SAF51003I
Network Appliance Platform

User Manual

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User Manual

SAF51003I

Network Appliance Platform

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How to Use This Guide

This guide includes detailed information on the Network Appliance Platform, including how to install components and maintain the system. To deploy this device effectively and ensure trouble-free operation, you should first read the relevant sections in this guide so that you are familiar with all the features.

Who Should Read this Guide?

This guide is for system technicians who are responsible for installing, maintaining, and troubleshooting this Network Security Platform. The guide assumes a basic working knowledge of server appliance hardware, LANs (Local Area Networks), and the Internet Protocol (IP).

How this Guide is Organized

The organization of this guide is based on the device's main components. An introduction and initial configuration information is also provided.

The guide includes these sections:

- Section I "Getting Started" — Includes an introduction to the device's hardware features.
- Section II "Installation Procedures" — Includes how to install or replace device hardware components.
- Section III "System Configuration" — Includes information on how to configure BIOS settings.
- Section IV "Appendices" — Includes information on troubleshooting device problems and safety and regulatory statements.

Conventions

The following conventions are used throughout this guide to show information:

Note: Emphasizes important information or calls your attention to related features or instructions.

Caution: Alerts you to a potential hazard that could cause loss of data, or damage the system or equipment.

Warning: Alerts you to a potential hazard that could cause personal injury.

Revision History

This section summarizes the changes in each revision of this guide.

May 2018 Revision

This is the first revision of this guide.

Contents

Figures

Tables

Section I

Getting Started

This section provides an overview of the Network Appliance Platform and introduces some basic concepts.

This section includes these chapters:

1 System Overview

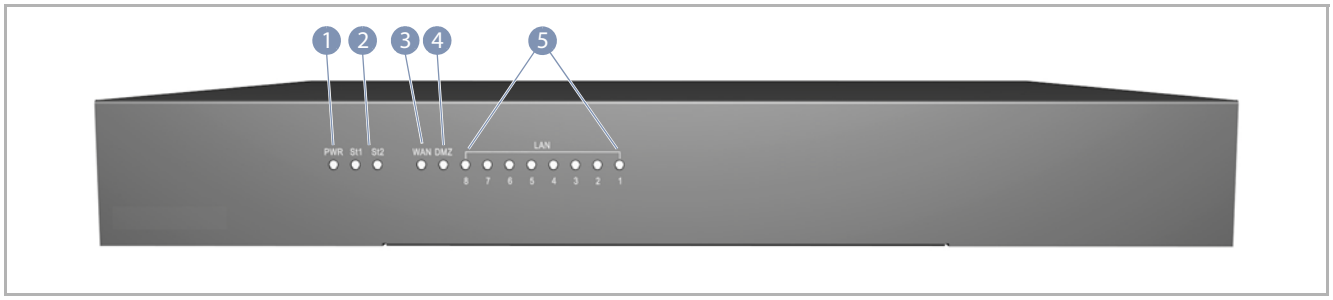
This chapter includes the following sections:

Introduction

The SAF51003I Network Appliance Platform is an open server appliance based on standard Intel® x86 communications hardware. The system includes internal eMMC and M.2 SSD disk drives, all contained within a desktop form-factor.

Front Panel Features

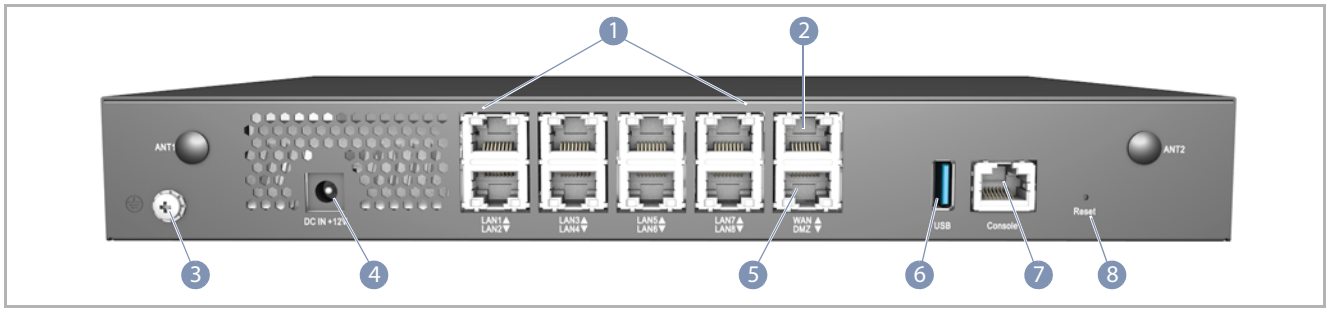
Figure 1: SAF51003I Front Panel Features



1. Power Status LED
2. Custom-defined Status LEDs
3. WAN Port Status LEDs
4. DMZ Port Status LED
5. LAN Ports 1-8 Link Status LEDs

Rear Panel Features

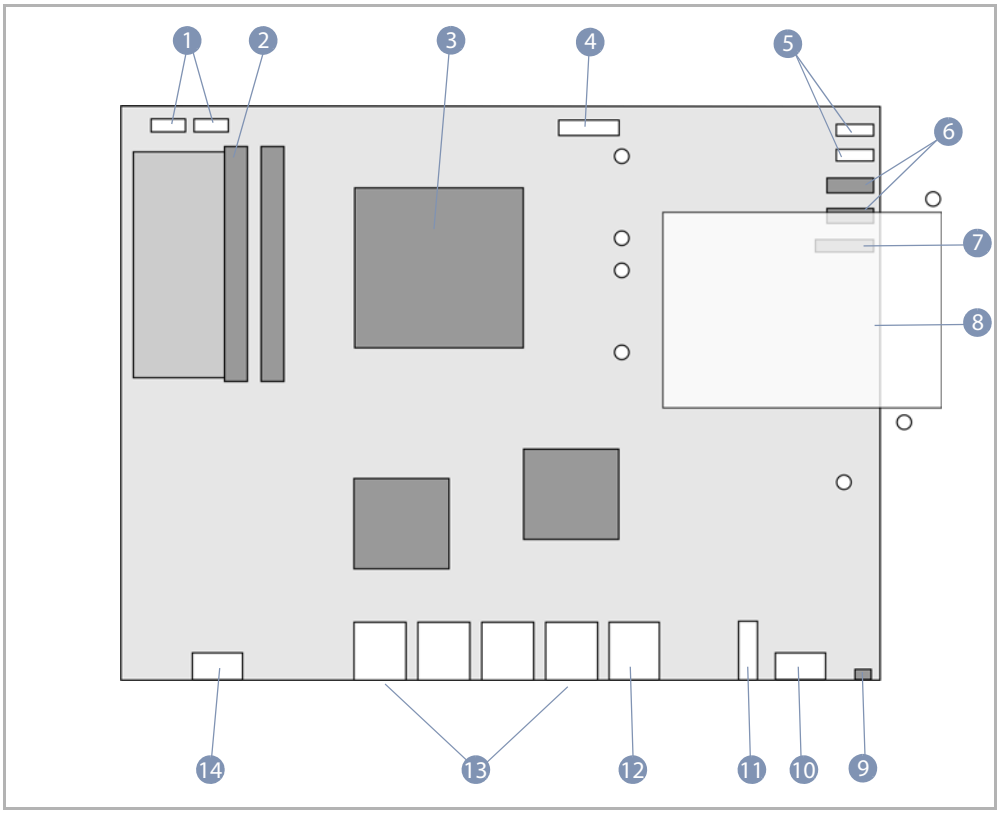
Figure 2: SAF51003I Rear Panel Features



1. 1000BASE-T RJ-45 LAN Ports
2. 1000BASE-T RJ-45 WAN Port
3. Grounding Point
4. DC Power Jack
5. 1000BASE-T RJ-45 DMZ Port
6. USB Port
7. Console Port
8. Reset Button

System Board Layout

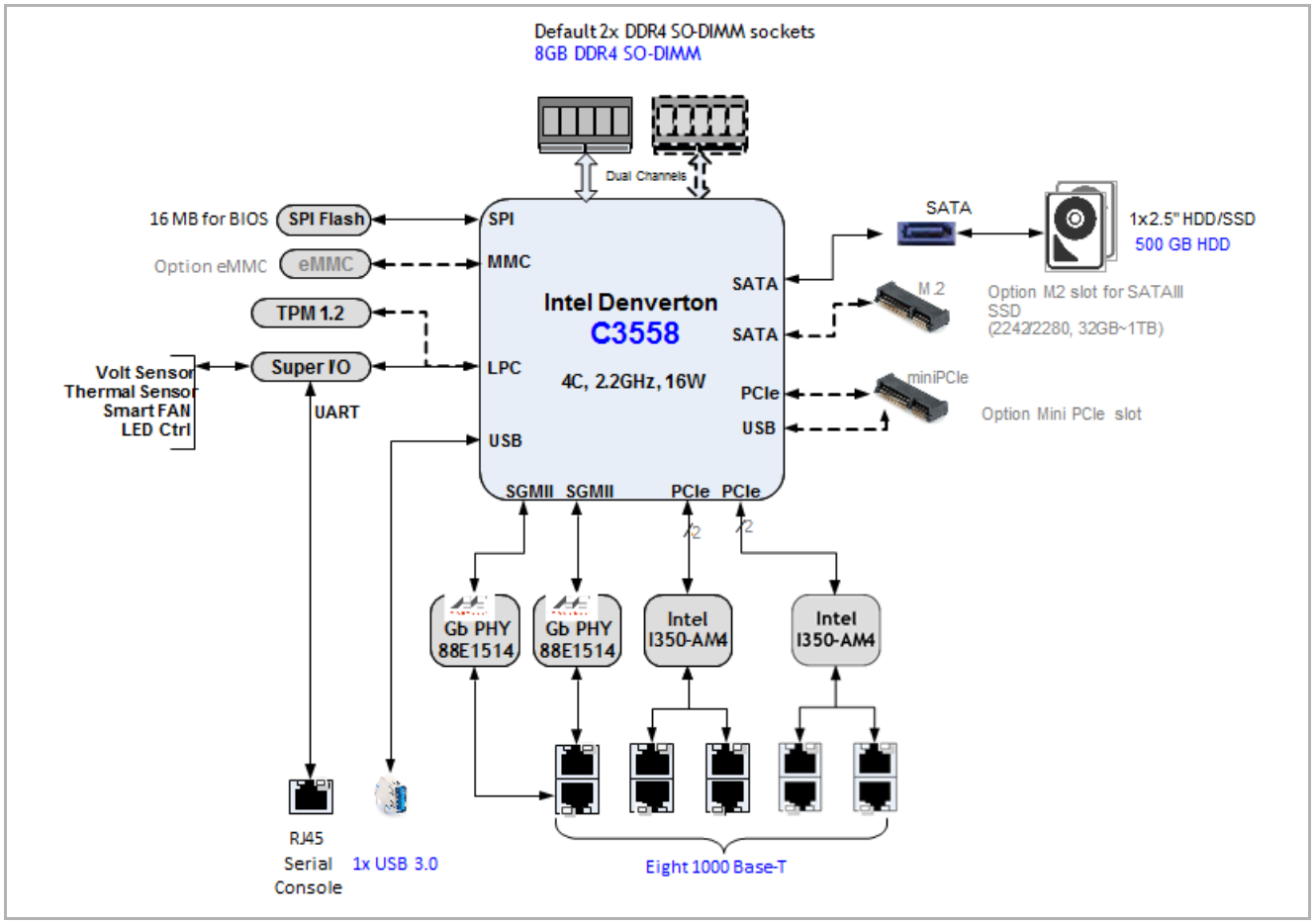
Figure 3: System Board



1. Fan power connectors
2. DDR SODIMM slot
3. CPU and heatsink
4. System battery
5. HDD/SSD power connector
6. SATA III ports
7. M.2 SSD card slot
8. 2.5″ 500 GB HDD
9. Reset button
10. Console port
11. USB slot
12. RJ-45 WAN and DMZ ports
13. RJ-45 LAN ports
14. DC power jack

System Block Diagram

Figure 4: System Block Diagram



System Specifications

Table 1: SAF51003I Specifications

Item	Specification
Form-Factor	Compact desktop
Dimensions (W x D x H):	300 x 200 x 38.5 mm (11.81 x 7.87 x 1.52 inches)
Weight	1.58 kg (3.48 lb)
CPUs	SoC, Intel® Atom™ Processor for Communications C3000 Series (FCBGA, 14nm), supports 2-4 cores, 2.2 GHz (turbo 2.4 GHz)
Memory	Sockets: 2 x 260pin DDR4 SODIMM slots Type: DDR4 1866/2133/2400 MT/s (64GB max)
Local Storage	1 x M.2 SATAIII SSD, support 2242/2280 type 1 x 2.5" 500GB HDD Optional on-board eMMC 16-256GB (not equipped by default)
I/O Interfaces	1 x RJ-45 type serial console 1 x hardware reset button (through hole)
Network Interfaces	1 x RJ-45 GbE for DMZ 1 x RJ-45 GbE port for WAN 8 x RJ-45 GbE for LAN
Expansion	Type: 1x Mini PCIe Signal: PCIe x1 and USB 2.0
Accelerator	Advanced Technologies: Intel® VT-x, Intel® VT-d, SR-IOV, VMDq, QuickAssist, PECI over SMBUS, eSPI, NC-SI, Core and Memory RAPL, Memory OLTT and CLTT
OS Version	Ubuntu 16.04 Server X64
Power Adapter	Input: AC 110 to 240 @ 50/60 Hz Output: 12 VDC, 5.0 A, 60 W
System Cooling	2x PWM fans, supporting smart-fan
Temperature	Operating: 0 °C to 40°C (32 °F to 104 °F) Storage: -20 °C to 70 °C (-4 °F to 158 °F)
Humidity	Operating: 20% to 90% (non-condensing) Storage: 5% to 90% (non-condensing)
Compliances	CE FCC RoHS 2.0

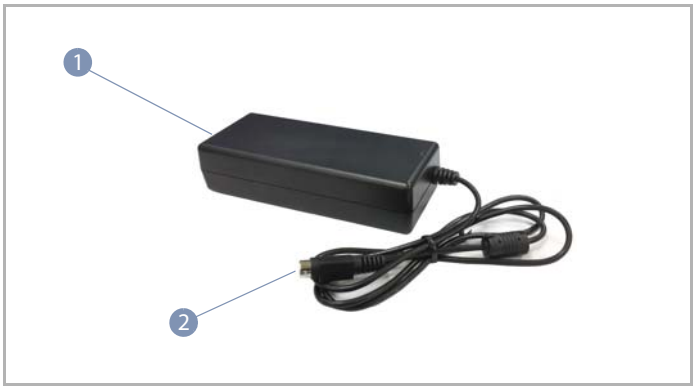
2 System Components

This chapter includes the following sections:

Power Supply

The server system includes an external AC/DC power adapter. The power adapter connects to an AC power source in the range 110 to 240 VAC, 50/60 Hz.

Figure 5: AC/DC Power Adapter

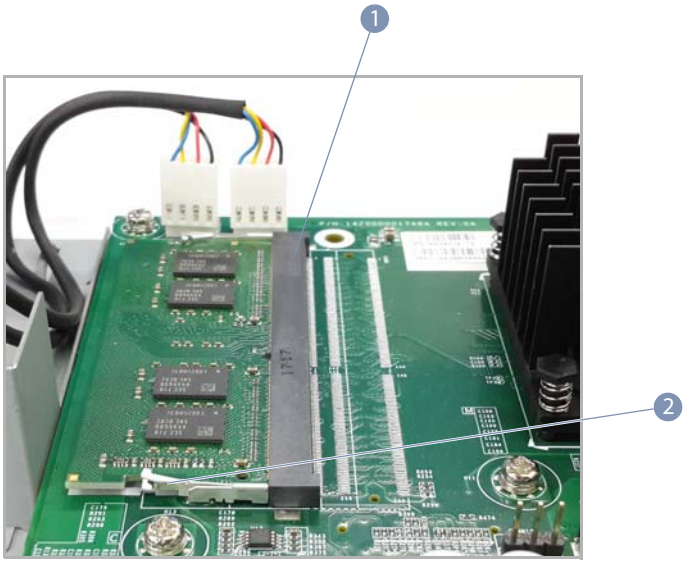


1. AC power cord socket
2. DC power connector

System Memory

The server has one DIMM memory slot. The slot accepts a 260-pin DDR4 SODIMM. You can install up to a maximum of 32GB.

Figure 6: DIMM Slot



1. DIMM slot
2. Module release lever

M.2 Solid-State Drives (SSDs)

The server supports a single SSD (32GB default) in compact M.2 form factor for local storage. The 2242/2280 type SSD card installs into the M.2 SATA III slot on the system board.

Figure 7: M.2 SSD Slot on System Board

1. M.2 securing screw
2. SSD 2280/22110 M.2 card
3. M.2 slot

Mini PCIe Slot

The server supports one standard Mini PCIe slot for add-in cards. A second Mini PCIe slot (CONN 6) is non-standard with added 5 VDC power on pin 17.

Figure 8: Mini PCIe Slot

1. Standard Mini PCIe card slot
2. Non-standard Mini PCIe card slot

System Battery

The server system includes one lithium battery. If the system no longer displays the correct date and time, the system battery may need to be replaced.

Be sure to replace the battery with the same type, a CR2032 lithium battery.

Warning: Risk of fire if the battery is installed incorrectly.

Figure 9: System Battery

1. System battery

Section II

Installation Procedures

This section provides details on installing server hardware.

This section includes these chapters:

3 Chassis Installation

This chapter includes the following sections:

General Installation Guidelines

Be sure to follow the guidelines below when choosing a location.

- The installation location should:
  - be able to maintain its temperature within 0 to 45 °C (32 to 113 °F) and its humidity within 10% to 90%, non-condensing.
  - provide adequate space (approximately five centimeters or two inches) on all sides for proper air flow.
  - be accessible for installing, cabling and maintaining the device.
  - allow the status LEDs to be clearly visible.
- Make sure twisted-pair cable is always routed away from power lines, fluorescent lighting fixtures and other sources of electrical interference, such as radios and transmitters.
- Make sure that the unit is connected to a separate grounded power outlet and is powered from an independent circuit breaker. As with any equipment, using a filter or surge suppressor is recommended. Verify that the external power requirements for the switch can be met as listed under "Power Supply Units" on page 27.

Installation Precautions

Warning: This appliance uses lasers to transmit signals over fiber optic cable. The lasers are compliant with the requirements of a Class 1 Laser Product and are inherently eye safe in normal operation. However, you should never look directly at a transmit port when it is powered on.

Warning: When selecting a fiber QSFP+ device, considering safety, please make sure that it can function at a temperature that is not less than the recommended maximum operational temperature of the product. You must also use an approved Laser Class 1 QSFP+ transceiver.

Caution: Before installing your appliance, first review all the safety statements and guidelines in the *Safety and Regulatory Information* document.

Caution: The earth connection must not be removed unless all supply connections have been disconnected.

Installing the Server Appliance on a Desktop

The server appliance can be installed on a desktop or shelf.

To install the appliance on a desktop, follow these steps:

1. Attach the four adhesive feet to the bottom of the device.

Figure 10: Installing the Appliance on a Desktop

1. Adhesive feet.

2. Set the device on a flat surface near an AC power source, making sure there are at least two inches of space on all sides for proper air flow.

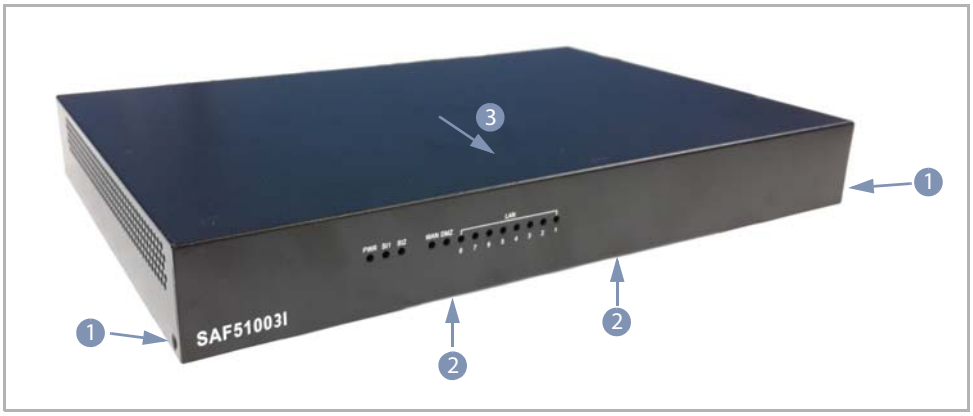
Appliance Cooling Requirements

Wherever the appliance is located, be sure to pay close attention to the device's cooling requirements. The location should be well ventilated and provide unrestricted air flow at the front, back, and sides of the appliance. If the air flow is insufficient, it may cause the appliance to overheat and possibly fail.

Removing the Top Cover

To access internal components of the appliance, the top cover must be removed.

Figure 11: Removing the Top Cover



1. Side panel screws (2)
2. Bottom panel screws (2)
3. Open direction

1. Unscrew the two side panel screws and two bottom panel screws.

2. Push the cover towards the rear until it is free.

3. Lift the cover off to remove it.

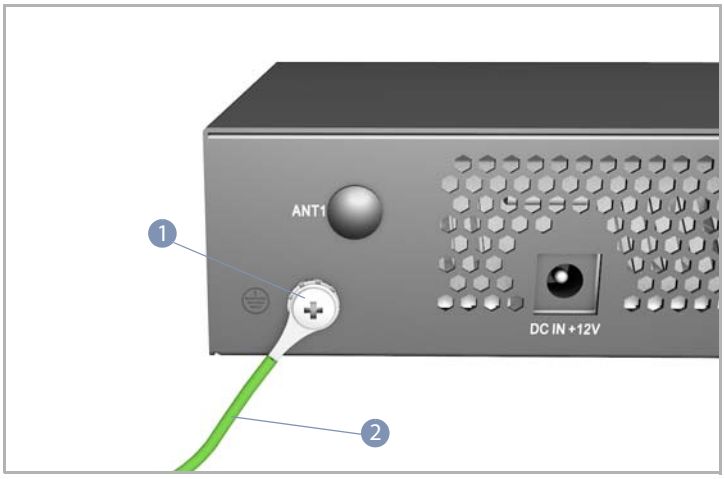
4 Server Connections

This chapter includes the following sections:

Grounding the Device

The rear panel of the server appliance includes a single-screw grounding terminal. The surface area around this terminal is not painted in order to provide for a good connection. The terminal must be connected to ground to ensure proper operation and to meet electromagnetic interference (EMI) and safety requirements.

Figure 12: Grounding the Device



1. Grounding terminal
2. #14 AWG grounding wire

Before powering on the server, ground the device to earth as described below.

1. Ensure the device is properly grounded in compliance with ETSI ETS 300 253. Verify that there is a good electrical connection to the grounding point (no paint or isolating surface treatment).
2. Disconnect all power cables to the device.
3. Attach a #14 AWG stranded copper wire to the grounding terminal on the server.
4. Then attach the grounding wire to the ground point.

Caution: The earth connection must not be removed unless all supply connections have been disconnected.

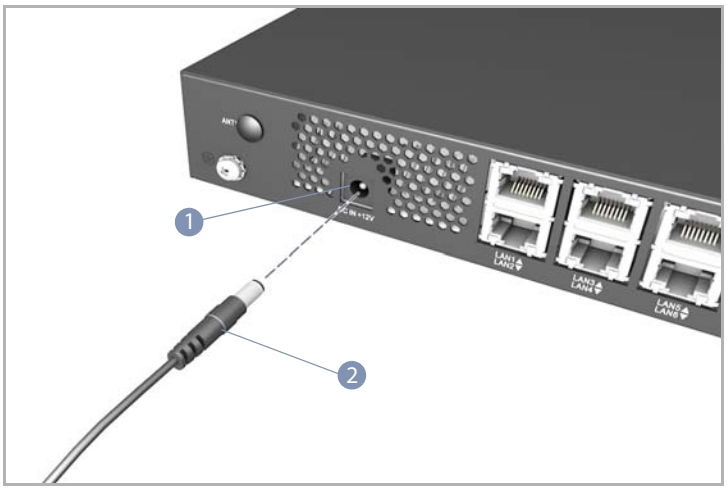
Connecting Power and Powering On

The server needs to be powered from the included AC/DC power adapter. Before connecting the AC/DC power adapter to an AC power source, first verify that the external AC power source can provide 110 to 240 VAC, 50/60 Hz.

To connect the server to a power source:

1. Connect the AC/DC power adapter to the DC power jack on the device.

Figure 13: Connecting Power to the Server



1. DC power jack
2. AC/DC power adapter connector

2. Connect the AC/DC power adapter to an AC power source.

3. Check the PWR LED indicator on the server to verify that power is being received. If not, recheck the power cord connections at the AC supply source and the AC/DC power adapter.

Connecting to the Console Port

The RJ-45 Console port on the server's rear panel is used to connect to the server for BIOS configuration. The console device can be a PC or workstation running a VT-100 terminal emulator, or a VT-100 terminal. An RJ-45 to DB-9 console cable can be used for connecting to a PC's RS-232 serial DB-9 DTE (COM) port.

Note: To connect to notebooks or other PCs that do not have a DB-9 COM port, you can use a USB-to-male DB-9 adapter cable (not included with the server).

Figure 14: Connecting to the Console Port

1. Console port

The following table describes the pin assignments used in the console cable.

Table 2: Console Cable Wiring

Server's RJ-45 Console Port	Null Modem	PC's 9-Pin DTE Port
6 RXD (receive data)	<----------	3 TXD (transmit data)
3 TXD (transmit data)	---------->	2 RXD (receive data)
4,5 SGND (signal ground)	----------	5 SGND (signal ground)

No other pins are used.

The serial port's configuration requirements are as follows:

- Default Baud rate—115200 bps
- Character Size—8 Characters
- Parity—None
- Stop bit—One
- Data bits—8
- Flow control—none

Follow these steps to connect to the Console port:

1. Attach one end of the included RJ-45-to-DB-9 serial cable to a DB-9 COM port connector on a management PC.

2. Attach the other end of the serial cable to the Console port on the server.

3. Configure the PC's COM port required settings using VT-100 terminal emulator software (such as HyperTerminal) running on the management PC.

4. Press the Enter key on the management PC to access the BIOS.

   If you boot the Ubuntu OS, log in using the default user account and password:

   - Account: edgecore
   - Password: 1111
   - Root Password: 1111

For a detailed description of BIOS configuration settings, see "BIOS Settings" on page 36.

Connecting to 1000BASE-T Network Ports

The RJ-45 10/100/1000BASE-T network ports on the server support automatic MDI/MDI-X pinout configuration, so you can use standard straight-through twisted-pair cables to connect to any other network device. The connections require unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cables with RJ-45 connectors at both ends.

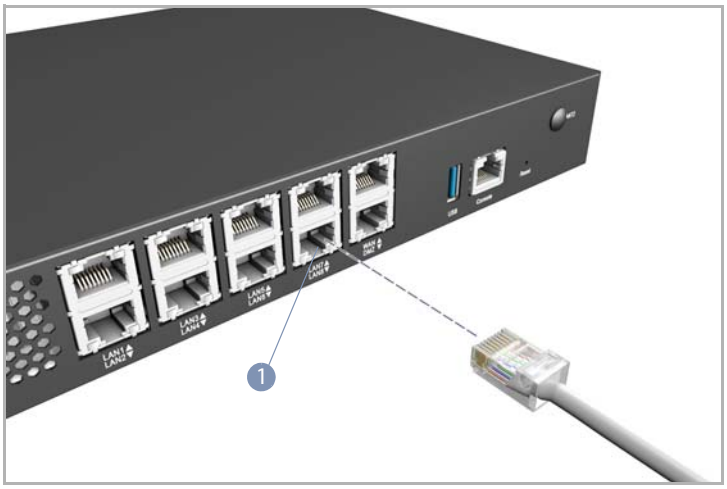
Table 3: Maximum Twisted-Pair Copper Cable Lengths

Cable Type	Maximum Cable Length	Connector
1000BASE-T		
Category 5, 5e, or 6 100-ohm UTP or STP	100 m (328 ft)	RJ-45
100BASE-TX		
Category 5 or better 100-ohm UTP or STP	100 m (328 ft)	RJ-45
10BASE-T		
Category 3 or better 100-ohm UTP	100 m (328 ft)	RJ-45

Follow these steps to connect network cable an RJ-45 port:

1. Attach one end of a twisted-pair cable to the network device's RJ-45 port.

Figure 15: Connecting to 1000BASE-T RJ-45 Ports



1. RJ-45 network port

2. Attach the other end to an RJ-45 port on the server.

3. As a connection is made, the status LEDs on the server port will turn on to indicate that the connection is valid.

Table 4: RJ-45 Port Status LEDs

LED	Condition	Status
Status (link/activity)	On/Blinking Green	The port has a valid 1 Gbps link. Blinking indicates traffic passing through the port.
	On/Blinking Amber	The port has a valid 10/100 Mbps link. Blinking indicates traffic passing through the port.
	Off	There is no valid link on the port.

Section III

System Configuration

This section provides a description of system software configuration.

This section includes these chapters:

5 BIOS Setup Access

This chapter includes the following sections:

BIOS Introduction

The American Megatrends Inc. (AMI) BIOS software handles all basic communications between the CPUs and peripherals, as well as including code that supports advanced server system features. You can configure the BIOS settings through its menu-driven interface and then save the configuration into memory.

Note: You can access the system BIOS and configure settings with or without an operating system installed on the server.

This chapter describes how to access the BIOS setup menus and the following chapter, "BIOS Settings" on page 36, describes the configuration settings.

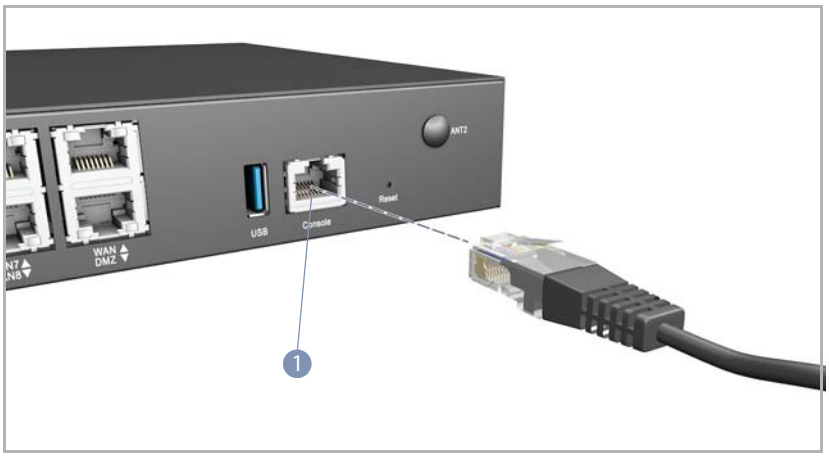
Note that the majority of configuration settings are preconfigured as BIOS default values, whereas others are automatically detected during the boot-up process and configured without requiring any actions.

Accessing the BIOS Setup Menu

The server's BIOS settings can be accessed through the console port.

1. Connect a computer running VT-100 terminal emulator software to the console port following the procedure in the section "Connecting to the Console Port" on page 27.

Figure 16: Access to BIOS Settings

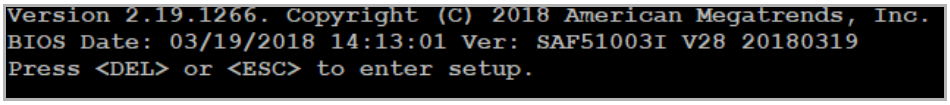


1. Console port

2. Power-on the server.

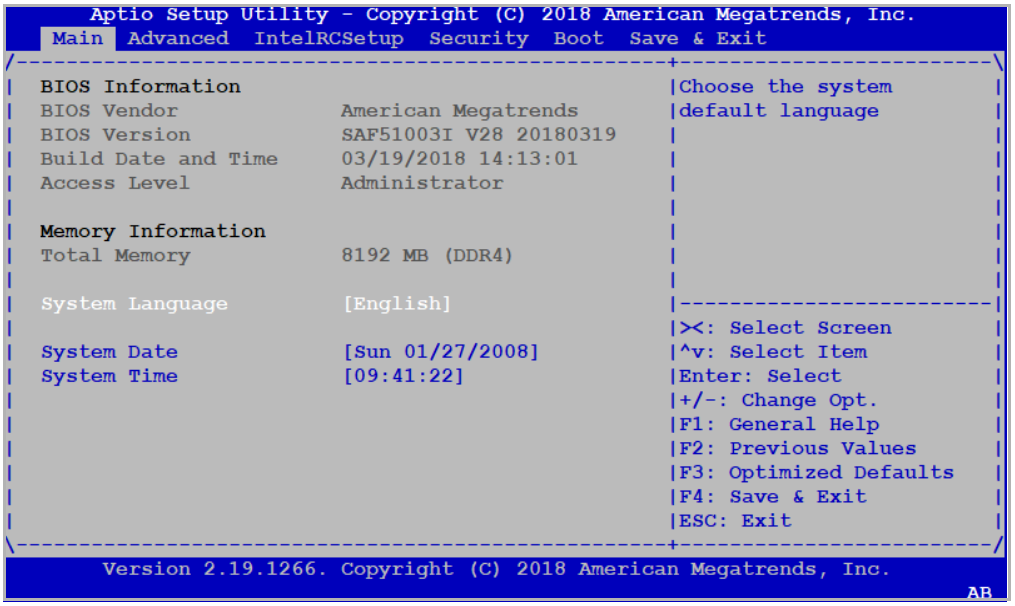
3. When the BIOS boot message is displayed, press <Esc> on the keyboard to enter the BIOS setup menu.

Figure 17: BIOS Setup Menu Access



4. The BIOS main menu displays and you can view settings and make configuration changes.

Figure 18: BIOS Main Menu



BIOS Setup Utility Keyboard Commands

The AMI BIOS setup utility uses only the connected computer keyboard for menu navigation and configuration settings. The commands for each menu are shown on the right side of each menu.

The basic commands are describe in Table 5.

Table 5: BIOS Setup Utility Commands

Key	Action
Right and Left arrows	Moves the cursor left or right (selects the menu).
Up and Down arrows	Moves the cursor up or down (Selects the submenu or fields).
<Enter>	Selects the highlighted submenu.

Table 5: BIOS Setup Utility Commands (Continued)

Key	Action
+ (plus key)	Scrolls forward through setting options of the highlighted field.
- (minus key)	Scrolls backward through setting options of the highlighted field.
<F1>	Displays help navigation.
<F2>	Loads the previously used configuration.
<F3>	Loads optimized default values.
<F4>	Saves the configuration and exits the setup utility.
<Esc>	Exit the BIOS setup utility or the current submenu.

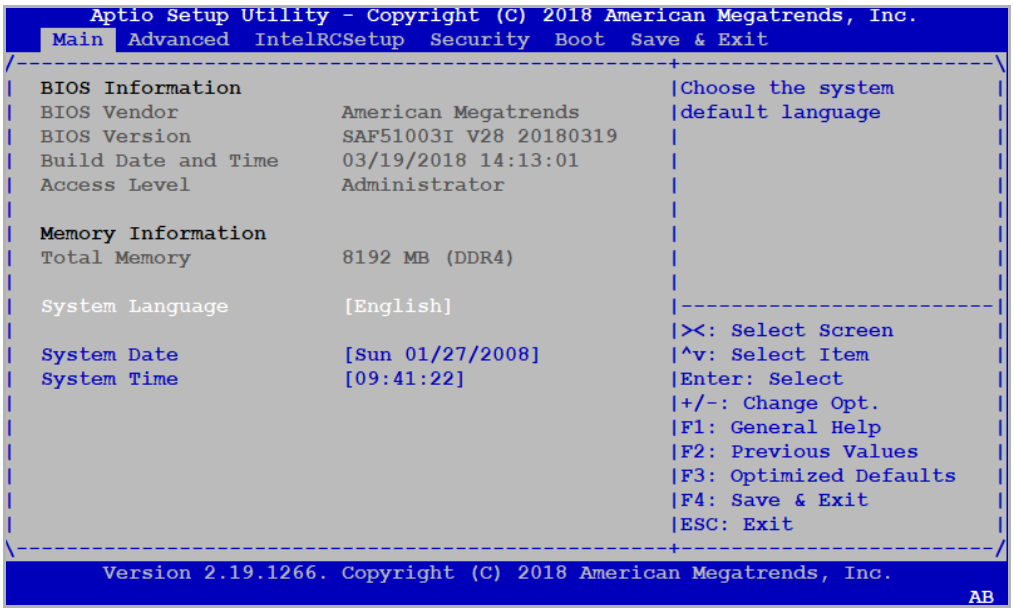
6 BIOS Settings

This chapter includes the following sections:

Main Menu

The main menu describes general system information.

Figure 19: BIOS Main Menu



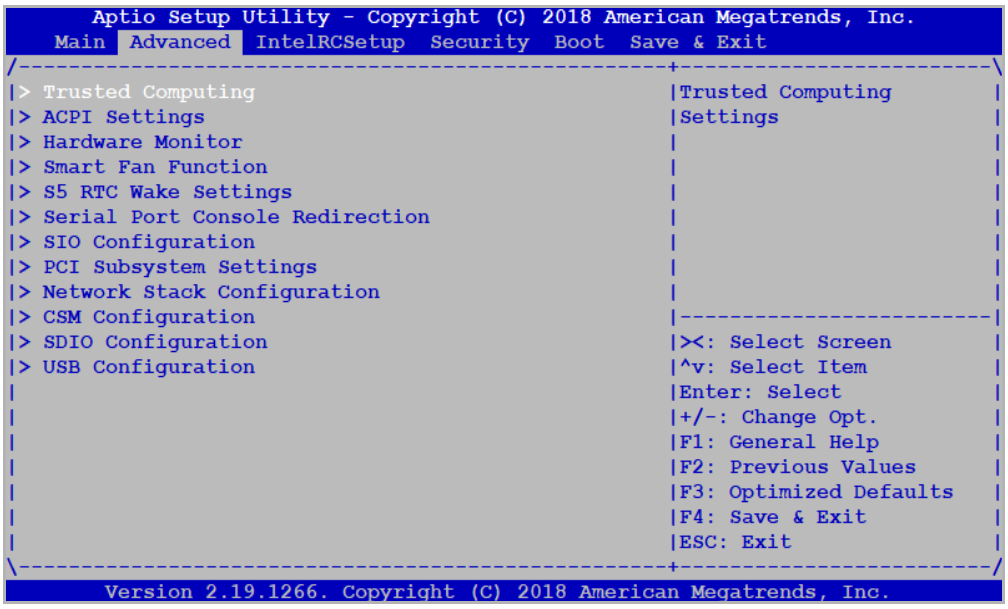
This menu includes the following items:

- **BIOS Vendor** — American Megatrends.
- **BIOS Version** — The BIOS version.
- **Build Date and Time** — Shows the BIOS build date and time.
- **Access Level** — Displays the access rights of the current BIOS user.
- **Total Memory** — Displays the total system memory.
- **System Language** — Selects the display language for the BIOS.
- **System Date** — Displays the RTC date. Use the [+] or [-] keys to set the date.
- **System Time** — Displays the RTC time. Use the [+] or [-] keys to set the time.

Advanced Menu

The Advanced menu includes items for Trusted Computing and other system features.

Figure 20: BIOS Advanced Menu



This menu includes the following items:

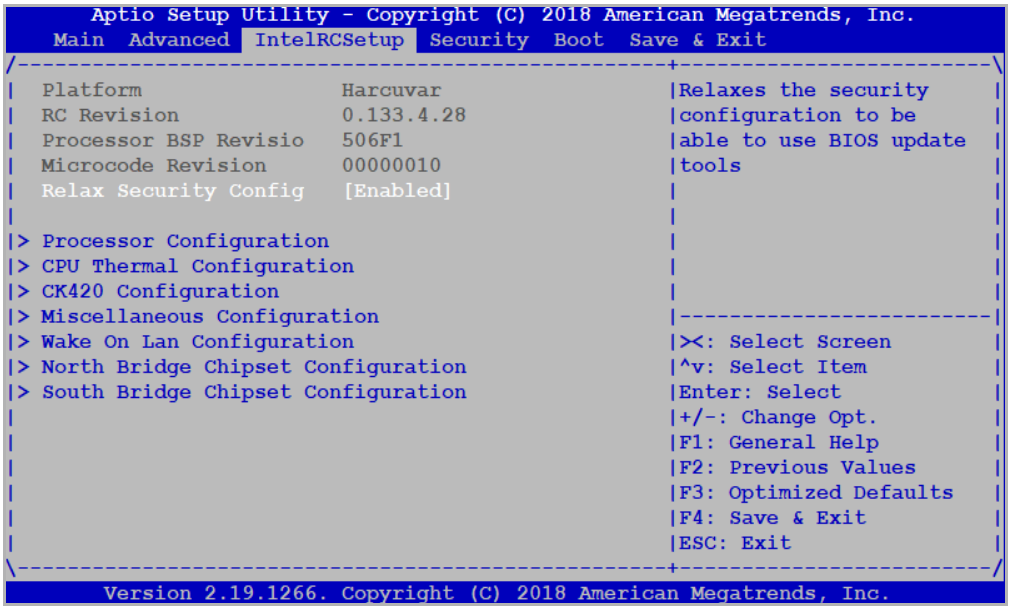
- **Trusted Computing** — Trusted Computing settings.
- **ACPI Settings** — The Advanced Configuration and Power Interface (ACPI) settings. ACPI is the standard method for computers to discover and configure hardware components.
- **HW Monitor** — Information on hardware health status.
- **Smart Fan Function** — Configures system fan speeds and temperature threshold settings.
- **S5 RTC Wake Settings** — Enables the system to wake from an ACPI S5 (soft off) state based on a real-time clock alarm setting.
- **Serial Port Console Redirection** — Settings that enable the BIOS settings to be configured from a serial port connection.
- **SIO Configuration** — Super I/O chip functions, such as serial port settings.
- **PCI Subsystem Settings** — Configures settings for PCI, PCI-X, and PCI.

- **Network Stack Configuration** — Enables the Unified Extensible Firmware Interface (UEFI) network boot option.
- **CSM Configuration** — Compatibility Support Module (CSM) configuration. Settings for CSM provide support for legacy operating systems that are not UEFI compatible.
- **SDIO Configuration** — Configures settings for access to SD storage devices.
- **USB Configuration** — Configures settings for USB controllers and ports.

IntelRCSetup

The Intel RC Setup menu provides configuration access to Intel chipset features.

Figure 21: BIOS Intel RC Setup



This menu includes the following items:

- **Platform** — The platform name of the Intel chipset.
- **RC Revision** — The version of the Intel chipset.
- **Processor BSP Revision** — The version of the Intel board support package.
- **Microcode Revision** — The version of the Intel chip microcode.
- **Processor Configuration** — Configures parameters related to the CPU.
- **CPU Thermal Configuration** — Configures settings for CPU thermal control.

- **CK420 Configuration** — Enables spread spectrum support for the clock generator to reduce system EMI.
- **Miscellaneous Configuration** — Settings for other Intel chipset parameters.
- **Wake on LAN Configuration** — Enables network interface Wake on LAN function to power on the system.
- **North Bridge Chipset Configuration** — Configures parameters for the processor memory, PCI bus connections, and AGP graphics functions.
- **South Bridge Chipset Configuration** — Configures parameters for controlling system I/O functions.

Security menu

The Security menu allows you to set passwords to protect the system from unauthorized access.

Administrator Password

The administrator password is limited to 3-20 characters and is case sensitive. The password does not support special characters, such as "!", "%", "^", "~".

When the administrator password is set, the password must be entered to access the BIOS setup menu. If an incorrect password is entered more than three times, the system BIOS displays a warning message.

User Password

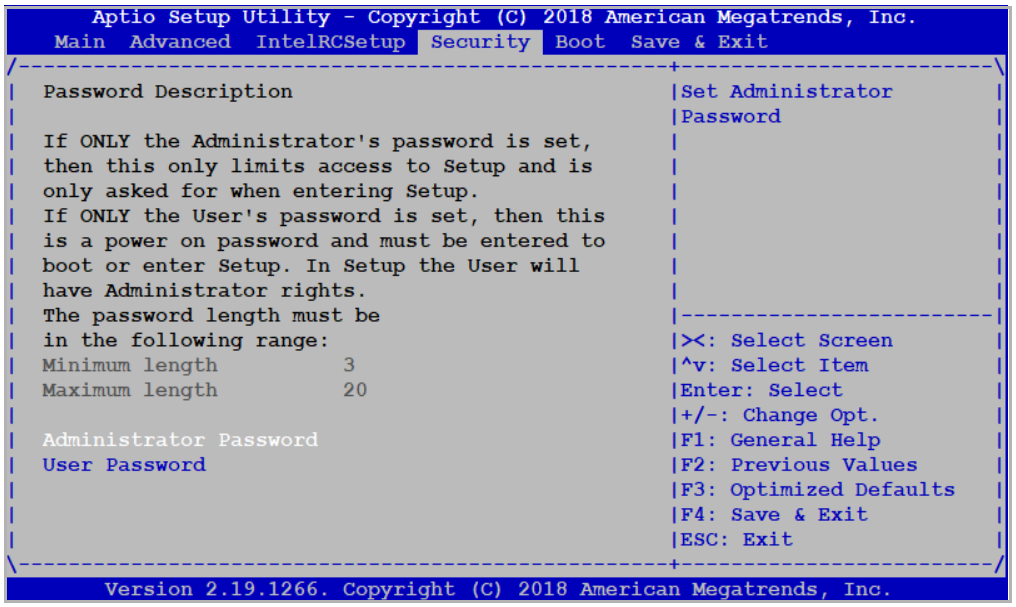
The user password is limited to 3-20 characters and is case sensitive. The password does not support special characters, such as "!", "%", "^", "~".

When a user password is set, you must enter the password during system boot and to access the BIOS setup menu. If an incorrect password is entered more than three times, the system BIOS displays a warning message.

Note: To set a user password, you must first set an administrator password. Setting a user password first automatically sets the administrator password by default.

Note: If you forget the administrator password, the BIOS settings must be cleared by removing the system battery.

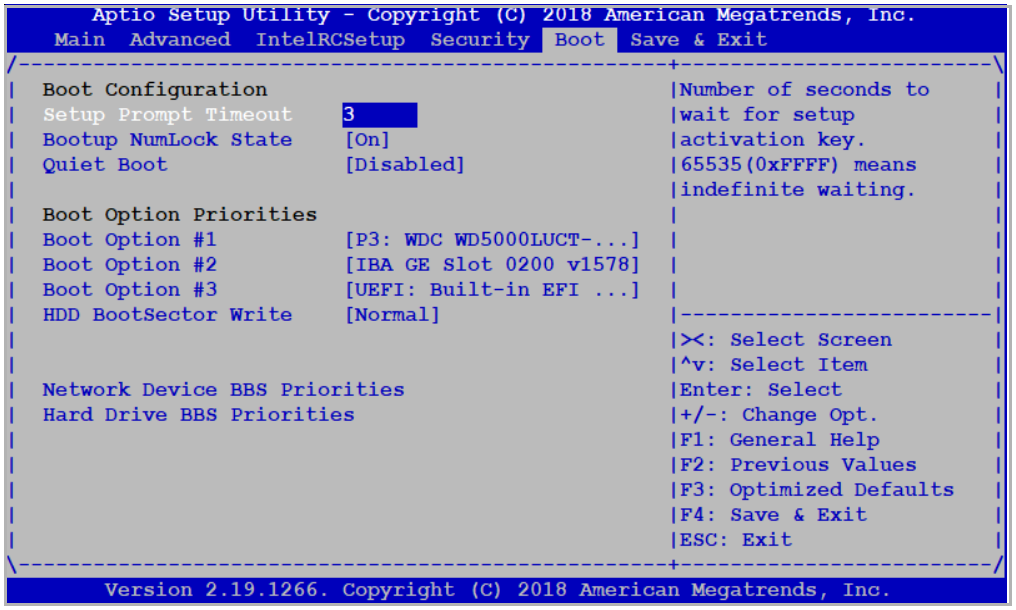
Figure 22: BIOS Security Menu



BOOT Menu

The Boot menu allows you to set the boot device priority sequence and various other parameters.

Figure 23: BIOS Boot Menu



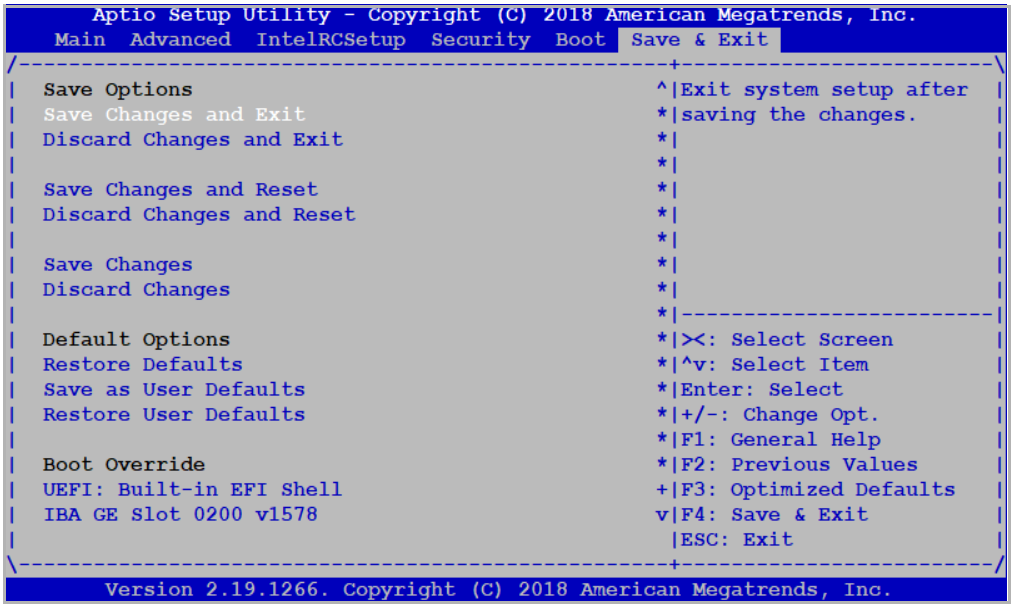
This menu includes the following items:

- **Setup Prompt Timeout** — The number of seconds to wait for the keystroke to enter the BIOS setup menu. (Range: 1-65535 seconds)
- **Bootup NumLock State** — Sets the keyboard Numlock state.
- **Quiet Boot** — Sets the screen display during boot-up. When set to disabled, the system displays POST messages. When set to enabled, the system logo is displayed.
- **Boot Option Priorities** — Sets the priority sequence for boot device types. The selection for Boot Option #1 is the first priority.
- **Hard Drive BBS Priorities** — Sets the boot priority sequence for installed hard drive devices.

Save and Exit Menu

The Save and Exit menu provides options for saving BIOS settings and exiting the setup utility.

Figure 24: BIOS Save and Exit Menu



This menu includes the following items:

- **Save Changes and Exit** — Saves the current settings and exits the BIOS setup utility. Select the field and press Enter. In the dialog box that displays, select "Yes" to save the settings and exit the BIOS setup utility.

- **Discard Changes and Exit** — Discards the current changes, and exits the BIOS setup utility.
- **Save Changes and Reset** — Saves the current changes and reboots the server.
- **Discard Changes and Reset** — Discards the current changes and reboots the server.
- **Save Changes** — Saves the current BIOS settings.
- **Discard Changes** — Discards the current changes.
- **Restore Defaults** — Restores the BIOS configuration to factory default values.
- **Save as User Defaults** — Saves the current BIOS configuration as a User Default.
- **Restore User Defaults** — Restores the BIOS configuration to previously saved User Default values.
- **Boot Override** — Allows you to select an available boot option that overrides other boot priorities when you exit the BIOS setup utility and reboot the system.

Section IV

Appendices

This section provides additional information and includes these items:

A Troubleshooting

When possible, before checking specific troubleshooting options, always look for POST messages by first rebooting the server using one of these methods:

- Reset the system through OS software.
- Power down by removing power to the unit.

Power Supply

If the server does not power on, check these items:

- Make sure power is available at the source outlet.
- Look for loose power cord connections.

Note: If you cannot isolate the power problem, the power adapter may be defective. Replace the power adapter and check all items again.

POST and Boot Problems

If the server does not complete the POST or boot the OS, check these items:

- Check the POST messages for errors.
- Check installed SSD cards are properly seated.
- Check the boot settings in the BIOS.
- OS software is not installed or corrupted. Reinstall the OS.

Cooling and Fans

If the system is running hot, check these items:

- Make sure the top cover is installed.

- Check to be sure the ambient temperature is not too high.
- Make sure all fans are running properly.
- Check the fan settings in the BIOS. The fans might need to run at a higher speed.
- Make sure that airflow around the server is not obstructed.

Network Connections

If there are problems with network connections, check these items:

- Verify that the server and attached device are powered on.
- Be sure the cable is plugged into both the server port and corresponding device.
- Verify that the proper cable type is used and its length does not exceed specified limits.
- Check the attached device and cable connections for possible defects. Replace the defective cable if necessary.

B Installing the Intel Driver

If after installing the Linux OS some RJ-45 ports cannot be found, download and install the latest Intel ixgbe driver for your OS.

For example, you install Ubuntu 16.04.4 and find that ports LAN1–LAN8 can be used by the built-in Intel igb driver, but the WAN and DMZ ports cannot be found in the OS. In this case, download and install the latest Intel ixgbe driver.

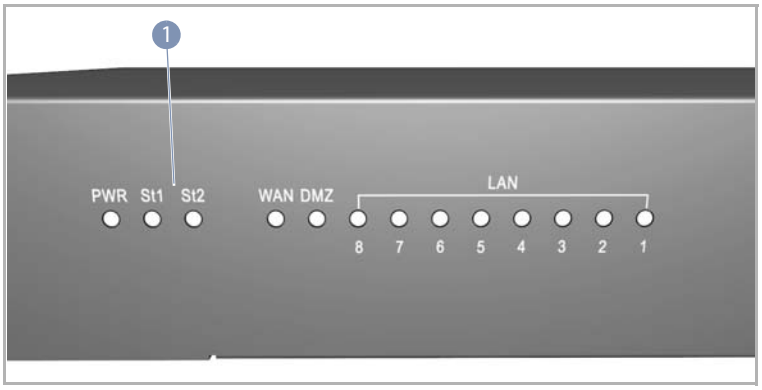
The Intel ixgbe driver and related information can be found at the following URL:

https://downloadcenter.intel.com/download/14687/Intel-Network-Adapter-Driver-for-PCIe-Intel-10-Gigabit-Ethernet-Network-Connections-Under-Linux-

C LED Control Utility

The custom-defined Status LEDs can be controlled using a software utility. If you do not have the **Utility** file, contact Edgecore sales or technical support.

Figure 25: Status LEDs



1. Status 1 and Status 2 LEDs

1. Make sure you have the **Utility** file, which includes two files; **devmen2.c** and **test_led.py**.
2. At the Linux command line, type **`gcc -o devmem2 devmem2.c`** to compile.
3. Execute **`test_led.py`** to see detailed information and how to use the utility.

Figure 26: LED Control Utility

```
Usage:
    test_led.py <LED #> <amber/green> <on/off/blink>

    <LED #>: 1 or 2

    amber: amber LED
    green: green LED

    on: turn LED on
    off: turn LED off
    blink: blink LED
```

D Safety and Regulatory Information

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

You may use unshielded twisted-pair (UTP) for RJ-45 connections - Category 3 or better for 10 Mbps connections, Category 5 or better for 100 Mbps connections, Category 5, 5e, or 6 for 1000 Mbps connections. For fiber optic connections, you may use 50/125 or 62.5/125 micron multimode fiber or 9/125 micron single-mode fiber.

Japan - VCCI Class A

この装置は，クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

CE Mark

CE Mark Declaration of Conformance for EMI and Safety (EEC)

This information technology equipment complies with the requirements of the Council Directive 2014/30/EU on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 2014/35/EU for electrical equipment used within certain voltage limits. For the evaluation of the compliance with these Directives, the following standards were applied:

RFI Emission:
- Limit according to 55032:2012+AC:2013, Class A
- Limit for harmonic current emission according to EN 61000-3-2:2014, Class A
- Limitation of voltage fluctuation and flicker in low-voltage supply system according to EN 61000-3-3:2013

Immunity:
- Product family standard according to EN 55024:2010+A1:2015

- Electrostatic Discharge according to IEC 61000-4-2:2008 ED. 2.0
- Radio-frequency electromagnetic field according to IEC 61000-4-3:2010 ED. 3.2
- Electrical fast transient/burst according to IEC 61000-4-4:2012 ED. 3.0
- Surge immunity test according to IEC 61000-4-5:2014 ED. 3.0
- Immunity to conducted disturbances, Induced by radio-frequency fields: IEC 61000-4-6:2013 ED. 4.0
- Power frequency magnetic field immunity test according to IEC 61000-4-8:2009 ED. 2.0
- Voltage dips, short interruptions and voltage variations immunity test according to IEC 61000-4-11:2004 ED. 2.0

LVD:

- EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013

CE

PSE Alarm

本製品に同梱いたしております電源コードセットは、
本製品専用です。本電源コードセットは、本製品以外の
製品並びに他の用途でご使用いただくことは出来ません。
製品本体に同梱された電源コードセットを利用し、他製品
の電源コードセットを使用しないで下さい。

Power Cord Safety

Please read the following safety information carefully before installing the switch:

Warning: Installation and removal of the unit must be carried out by qualified personnel only.

- The unit must be connected to an earthed (grounded) outlet to comply with international safety standards.
- Do not connect the unit to an A.C. outlet (power supply) without an earth (ground) connection.
- The appliance coupler (the connector to the unit and not the wall plug) must have a configuration for mating with an EN 60320/IEC 320 appliance inlet.
- The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.

- This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 60950. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.

France and Peru only

This unit cannot be powered from IT† supplies. If your supplies are of IT type, this unit must be powered by 230 V (2P+T) via an isolation transformer ratio 1:1, with the secondary connection point labelled Neutral, connected directly to earth (ground).

† Impédance à la terre

Important! Before making connections, make sure you have the correct cord set. Check it (read the label on the cable) against the following:

Power Cord Set	
U.S.A. and Canada	The cord set must be UL-approved and CSA certified. The minimum specifications for the flexible cord are: - No. 18 AWG - not longer than 2 meters, or 16 AWG. - Type SV or SJ - 3-conductor The cord set must have a rated current capacity of at least 10 A The attachment plug must be an earth-grounding type with NEMA 5-15P (15 A, 125 V) configuration.
Denmark	The supply plug must comply with Section 107-2-D1, Standard DK2-1a or DK2-5a.
Switzerland	The supply plug must comply with SEV/ASE 1011.
U.K.	The supply plug must comply with BS1363 (3-pin 13 A) and be fitted with a 5 A fuse which complies with BS1362. The mains cord must comply with IEC 60227 (designation 60227 IEC 52).
Europe	The supply plug must comply with CEE7/7 (“SCHUKO”). The mains cord must comply with IEC 60227 (designation 60227 IEC 52). IEC-320 receptacle.

Veuillez lire à fond l'information de la sécurité suivante avant d'installer le Switch:

Avertissement: L’installation et la dépose de ce groupe doivent être confiés à un personnel qualifié.

- Ne branchez pas votre appareil sur une prise secteur (alimentation électrique) lorsqu'il n'y a pas de connexion de mise à la terre (mise à la masse).

- Vous devez raccorder ce groupe à une sortie mise à la terre (mise à la masse) afin de respecter les normes internationales de sécurité.

- Le coupleur d'appareil (le connecteur du groupe et non pas la prise murale) doit respecter une configuration qui permet un branchement sur une entrée d'appareil EN 60320/IEC 320.

- La prise secteur doit se trouver à proximité de l'appareil et son accès doit être facile. Vous ne pouvez mettre l'appareil hors circuit qu'en débranchant son cordon électrique au niveau de cette prise.

- L'appareil fonctionne à une tension extrêmement basse de sécurité qui est conforme à la norme IEC 60950. Ces conditions ne sont maintenues que si l'équipement auquel il est raccordé fonctionne dans les mêmes conditions.

France et Pérou uniquement:

Ce groupe ne peut pas être alimenté par un dispositif à impédance à la terre. Si vos alimentations sont du type impédance à la terre, ce groupe doit être alimenté par une tension de 230 V (2 P+T) par le biais d'un transformateur d'isolement à rapport 1:1, avec un point secondaire de connexion portant l'appellation Neutre et avec raccordement direct à la terre (masse).

Cordon électrique - Il doit être agréé dans le pays d'utilisation	
Etats-Unis et Canada:	Le cordon doit avoir reçu l'homologation des UL et un certificat de la CSA. Les spécifications minimales pour un cable flexible sont AWG No. 18, ouAWG No. 16 pour un cable de longueur inférieure à 2 mètres. - type SV ou SJ - 3 conducteurs Le cordon doit être en mesure d'acheminer un courant nominal d'au moins 10 A. La prise femelle de branchement doit être du type à mise à la terre (mise à la masse) et respecter la configuration NEMA 5-15P (15 A, 125 V).
Danemark:	La prise mâle d'alimentation doit respecter la section 107-2 D1 de la norme DK2 1a ou DK2 5a.
Suisse:	La prise mâle d'alimentation doit respecter la norme SEV/ASE 1011.
Europe	La prise secteur doit être conforme aux normes CEE 7/7 ("SCHUKO") Le cordon d'alimentation doit être conforme à la norme IEC 60227 (IEC 60227 désignation 52)

Bitte unbedingt vor dem Einbauen des Switches die folgenden Sicherheitsanweisungen durchlesen:

Warnung: Die Installation und der Ausbau des Geräts darf nur durch Fachpersonal erfolgen.

- Das Gerät sollte nicht an eine ungeerdete Wechselstromsteckdose angeschlossen werden.

- Das Gerät muß an eine geerdete Steckdose angeschlossen werden, welche die internationalen Sicherheitsnormen erfüllt.

- Der Gerätestecker (der Anschluß an das Gerät, nicht der Wandsteckdosenstecker) muß einen gemäß EN 60320/IEC 320 konfigurierten Geräteeingang haben.

- Die Netzsteckdose muß in der Nähe des Geräts und leicht zugänglich sein. Die Stromversorgung des Geräts kann nur durch Herausziehen des Gerätenetzkabels aus der Netzsteckdose unterbrochen werden.

- Der Betrieb dieses Geräts erfolgt unter den SELV-Bedingungen (Sicherheitskleinstspannung) gemäß IEC 60950. Diese Bedingungen sind nur gegeben, wenn auch die an das Gerät angeschlossenen Geräte unter SELV-Bedingungen betrieben werden.

Stromkabel. Dies muss von dem Land, in dem es benutzt wird geprüft werden:	
Schweiz	Dieser Stromstecker muß die SEV/ASE 1011Bestimmungen einhalten.
Europe	Das Netzkabel muss mit IEC 60227 (IEC 60227 entsprechen Bezeichnung 52) Der Netzstecker muß die Norm CEE 7/7 erfüllen ("SCHUKO").