step 1:** Locate the DVI-I connector (VIDEO1). The location of the VIDEO1 connector is shown in Chapter 3.
- Step 2:** Align the DVI-I to VGA adapter. Align the DVI-I (male) end of the DVI-I to VGA adapter with the VIDEO1 connector on the external peripheral interface.
- Step 3:** **Insert the DVI-I to VGA connector.** Once the connectors are properly aligned, insert male connector from the adapter into the female connector on the ECN-581A-R11/QM57-I5.
- Step 4:** **Locate the female DB-15 connector** on the adapter.

Step 5: Align the VGA connector. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 6: Insert the VGA connector. Once the connectors are properly aligned, insert the male connector from the VGA screen into the female connector on the ECN-581A-R11/QM57-I5. See **Figure 3-20**.

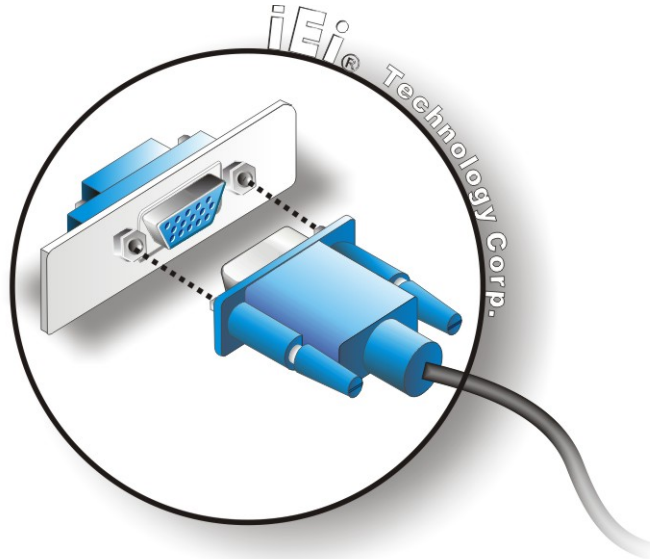


Figure 3-20: VGA Connector

Step 7: Secure the connector. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

Chapter

4

BIOS

4.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

4.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the “**Press Del to enter SETUP**” message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

4.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **Esc** to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Load previous values.
F3 key	Load optimized defaults

Key	Function
F4 key	Save all the CMOS changes

Table 4-1: BIOS Navigation Keys

4.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

4.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in Chapter 5.

4.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Save & Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

4.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
BIOS Information					Set the Time. Use Tab to switch between Time elements.
BIOS Vendor			American Megatrends		
Core Version			4.6.3.7 0.16		
Project Version			Z129AR11.ROM		
Build Date			05/28/2010 10:26:42		

Memory Information					←→: Select Screen
Total Memory			2048 MB (DDR3 1066)		↑ ↓: Select Item
System Date			[Tue 07/12/2008]		EnterSelect
System Time			[14:20:27]		F1 General Help
Access Level			Administrator		F2 Previous Values
					F3 Optimized Defaults
					F4 Save
					ESC Exit
Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.					

BIOS Menu 1: Main

→ BIOS Information

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Project Version:** the board version
- **Build Date:** Date the current BIOS version was made

→ Memory Information

The **Memory Information** lists a brief summary of the on-board memory. The fields in **Memory Information** cannot be changed.

- **Total Memory:** Displays the auto-detected system memory size and type.

The System Overview field also has two user configurable fields:

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→ System Date [xx/xx/xx]

Use the **System Date** option to set the system date. Manually enter the day, month and year.

→ System Time [xx:xx:xx]

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

4.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:



WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

```

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
Main  Advanced  Chipset  Boot  Security  Save & Exit
-----
> ACPI Settings
> CPU Configuration
> SATA Configuration
> USB Configuration
> Super IO Configuration
> H/M Monitor
> AMT Configuration
> Serial Port Console Redirection

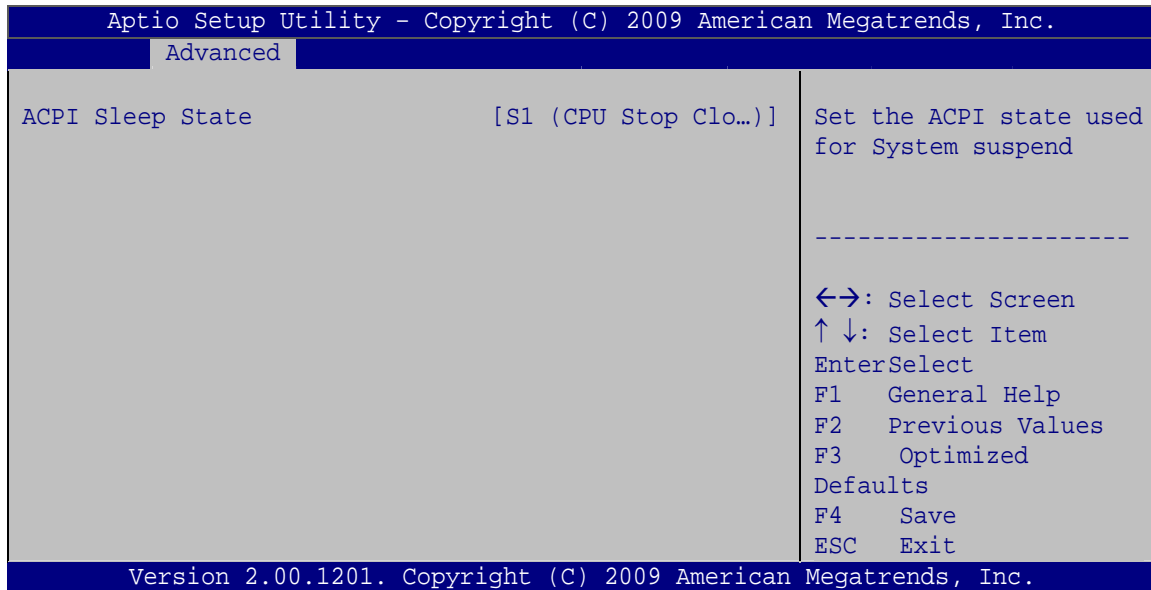
System ACPI Parameters
-----
<=>: Select Screen
↑↓: Select Item
Enter>Select
F1  General Help
F2  Previous Values
F3  Optimized
Defaults
F4  Save
ESC Exit

Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
    
```

BIOS Menu 2: Advanced

4.3.1 ACPI Configuration

The **ACPI Configuration** menu (**BIOS Menu 3**) configures the Advanced Configuration and Power Interface (ACPI) options.



BIOS Menu 3: ACPI Configuration

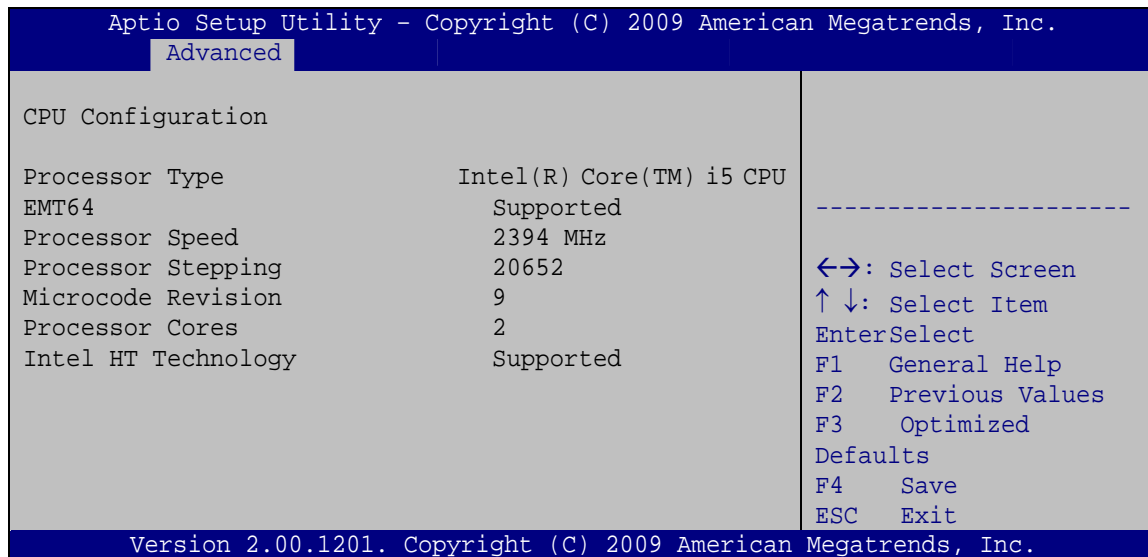
→ ACPI Sleep State [S1 (CPU Stop Clock)]

Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

- **S1 (CPU Stop DEFAULT Clock)** The system enters S1 (POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.
- **S3 (Suspend to RAM)** The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

4.3.2 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 4**) to view detailed CPU specifications and configure the CPU.



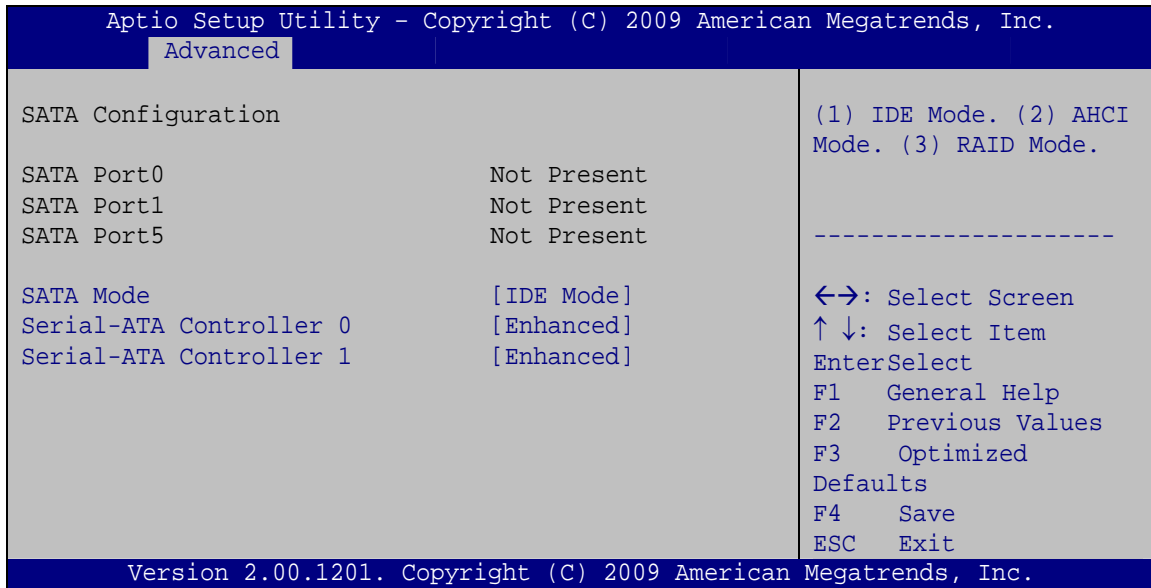
BIOS Menu 4: CPU Configuration

The CPU Configuration menu (**BIOS Menu 4**) lists the following CPU details:

- Processor Type: Lists the brand name of the CPU being used
- EMT64: Indicates if the EM64T is supported by the CPU.
- Processor Speed: Lists the CPU processing speed
- Processor Stepping: Lists the CPU processing stepping
- Microcode Revision: Lists the microcode revision
- Processor Cores: Lists the number of the processor core
- Intel HT Technology: Indicates if the Intel HT Technology is supported by the CPU.

4.3.3 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 5**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 5: IDE Configuration

→ SATA Mode [IDE Mode]

Use the **SATA Mode** option to configure SATA devices as normal IDE devices.

- **Disable** Disables SATA devices.
- **IDE Mode** **DEFAULT** Configures SATA devices as normal IDE device.
- **AHCI Mode** Configures SATA devices as AHCI device.
- **RAID Mode** Configures SATA devices as RAID device.

→ Serial-ATA Controller 0/1 [Enhanced]

Use the **Serial-ATA Controller** option to configure the Serial-ATA controller mode when the SATA mode is set to IDE Mode.

- **Disable** Disables Serial-ATA controller.

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- ➔ **Enhanced** **DEFAULT** Configures the Serial-ATA controller to be in enhanced mode. In this mode, IDE channels and SATA channels are separated. Some legacy OS do not support this mode.

- ➔ **Compatible** Configures the Serial-ATA controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels.

4.3.4 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 6**) to read USB configuration information and configure the USB settings.

```

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
  Advanced
-----
USB Configuration
USB Devices:
    2 Hubs
Legacy USB Support          [Enabled]
EHCI Hand-off              [Enabled]
-----
Enables Legacy USB
support. AUTO option
disables legacy support
if no USB devices are
connected. DISABLE
option will keep USB
devices available only
for EFI applications.

-----
<=>: Select Screen
↑↓: Select Item
Enter>Select
F1   General Help
F2   Previous Values
F3   Optimized
Defaults
F4   Save
ESC  Exit

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```

BIOS Menu 6: USB Configuration

➔ USB Devices

The **USB Devices Enabled** field lists the USB devices that are enabled on the system

→ All USB Devices [Enabled]

Use the **All USB Devices** option to enable the USB devices.

- **Disabled** All USB devices are disabled.
- **Enabled** **DEFAULT** All USB devices are enabled.

→ Legacy USB Support [Enabled]

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

- **Disabled** Legacy USB support disabled
- **Enabled** **DEFAULT** Legacy USB support enabled
- **Auto** Legacy USB support disabled if no USB devices are connected

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4.3.5 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 7**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.

```

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
  Advanced
-----
Super IO Configuration
Super IO Chip                Fintek F81801
> Serial Port 0 Configuration
> Serial Port 1 Configuration

Set Parameters of Serial
Port 0 (COMA)
-----
<=>: Select Screen
↑ ↓: Select Item
EnterSelect
F1  General Help
F2  Previous Values
F3  Optimized
Defaults
F4  Save
ESC Exit

Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.

```

BIOS Menu 7: Super IO Configuration

4.3.5.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 8**) to configure the serial port n.

```

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
  Advanced
-----
Serial Port 0 Configuration
Serial Port                [Enabled]
Device Settings            IO=3F8h; IRQ=4
Change Settings            [Auto]

Enable or Disable Serial
Port (COM)
-----
<=>: Select Screen
↑ ↓: Select Item
EnterSelect
F1  General Help
F2  Previous Values
F3  Optimized
Defaults
F4  Save
ESC Exit

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```

BIOS Menu 8: Serial Port n Configuration Menu

4.3.5.1.1 Serial Port 0 Configuration

→ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- **Disabled** Disable the serial port
- **Enabled** **DEFAULT** Enable the serial port

→ Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- **Auto** **DEFAULT** The serial port IO port address and interrupt address are automatically detected.
- **IO=3F8h;**
IRQ=4 Serial Port I/O port address is 3F8h and the interrupt address is IRQ4
- **IO=3F8h;**
IRQ=3, 4,
5, 6, 7, 9,
10, 11, 12 Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
- **IO=2F8h;**
IRQ=3, 4,
5, 6, 7, 9,
10, 11, 12 Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
- **IO=3E8h;**
IRQ=3, 4,
5, 6, 7, 9,
10, 11, 12 Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
- **IO=2E8h;**
IRQ=3, 4,
5, 6, 7, 9,
10, 11, 12 Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

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4.3.5.1.2 Serial Port 1 Configuration

→ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- **Disabled** Disable the serial port
- **Enabled DEFAULT** Enable the serial port

→ Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- **Auto DEFAULT** The serial port IO port address and interrupt address are automatically detected.
- **IO=2F8h;
IRQ=3** Serial Port I/O port address is 2F8h and the interrupt address is IRQ3
- **IO=3F8h;
IRQ=3, 4,
5, 6, 7, 9,
10, 11, 12** Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
- **IO=2F8h;
IRQ=3, 4,
5, 6, 7, 9,
10, 11, 12** Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
- **IO=3E8h;
IRQ=3, 4,
5, 6, 7, 9,
10, 11, 12** Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
- **IO=2E8h;
IRQ=3, 4,
5, 6, 7, 9,
10, 11, 12** Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

4.3.6 H/W Monitor

The H/W Monitor menu (**BIOS Menu 9**) shows the operating temperature, fan speeds and system voltages.

```

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
  Advanced
PC Health Status
> Smart Fan Mode Configuration

CPU Temperature      :+46 C
SYS Temperature     :+34 C

CPU FAN Speed       :3500 RPM
SYS FAN Speed       :N/A

VIN0 (VCC3C)        :+3.312 V
VIN1 (VCORE)        :+1.160 V
VIN2 (+1.5V)        :+1.520 V
VSB3V               :+3.328 V
VBAT                :+3.216 V

-----
<->: Select Screen
↑ ↓: Select Item
Enter>Select
F1   General Help
F2   Previous Values
F3   Optimized
Defaults
F4   Save
ESC  Exit

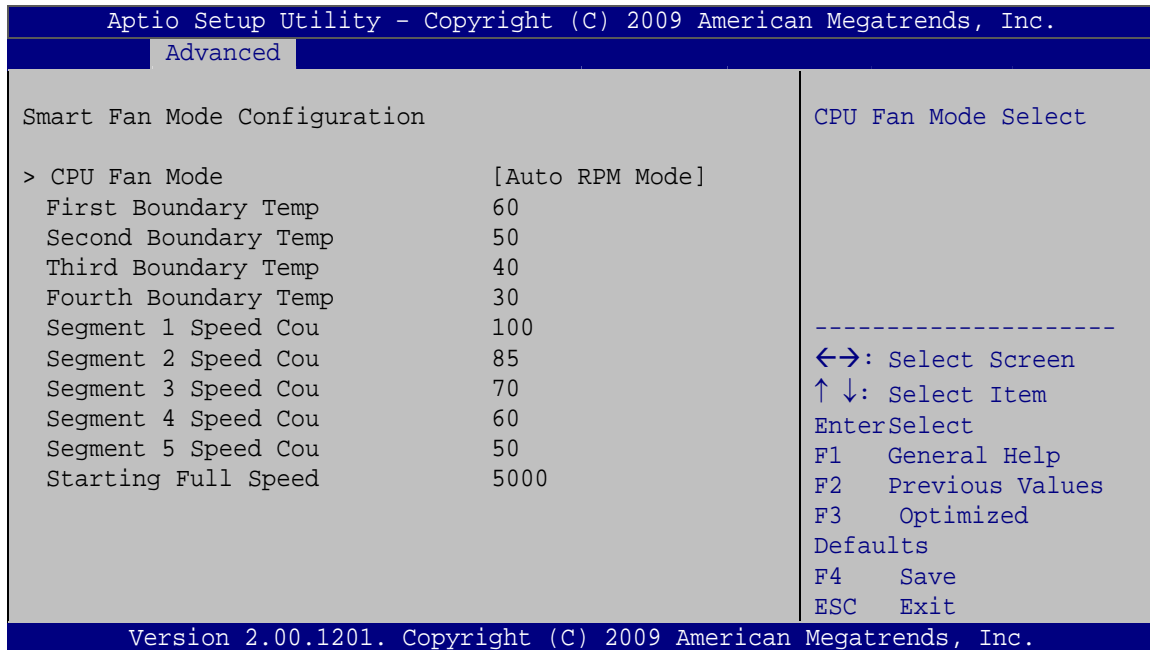
Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
  
```

BIOS Menu 9: Hardware Health Configuration

4.3.6.1 Smart Fan Mode Configuration

Use the Smart Fan Mode Configuration menu (**BIOS Menu 10**) to configure the CPU fan.

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BIOS Menu 10: Hardware Health Configuration

→ CPU Fan Mode [Auto Fan by RPM]

Use the **CPU Fan Mode** option to configure the CPU fan.

- **Auto RPM Mode** **DEFAULT** The fan adjusts its speed using these settings by RPM:
- First Boundary Temperature
 - Second Boundary Temperature
 - Third Boundary Temperature
 - Fourth Boundary Temperature
 - Segment 1 Speed Count
 - Segment 2 Speed Count
 - Segment 3 Speed Count
 - Segment 4 Speed Count
 - Segment 5 Speed Count
 - Starting Full Speed Count

→ **Auto Duty Cycle Mode**

The fan adjusts its speed using these settings by Duty Cycle:

- First Boundary Temperature
- Second Boundary Temperature
- Third Boundary Temperature
- Fourth Boundary Temperature
- Segment 1 Speed Count
- Segment 2 Speed Count
- Segment 3 Speed Count
- Segment 4 Speed Count
- Segment 5 Speed Count

→ **Manual RPM Mode**

The fan spins at the speed set in:

- Expect speed count value
(Min=1000 rpm, Max=15000 rpm)

→ **Manual Duty Cycle Mode**

The fan spins at the speed set in:

- Expect Duty Cycle
(Min=0%, Max=100%)



NOTE:

Smart fan functions are supported only when using a 4-pin fan. When using a 3-pin fan, the functions are not supported.

→ **First Boundary Temperature [060]**



WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

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- Minimum Value: 1°C
- Maximum Value: 128°C

→ Second Boundary Temperature [050]



WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 1°C
- Maximum Value: 128°C

→ Third Boundary Temperature [040]



WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 1°C
- Maximum Value: 128°C

→ Fourth Boundary Temperature [030]



WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 1°C
- Maximum Value: 128°C

→ Segment 1 Speed Count [100]

This value is always full speed and corresponds to the First Boundary Temperature. This speed should be higher than Segment 2.

- Minimum Value: 1%
- Maximum Value: 100%

→ Segment 2 Speed Count [085]

This value is always full speed and corresponds to the Boundary Temperature. This speed should be higher than Segment 3.

- Minimum Value: 1%
- Maximum Value: 100%

→ Segment 3 Speed Count [070]

This value is always full speed and corresponds to the Third Boundary Temperature. This speed should be higher than Segment 4.

- Minimum Value: 1%
- Maximum Value: 100%

→ Segment 4 Speed Count [060]

This value is always full speed and corresponds to the Fourth Boundary Temperature. This speed should be higher than Segment 5.

- Minimum Value: 1%
- Maximum Value: 100%

→ Segment 5 Speed Count [050]

This value is always full speed. The CPU fan starts at this speed.

- Minimum Value: 1%
- Maximum Value: 100%

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→ Starting Full Speed Count

This value is the starting speed of the CPU fan.

- Minimum Value: 1000 RPM
- Maximum Value: 15000 RPM

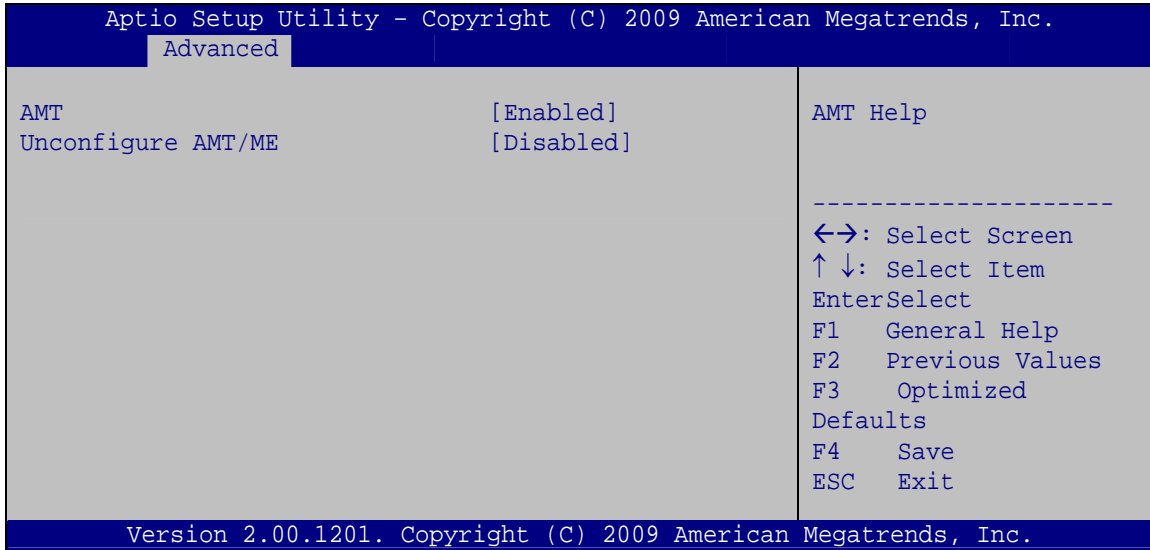
→ PC Health Status

The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
 - CPU Temperature
 - System Temperature
- Fan Speeds:
 - CPU Fan Speed
- Voltages:
 - VCC3V
 - Vcore
 - +1.5V
 - VSB3V
 - VBAT

4.3.7 AMT Configuration

The **AMT Configuration** menu (**BIOS Menu 11**) allows the advanced power management options to be configured.



BIOS Menu 11: AMT Configuration

→ AMT [Enabled]

Use **AMT** option to enable or disable the Intel® AMT function.

- **Disabled** Intel® AMT is disabled
- **Enabled** **DEFAULT** Intel® AMT is enabled

→ Unconfigure AMT/ME [Disabled]

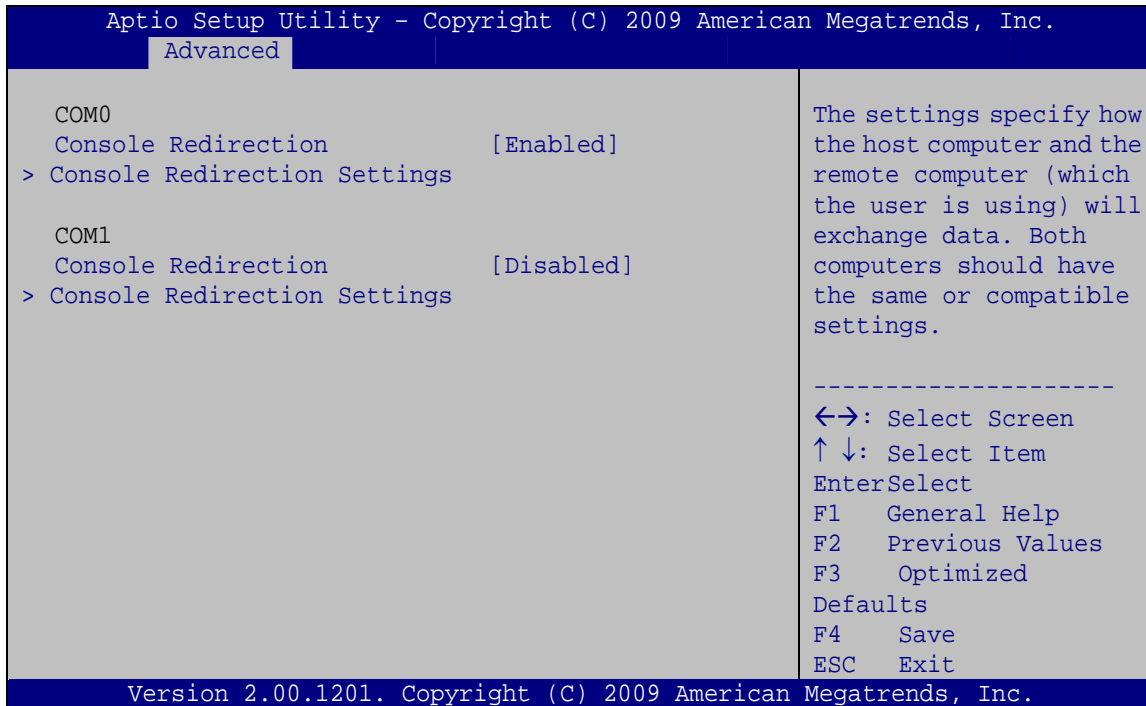
Use the **Unconfigure AMT/ME** option to perform AMT/ME unconfigure without password operation.

- **Disabled** **DEFAULT** Not perform AMT/ME unconfigure
- **Enabled** To perform AMT/ME unconfigure

4.3.8 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 12**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.

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BIOS Menu 12: Serial Port Console Redirection

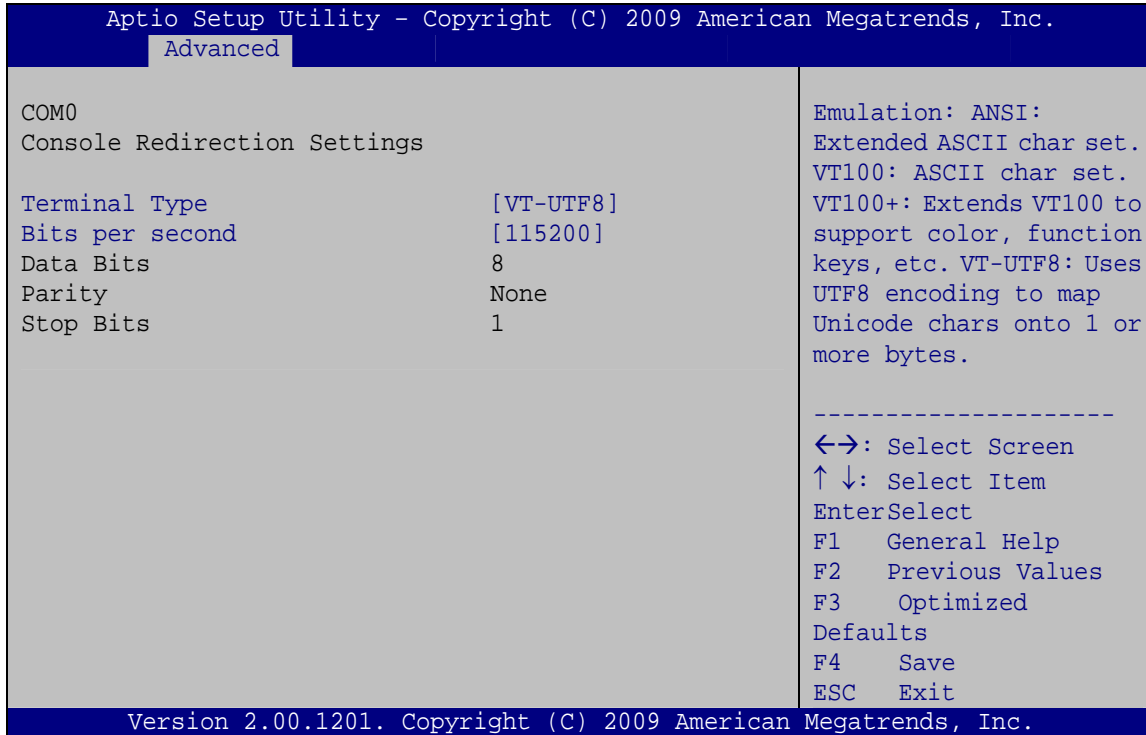
→ Console Redirection

Use **Console Redirection** option to enable or disable the console redirection function.

- **Disabled** **DEFAULT** Disables the console redirection function.
- **Enabled** Enabled the console redirection function.

4.3.8.1 Console Redirection Settings

The **Console Redirection Settings** menu (**BIOS Menu 13**) allows the console redirection options to be configured. The option is active when Console Redirection option is enabled.



BIOS Menu 13: Console Redirection Settings

→ Terminal Type [ANSI]

Use the **Terminal Type** option to specify the remote terminal type..

- **VT100** The target terminal type is VT100
- **VT100+** The target terminal type is VT100+
- **VT-UTF8** The target terminal type is VT-UTF8
- **ANSI** **DEFAULT** The target terminal type is ANSI

→ Bits per second [115200]

Use the **Bits per second** option to specify the transmission speed of the serial port.

- **9600** The transmission speed is 9600
- **19200** The transmission speed is 19200
- **57600** The transmission speed is 57600

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→ 115200 DEFAULT The transmission speed is 115200

4.4 Chipset

Use the **Chipset** menu (**BIOS Menu 14**) to access the Northbridge and Southbridge configuration menus



WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

```

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
Main   Advanced  Chipset  Boot   Security  Save & Exit
-----
> North Bridge
> South Bridge
> Integrated Graphics

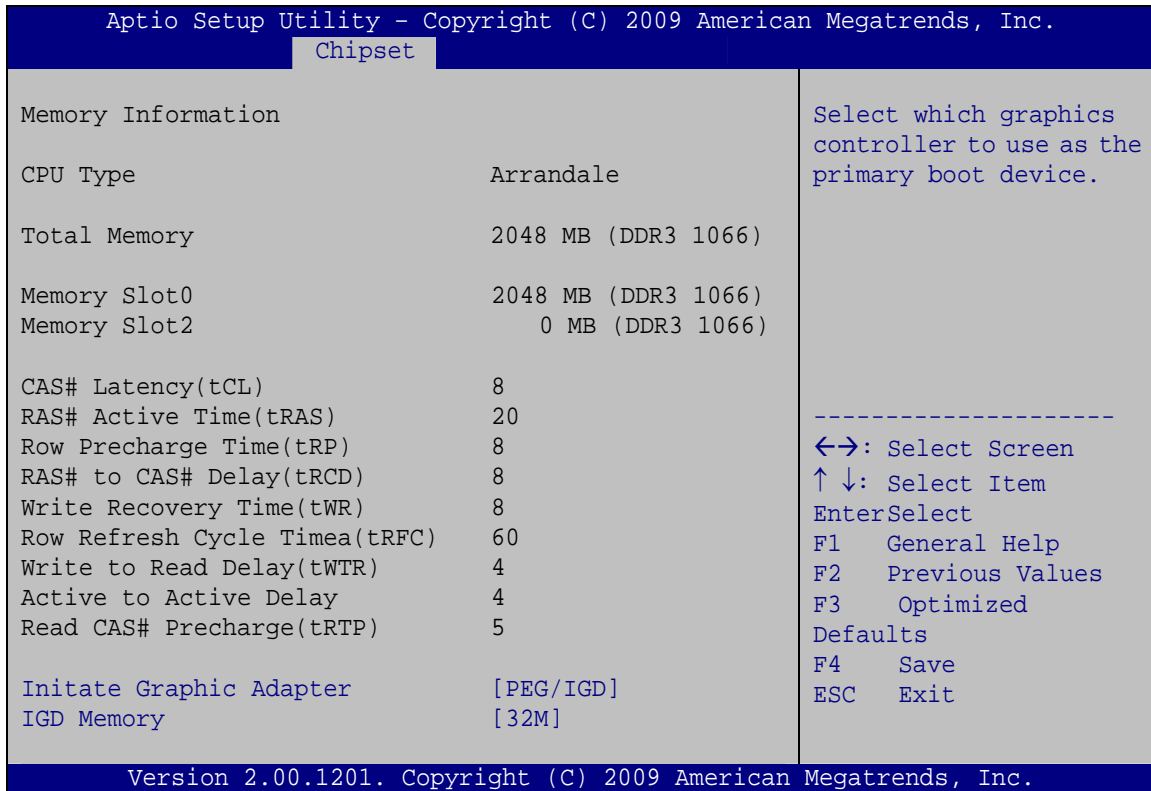
North Bridge Parameters
-----
<=>: Select Screen
↑↓: Select Item
Enter>Select
F1   General Help
F2   Previous Values
F3   Optimized
Defaults
F4   Save
ESC  Exit

Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
  
```

BIOS Menu 14: Chipset

4.4.1 Northbridge Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 15**) to configure the Northbridge chipset.



BIOS Menu 15:Northbridge Chipset Configuration

→ Initiate Graphics Adapter [PEG/IGD]

Use the **Initiate Graphics Adapter** option to select the graphics controller used as the primary boot device. Select either an integrated graphics controller (IGD) or a combination of PCI graphics controller, a PCI express (PEG) controller or an IGD. Configuration options are listed below:

- IGD
- PEG/IGD **DEFAULT**

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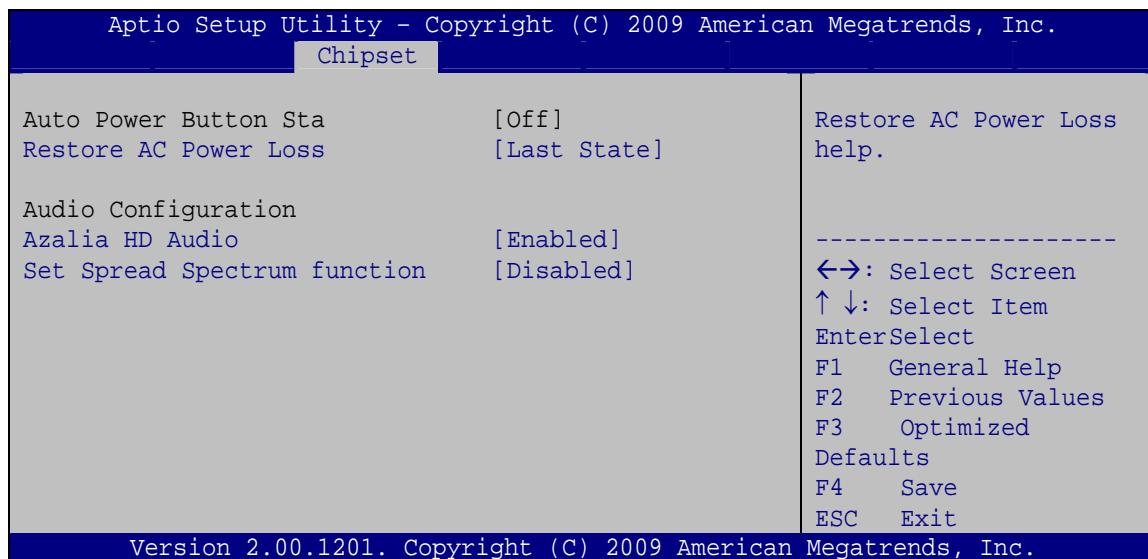
→ IGD Memory [32 MB]

Use the **IGD Memory** option to specify the amount of system memory that can be used by the Internal graphics device.

- **Disable**
- **32 MB** **DEFAULT** 32 MB of memory used by internal graphics device
- **64 MB** 64 MB of memory used by internal graphics device
- **128 MB** 128 MB of memory used by internal graphics device

4.4.2 Southbridge Configuration

Use the **Southbridge Configuration** menu (**BIOS Menu 16**) to configure the Southbridge chipset.



BIOS Menu 16:Southbridge Chipset Configuration

→ Restore AC Power Loss [Power Off]

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

- **Power Off** The system remains turned off

- **Power On** **DEFAULT** The system turns on
- **Last State** The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

→ **Azalia HD Audio [Enabled]**

Use the **Azalia HD Audio** option to enable or disable the High Definition Audio controller.

- **Disabled** The onboard High Definition Audio controller is disabled
- **Enabled** **DEFAULT** The onboard High Definition Audio controller automatically detected and enabled

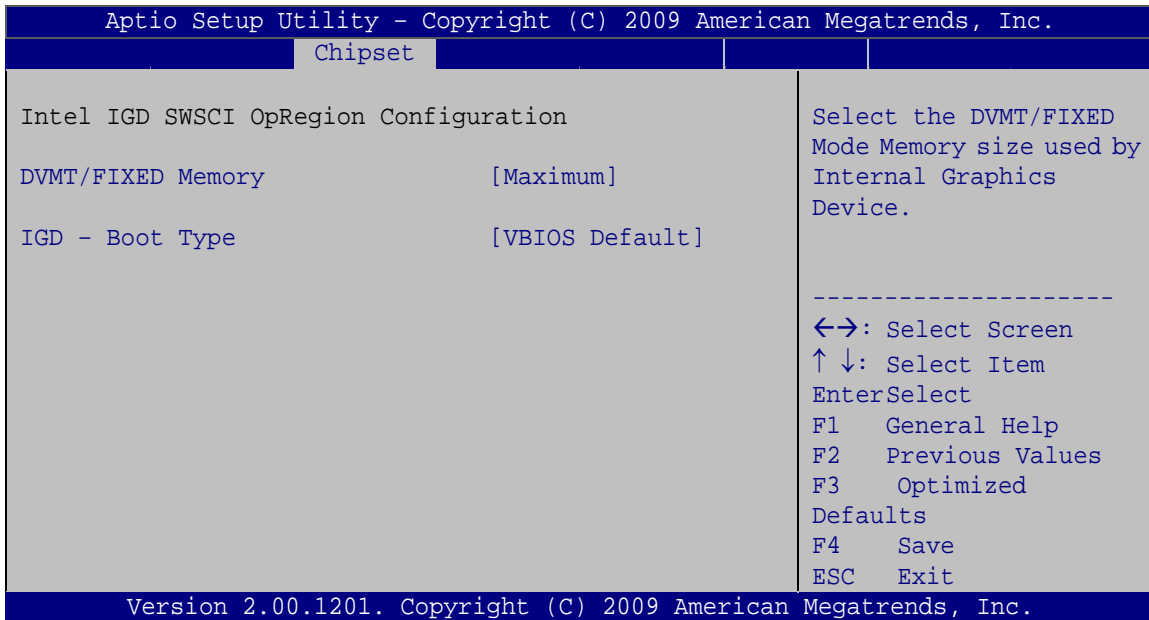
→ **Set Spread Spectrum function [Disabled]**

Use the **Set Spread Spectrum function** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

- **Disabled** **DEFAULT** EMI not reduced
- **Enabled** EMI reduced

4.4.3 Integrated Graphics

Use the **Integrated Graphics** menu to configure the video device connected to the system.



BIOS Menu 17: Intel IGD SWSCI OpRegion

→ DVMT/FIXED Memory [128 MB]

Use the **DVMT/FIXED Memory** option to specify the maximum amount of memory that can be allocated as graphics memory. Configuration options are listed below.

- 128 MB Default
- 256 MB
- Maximum

→ IGD – Boot Type [VBIOS Default]

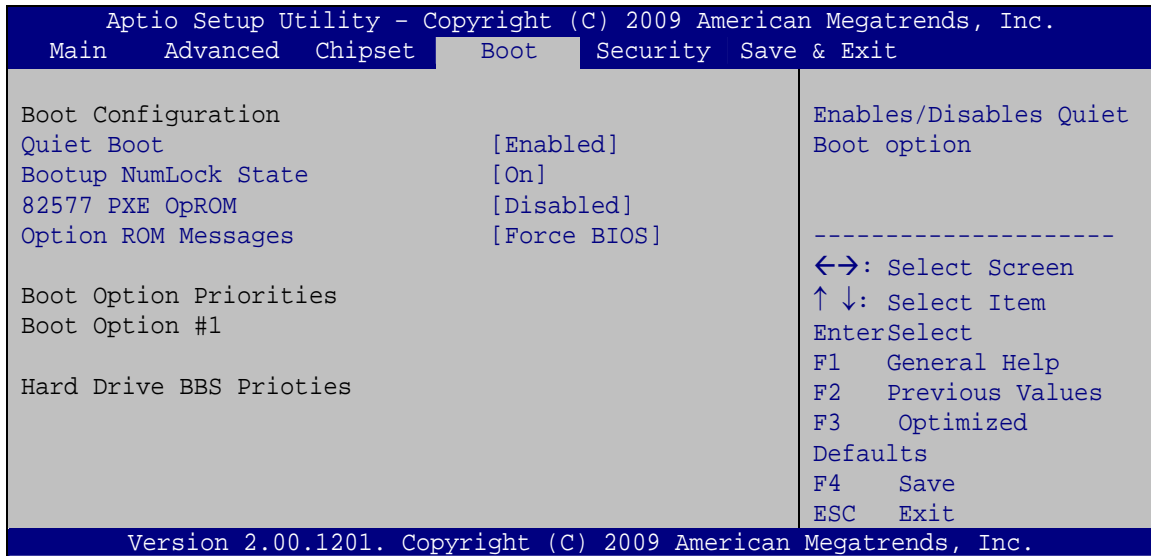
Use the **IGD – Boot Type** BIOS feature to determine what displays are used. Dual display functionality is enabled here. Dual display configuration options are listed below:

- VBIOS Default DEFAULT
- CRT
- CTR1

- EFP
- EFP1
- CRT + CRT1
- CRT + EFP1

4.5 Boot

Use the **Boot** menu (**BIOS Menu 18**) to configure system boot options.



BIOS Menu 18: Boot

→ Quiet Boot [Enabled]

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

- **Disabled** Normal POST messages displayed
- **Enabled** **DEFAULT** OEM Logo displayed instead of POST messages

→ Bootup NumLock [On]

Use the **Bootup NumLock** BIOS option to specify if the number lock setting must be modified during boot up.

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- ➔ **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.
- ➔ **On DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **82577 PXE OpROM [Disabled]**

Use the **82577 PXE OpROM** option to enable the Intel® 82577 PCIe GbE controller to boot the system.

- ➔ **Disabled DEFAULT** Cannot be booted from a remote system through the Intel® 82577 PCIe GbE controller
- ➔ **Enabled** Can be booted from a remote system through the Intel® 82577 PCIe GbE controller

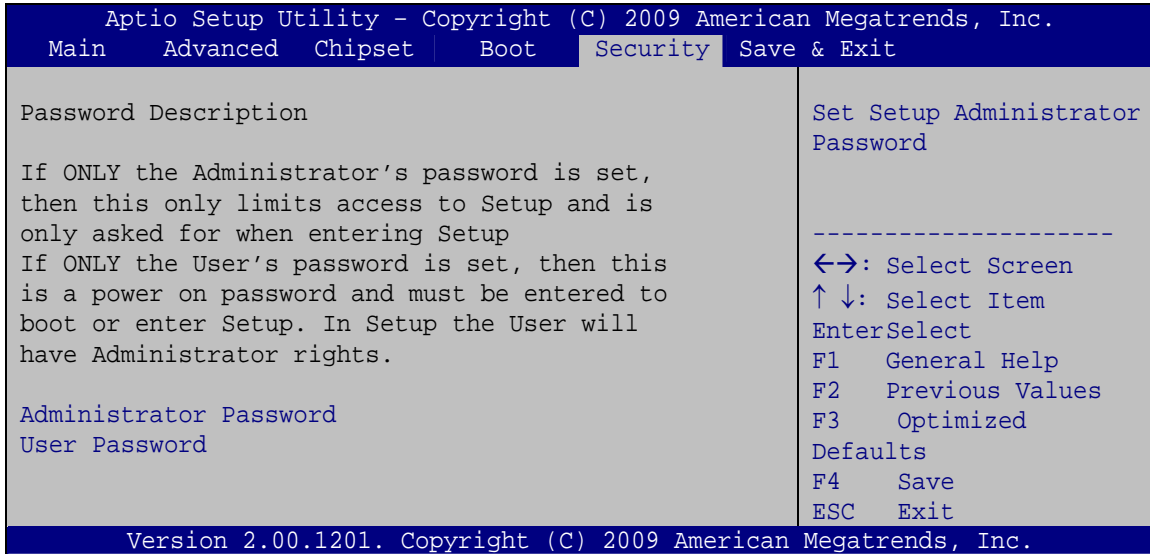
➔ **Option ROM Messages [Force BIOS]**

Use the **Option ROM Messages** option to allow add-on ROM (read-only memory) messages to be displayed.

- ➔ **Force BIOS DEFAULT** The system forces third party BIOS to display during system boot.
- ➔ **Keep Current** The system displays normal information during system boot.

4.6 Security

Use the **Security** menu (**BIOS Menu 19**) to set system and user passwords.



BIOS Menu 19: Security

→ Administrator Password

Use the **Administrator Password** to set or change a administrator password.

→ User Password

Use the **User Password** to set or change a user password.

4.7 Exit

Use the **Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.

```

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
Main   Advanced  Chipset  Boot   Security  Save & Exit
-----
Save Changes and Reset
Discard Changes and Reset

Save Options
Save Changes
Discard Changes

Restore Defaults

Exit system setup after
saving the changes.

-----
<->: Select Screen
↑ ↓: Select Item
Enter>Select
F1   General Help
F2   Previous Values
F3   Optimized
Defaults
F4   Save
ESC  Exit

Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.

```

BIOS Menu 20:Exit

→ Save Changes and Reset

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

→ Discard Changes and Reset

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

→ Save Changes

Use the **Save Changes** option to save the changes made to the BIOS options.

→ **Discard Changes**

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

→ **Restore Defaults**

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

Appendix

A

Intel[®] AMT Configuration

A.1 Intel® AMT Setup Procedure

The ECN-581A-R11/QM57-I5 is featured with the Intel® Active Management Technology (AMT) 6.0. To enable the Intel® AMT function, follow the steps below.

- Step 1:** Make sure the DIMM1 socket is installed with one DDR3 SO-DIMM.
- Step 2:** Connect an Ethernet cable to the RJ-45 connector labeled LAN2_USB2.
- Step 3:** The AMI BIOS options regarding the Intel® ME or Intel® AMT must be enabled, including:
 - AMT Configuration [Advanced]
 - ME Subsystem [Chipset]
- Step 4:** Configure the Intel® Management Engine BIOS extension (MEBx) (see Section A.2 below)
- Step 5:** The following dialog window is displayed after the OS is loaded to show the Intel® AMT status on the ECN-581A-R11/QM57-I5 is enabled.



Figure A-1: Intel® Active Management Technology Status Dialog

A.2 Intel® Management Engine BIOS Extension

This section describes the essential steps for using the Intel® Management Engine BIOS extension (MEBx).

- Step 1:** A screen prompts the user to press <Ctrl+P> after a single beep during boot-up process. To get into the Intel® MEBx settings, press <Ctrl+P>.

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Step 2: Enter the Intel® ME password as it requires (**Figure B-10**). Enter the Intel® default password: **admin**.

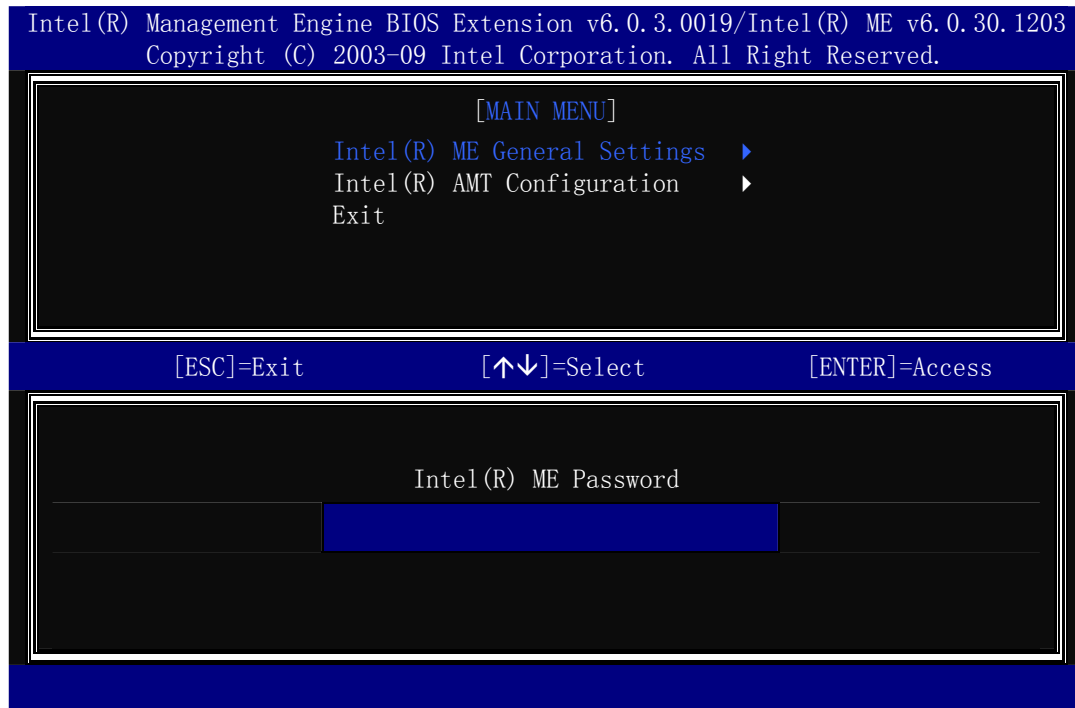


Figure A-2: Intel® Current ME Password

Step 3: Enter a new password following the strong password rule (containing at least one upper case letter, one lower case letter, one digit and one special character, and be at least eight characters). (**Figure B-11**)

Step 4: Verify the new password by entering again.

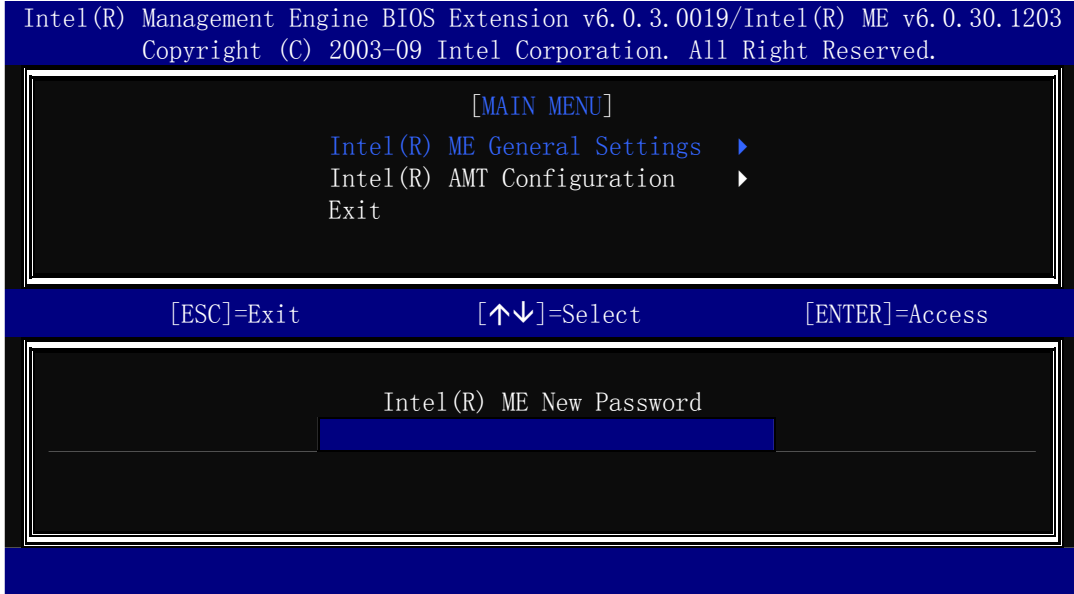


Figure A-3: Intel® ME New Password

Step 5: Select Intel® AMT Configuration and press Enter (Figure B-15).

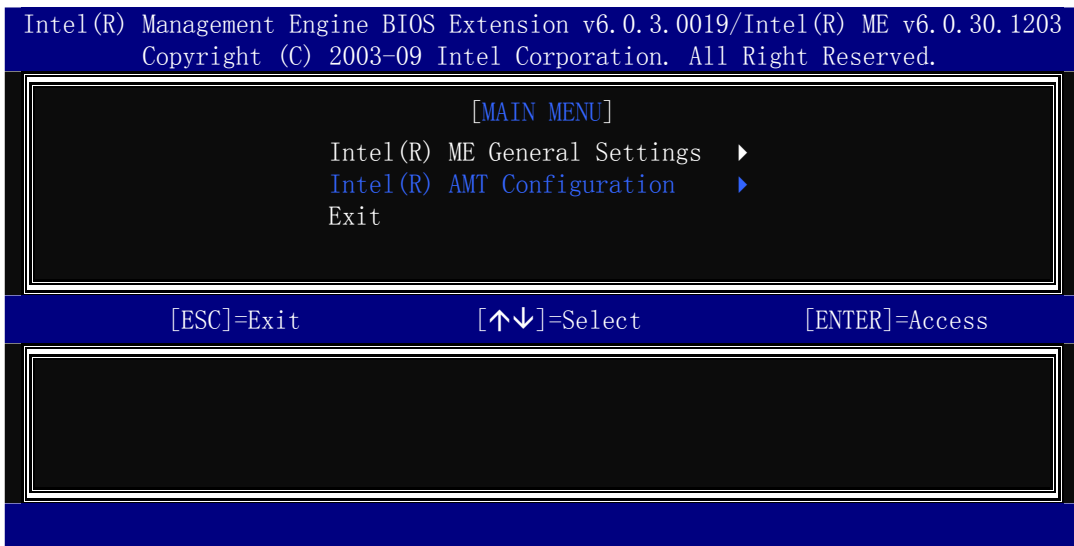


Figure A-4: Intel® AMT Configuration

Step 6: Select **KVM Configuration** and press **Enter**. (Figure B-16)

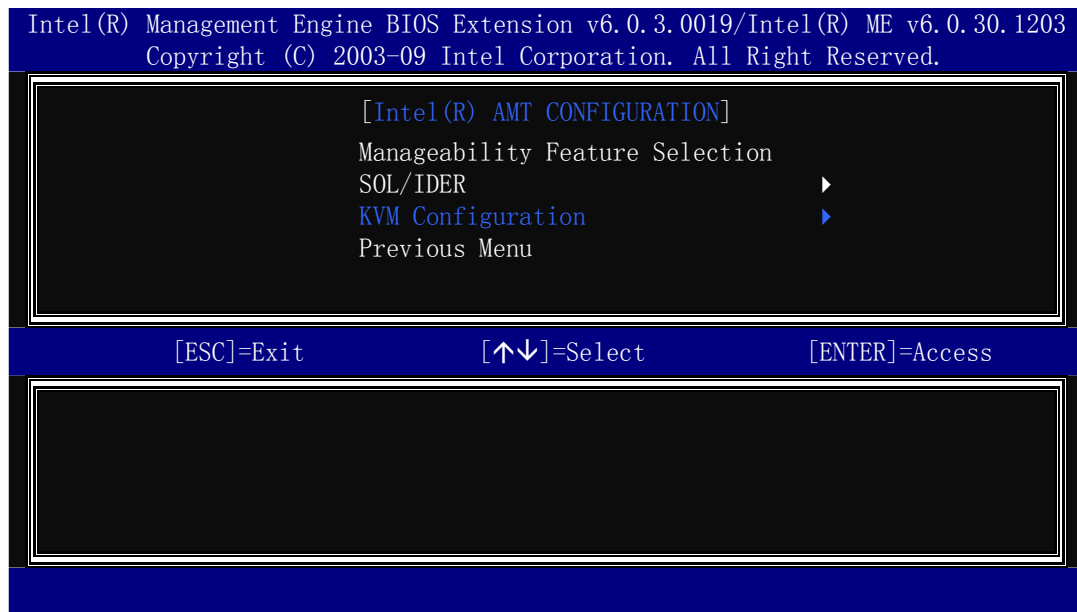


Figure A-5: Select KVM Configuration

Step 7: When the screen in **Figure B-17** prompts, select **User Opt-in** and press **Enter**.

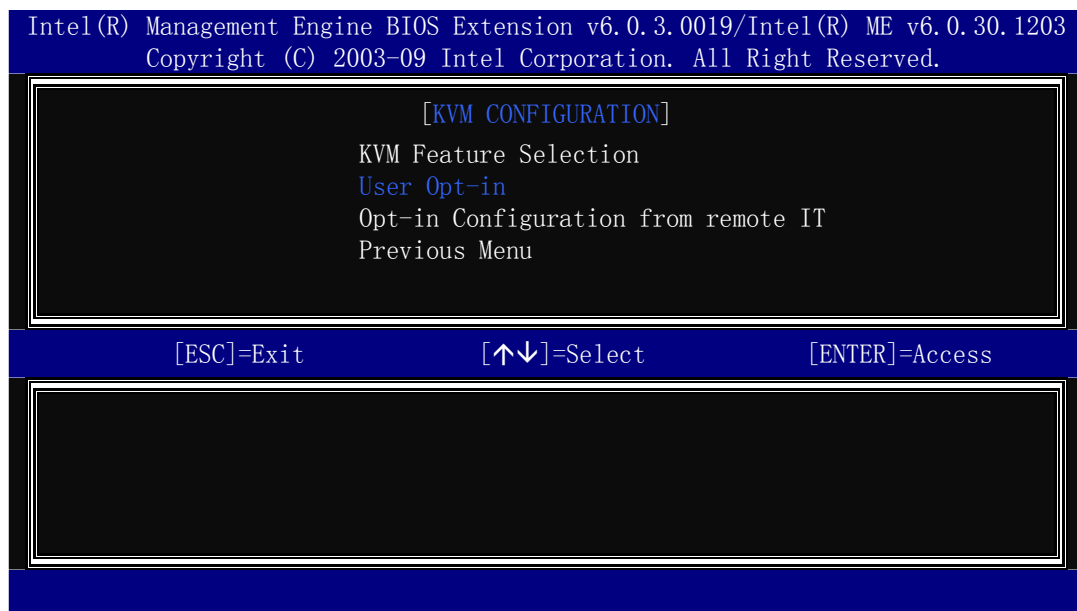


Figure A-6: KVM Configuration

Step 8: Two options are shown as in **Figure B-21**. Choose **User Consent is not required for KVM session** which means no password is required for using iAMT function. Then press **Enter**.

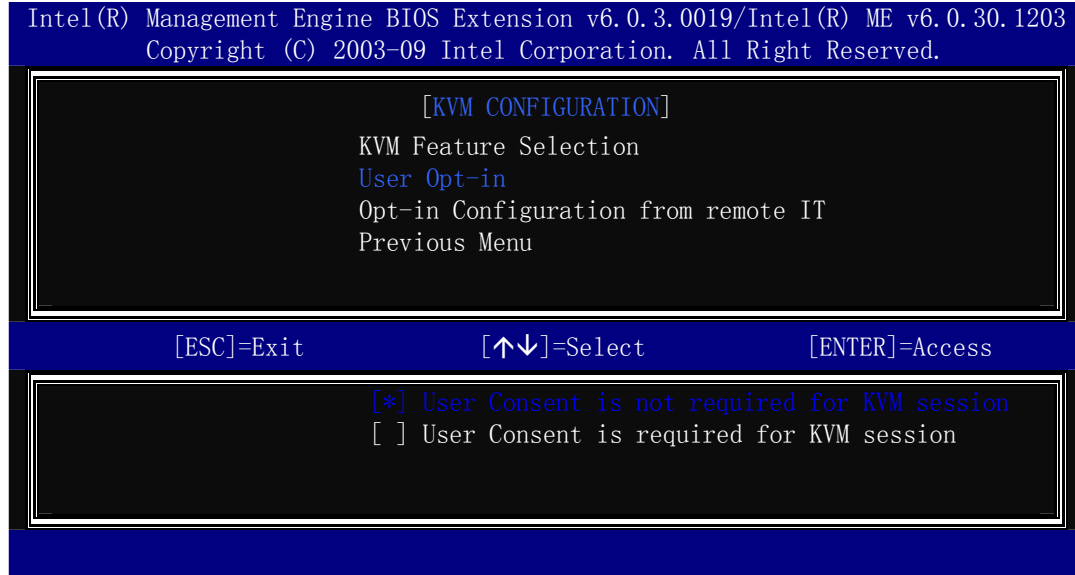


Figure A-7: KVM User Opt-in

Step 9: Make other necessary settings in the Intel® MEBx depending on users' need.

Step 10: To exit the Intel® MEBx, return to the main menu and select Exit. (**Figure B-28**)

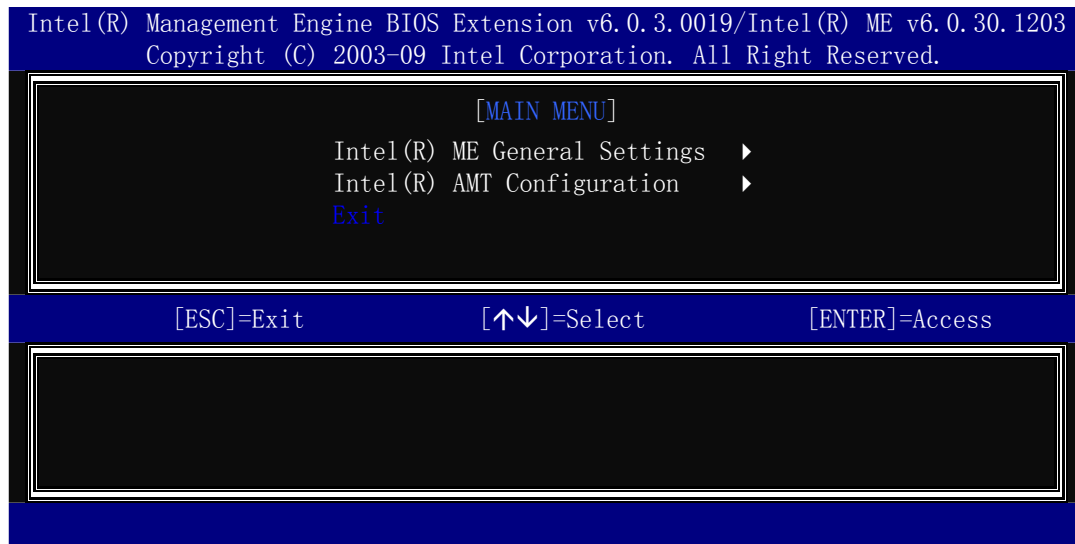


Figure A-8: Exit

A.3 IEI Easy Manager Application



IEI Easy Manager (iEZMan) application program allows a remote user, such as a support person, to remotely control and perform administrative tasks through a graphical user interface in Windows. The functions of the iEZMan application include

- Power Management
- Schedule Power Management
- Remote Access
- Group Management
- Patch Management
- Alert and Events

For more information regarding the iEZMan application, please refer to the instruction manual of the iEZMan.



Appendix

B

One Key Recovery

B.1 One Key Recovery Introduction

The IEI one key recovery is an easy-to-use front end for the Norton Ghost system backup and recovery tool. The one key recovery provides quick and easy shortcuts for creating a backup and reverting to that backup or for reverting to the factory default settings.

The IEI One Key Recovery tool menu is shown below.

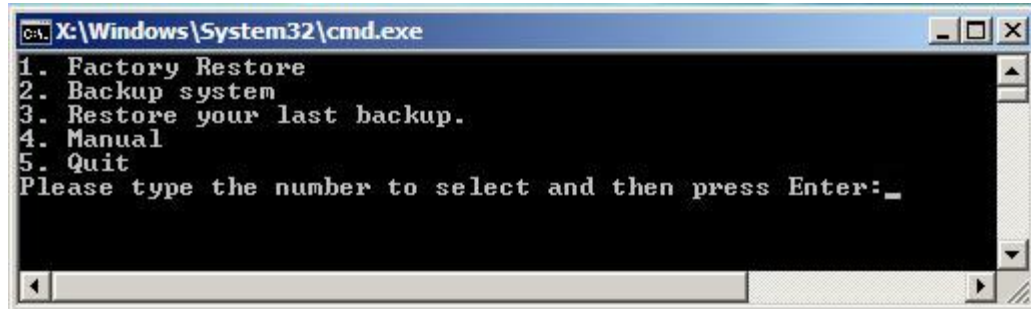


Figure B-1: IEI One Key Recovery Tool Menu

Prior to using the IEI One Key Recovery tool (as shown in **Figure B-1**) to backup or restore Windows system, five setup procedures are required.

1. Hardware and BIOS setup (see **Section B.2.1**)
2. Create partitions (see **Section B.2.2**)
3. Install operating system, drivers and system applications (see **Section B.2.3**)
4. Build-up recovery partition (see **Section B.2.4**)
5. Create factory default image (see **Section B.2.5**)

After completing the five initial setup procedures as described above, users can access the recovery tool by pressing <F3> while booting up the system. The detailed information of each function is described in **Section B.4**.



NOTE:

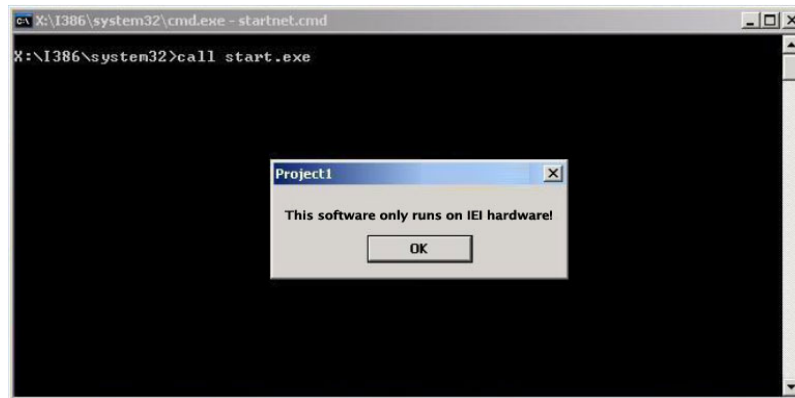
The initial setup procedures for Linux system are described in **Section B.3**.

B.1.1 System Requirement



NOTE:

The recovery CD can only be used with IEI products. The software will fail to run and a warning message will appear when used on non-IEI hardware.



To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

The partition created for recovery images must be big enough to contain both the factory default image and the user backup image. The size must be calculated before creating the partitions. Please take the following table as a reference when calculating the size of the partition.

	OS	OS Image after Ghost	Compression Ratio
Windows® 7	7 GB	5 GB	70%
Windows® XPE	776 MB	560 MB	70%
Windows® CE 6.0	36 MB	28 MB	77%

**NOTE:**

Specialized tools are required to change the partition size if the operating system is already installed.

B.1.2 Supported Operating System

The recovery CD is compatible with both Microsoft Windows and Linux operating system (OS). The supported OS versions are listed below.

- Microsoft Windows
 - Windows XP (Service Pack 2 or 3 required)
 - Windows Vista
 - Windows 7
 - Windows CE 5.0
 - Windows CE 6.0
 - Windows XP Embedded
- Linux
 - Fedora Core 12 (Constantine)
 - Fedora Core 11 (Leonidas)
 - Fedora Core 10 (Cambridge)
 - Fedora Core 8 (Werewolf)
 - Fedora Core 7 (Moonshine)
 - RedHat RHEL-5.4
 - RedHat 9 (Ghirke)
 - Ubuntu 8.10 (Intrepid)
 - Ubuntu 7.10 (Gutsy)
 - Ubuntu 6.10 (Edgy)
 - Debian 5.0 (Lenny)
 - Debian 4.0 (Etch)
 - SuSe 11.2
 - SuSe 10.3

**NOTE:**

Installing unsupported OS versions may cause the recovery tool to fail.

B.2 Setup Procedure for Windows

Prior to using the recovery tool to backup or restore Windows system, a few setup procedures are required.

- Step 1:** Hardware and BIOS setup (see Section B.2.1)
- Step 2:** Create partitions (see Section B.2.2)
- Step 3:** Install operating system, drivers and system applications (see Section B.2.3)
- Step 4:** Build-up recovery partition (see Section B.2.4)
- Step 5:** Create factory default image (see Section B.2.5)

The detailed descriptions are described in the following sections.

**NOTE:**

The setup procedures described below are for Microsoft Windows operating system users. For Linux system, most setup procedures are the same with Microsoft Windows except for several steps described in **Section B.3**.

B.2.1 Hardware and BIOS Setup

- Step 1:** Make sure the system is powered off and unplugged.
- Step 2:** Install a hard drive or SSD in the system. An unformatted and unpartitioned disk is recommended.
- Step 3:** Connect an optical disk drive to the system and insert the recovery CD.

- Step 4:** Turn on the system.
- Step 5:** Press the <DELETE> key as soon as the system is turned on to enter the BIOS.
- Step 6:** Select the connected optical disk drive as the 1st boot device. (Boot → Boot Device Priority → 1st Boot Device).
- Step 7:** Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

B.2.2 Create Partitions

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

- Step 1:** Put the recovery CD in the optical drive of the system.
- Step 2:** **Boot the system from recovery CD.** When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

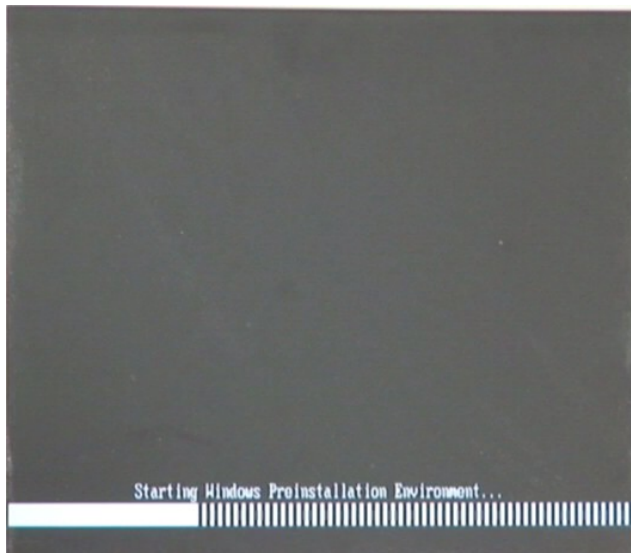
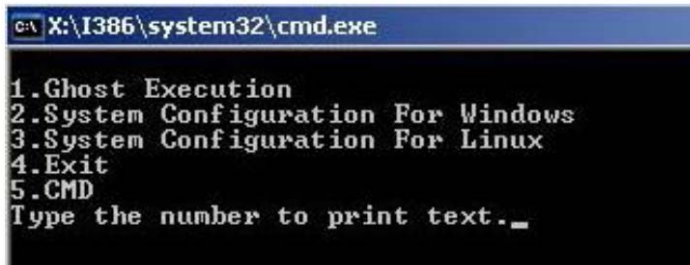


Figure B-2: Launching the Recovery Tool

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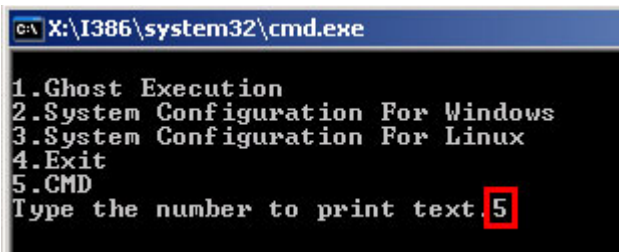
Step 3: The recovery tool setup menu is shown as below.



```
C:\X:\I386\system32\cmd.exe
1.Ghost Execution
2.System Configuration For Windows
3.System Configuration For Linux
4.Exit
5.CMD
Type the number to print text._
```

Figure B-3: Recovery Tool Setup Menu

Step 4: Press <5> then <Enter>.



```
C:\X:\I386\system32\cmd.exe
1.Ghost Execution
2.System Configuration For Windows
3.System Configuration For Linux
4.Exit
5.CMD
Type the number to print text. 5
```

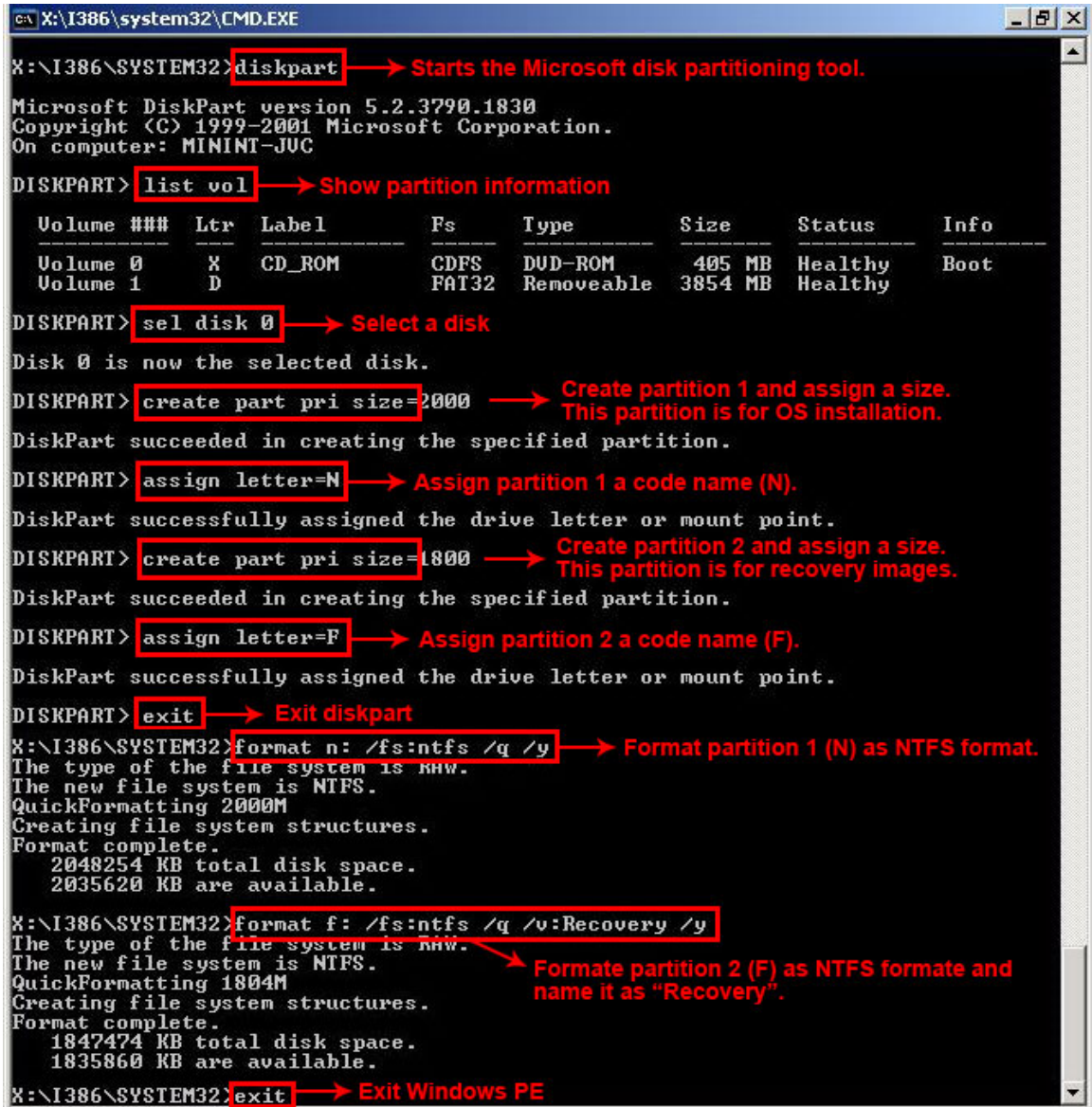
Figure B-4: Command Mode

Step 5: The command prompt window appears. Type the following commands (marked in red) to create two partitions. One is for the OS installation; the other is for saving recovery files and images which will be an invisible partition. (Press <Enter> after entering each line below)

```
system32>diskpart
DISKPART>list vol
DISKPART>sel disk 0
DISKPART>create part pri size= ____
DISKPART>assign letter=N
DISKPART>create part pri size= ____
DISKPART>assign letter=F
DISKPART>exit
system32>format N: /fs:ntfs /q /y
```


system32>format F: /fs:ntfs /q /v:Recovery /y

system32>exit



```
X:\I386\SYSTEM32\CMD.EXE
X:\I386\SYSTEM32>diskpart → Starts the Microsoft disk partitioning tool.
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JUC
DISKPART> list vol → Show partition information
Volume ### Ltr Label Fs Type Size Status Info
-----
Volume 0 X CD_ROM GDFS DUD-ROM 405 MB Healthy Boot
Volume 1 D FAT32 Removeable 3854 MB Healthy
DISKPART> sel disk 0 → Select a disk
Disk 0 is now the selected disk.
DISKPART> create part pri size=2000 → Create partition 1 and assign a size.
This partition is for OS installation.
DiskPart succeeded in creating the specified partition.
DISKPART> assign letter=N → Assign partition 1 a code name (N).
DiskPart successfully assigned the drive letter or mount point.
DISKPART> create part pri size=1800 → Create partition 2 and assign a size.
This partition is for recovery images.
DiskPart succeeded in creating the specified partition.
DISKPART> assign letter=F → Assign partition 2 a code name (F).
DiskPart successfully assigned the drive letter or mount point.
DISKPART> exit → Exit diskpart
X:\I386\SYSTEM32>format n: /fs:ntfs /q /y → Format partition 1 (N) as NTFS format.
The type of the file system is ntfs.
The new file system is NTFS.
QuickFormatting 2000M
Creating file system structures.
Format complete.
2048254 KB total disk space.
2035620 KB are available.
X:\I386\SYSTEM32>format f: /fs:ntfs /q /v:Recovery /y → Formate partition 2 (F) as NTFS formate and
name it as "Recovery".
The type of the file system is ntfs.
The new file system is NTFS.
QuickFormatting 1804M
Creating file system structures.
Format complete.
1847474 KB total disk space.
1835860 KB are available.
X:\I386\SYSTEM32>exit → Exit Windows PE
```

Figure B-5: Partition Creation Commands

**NOTE:**

Use the following commands to check if the partitions were created successfully.

```
X:\I386\SYSTEM32>diskpart
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JUC

DISKPART> sel disk 0
Disk 0 is now the selected disk.

DISKPART> list part

   Partition ###   Type              Size              Offset
-----
   Partition 1     Primary            2000 MB           32 KB
   Partition 2     Primary            1804 MB          2000 MB

DISKPART> exit
```

Step 6: Press any key to exit the recovery tool and automatically reboot the system.

Please continue to the following procedure: Build-up Recovery Partition.

B.2.3 Install Operating System, Drivers and Applications

Install the operating system onto the unlabelled partition. The partition labeled as "Recovery" is for use by the system recovery tool and should not be used for installing the operating system or any applications.

**NOTE:**

The operating system installation program may offer to reformat the chosen partition. DO NOT format the partition again. The partition has already been formatted and is ready for installing the new operating system.

To install the operating system, insert the operating system installation CD into the optical drive. Restart the computer and follow the installation instructions.

B.2.4 Build-up Recovery Partition

- Step 1:** Put the recover CD in the optical drive.
- Step 2:** Start the system.
- Step 3:** **Boot the system from recovery CD.** When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

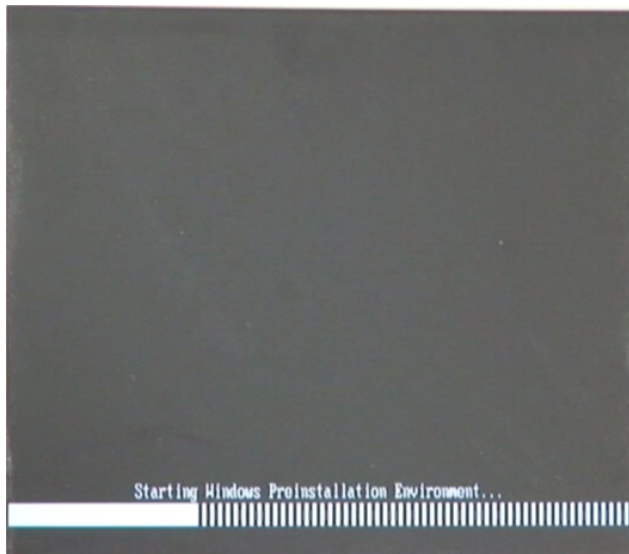


Figure B-6: Launching the Recovery Tool

- Step 4:** When the recovery tool setup menu appears, press <2> then <Enter>.

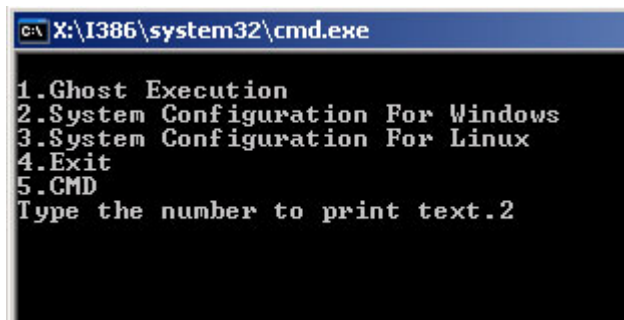


Figure B-7: System Configuration for Windows

- Step 5:** The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. In this process, the partition which is created for

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recovery files in **Section B.2.2** is hidden and the recovery tool is saved in this partition.

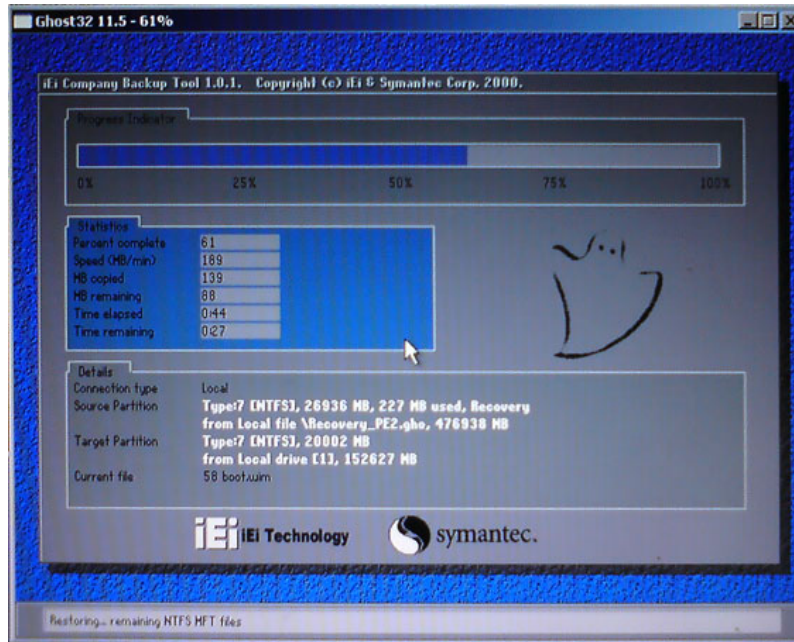


Figure B-8: Build-up Recovery Partition

Step 6: After completing the system configuration, press any key in the following window to reboot the system.

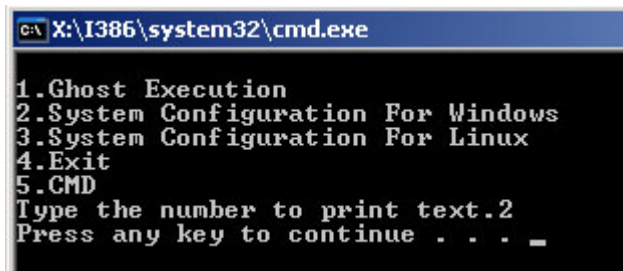


Figure B-9: Press any key to continue

Step 7: Eject the recovery CD.

B.2.5 Create Factory Default Image



NOTE:

Before creating the factory default image, please configure the system to a factory default environment, including driver and application installations.

To create a factory default image, please follow the steps below.

Step 1: Turn on the system. When the following screen displays (**Figure B-10**), press the <F3> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.

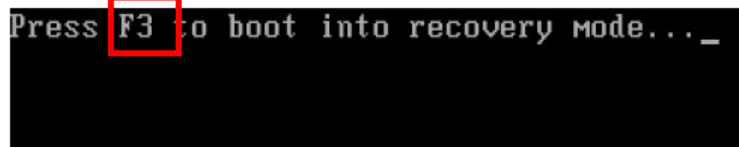


Figure B-10: Press F3 to Boot into Recovery Mode

Step 2: The recovery tool menu appears. Type <4> and press <Enter>. (**Figure B-11**)

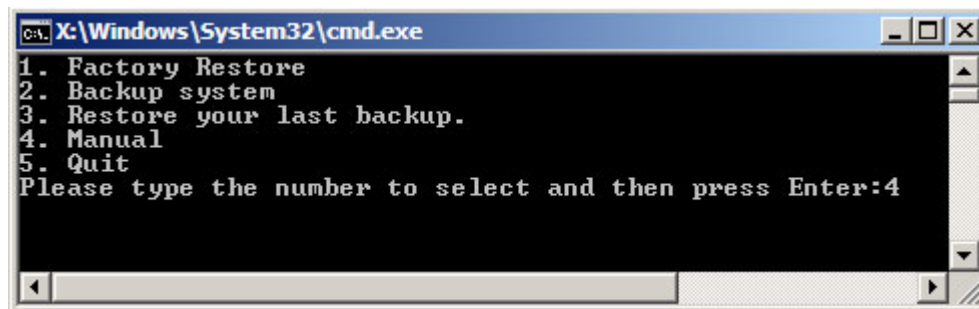


Figure B-11: Recovery Tool Menu

Step 3: The About Symantec Ghost window appears. Click **OK** button to continue.

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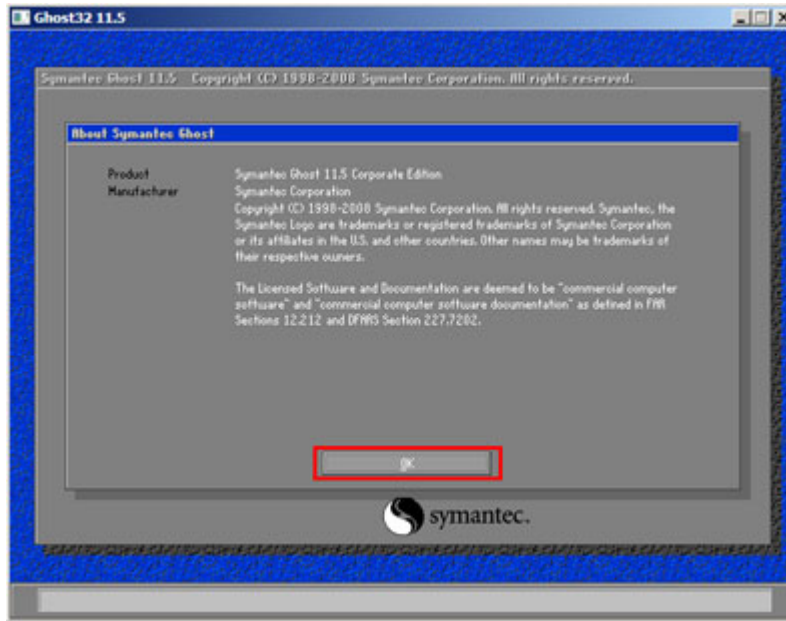


Figure B-12: About Symantec Ghost Window

Step 4: Use mouse to navigate to the option shown below (Figure B-13).

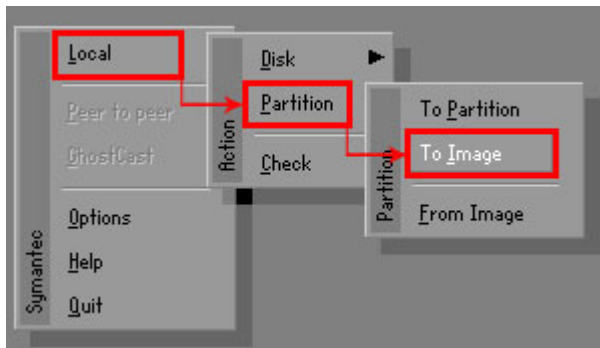


Figure B-13: Symantec Ghost Path

Step 5: Select the local source drive (Drive 1) as shown in Figure B-14. Then click OK.

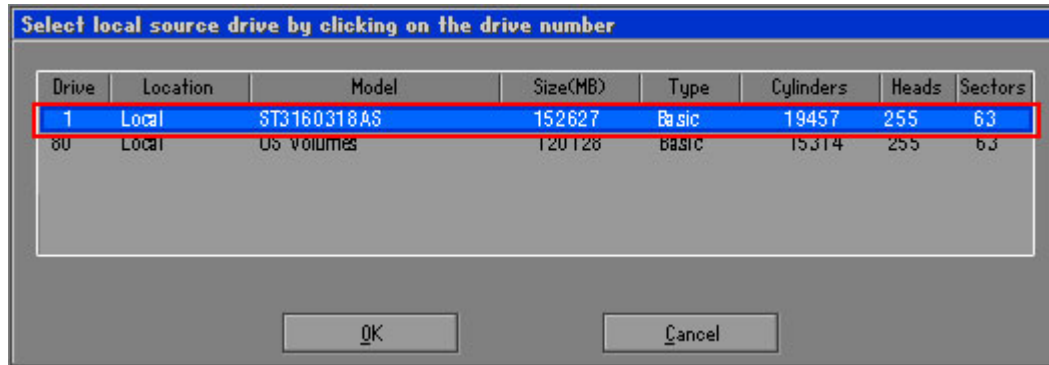


Figure B-14: Select a Local Source Drive

Step 6: Select a source partition (Part 1) from basic drive as shown in **Figure B-15**. Then click OK.

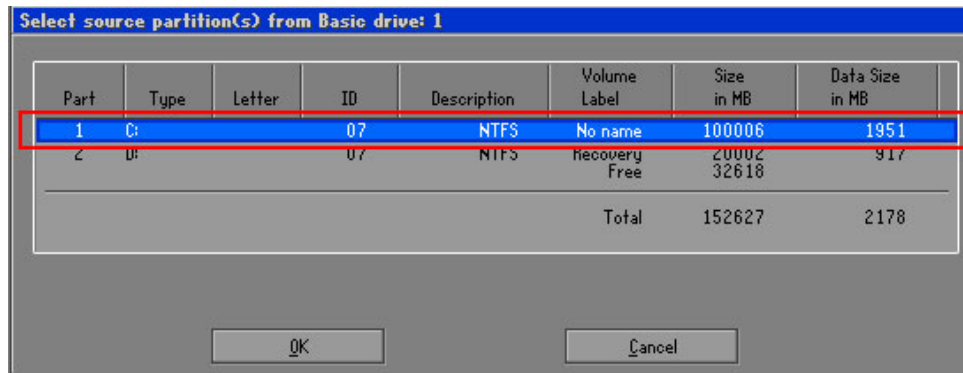


Figure B-15: Select a Source Partition from Basic Drive

Step 7: Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei** (**Figure B-16**). Click **Save**. The factory default image will then be saved in the selected recovery drive and named **IEI.GHO**.



WARNING:

The file name of the factory default image must be **iei.GHO**.

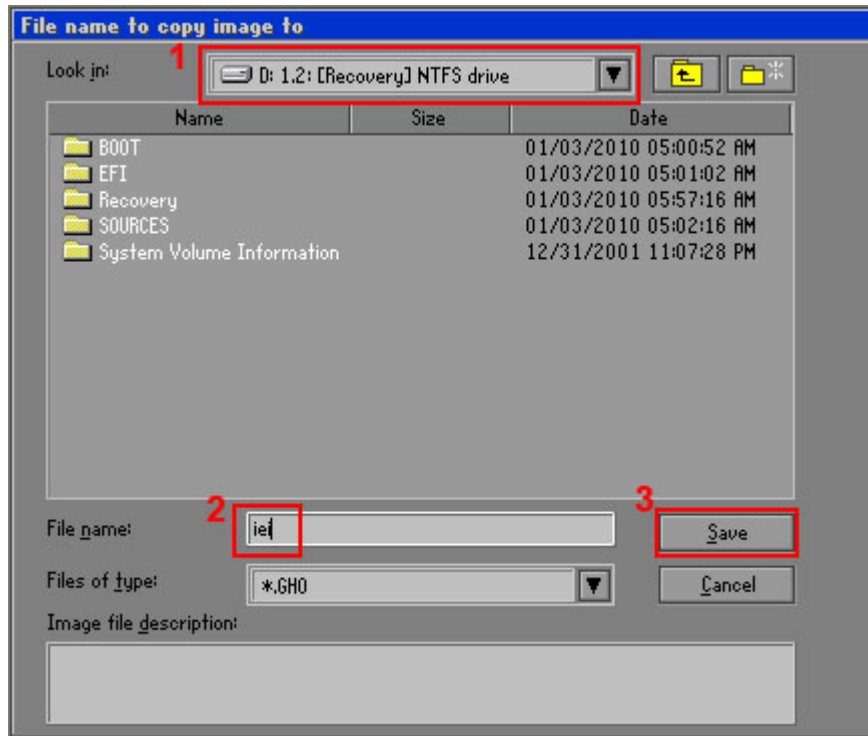


Figure B-16: File Name to Copy Image to

Step 8: When the Compress Image screen in **Figure B-17** prompts, click **High** to make the image file smaller.

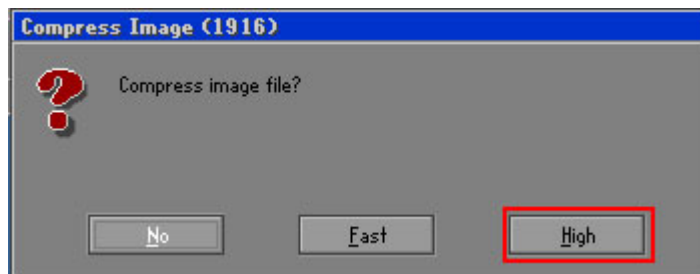


Figure B-17: Compress Image

Step 9: The Proceed with partition image creation window appears, click **Yes** to continue.

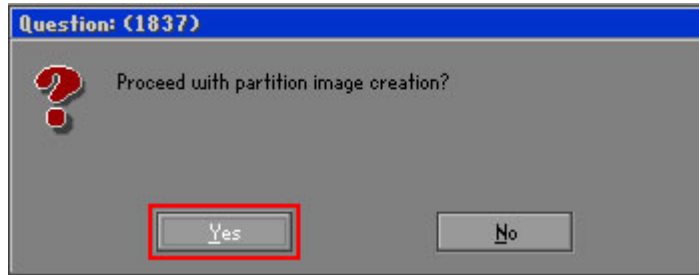


Figure B-18: Image Creation Confirmation

Step 10: The Symantec Ghost starts to create the factory default image (**Figure B-19**).

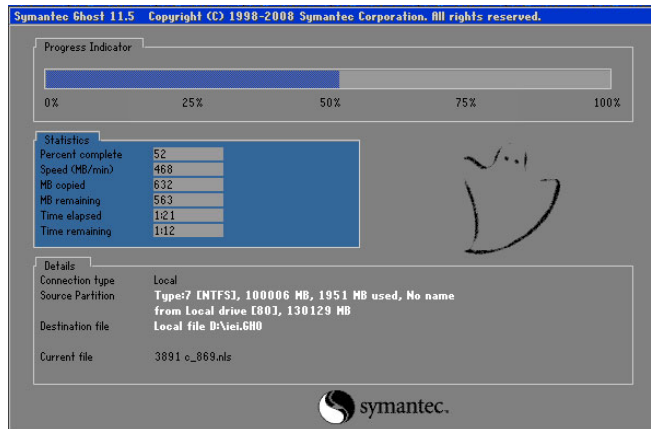


Figure B-19: Image Creation Process

Step 11: When the image creation completes, a screen prompts as shown in **Figure B-20**. Click **Continue** and close the Ghost window to exit the program.

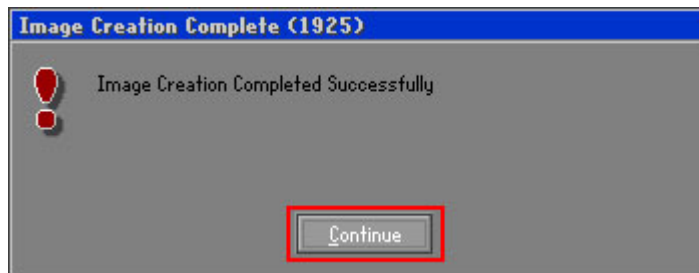
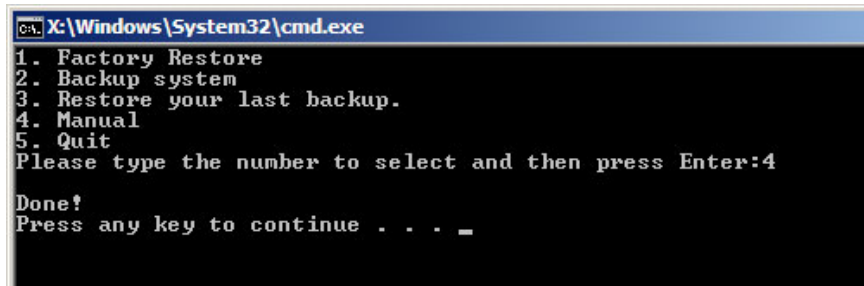


Figure B-20: Image Creation Complete

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Step 12: The recovery tool main menu window is shown as below. Press any key to reboot the system.



```
C:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:4
Done!
Press any key to continue . . . _
```

Figure B-21: Press Any Key to Continue

B.3 Setup Procedure for Linux

The initial setup procedures for a Linux system are mostly the same with the procedure for Microsoft Windows. Please follow the steps below to setup the recovery tool for Linux OS.

Step 1: **Hardware and BIOS setup.** Refer to **Section B.2.1.**

Step 2: **Install Linux operating system.** Make sure to install GRUB (v0.97 or earlier) MBR type and Ext3 partition type. Leave enough space on the hard drive to create the recover partition later.



NOTE:

If the Linux OS is not installed with GRUB (v0.97 or earlier) and Ext3, the Symantec Ghost may not function properly.

While installing Linux OS, please create two partitions:

- Partition 1: /
- Partition 2: **SWAP**


NOTE:

Please reserve enough space for partition 3 for saving recovery images.

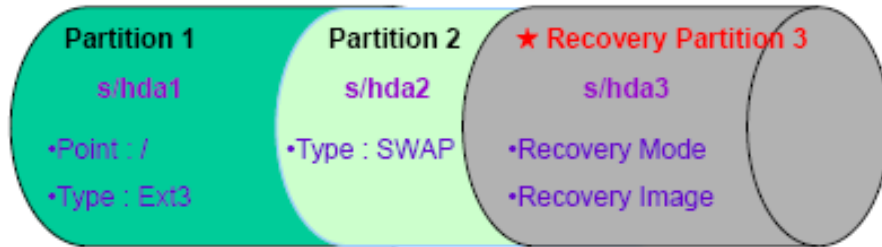


Figure B-22: Partitions for Linux

Step 3: Create a recovery partition. Insert the recovery CD into the optical disk drive.

Follow **Step 1 ~ Step 3** described in **Section B.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

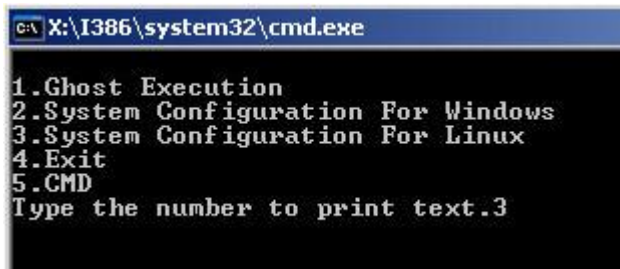
```

system32>diskpart
DISKPART>list vol
DISKPART>sel disk 0
DISKPART>create part pri size= ____
DISKPART>assign letter=N
DISKPART>exit

system32>format N: /fs:ntfs /q /v:Recovery /y
system32>exit
  
```

Step 4: Build-up recovery partition. Press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient. When the recovery tool setup menu appears, type <3> and press <Enter> (**Figure B-23**). The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. After completing the system configuration, press any key to reboot the system. Eject the recovery CD.

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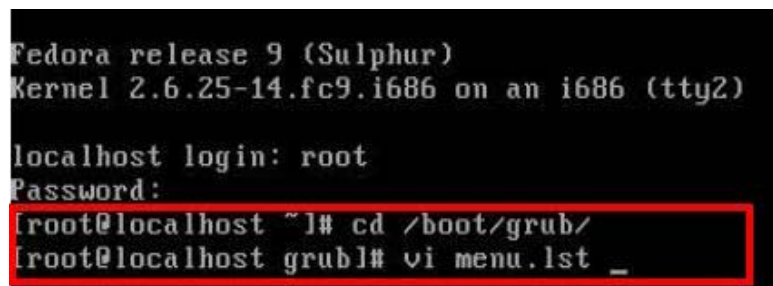
```
C:\X:\I386\system32\cmd.exe
1.Ghost Execution
2.System Configuration For Windows
3.System Configuration For Linux
4.Exit
5.CMD
Type the number to print text.3
```

Figure B-23: System Configuration for Linux

Step 5: Access the recovery tool main menu by modifying the “menu.lst”. To first access the recovery tool main menu, the menu.lst must be modified. In Linux system, enter Administrator (root). When prompt appears, type:

```
cd /boot/grub
```

```
vi menu.lst
```



```
Fedora release 9 (Sulphur)
Kernel 2.6.25-14.fc9.i686 on an i686 (tty2)

localhost login: root
Password:
[root@localhost ~]# cd /boot/grub/
[root@localhost grub]# vi menu.lst _
```

Figure B-24: Access menu.lst in Linux (Text Mode)

Step 6: Modify the menu.lst as shown below.

```
#boot=/dev/sda
default=0
timeout=10 ← Modify timeout=10
splashimage=(hd0,0)/grub/splash.xpm.gz
hiddenmenu
title Fedora (2.6.25-14.fc9.i686)
    root (hd0,0)
    kernel /vmlinuz-2.6.25-14.fc9.i686 ro root=UUID=10f1acd
ac38b5c78910 rhgb quiet
    initrd /initrd-2.6.25-14.fc9.i686.img

title Recovery Partition
root (hd0,2)
makeactive ← Type command
chainloader +1
```

- **Type command:**
title Recovery Partition
root (hd0,2)
makeactive
chainloader +1

Step 7: The recovery tool menu appears. (Figure B-25)

```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:
```

Figure B-25: Recovery Tool Menu

Step 8: Create a factory default image. Follow **Step 2 ~ Step 12** described in **Section B.2.5** to create a factory default image.

B.4 Recovery Tool Functions

After completing the initial setup procedures as described above, users can access the recovery tool by pressing **<F3>** while booting up the system. The main menu of the recovery tool is shown below.

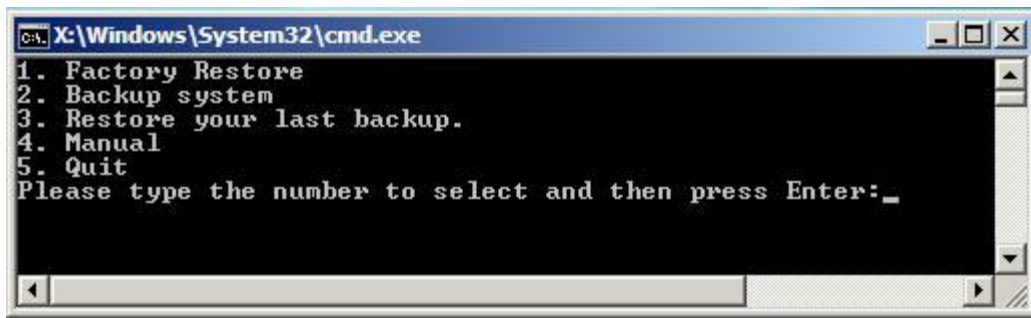


Figure B-26: Recovery Tool Main Menu

The recovery tool has several functions including:

1. **Factory Restore:** Restore the factory default image (iei.GHO) created in Section B.2.5.
2. **Backup system:** Create a system backup image (iei_user.GHO) which will be saved in the hidden partition.
3. **Restore your last backup:** Restore the last system backup image
4. **Manual:** Enter the Symantec Ghost window to configure manually.
5. **Quit:** Exit the recovery tool and restart the system.



WARNING:

Please do not turn off the system power during the process of system recovery or backup.



WARNING:

All data in the system will be deleted during the system recovery. Please backup the system files before restoring the system (either Factory Restore or Restore Backup).

B.4.1 Factory Restore

To restore the factory default image, please follow the steps below.

Step 1: Type <1> and press <Enter> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the factory default. A factory default image called **iei.GHO** is created in the hidden Recovery partition.

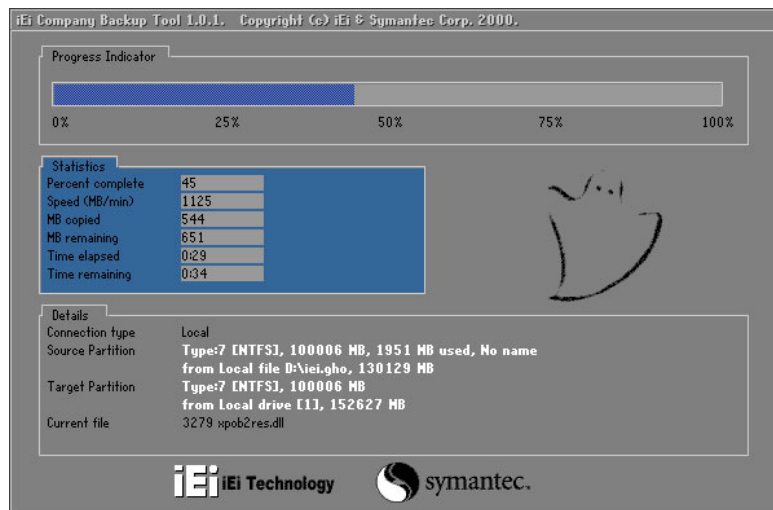


Figure B-27: Restore Factory Default

Step 3: The screen is shown as in **Figure B-28** when completed. Press any key to reboot the system.

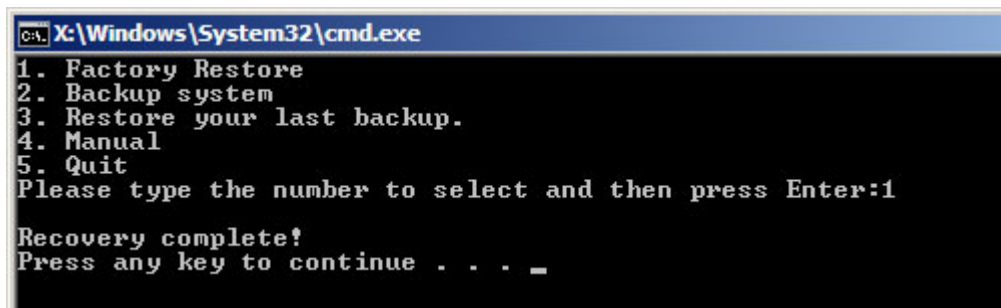


Figure B-28: Recovery Complete Window

B.4.2 Backup System

To backup the system, please follow the steps below.

Step 1: Type <2> and press <Enter> in the main menu.

Step 2: The Symantec Ghost window appears and starts to backup the system. A backup image called `iei_user.GHO` is created in the hidden Recovery partition.

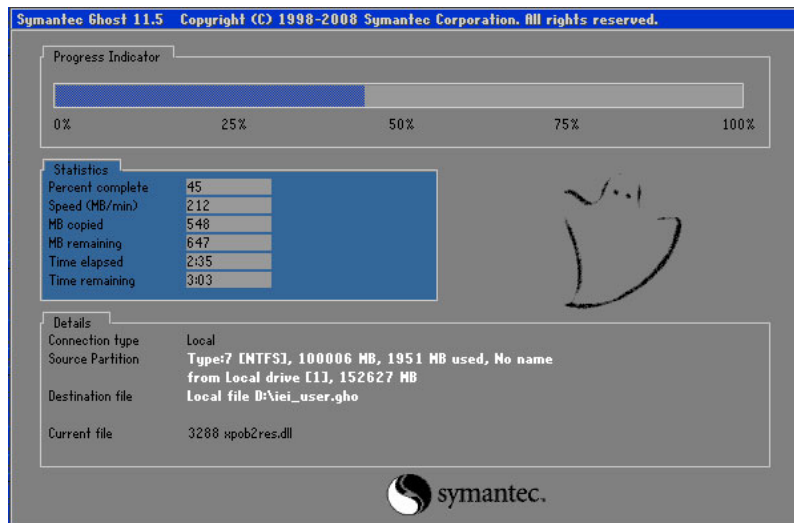


Figure B-29: Backup System

Step 3: The screen is shown as in **Figure B-30** when system backup is completed.

Press any key to reboot the system.

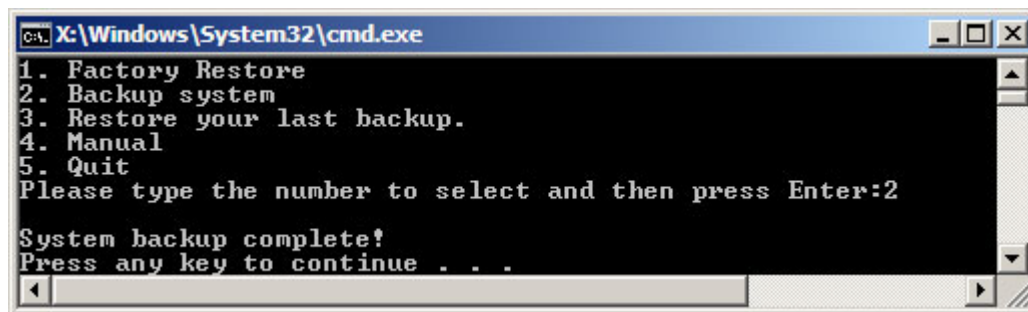


Figure B-30: System Backup Complete Window

B.4.3 Restore Your Last Backup

To restore the last system backup, please follow the steps below.

Step 1: Type <3> and press <Enter> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the last backup image (iei_user.GHO).

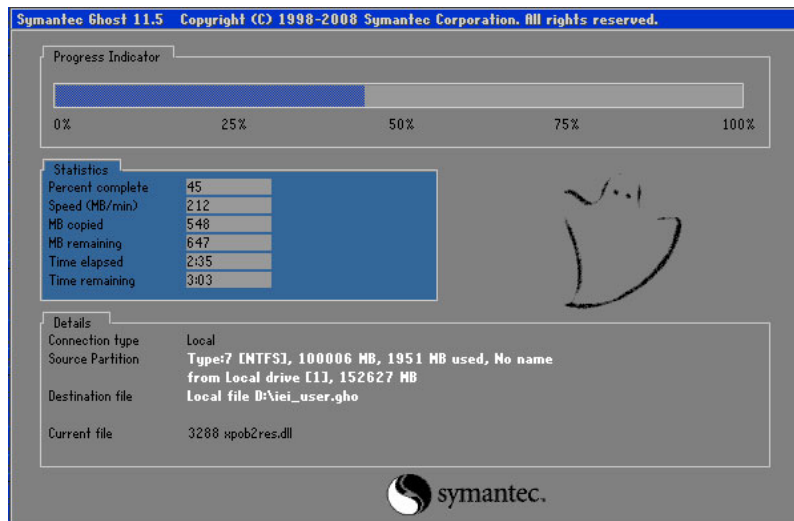


Figure B-31: Restore Backup

Step 3: The screen is shown as in **Figure B-32** when backup recovery is completed. Press any key to reboot the system.

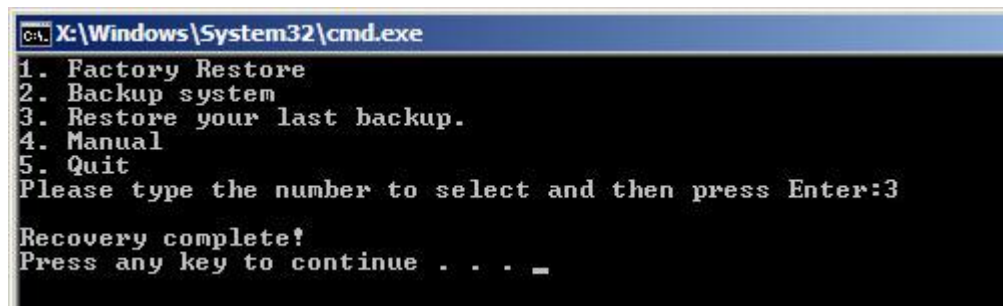


Figure B-32: Restore System Backup Complete Window

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B.4.4 Manual

To restore the last system backup, please follow the steps below.

Step 1: Type <4> and press <Enter> in the main menu.

Step 2: The Symantec Ghost window appears. Use the Ghost program to backup or recover the system manually.

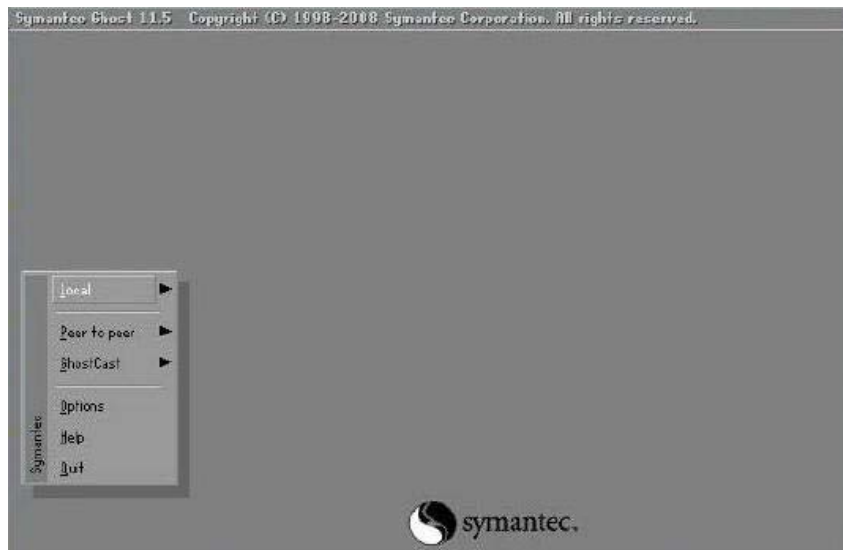


Figure B-33: Symantec Ghost Window

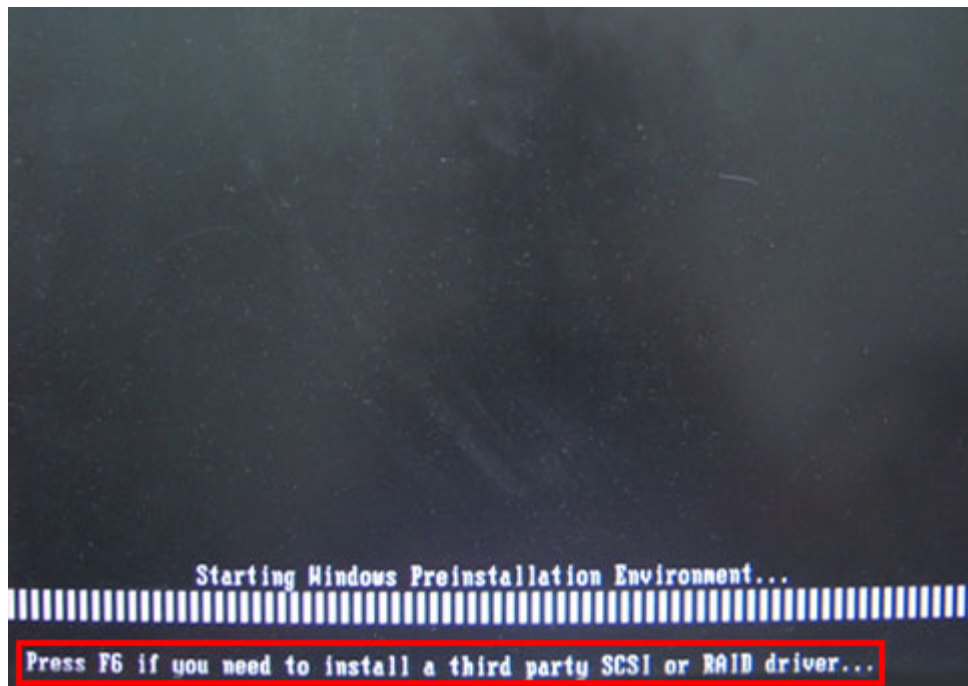
Step 3: When backup or recovery is completed, press any key to reboot the system.

B.5 Other Information

B.5.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller

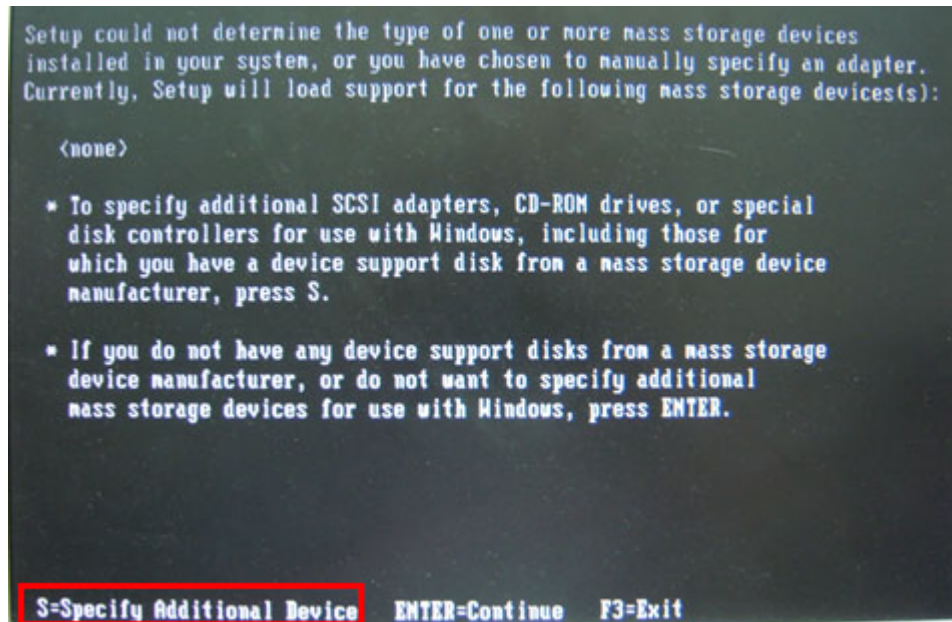
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

- Step 1:** Copy the SATA RAID/AHCI driver to a floppy disk and insert the floppy disk into a USB floppy disk drive. The SATA RAID/AHCI driver must be especially designed for the on-board SATA controller.
- Step 2:** Connect the USB floppy disk drive to the system.
- Step 3:** Insert the One Key Recovery CD into the system and boot the system from the CD.
- Step 4:** When launching the recovery tool, press <F6>.

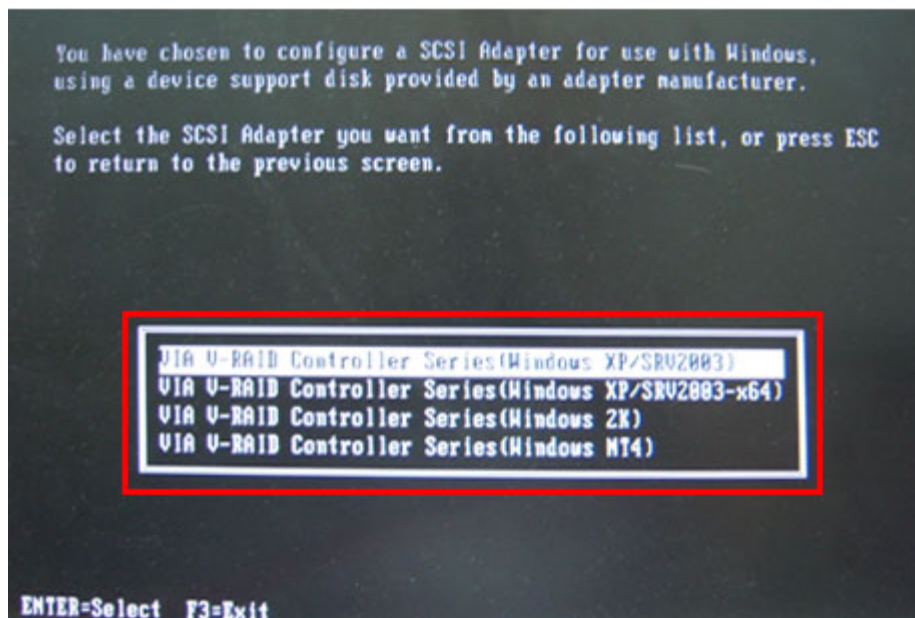


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Step 5: When the following window appears, press <S> to select “Specify Additional Device”.



Step 6: In the following window, select a SATA controller mode used in the system. Then press <Enter>. The user can now start using the SATA HDD.



Step 7: After pressing <Enter>, the system will get into the recovery tool setup menu.

Continue to follow the setup procedure from **Step 4** in **Section B.2.2 Create Partitions** to finish the whole setup process.

B.5.2 System Memory Requirement

To be able to access the recovery tool by pressing <F3> while booting up the system, please make sure to have enough system memory. The minimum memory requirement is listed below.

- **Using Award BIOS:** 128 MB system memory
- **Using AMI BIOS:** 512 MB system memory.

Appendix

C

Safety Precautions

C.1 Safety Precautions



WARNING:

The precautions outlined in this appendix should be strictly followed. Failure to follow these precautions may result in permanent damage to the ECN-581A-R11/QM57-I5.

Please follow the safety precautions outlined in the sections that follow:

C.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Make sure the power is turned off and the power cord is disconnected*** when moving, installing or modifying the system.
- ***Do not apply voltage levels that exceed the specified voltage range.*** Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if opened while still powered on.
- ***Do not drop or insert any objects*** into the ventilation openings.
- ***If considerable amounts of dust, water, or fluids enter the system***, turn off the power supply immediately, unplug the power cord, and contact the system vendor.
- **DO NOT:**
 - Drop the system against a hard surface.
 - Strike or exert excessive force onto the LCD panel.
 - Touch any of the LCD panels with a sharp object
 - In a site where the ambient temperature exceeds the rated temperature

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C.1.2 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the ECN-581A-R11/QM57-I5 may result in permanent damage to the ECN-581A-R11/QM57-I5 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ECN-581A-R11/QM57-I5. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ECN-581A-R11/QM57-I5 is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding:*** Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component:*** When handling the electrical component, hold the electrical component by its edges.

C.1.3 Product Disposal

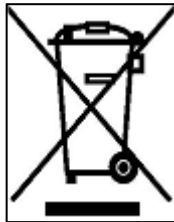


CAUTION:

Risk of explosion if battery is replaced by and incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union - If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union:



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords.

When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

C.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the ECN-581A-R11/QM57-I5, please follow the guidelines below.

C.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the ECN-581A-R11/QM57-I5, please read the details below.

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- The interior of the ECN-581A-R11/QM57-I5 does not require cleaning. Keep fluids away from the ECN-581A-R11/QM57-I5 interior.
- Be cautious of all small removable components when vacuuming the ECN-581A-R11/QM57-I5.
- Turn the ECN-581A-R11/QM57-I5 off before cleaning the ECN-581A-R11/QM57-I5.
- Never drop any objects or liquids through the openings of the ECN-581A-R11/QM57-I5.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the ECN-581A-R11/QM57-I5.
- Avoid eating, drinking and smoking within vicinity of the ECN-581A-R11/QM57-I5.

C.2.2 Cleaning Tools

Some components in the ECN-581A-R11/QM57-I5 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the ECN-581A-R11/QM57-I5.

- **Cloth** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the ECN-581A-R11/QM57-I5.
- **Water or rubbing alcohol** – A cloth moistened with water or rubbing alcohol can be used to clean the ECN-581A-R11/QM57-I5.
- **Using solvents** – The use of solvents is not recommended when cleaning the ECN-581A-R11/QM57-I5 as they may damage the plastic parts.
- **Vacuum cleaner** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the ECN-581A-R11/QM57-I5. Dust and dirt can restrict the airflow in the ECN-581A-R11/QM57-I5 and cause its circuitry to corrode.
- **Cotton swabs** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- **Foam swabs** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

D

Hazardous Materials Disclosure

D.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

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此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯 醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。