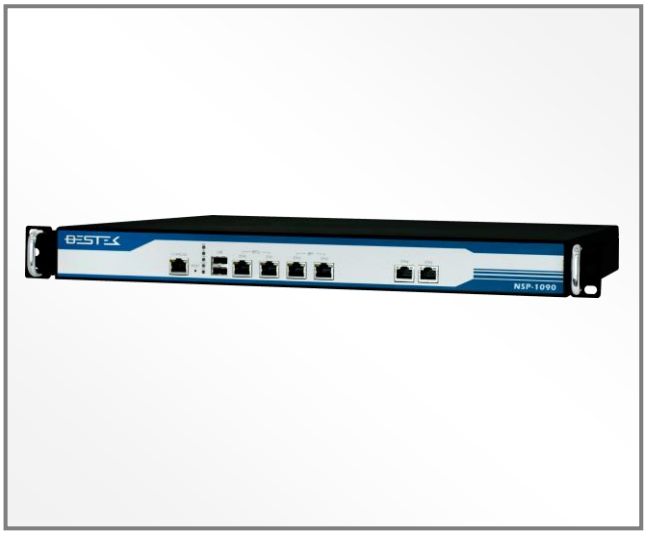
Network Security System

NSP-1090



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User Manual

Copyright

Trademarks

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FCC and DOC Statement on 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 residential installation. 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. 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 the 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.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

Warranty

1. Warranty does not cover damages or failures that are raised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
2. The warranty is void if the product has been subject to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:
• Use the correct AC input voltage range.

To reduce the risk of electric shock:
• Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:
• Danger of explosion if battery incorrectly replaced.
• Replace only with the same or equivalent type recommend by the manufacturer.
• Dispose of used batteries according to local ordinance.

Before Using the

Before using the system, prepare basic system components.

If the system comes as a barebone; that is, none of the key components, including processor, memory, and hard drive has been pre-installed as part of your purchase, you will need to at least ensure a compatible counterpart is located and installed.

You will also need a few external system peripherals intended for the use of the system, a common pool with at least a keyboard, a mouse, and a monitor is thus suggested.

Table of Content

Chapter 1
General Information

1.1 Main Feature

Processor Performance

NSP-1090 is an entry level Rack Mount Network Security Platform with Intel® Bay Trail Quad-Core J1900 Celeron Processor; 2.0GHz base frequency as it is, boosting a gigantic processor performance improvement against the predecessor market lead - Intel® D2550 Dual-Core.

8GB Memory for 64bit OS

The two Dual Channel DDR3 SO-DIMM slots are designed to carry up to 8GB DDR3 1066/1333/1600MHz SDRAM with Non-ECC support, ideally facilitating applications that demand total memory capacity for the use in 64bit OS, beyond the 4GB barrier inherent in the 32bit OS.

Six Gigabit LAN Ports

The six onboard Intel® i210-AT PCIe Gigabit LAN Controllers are the cores of the platform to deliver outstanding network performance with optional two-pair ByPass ready on request.

Small Giant Yet Big Heart

The platform carries a fan-less heat-dissipater over processor, with only one system fan helping to adjust the thermal chamber well enough, though light-power as it may seems to be, secured with one internal 200W 80Plus Power Supply, ensuring the maximum performance that may have been expected, jointly assured with one 3.5” SATA drive bay, totally releasing whatever power that is meant to be employed.

List of Key Features

- Intel® Bay Trail Quad-Core J1900 2.0Hz Onboard Celeron Processor
- Two DDR3 SO-DIMM Slots up to 8GB
- Six Intel® i210-AT GbE LAN Ports with Optional Two-Pair ByPass
- One Internal 3.5” SATA Drive Bay
- One CompactFlash
- Two Front USB 2.0 Ports
- One Front Console Port
- Built-in 200W 80Plus Power Supply
- Rack-Mount Brackets

1.2 Specifications

Core Engine	Processor	Intel® Celeron® Bay Trail J1900 (2.00GHz, 4-core, 2MB Cache, 10W)
	Memory	2x DDR3 SO-DIMM Slots for up to 8GB
	Display	CPU Integrated
Ethernet	Controller	6x Onboard Intel® i210-AT GbE Controllers
	ByPass	Optional 2-pair
Storage	SATA	1x 3.5” SATA2 Drive Bay
	CF	1x CompactFlash Socket
Front I/O	Indication	1x Power LED, 1x HDD LED, 2x Bypass LED, 1x Status LED
	LAN	6x RJ45 Ports
	Console	1x RJ45 Type Console Port
	USB	2x USB 2.0 Ports
Rear I/O	Switch	1x Rock Type Power Switch
	VGA	1x Optional DB15 VGA Port
Power	Type	Internal 200W 80Plus Single Power Supply, 100-240Vac, 50-60Hz
Cooling	System Fan	1x 40mm System Fan at rear side
Other	H/W Monitoring	Monitor temperature, voltage, and fan speed, auto-throttling control at CPU overheat
	Color	Pantone Silver Black, Liquid Paint
Environment	Operating Temp.	0ºC ~ 40ºC
	Storage Temp.	-20ºC ~ 70ºC
	Humidity	10% ~ 90% (Non-Condensing)
Mechanical	Dimension	430mm (W) x 290mm (D) x 44mm (H)

1.3 System Layout

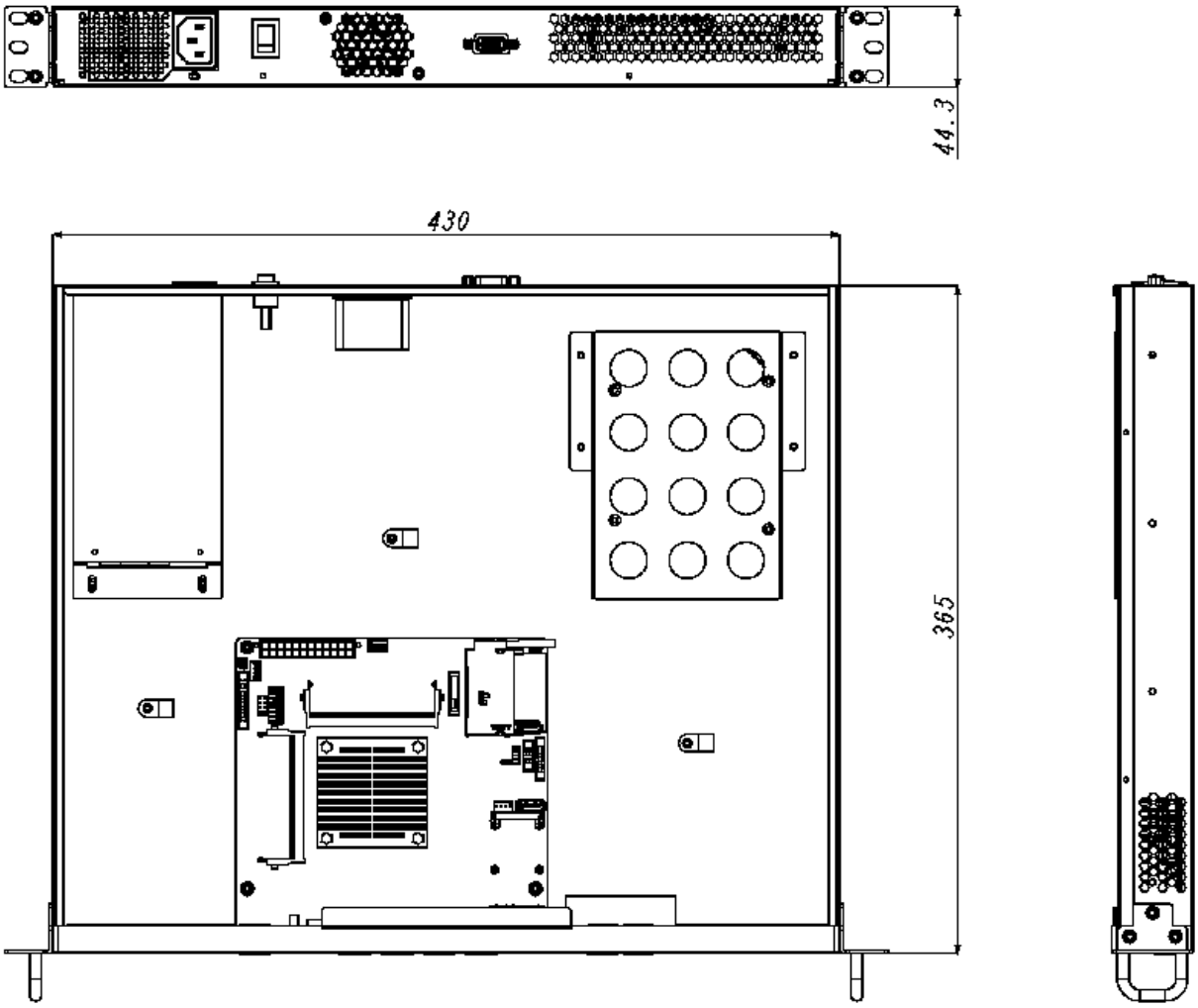
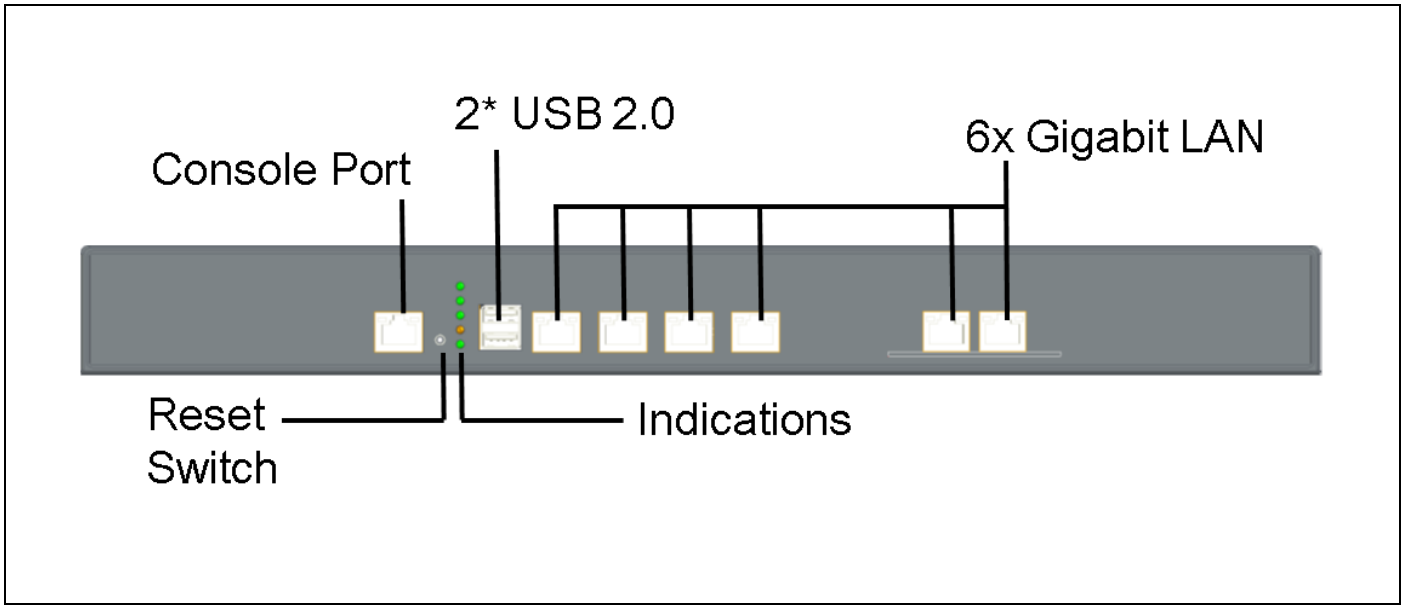


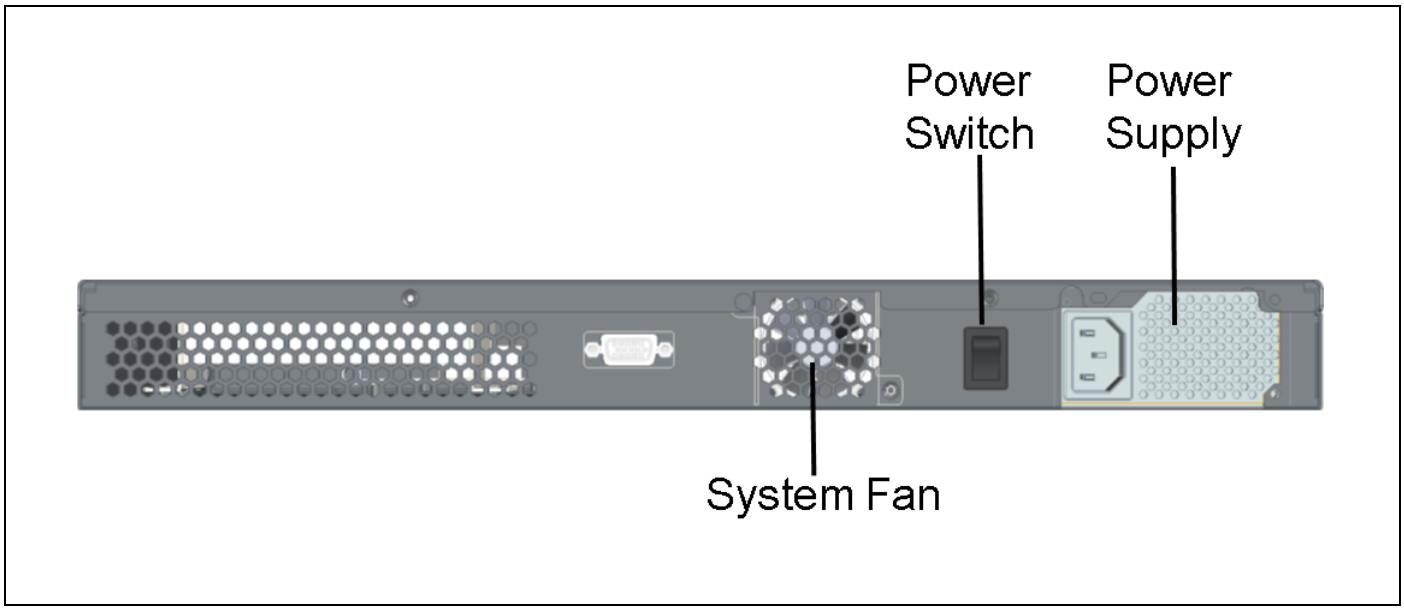
Figure 1.1: System Layout of NSP-1090

1.4 Indicators & Features

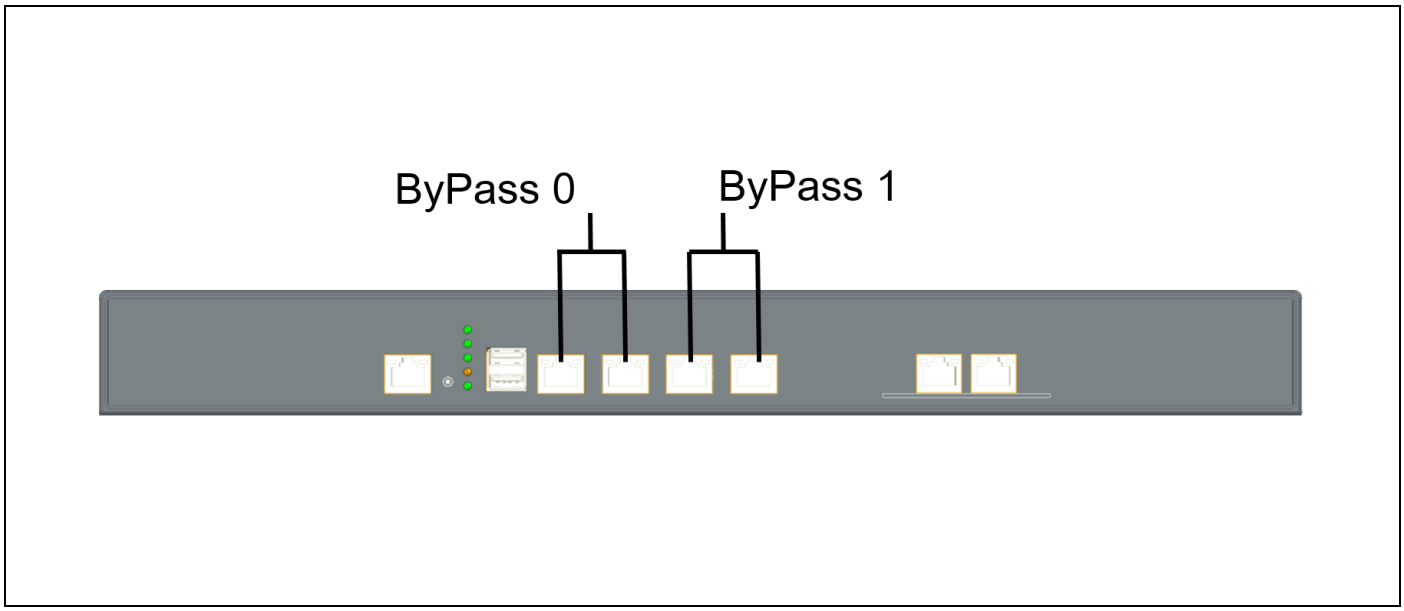
► Front View



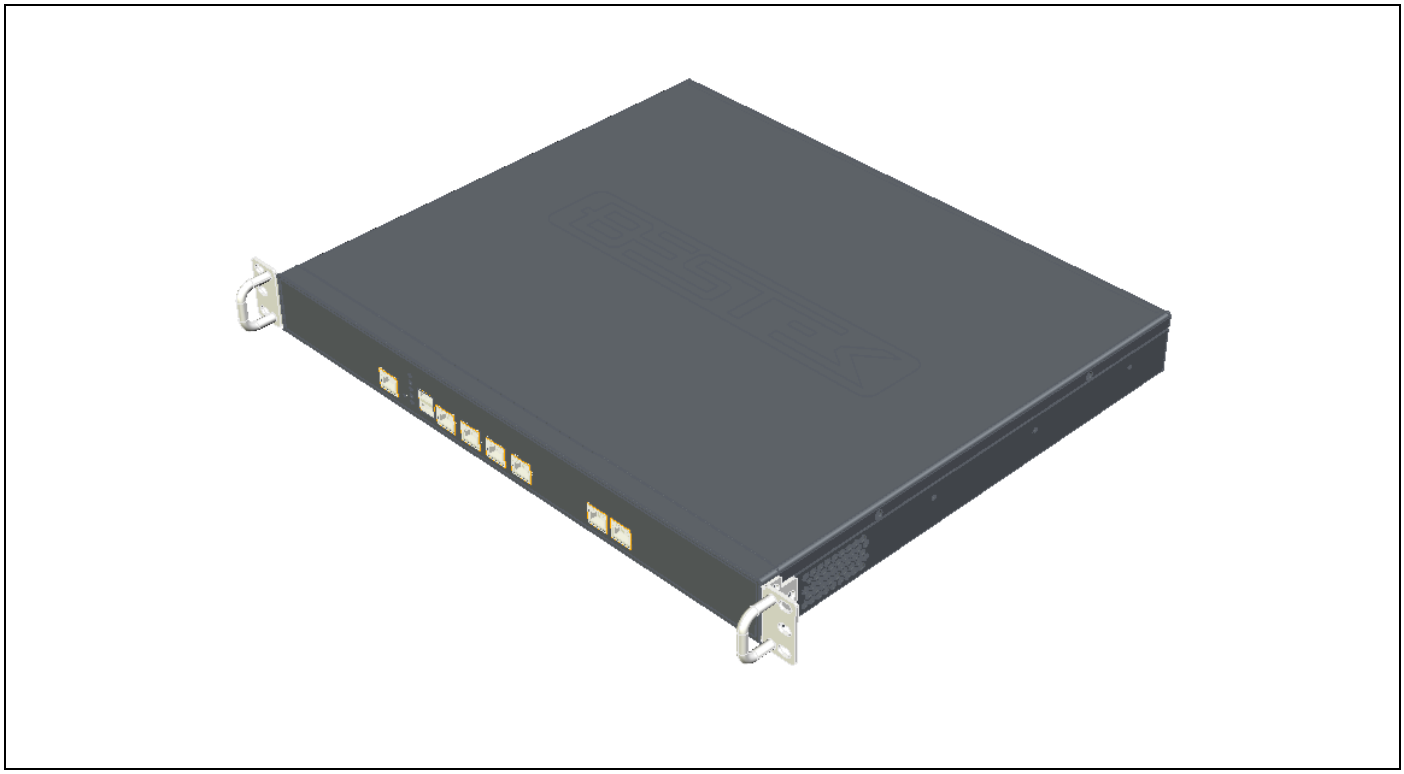
► Rear View



► ByPass Pair View



► Rack Mounting Scheme



Chapter 2
Preparation

2.1 Before You Begin

A stable and clean working environment are essential. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A set of jewelers Screwdrivers
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

2.2 Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself:

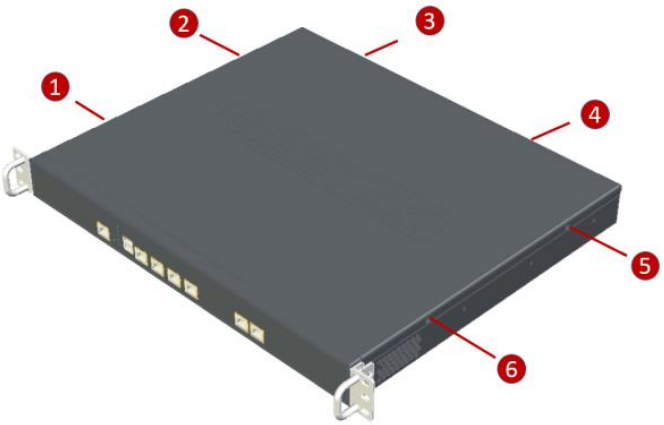
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Never touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

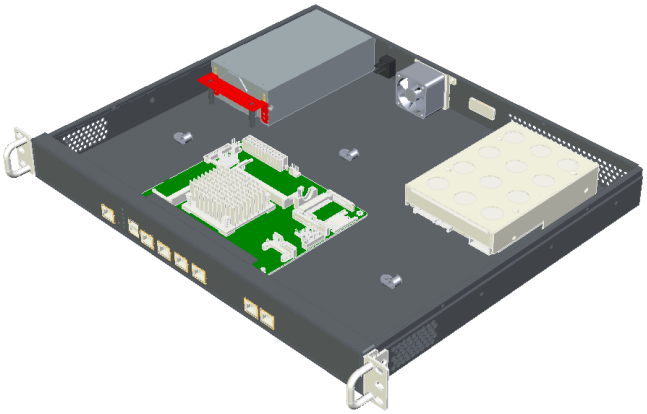
2.3 Open Up Top Cover

This is the first step of all to proceed with, if you are to install a hard drive, CompactFlash Card, or memory module(s).

Please remove the 6 screws as indicated in the places below, prior to any moving of the top cover. It is recommended to push the top cover backwards so as to detach the cover tongue out of the snatch-up at front side, before the lift-up or removal of the top cover.

Securing the screws is essential for they would be re-used for the restoration of the top cover, after all preparation procedures are completed.

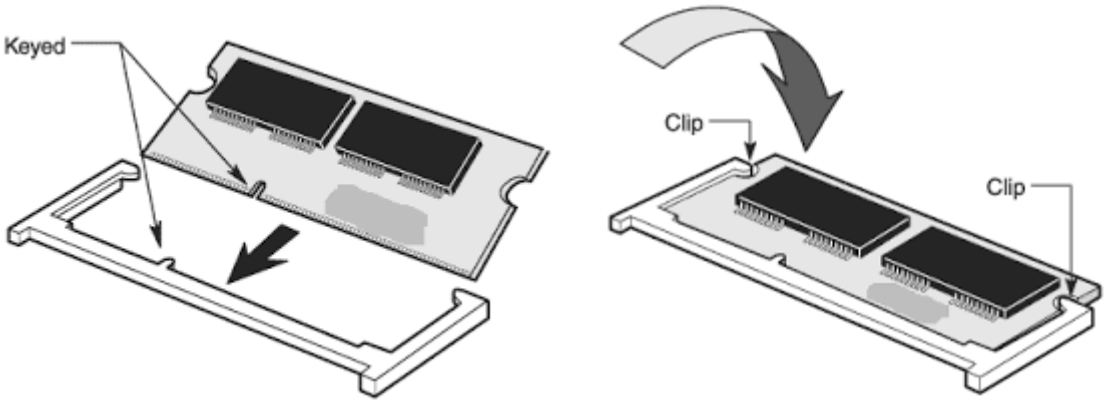




2.4 Accessing Memory

To install SO-DIMM

1. Make sure the “Key” on Memory module and socket are perfectly matched, and add slowly the RAM module into the socket along the plastic guides at both ends.
2. Make sure the Memory are snapped perfectly by the socket, and the two handles are restored back to “close” position automatically. If not, press the handles to “close” position.



3. To remove the Memory module, please push the handles outwards, and the memory module will be automatically disengaged.

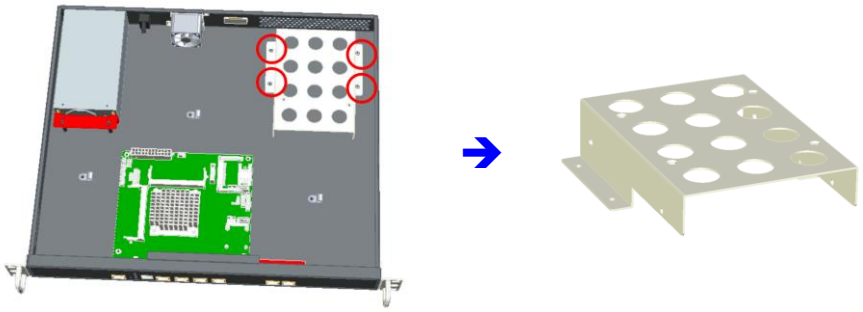
2.5 Adding 3.5” SATA Hard Drive

It is to assume that no hard drive device has been installed within the system prior to undertaking this procedure. However, in case a hard drive is in the system, this procedure demonstrates also a good illustration as to how and where to start with attaching or replacing a hard drive.

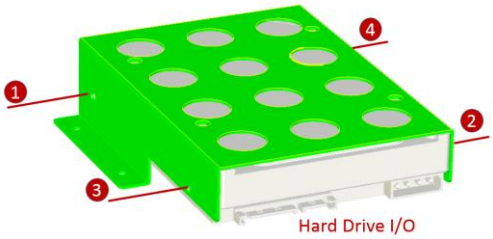
Procedures:

(1) Turn off the system and open up the top cover.

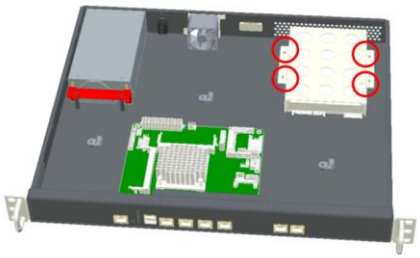
(2) Find the four screws fastened on the Hard Drive bracket (red circles as below). Remove these screws to acquire the Hard Drive bracket.



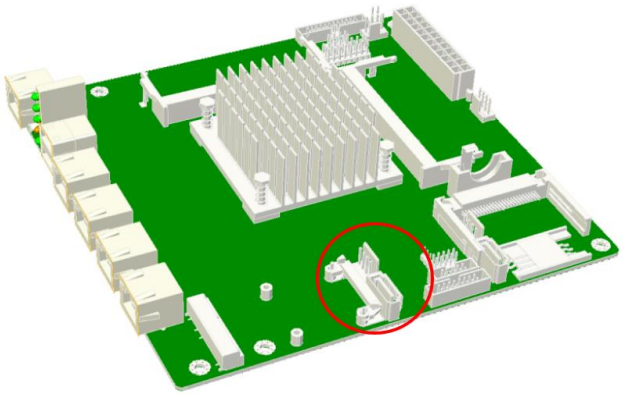
(3) As illustrated below, please have the 3.5” Hard Drive assembled with this bracket, assuring the Hard Drive I/O is placed as indicated in the drawing below, and add in the suggested sequence below the four screws enclosed in the accessory screw bag, for a perfect and firm Hard Drive subset.



(4) Restore this Hard Drive subset back to the chassis, to where and as how it was secured prior to being taken out, and add the four screws back to position.



(5) Add SATA signal cable and SATA power cable to complete the work. Also refer to the drawing below as to where to find SATA connector. Users should always use the SATA Power Cable from the internal power supply harness.



2.6 Accessing CompactFlash Card

CompactFlash instead of CFast

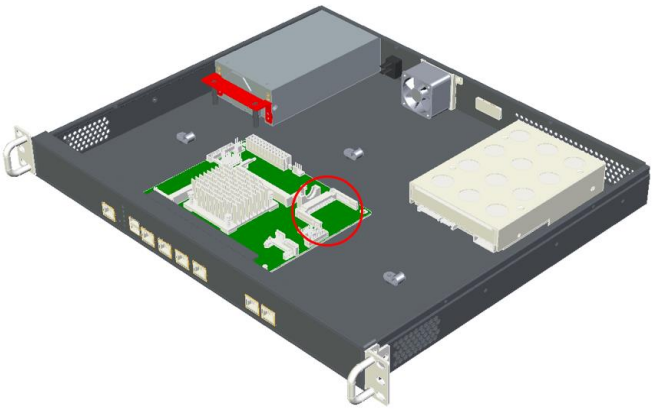
As stated above, significant differences of CompactFlash and CFast are literally defined by their respective interfaces, though the very resemblances can merely be indistinctly differentiated.

Alternative Substitute for SATA Drive

CompactFlash card runs on IDE interface, boasting a fascinating speed up to the kind as ATA133, while the true bandwidth habitually depends on the firmware of CompactFlash card, producing comparably competitive performance for most applications, were plenty of capacity adequately allocated for what is demanded by the Operating Systems. It is not entirely degraded from SSD to any extent, by the outstanding stability as to the no-spindle feature of itself. Such an interface is built internally for nothing but security reasons that can be observed on most server platforms. Please open up the top cover to acquire access to this interface.

Procedures:

(1) Turn off the system.
(2) The onboard CompactFlash socket is to be accessed from the motherboard (as the red circle).
(3) Once add or replace a CompactFlash card, please add the top cover back.

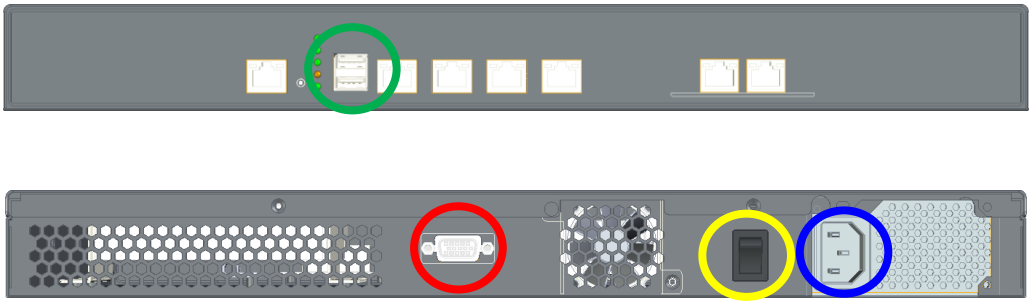


Please be advised that CompactFlash card on IDE interface is never to be added or removed when the system power is still turned on; that is, no plug-and-play scheme is enabled for this device. Disrespect of such a limitation would very likely lead to system instability or malfunction, or even to the worst a fatal system catastrophe. Please always turn off system power before accessing CompactFlash card.

Chapter 3
Operation

3.1 Turning On/Off The System

Add your cables, such as USB keyboard, USB mouse onto the USB ports (as with green circle at front side), and DB15 VGA Cable (as with red circle at rear side), as the merest devices to control the system. Leave the AC power cord as the last cable to be added, right on the AC Inlet (as with blue circle at rear side). The AC input range of the built-in Power Supply is 100-240Vac. If your AC input is not within this range, though rarely possible in fact, it is not compliant with the system and you should not plug in the AC power cord.



Turn On the Power

In some cases, depending on whether a BIOS setting has been configured to allow immediate power-on upon the delivery of AC power, system might come right up unexpectedly for no particular reason. *Please refer to BIOS section for details as to "Restore AC Power Loss"*. Have you intended to bring it down, simply press once the power switch (as with yellow circle at rear side), or press and hold for 4 seconds, to reach that goal.

However, in most occasions, without such abrupt event as stated above, simply press once on the Power Switch to turn on the system.

Turn Off the Power

There are a few scenario where different approaches to turn off the system are recommended as below:

(1) Operating System: Regardless of the type of operating system in the hard drive, users should find no difficulty to follow the standard power off procedure as is available within the said operating system. Modern operating systems such as Microsoft® Windows® or Linux are usually designed with similar power scheme, where once initiated, should bring the power down after a not so long and complicated shutdown process.
(2) BIOS: In case users intend to directly shutdown the system after a brief check within BIOS setup menu, simply press once the power switch, or press and hold for 4 seconds, to achieve that goal.
(3) Software catastrophe: In the event that a software testing reaches a point of malfunction or endless loop, where no restart or even user control is possible in software manner, it is suggested to simply press and hold the power switch for 4 seconds to disengage the power.

Please never try to unplug the power cord without trying the above approaches, as abruptly detaching the power cord while system power is still on might introduce unexpected power spikes and hence is the least suggested way to deploy.

Indication

Pin	Definition
1	ByPass 0 LED
2	ByPass I LED
3	Power LED
4	Power Status LED
5	HDD LED

A 5-LED set can be found at front side as system indication.

- ByPass 0 LED

ByPass 0 LED is marked at (1) which shall come lit constant ON when ByPass Pair 0 is enabled, regardless the system status at ON or OFF.

- ByPass 1 LED

ByPass 1 LED is marked at (2) which shall come lit constant ON when ByPass Pair 1 is enabled, regardless the system status at ON or OFF.

- Power LED

Power LED is marked at (3) which shall come lit constant ON at system start.

- Power Status LED

Power LED is marked at (4) which shall blink when system suspend mode is initiated.

- HDD LED

Power LED is marked at (5), and shall blink in the wake of storage activity, such as SATA drive or CompactFlash.

First screen & Optimal BIOS Setting

Once the system successfully boots up, it shall activate display signal on monitor, disclosing some system information as checkpoints for debugging, thereafter users are encouraged to bring up BIOS setup menu to at least load the optimal BIOS setting, as the first thing to do at power on. Please refer to the BIOS section for substantial details.

3.2 Installing Operating System & Drivers

Confirm the Hard Drive List

The system is designed to allow booting from a variety of internal devices, including USB pen drive, SATA drive, and CompactFlash drive, etc. Given the tiny footprint and slow performance of USB pen drive, SATA drive and CompactFlash are more prevailing devices to carry operating system and can to be found in the detected drive list, in the section of IDE Configuration.

In the event that a particular SATA device is not detected and prompted in the device list, never would a chance the system boot from it. Please turn off the system, check or re-apply the SATA cable and SATA power cable, or re-insert CompactFlash card to ensure an appropriate connection.

Always Mind the SATA Mode

SATA controller is embedded in the Intel® J1900 Celeron Processor, and shall run only in one single SATA mode at a time. Two different modes are available: IDE and AHCI. Please ensure that a SATA mode has been selected for the installation, and always use this particular mode to boot the operating system being installed. Failed to boot the operating system with the correct mode would definitely run into system collapse. While thus disaster occurs, please re-select a SATA mode to try again the advisability of such change, so as to determine the mode being used at installation phase.

Procedures to load operating system:

(1) Please attach USB CD-ROM or DVD-ROM drive.
(2) Start or restart the system.
(3) Press “del” to go to BIOS setup menu.
(4) Choose to confirm SATA Controller status. If it is enabled, select a SATA mode and go to (6).
(5) If SATA Controller is disabled, bring it up and reboot to allow a re-detection of Hard Drives.
(6) Confirm if the Hard Drive has been detected by the prompt of it on the drive list.
(7) Scroll and choose to boot from optical device (CD-ROM or DVD-ROM).
(8) Save and reboot the system to activate the change and start the installation.
(9) Upon reception of messages or instruction from Operating System CD or DVD, please proceed with the rest of the work as installer instructs.

Loading Extra Driver Files

Some challenges might occur during the installation, as if the issue of no Hard Drive detected, where extra driver files are needed. This is mostly found, when AHCI mode is selected, in operating systems such as Windows-XP, where a USB floppy drive loaded with SATA driver should be prepared and attached on USB port and, at the prompt of such a message, please press “F6” key while being asked to do so, to allow the installer integrate the driver file from floppy drive. Windows-7, or above, or most Linux OS (of the latest version) apparently do not seem to come inherently with such an issue against the onboard SATA Controller, and hence no extra driver would be needed.

On completion of the installation of operating system such as Microsoft Windows, please find the driver CD in the enclosed accessory bag and proceed with driver files installation in the sequence as: INF (Chipset), VGA, and LAN. If some driver updates are available by Windows Update, please mind the decision as to whether to proceed with the update accordingly.

3.3 Understanding LAN Indicators

Activity LED

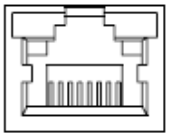
The left LED is LAN Port Activity LED, with three different indication status:

(1) Constant Yellow: Network is connected.
(2) Blinking Yellow: Network activity is on-going.
(3) Off: Network is not connected.

LAN Speed LED

The right LED is LAN Port Speed LED, with three different speeds:

(1) Amber: 1000 Speed
(2) Green: 100 Speed
(3) Off: 10 Speed.



Summary Table

LED	Color	State	Description
RJ45 NIC Linkage (Left Side)	Yellow	On	LAN linked
	Yellow	Blinking	LAN accessing
	Off	Off	No LAN linked
RJ45 NIC Mode (Right Side)	Amber	On	Gigabit mode
	Green	On	100M mode
	Off	Off	10M mode

3.4 Using Console Port

Please find the Console Cable in the enclosed accessory bag. Attach the RJ45 end at Console Port at front side, and the other end of DB9 female end to the RS-232 Port of another notebook PC or Desktop Computer. Please refer to the BIOS section for Console Setting, and mind the setting of Terminal Type as well as the Baud Rate that would be configured for the Console activity. It is always recommended to use the same setting on the system and also the Console PC to avoid nothing being transmitted or corrupted reception.

Chapter 4
BIOS Setup

About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values stored in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

When to Run BIOS

This program should be executed under the following conditions:

- When changing the system configurations.
- When a configuration error is detected by the system and you are prompted to make changes to the Setup program.
- When resetting the system clock.
- When setting the CPU clock speed so that it automatically runs either fast or slow.
- When redefining the communication ports to prevent any conflicts.
- When making changes to the Power Management configuration.
- When changing the password or making other changes to the security setup.

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM loses power, or when the system features need to be changed.

When to Update BIOS

In the event that new features are released and a BIOS update is required, you will need to update your BIOS on your own, with the help of an appropriate guide, a reference tool, and some command files for the job.

Please seek for help from your local dealer, or send your request to our technical support department.

4.1 Entering Setup

When the system is powered on, the BIOS will initiate the Power-On-Self-Test (POST) routines. These routines perform various diagnostic checks. If an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <**Del**> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT
PRESS <CTRL-ALT-ESC> OR <DEL> KEY

Press the <**Del**> key or press the <**Ctrl**>, <**Alt**>, and <**Esc**> keys to enter Setup.

4.2 Getting Help

The online description of the highlighted setup item is displayed at the right pane of the menu at all time. Press F1 to pop up a small help window that lists all the function keys and its use.

To exit the Help Window, press **<F1>** or **<Esc>**.

4.3 Control Keys

The table below lists all the function keys for the navigation in the BIOS setup menu.

Function Key	**Description**
Up/Down Arrow Key	Move Up/Down
Left/Right Arrow Key	Move Left/Right
Enter Key	Select
+/- Key	Change value
ESC	Exit
Tab	Select a Field
F1	General Help
F2	Previous Values
F3	Optimized Values
F4	Save & Exit

To exit the Help Window, press **<F1>** or **<Esc>**.

4.4 The Main Menu

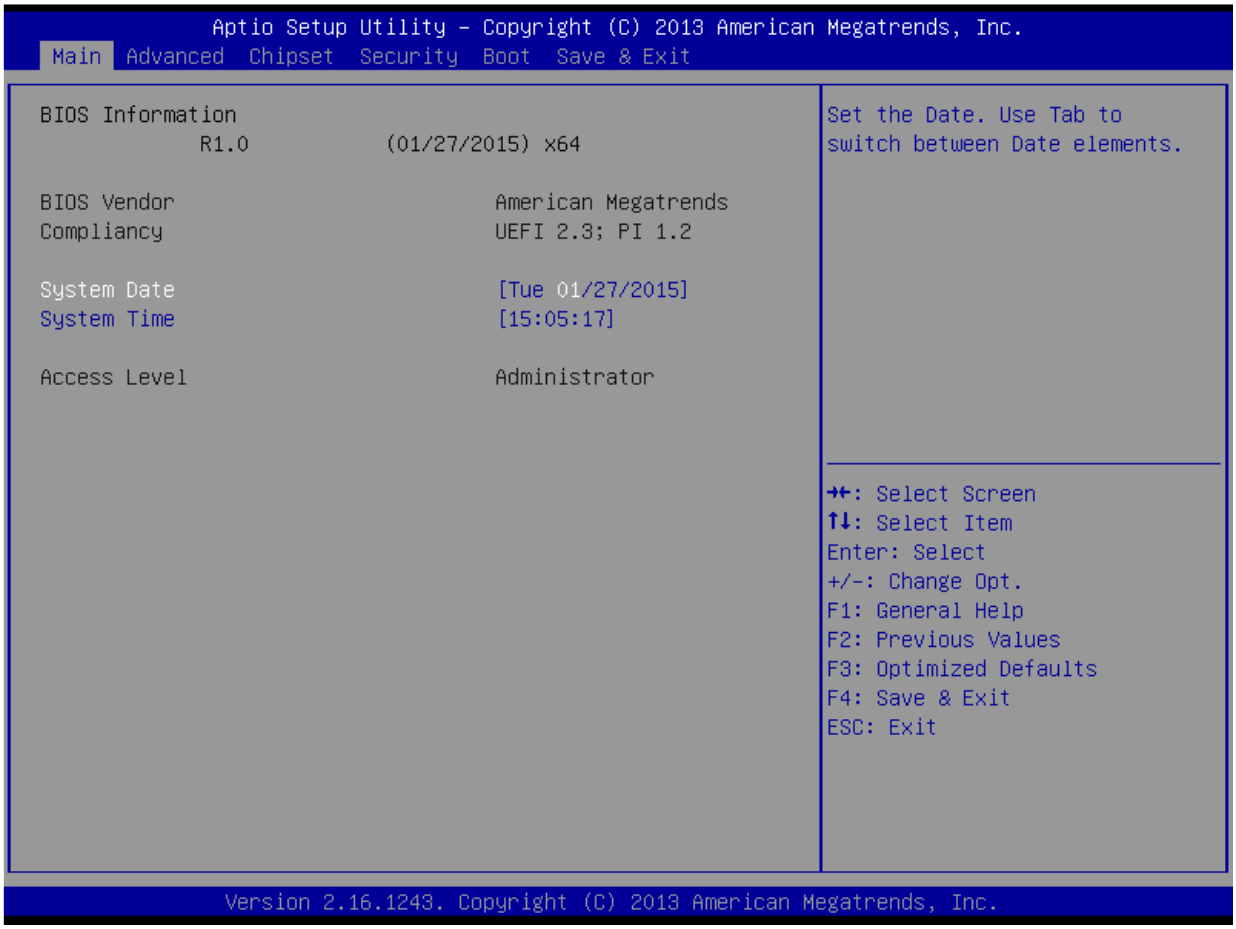


Figure 4-1: BIOS Setup Utility Main Menu

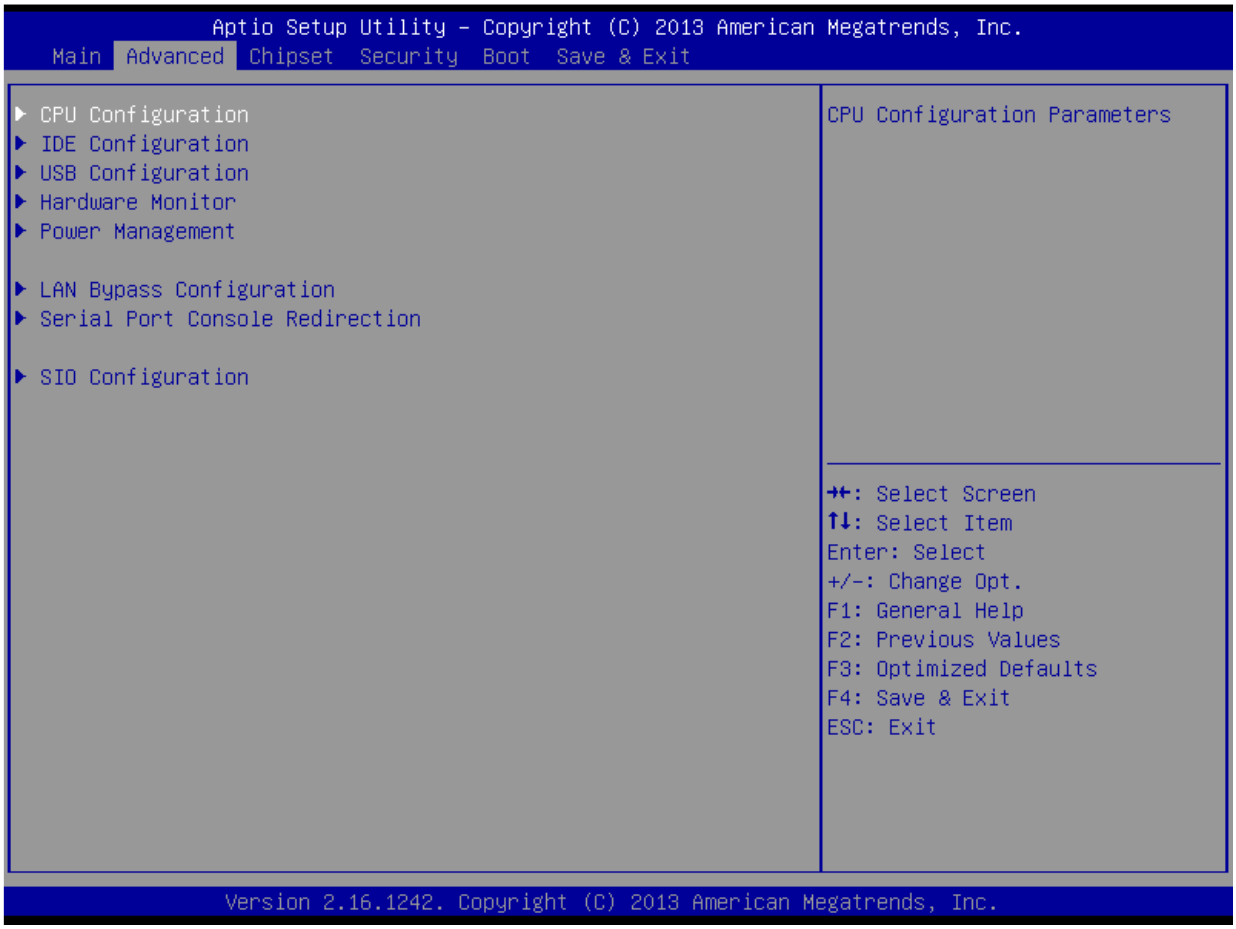
The menu bar on the top of the first screen has the following submenus:

- **Main:** Basic system configuration.
- **Advanced:** Advanced system settings.
- **Chipset:** Other functions.
- **Security:** Configure Supervisor and User Password
- **Boot:** System boot configuration.
- **Save & Exit:** Exit options as well as loading optimal defaults

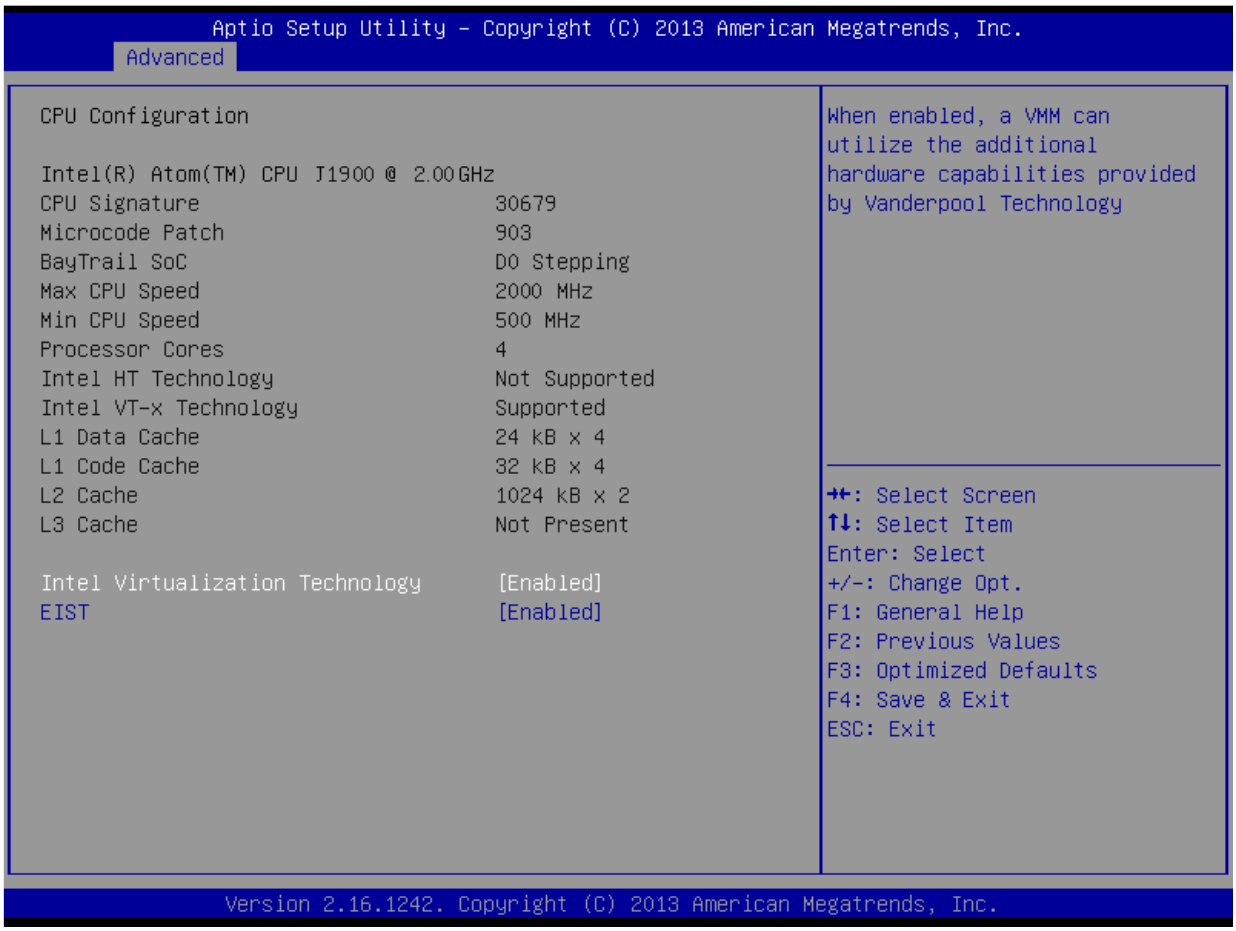
System Time [xx:xx:xx]: Set the system time.
System Date [Day xx/xx/xxxx]: Set the system date.

4.5 The Advanced Menu

In this section, you may configure the followings: CPU Configuration, IDE Configuration, USB Configuration, Hardware Monitor, Power Management, LAN Bypass Configuration, Serial Port Console Redirection, and SIO Configuration.



CPU Configuration



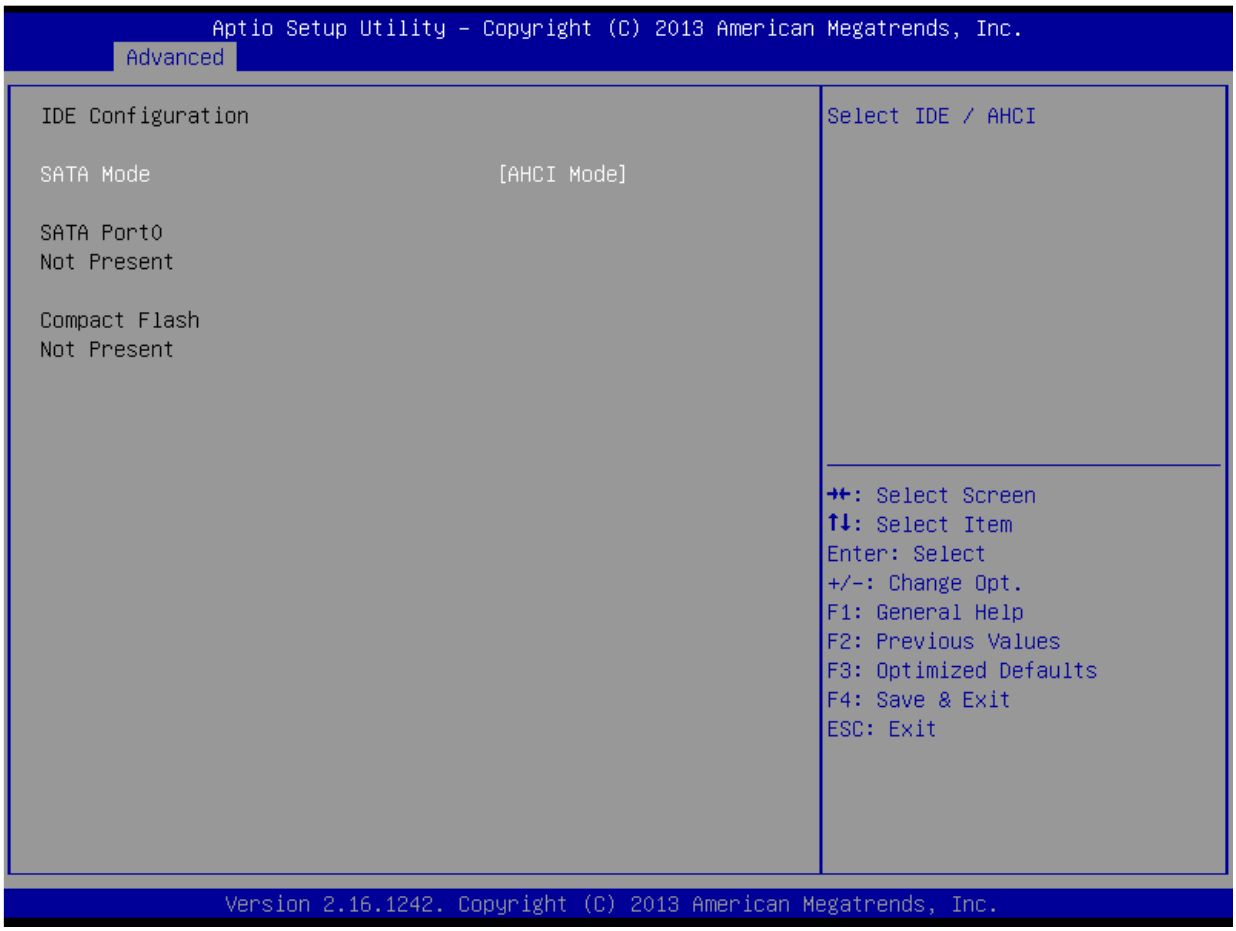
Intel® Virtualization Technology

Enable/Disable Intel® Virtualization Technology.

EIST

Enable/Disable Enhanced Intel® SpeedStep® Technology for advanced power saving control against thermal condition.

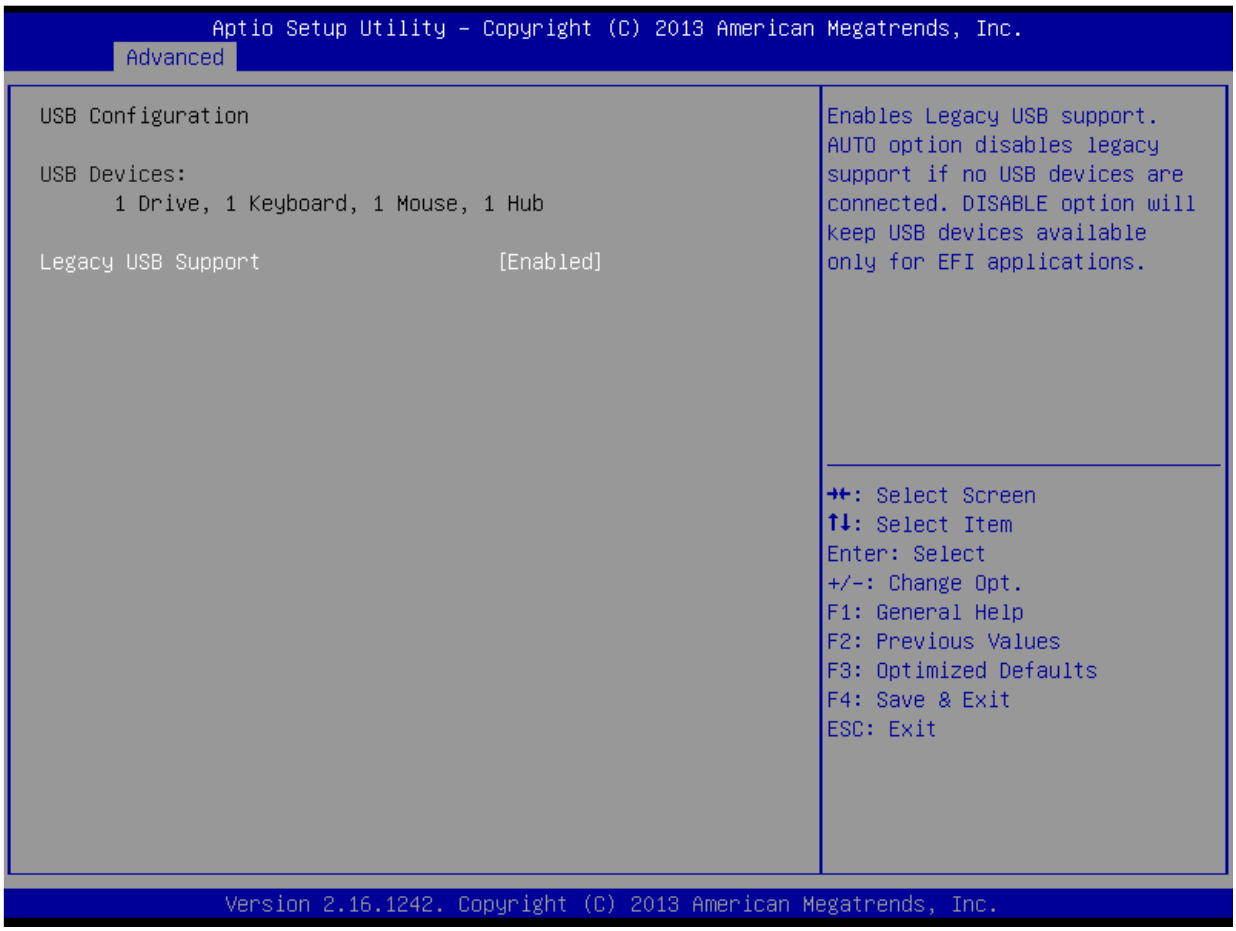
IDE Configuration



SATA Mode

Select a proper SATA mode from IDE and AHCI.

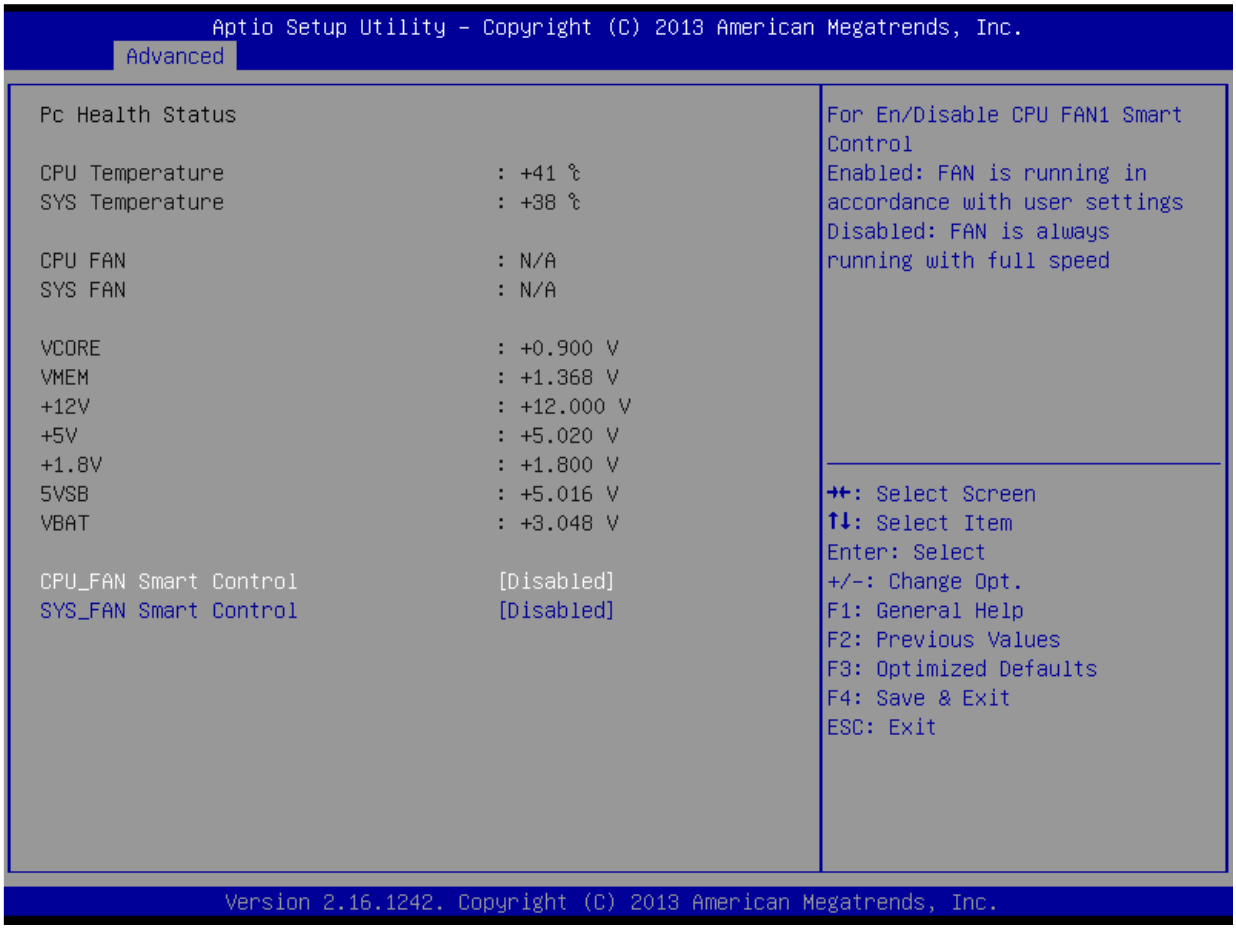
USB Configuration



Legacy USB Support

Enable this to allow using USB devices (Keyboard or Floppy) at some legacy operating systems, such as DOS. If Auto is selected, USB Legacy Support will be disabled when no USB device is detected.

Hardware Monitor



CPU_Fan Smart Control

Enable/Disable CPU Fan Smart Control.

SYS_Fan Smart Control

Enable/Disable System Fan Smart Control.

Power Management

Power Mode

Select AT/ATX Power Mode.

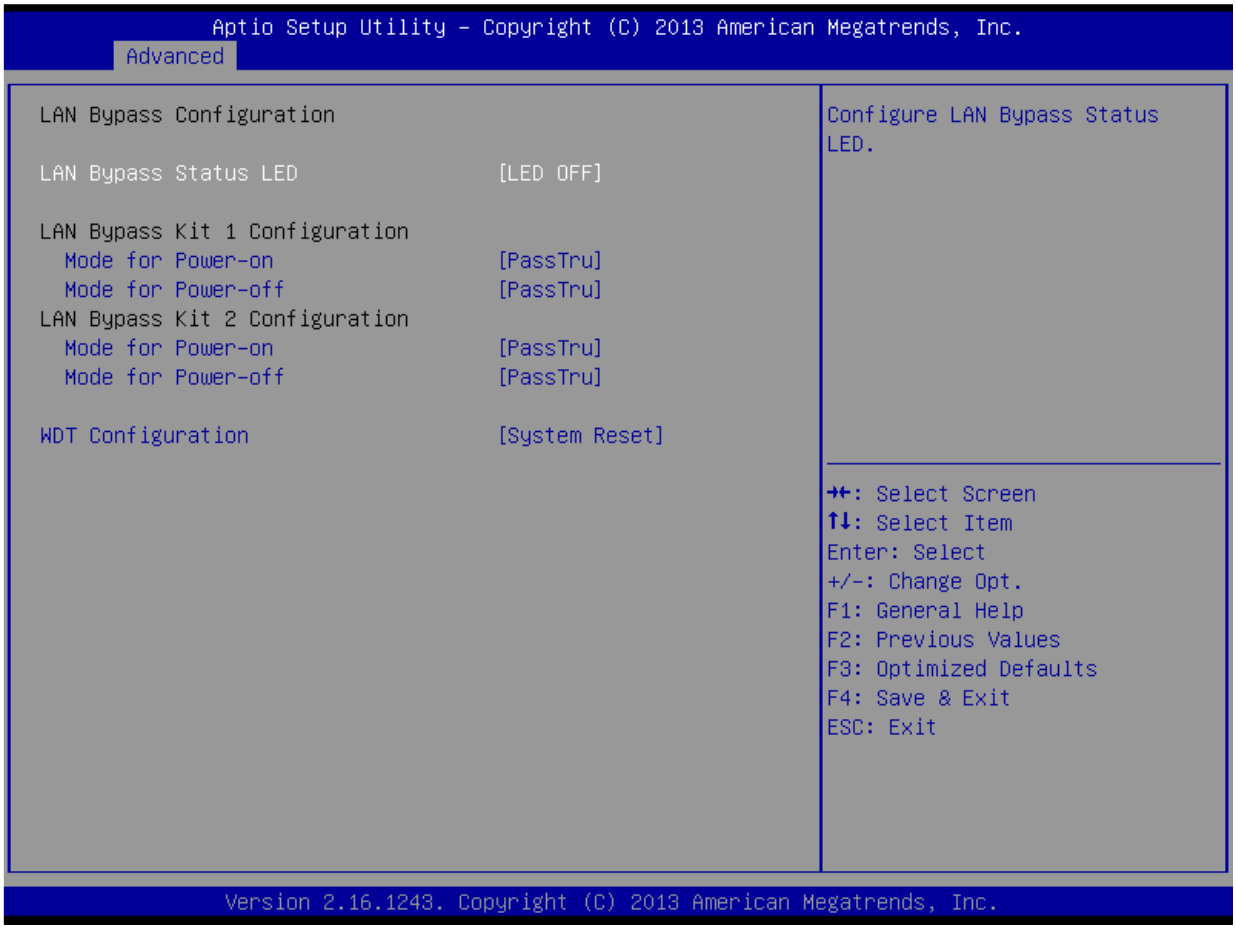
Restore AC Power Loss

This is to set the power state after an unexpected AC/power loss.
If [Power Off] is selected, the AC/power remains off when the power recovers.
If [Power On] is selected, the AC/power would come right on once power recovers.
If [Last State] is selected, the AC/power would follow the system state prior to the power loss.

RTC wake system from S5

Enable/Disable system to wake on alarm event; that is the preset hh:mm:ss.

LAN ByPass Configuration



LAN ByPass Status LED

Select ByPass LED from:

- LED OFF
- RED LED ON
- RED LED BLINK
- RED LED FAST LINK
- GREEN LED ON
- GREEN LED BLINK
- GREEN LED FAST LINK

LAN ByPass Kit 1 Configuration

Mode for power-on: Select Power ByPass mode from PassThru or ByPass

Mode for power-off: Select Power ByPass mode from PassThru or ByPass

LAN ByPass Kit 2 Configuration

Mode for power-on: Select Power ByPass mode from PassThru or ByPass

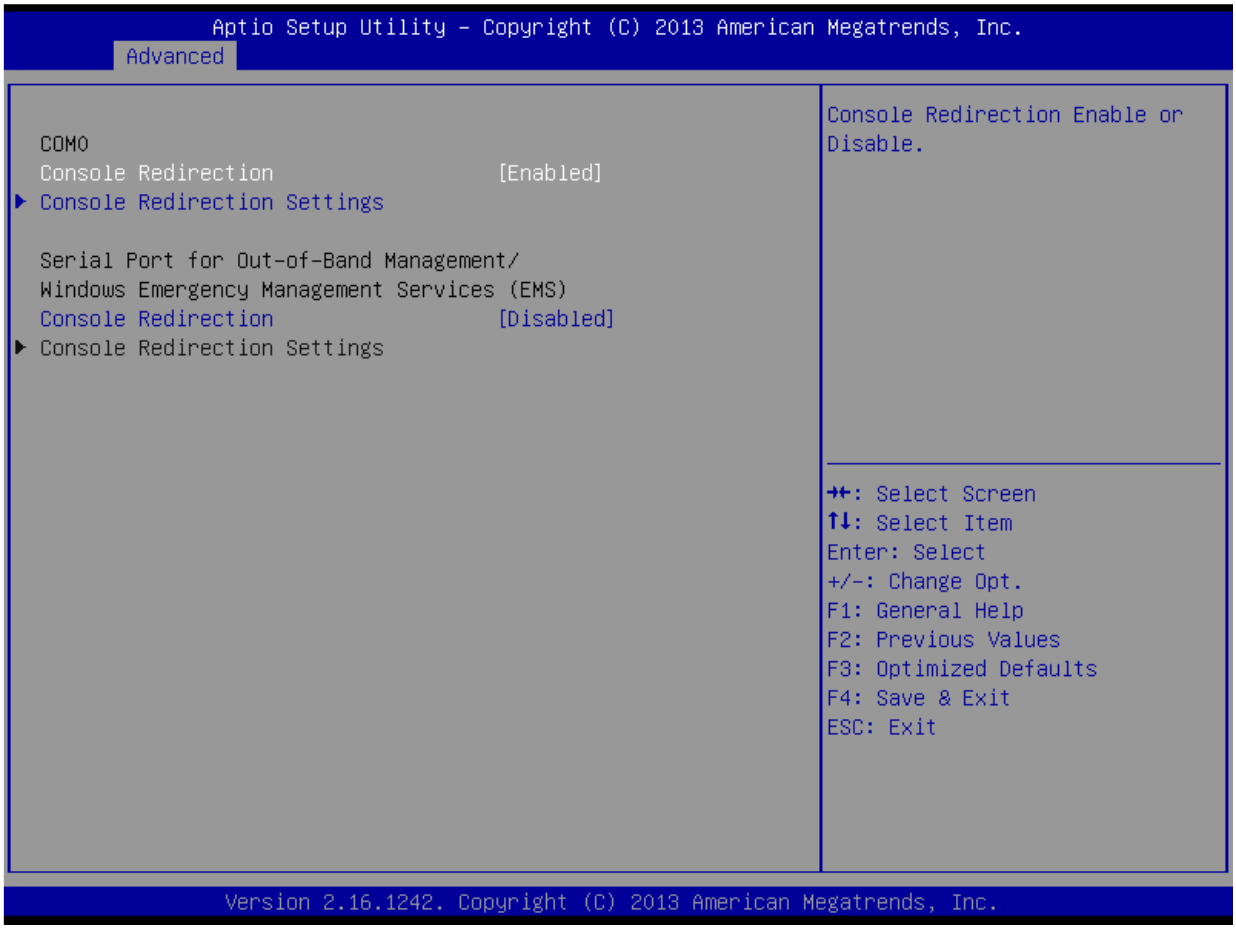
Mode for power-off: Select Power ByPass mode from PassThru or ByPass

WDT Configuration

Select system behavior after WDT time-out from:

- Force ByPass: Enable LAN ByPass
- System Reset: Reboot system

Serial Port Console Redirection



Console Redirection

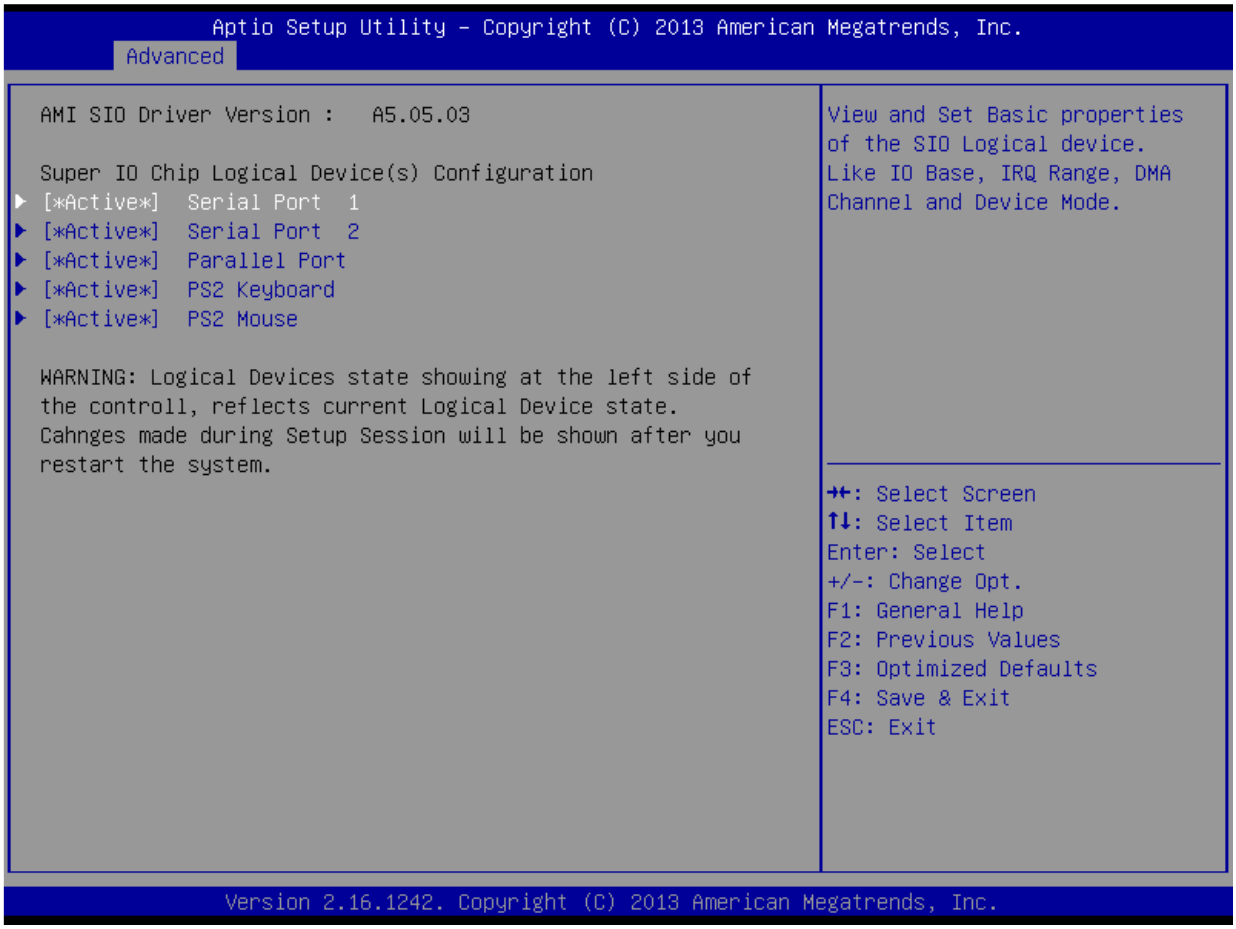
Enable/Disable Console Redirection function.

Console Redirection Settings

Enter to configure or confirm the Terminal Type and Baud Rate for Console activity.

Please be advised that Console Port is a function built over RS-232 COM Port. If users accidentally disable RS-232 Port within SIO Configuration, Console Port will also be deactivated and hence no transmission will be available.

SIO Configuration



Serial Port 1/2

- Use This Device: Enable/Disable COM1/COM2.
- Possible: Configure the COM1/COM2 Setting (It is suggested to leave this setting unchanged as default)

Parallel Port

- Use This Device: Enable/Disable Parallel Port.
- Possible: Configure the Parallel Port Setting (It is suggested to leave this setting unchanged as default)
- Mode: Select Parallel Port Mode from SPP, EPP, ECP, and EPP & ECP.

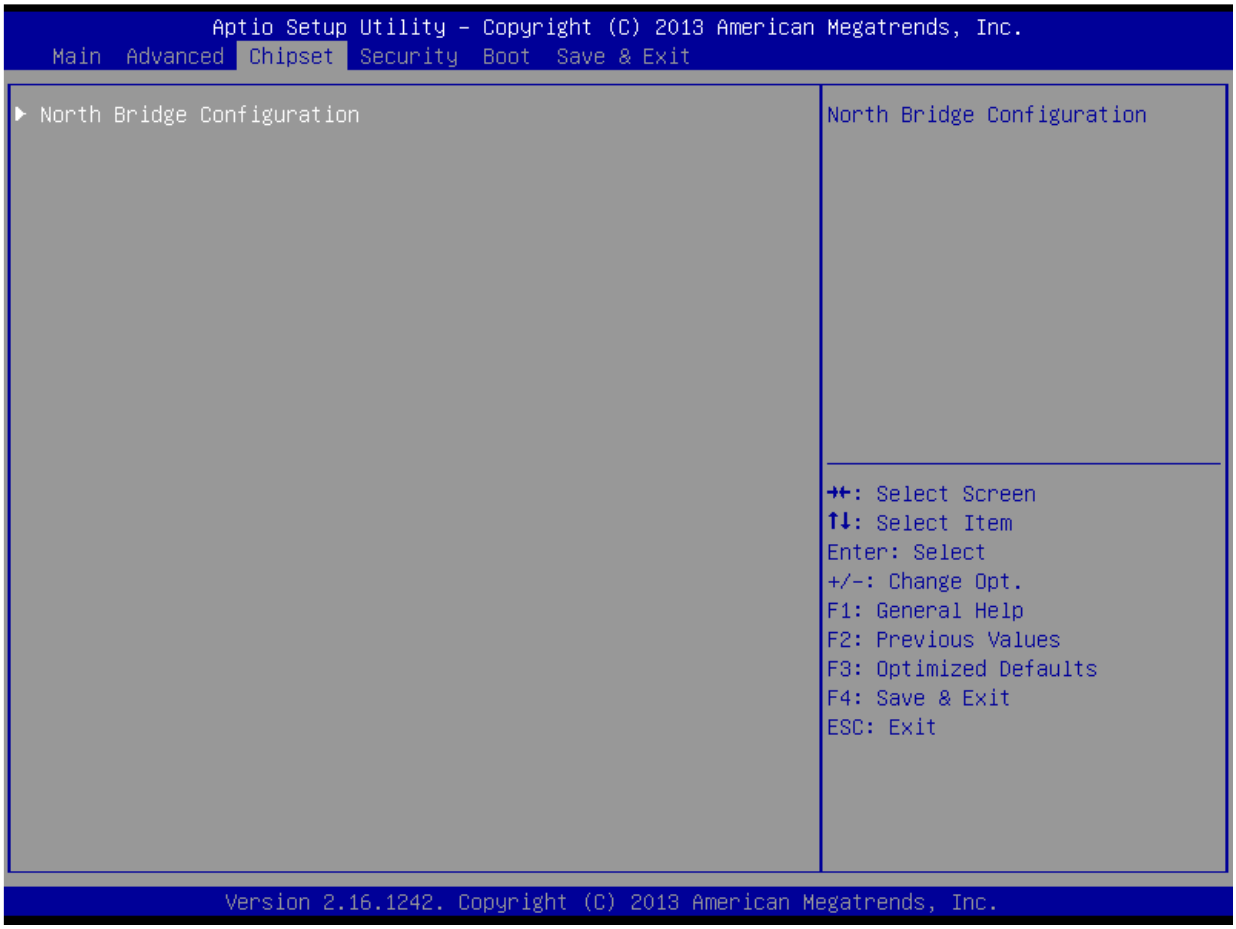
PS2 Keyboard

- Use This Device: Enable/Disable PS2 Keyboard.
- Possible: Configure the PS2 Keyboard setting (It is suggested to leave this setting unchanged as default)

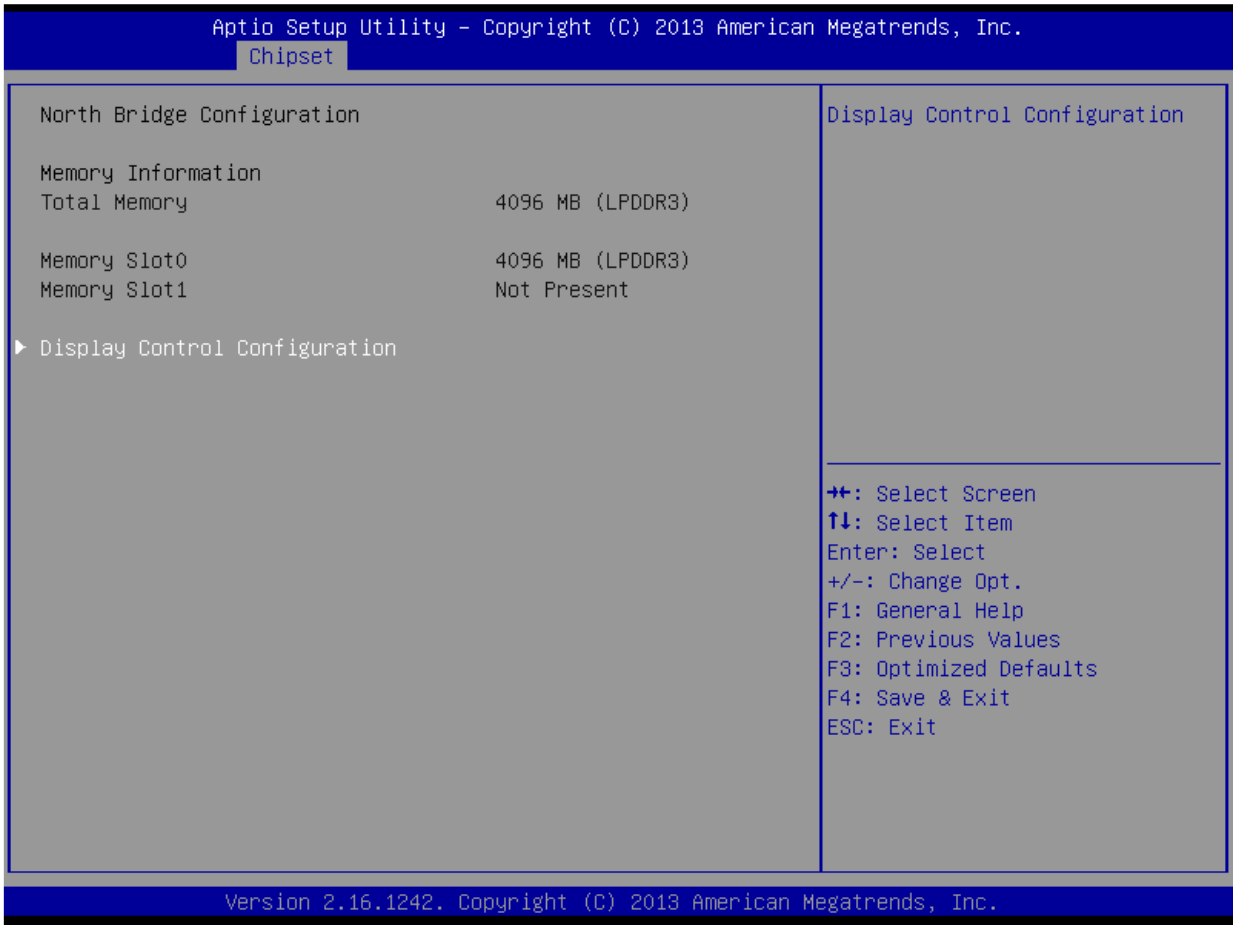
PS2 Mouse

- Use This Device: Enable/Disable PS2 Mouse.
- Possible: Configure the PS2 Mouse setting (It is suggested to leave this setting unchanged as default)

4.6 The Chipset Menu



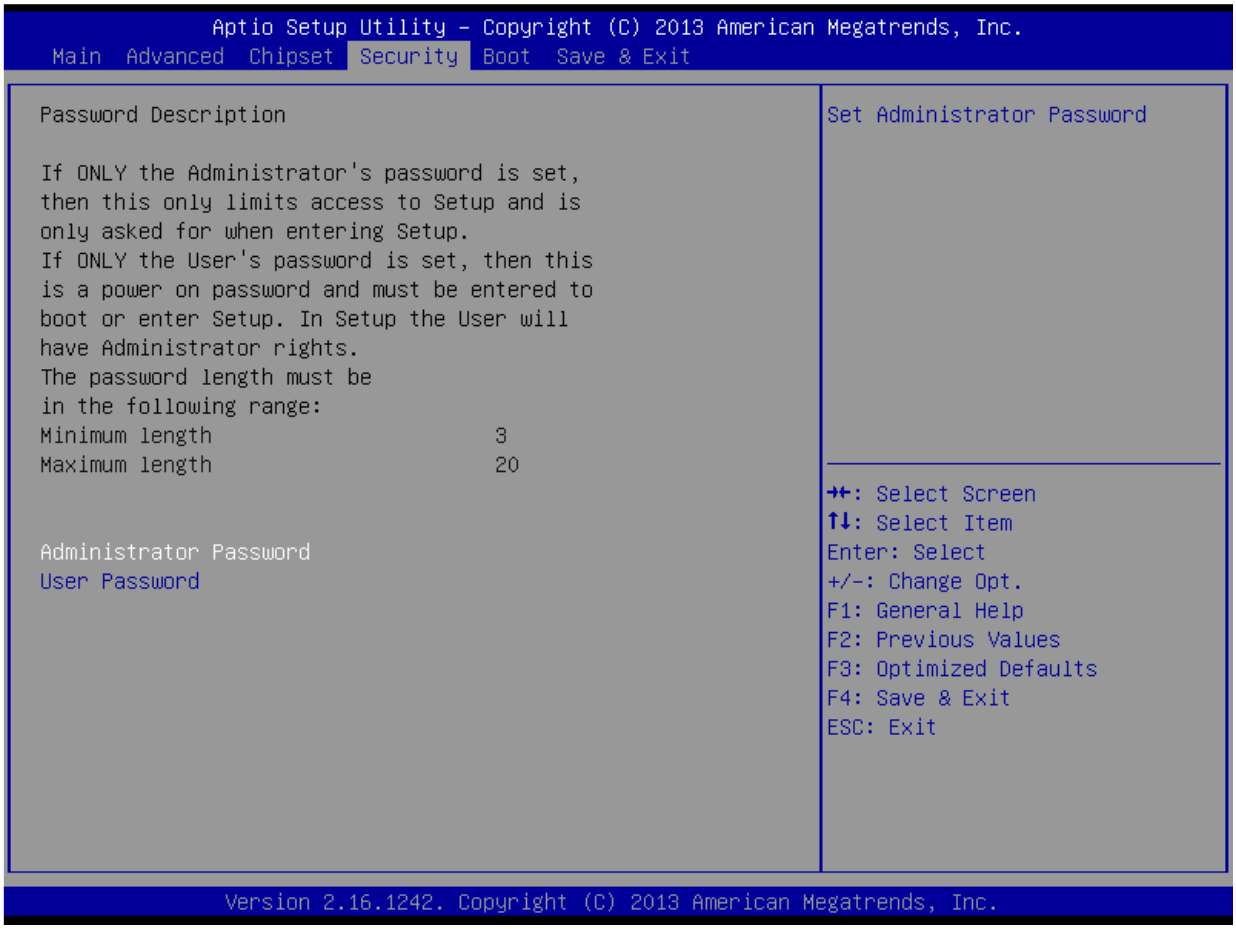
North Bridge



Display Control Configuration

- DVMT Pre-allocated: Select DVMT (Dynamic Video Memory Technology) Pre-Allocated Graphic Memory Size for internal Intel(r) graphic device. Options: 64MB, 96MB, 128MB, 160MB, 192MB, 224MB, 256MB, 288MB, 320MB, 352MB, 384MB, 416MB, 448MB, 480MB, and 512MB.
- DVMT Total Gfx Mem: Select DVMT (Dynamic Video Memory Technology) total Graphic Memory Size for internal Intel(r) graphic device. Options: 128MB, 256MB, and Max.

4.7 The Security Menu



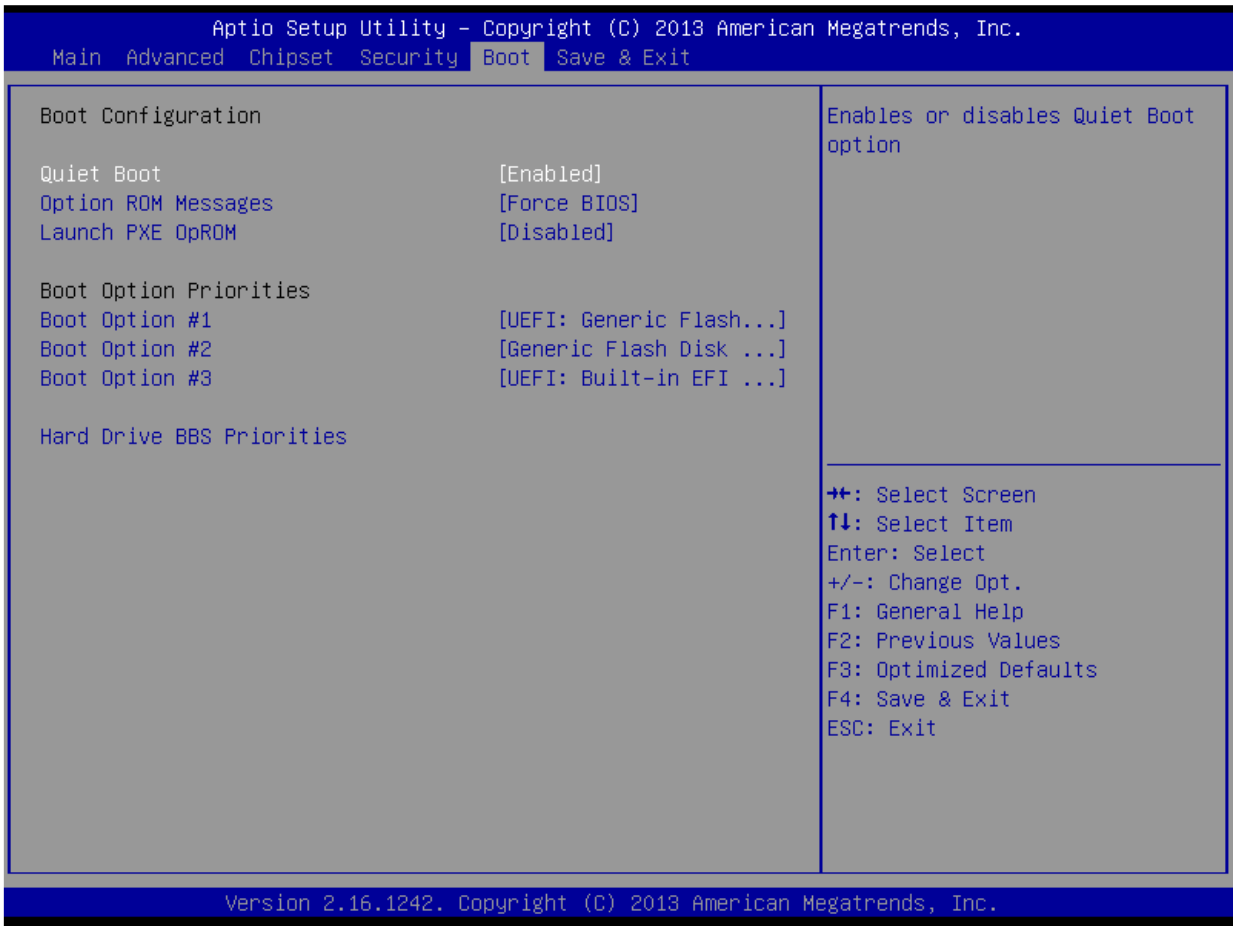
Administrator Password

Change Administrator Password

User Password

Change User Password

4.8 The Boot Menu



Quiet Boot

Enable: Display full screen boot up logo at start up.

Disable: Display POST message at start up.

OptionROM Message

- Force BIOS: Display 3rd party ROM message at start up.
- Keep Current: The 3rd party ROM message will be brought up only if the 3rd part manufacturer had set the add-on device to do so.

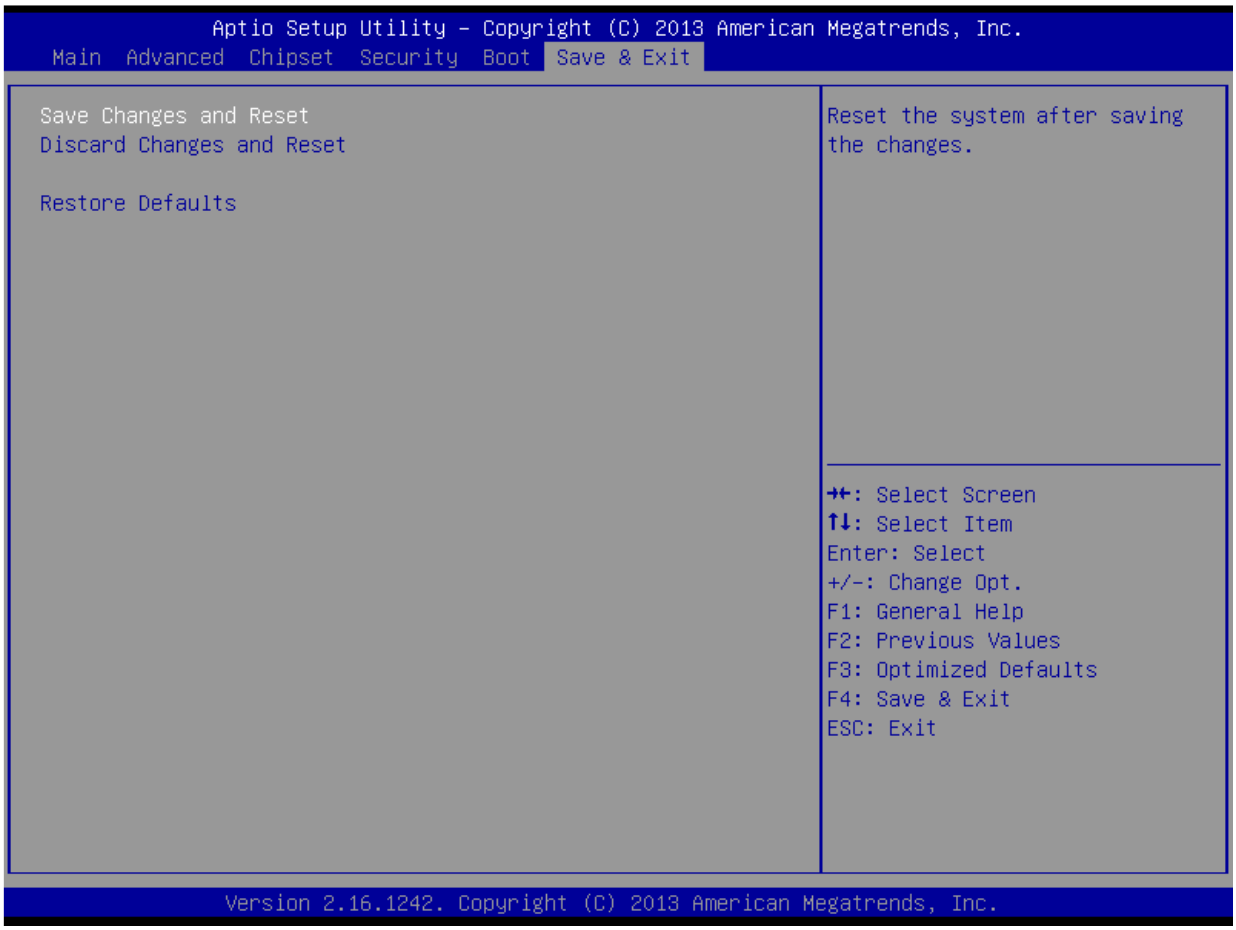
Launch PXE OpROM

Enable/Disable Legacy Boot Option

Hard Drive BBS Priorities

Select which hard drive to boot first at system start.

4.9 The Save & Exit Menu



Save Changes and Reset

To save the changes and reboot the system.

Discard Changes and Reset

To reboot the system without saving the changes.

Restore Defaults

To load optimal default values from the BIOS ROM, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK. You can also press <F9> to load optimal default values.

Chapter 5
WDT Programming Guide

Super I/O Register Table

	Default Value	Note
Index	0x2E	SIO MB PnP Mode Index Register 0x2E or 0x4E
Data	0x2F	SIO MB PnP Mode Data Register 0x2F or 0x4F

WDT Register Table

	LDN	Register	BitNum	Value	Note
Timer Counter	0x07	0x73			Time of watchdog timer (0~255) This register is byte access
Counting Unit	0x07	0x72	7	1	Select time unit. 1: second 0: minute
WDT Enable	0x07	0x72	6	1	0: Disable 1: Enable
TimeOut	0x07	0x71	0	1	1: Clear timeout status

```
//*************************************************************************************
// SuperIO relative definition (Please reference to Table 1)
#define byte SIOIndex //This parameter is represented from Note1
#define byte SIOData //This parameter is represented from Note2
#define void IOWriteByte(byte IOPort, byte Value);
#define byte IOReadByte(byte IOPort);
// Watch Dog relative definition (Please reference to Table 2)
#define byte TimerLDN //This parameter is represented from Note3
#define byte TimerReg //This parameter is represented from Note4
#define byte TimerVal // This parameter is represented from Note24
#define byte UnitLDN //This parameter is represented from Note5
#define byte UnitReg //This parameter is represented from Note6
#define byte UnitBit //This parameter is represented from Note7
#define byte UnitVal //This parameter is represented from Note8
#define byte EnableLDN //This parameter is represented from Note9
#define byte EnableReg //This parameter is represented from Note10
#define byte EnableBit //This parameter is represented from Note11
#define byte EnableVal //This parameter is represented from Note12
#define byte StatusLDN // This parameter is represented from Note13
#define byte StatusReg // This parameter is represented from Note14
#define byte StatusBit // This parameter is represented from Note15
//*************************************************************************************
```

```
*********************************************************************************
VOID Main(){
// Procedure : BestekWDTConfig
// (byte)Timer : Time of WDT timer.(0x00~0xFF)
// (boolean)Unit : Select time unit(0: second, 1: minute).
BestekWDTConfig();
// Procedure : BestekWDTEnable
    // This procudure will enable the WDT counting.
BestekWDTEnable();
}
*********************************************************************************
// Procedure : BestekWDTEnable
VOID BestekWDTEnable (){
    WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 1);
}
// Procedure : BestekWDTConfig
VOID BestekWDTConfig (){
    // Disable WDT counting
    WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 0);
    // Clear Watchdog Timeout Status
    WDTClearTimeoutStatus();
    // WDT relative parameter setting
    WDTParameterSetting();
}
VOID WDTEnableDisable(byte LDN, byte Register, byte BitNum, byte Value){
SIOBitSet(LDN, Register, BitNum, Value);
}
VOID WDTParameterSetting(){
    // Watchdog Timer counter setting
    SIOByteSet(TimerLDN, TimerReg, TimerVal);
// WDT counting unit setting
SIOBitSet(UnitLDN, UnitReg, UnitBit, UnitVal);
}
VOID WDTClearTimeoutStatus(){
SIOBitSet(StatusLDN, StatusReg, StatusBit, 1);
}
*********************************************************************************
```

```
*****************************************************************************
VOID SIOEnterMBPnPMode(){
Switch(SIOIndex){
Case 0x2E:
IOWriteByte(SIOIndex, 0x87);
IOWriteByte(SIOIndex, 0x01);
                IOWriteByte(SIOIndex, 0x55);
                IOWriteByte(SIOIndex, 0x55);
                Break;
Case 0x4E:
IOWriteByte(SIOIndex, 0x87);
IOWriteByte(SIOIndex, 0x01);
                IOWriteByte(SIOIndex, 0x55);
                IOWriteByte(SIOIndex, 0xAA);
Break;
}
}
VOID SIOExitMBPnPMode(){
IOWriteByte(SIOIndex, 0x02);
IOWriteByte(SIOData, 0x02);
}
VOID SIOSelectLDN(byte LDN){
      IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07
IOWriteByte(SIOData, LDN);
}
*****************************************************************************
```

```
*****************************************************************************
VOID SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){
        Byte TmpValue;

        SIOEnterMBPnPMode();
        SIOSelectLDN(byte LDN);
        IOWriteByte(SIOIndex, Register);
        TmpValue = IOReadByte(SIOData);
        TmpValue &= ~(1 << BitNum);
        TmpValue |= (Value << BitNum);
        IOWriteByte(SIOData, TmpValue);
        SIOExitMBPnPMode();
}

VOID SIOByteSet(byte LDN, byte Register, byte Value){
        SIOEnterMBPnPMode();
        SIOSelectLDN(LDN);
        IOWriteByte(SIOIndex, Register);
        IOWriteByte(SIOData, Value);
        SIOExitMBPnPMode();
}
*****************************************************************************
```

Chapter 6
Q & A

Q: The power switch is pressed, but nothing happens.

A: Please check the following before you call out for help:

(1) Loose AC Power Cord => Push again.
(2) Loose power cable (both 24-pin and 4-pin) => Push again.
(3) A bad or loose power switch => Reseat the power switch on the header again.

Q: I can turn on the power, but the motherboard does not boot.

A: Please check the following before you call out for help:

(1) Unevenly populated memory modules on the slots => Re-populate the memory module again.
(2) CMOS checksum error => Clear CMOS or reseat the CMOS battery again.
(3) Bad Hard Drive => Remove SATA signal cable or CompactFlash card and boot again.
(4) Bad external devices => Detach RS-232 cable, LAN cable, and USB cable, and boot again.

Q: BIOS POST prompts but gets stuck.

A: Please check the following before you call out for help:

(1) CMOS checksum error due to Clear CMOS approach => Press F1 to bring up BIOS setup menu and load optimal setting.
(2) Bad Hard Drive => Remove SATA signal cable or CompactFlash card and boot again.
(3) Bad external devices => Detach RS-232 cable, LAN cable, and USB cable, and boot again.

Q: USB Keyboard does not work at DOS mode.

A: Please check the following before you call out for help:

(1) Check if USB keyboard is well plugged on USB port.
(2) Go to BIOS setup menu, Advanced/USB Configuration, and make sure Legacy USB Support is enabled.

Q: ByPass Relay does not flip

A: Please check the following before you call out for help:

(1) Shut down the system, restart and try again.
(2) Clear CMOS and try again.

Q: Nothing can be retrieved at Console Port

A: Please check the following before you call out for help:

(1) The default Console baud rate is 115200. Please configure this baud rate at the receiving side.
(2) Make sure RS-232 port and Console Redirection function are both enabled (at BIOS).

Q: System does not boot from USB CD-ROM/DVD-ROM

A: Please check the following before you call out for help:

(1) USB CD-ROM/DVD-ROM is not plugged on USB port.
(2) Check in the BIOS that CD-ROM/DVD-ROM has not been detected.
(3) Check in the BIOS that CD-ROM/DVD-ROM has not been selected as the first boot device.
(4) Unadvised misuse: Some OS installation CD/DVDs, such as Microsoft Windows, have a few seconds waiting time for a keyboard press which triggers the system to boot from the CD-ROM/DVD-ROM. Otherwise, system would boot from internal Hard Drive.

Q: System does not boot from USB Pen Drive

A: Please check the following before you call out for help:

(1) USB Pen Drive is not well plugged on USB port.
(2) Check in the BIOS that USB Pen Drive has not been detected.
(3) Check in the BIOS that USB Pen Drive has not been selected as the first boot device.
(4) Make sure your USB Pen Drive comes with a firmware designed for booting.

Q: Windows-XP installer does not find any Hard Drive

A: Please check the following before you call out for help:

(1) Check in the BIOS that SATA Hard Drive or CompactFlash has been detected.
(2) Check in the BIOS for correct SATA mode. If AHCI mode mode is selected, please refer to Chapter 3 to load extra driver files.

Q: Windows does not boot straight forward, and keep rebooting itself or ends at a blue screen

A: Please check the following before you call out for help:

(1) Incorrect SATA mode => Change mode and boot again. In the case that you need to use a particular SATA mode which was not used for the installation, you need to reinstall your Windows.
(2) A wrong image file has been used for cloning.

Q: Windows boots, but shuts down prior to showing graphic mode

A: Please check the following before you call out for help:

(1) Power switch stays at a pressed-down position => bring it up or move it off the header.
(2) Check if system fan is not rotating to the speed that is considered normal.

Q: My Windows does not shut down. It reboots in a few seconds after power off.

A: Please check the following before you call out for help:

(1) Press and hold the power switch for 4 seconds to see if your system shuts down permanently.
(2) Clear CMOS and try again.

Q: The display resolution is not right

A: Please change the resolution as follows (for Windows)

(1) Window-XP: Right-Click on the desktop and select Property for the configuration panel.
(2) Windows-7: Right-Click on the desktop and select Resolution for the configuration panel.

Q: I cannot connect my network with internet

A: Please check the following before you call out for help:

(1) Please consult your system administrator to confirm if a static network environment with security port designation has been deployed. Otherwise, mostly, reassuring to have Windows acquiring IP address automatically would be suggested and should resolve the situation. Please be referred to your system administrator for any further network configuration setting. Window-XP: Right-Click on the desktop and select Property for the configuration panel.
(2) Please double check if ByPass function has been enabled.

Q: My Windows does not see more than 4GB RAM

A: A 32-bit operating system captures only 4GB memory.

Q: 4GB RAM is installed, but Windows only sees around 3.0GB capacity.

A: Some portion of the system memory will be allocated for system devices, especially the onboard video device.

Q: Some onboard devices are not detected in Windows

A: Please check the following before you call out for help:

(1) Please go to Device Manager to rescan these devices if necessary.
(2) If any of the LAN port is not detected (4 of them should be all detected), please go to BIOS setup menu, Advanced/PCIE Ports Configuration, to see if any of them has been disabled.

Q: RS-232 Ports do not work

A: Please check the following before you call out for help:

(1) Please go to Device Manager to see if COM1/COM2 are correctly prompted.
(2) Please go to BIOS setup menu, Advanced/Super IO Configuration, to make sure RS-232 port(s) has(have) been enabled.
(3) Please double check your RS-232 cable for correct pin definition.