Reference Manual - English

FUJITSU

# D3219 BIOS Setup Utility for FUJITSU Server PRIMERGY TX1310 M1

Reference Manual

Edition April 2014

## Comments… Suggestions… Corrections…

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Feel free to send us your comments by e-mail to manuals@ts.fujitsu.com.

## Certified documentation according to DIN EN ISO 9001:2008

To ensure a consistently high quality standard and user-friendliness, this documentation was created to meet the regulations of a quality management system which complies with the requirements of the standard DIN EN ISO 9001:2008.

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## Before reading this manual

### For your safety

This manual contains important information for safely and correctly using this product.

Carefully read the manual before using this product. Pay particular attention to the accompanying manual "Safety Notes and Regulations" and ensure these safety notes are understood before using the product. Keep this manual and the manual "Safety Notes and Regulations" in a safe place for easy reference while using this product.

### Radio interference

This product is a "Class A" ITE (Information Technology Equipment). In a domestic environment this product may cause radio interference, in which case the user may be required to take appropriate measures. VCCI-A

### Aluminum electrolytic capacitors

The aluminum electrolytic capacitors used in the product's printed circuit board assemblies and in the mouse and keyboard are limited-life components. Use of these components beyond their operating life may result in electrolyte leakage or depletion, potentially causing emission of foul odor or smoke.

As a guideline, in a normal office environment (25°C) operating life is not expected to be reached within the maintenance support period (5 years). However, operating life may be reached more quickly if, for example, the product is used in a hot environment. The customer shall bear the cost of replacing replaceable components which have exceeded their operating life. Note that these are only guidelines, and do not constitute a guarantee of trouble-free operation during the maintenance support period.

### High safety use

This product has been designed and manufactured to be used in commercial and/or industrial areas as a server.

When used as visual display workplace, it must not be placed in the direct field of view to avoid incommoding reflections (applies only to TX server systems).

The device has not been designed or manufactured for uses which demand an extremely high level of safety and carry a direct and serious risk of life or body if such safety cannot be assured.

These uses include control of nuclear reactions in nuclear power plants, automatic airplane flight control, air traffic control, traffic control in mass transport systems, medical devices for life support, and missile guidance control in weapons systems (hereafter, "high safety use"). Customers should not use this product for high safety use unless measures are in place for ensuring the level of safety demanded of such use. Please consult the sales staff of Fujitsu if intending to use this product for high safety use.

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This product may be affected by a momentary voltage drop in the power supply caused by lightning. To prevent a momentary voltage drop, use of an AC uninterruptible power supply is recommended.

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**Harmonic Current Standards**

This product conforms to harmonic current standard JIS C 61000-3-2.

**Only for the Japanese market:**
**About SATA hard disk drives**

The SATA version of this server supports hard disk drives with SATA / BC-SATA storage interfaces. Please note that the usage and operation conditions differ depending on the type of hard disk drive used.

Please refer to the following internet address for further information on the usage and operation conditions of each available type of hard disk drive:

*http://jp.fujitsu.com/platform/server/primergy/harddisk/*

# Content

# 1 Introduction

BIOS setup provides settings for system functions and the hardware configuration for your system. Any changes you make take effect as soon as you save the settings and quit BIOS setup.

The individual menus in BIOS setup provide settings for the following areas:

- *Main* – System functions
- *Advanced* – Advanced system configuration
- *Security* – Security functions
- *Power* – Power management functions
- *Event Logs* – System Events Logs
- *Boot* – Configuration of the start-up sequence
- *Save & Exit* – Save and quit

The setting options depend on the hardware configuration of your system.

Menus or certain setting options may therefore not be available in your system's BIOS setup, or the menus may be in a different place, depending on the BIOS revision.

### Notational conventions

The meanings of fonts and symbols used in this manual are as follows:

| | |
|---|---|
| *Italics* | Commands, menu items, path names, and file names |
| `fixed font` | System output |
| **`semi-bold fixed font`** | Text you have to enter via the keyboard |
| "Quotation marks" | Names of chapters and terms that are being emphasized |
| ► | Activities that must be performed in the shown order |
| Abc | Key on the keyboard |
|  | Additional information, notes and tips |
|  **CAUTION!** | References, during their neglect your health, the operability of your system, or the security of your data is endangered |

# 2 Navigating the BIOS setup

## 2.1 Open the BIOS setup

- ► Start the system and wait until the screen output appears.
- ► Press the F2 function key.
- ► If a password is assigned, enter this password and confirm with the Enter key.

  The BIOS setup *Main* menu will be displayed on the screen.
- ► To show system specific information select *System Information* and press the Enter key.

  The BIOS release information will be displayed:

  – BIOS release (e.g. Version R1.3.0)
  The number of the system board (e.g. D3219-A1x) you will find under *Board*.

  – Press the F1 function key.
  The General Help information will be displayed.

When the *Main* menu does not appear:

– If the *Main* menu does not appear by pressing the F2 function key, press the Ctrl + Alt + Delete keys at the same time to restart the system, then start up BIOS Setup Utility.

## 2.2 Open the Boot menu immediately

Use this function if you do not want to start your system from the first drive that is set in the *Boot* menu under the *Boot Option Priorities* menu item.

- ► Start the system and wait until the screen output appears.
- ► Press the F12 function key.
  The *Boot* menu will be displayed as a popup window.
- ► Use the ↑ or ↓ cursor keys to select the drive from which you want to start the operating system, and confirm your selection by pressing the Enter key.
  The selection options are the same as in the *Boot* menu.

The selected option applies to the current system start. The next time you start the system, the settings in the *Boot* menu will apply again.

► To start the BIOS setup, select the *Enter Setup* parameter and confirm your selection with the Enter key.

## 2.3 Screen design

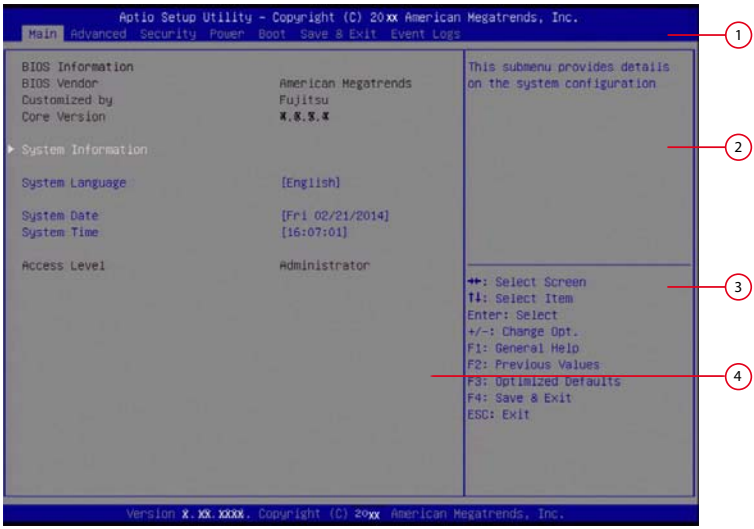


Figure 1: Example for a BIOS setup screen

The BIOS setup screen is divided into the following areas:

1 Menu bar
The menu bar is used to select the different BIOS setup menus.

2 Help area
Brief information is displayed in the help area.

3 Operations area
The operations area lists the keys available for use with BIOS setup.

4 Working area
In the working area the parameters of the selected menu are displayed with their current values. You can modify the parameter values according to your requirements (if the appropriate fields are not greyed out).

► Indicates parameters containing submenus

## 2.4 Exiting the BIOS setup

► In the *Save & Exit* menu select the required parameter and press the Enter key.

# 3 Main menu

The following parameters can be set in this menu. Some of them are only available under special preconditions.

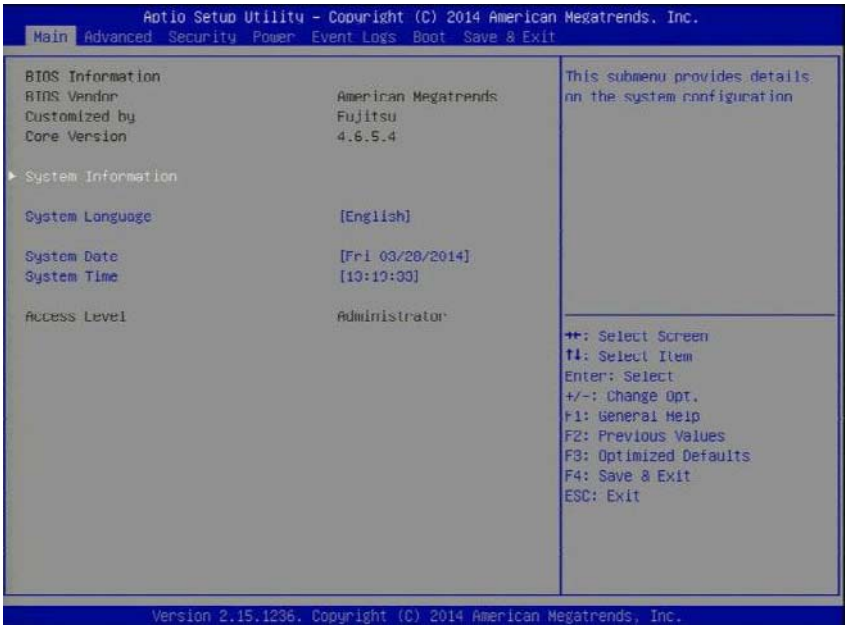


Figure 2: Example for the "Main" menu

*System Information*

The *System Information* window displays an overview about the system configuration. This includes CPU, memory and LAN configuration data.

*System Language*

Defines the language used in BIOS setup utility.

*System Date* / *System Time*

Displays the current date/time set on the system.

The system time has the format *HH*:*MM*:*SS*, and the system date has the format *DOW (day of week)*/*MM*/*DD*/*YYYY*.

To change the current time/date settings enter the new time/date in the *System Time*/*System Date* fields respectively. Use the [->] or the [<-] key to move the cursor within the *System Time* and the *System Date* fields.

If the system time and date are lost after you switch the system off and back on again, the lithium battery is empty and needs to be replaced.

Refer to the "FUJITSU Server PRIMERGY TX1310 M1 Server Upgrade and Maintenance Manual" for information on how to replace the lithium battery.

*Access Level*

Displays the current *Access Level* in BIOS setup utility.

*Administrator*

In case the system is not password protected the *Access Level* is Administrator.

*User*

If the User Password was set and User password was entered the user will have *User* level.

If Administrator and User password are assigned the *Access Level* depends on the password used for entering BIOS setup utility.

# 4 Advanced menu

**CAUTION!**

Only change the default settings if required for a special purpose. Incorrect settings in this menu can result in malfunctions on your computer!

Some settings depend on system configuration!

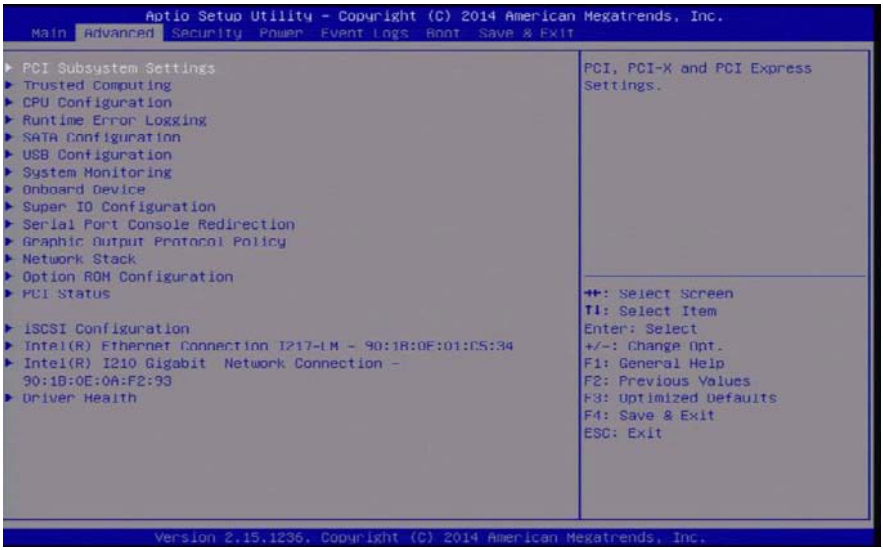


Figure 3: Example for the "Advanced" menu

*PCI Subsystem Settings*

Calls a submenu used to set up the PCI slots and PCI components on the system board (see "PCI Subsystem Settings" on page 18).

*Trusted Computing*

Calls a submenu used to make additional system settings (see "Trusted Computing" on page 20).

*CPU Configuration*

Calls a submenu used to make additional processor settings (see "CPU Configuration" on page 21).

The adjustment options available in this submenu depend on the processor being used.

*Runtime Error Logging*

Calls a submenu used to configure the Runtime Error Logging (see "Runtime Error Logging" on page 26).

*SATA Configuration*

Calls a submenu containing the settings for the corresponding SATA controller (see "SATA Configuration" on page 27).

*USB Configuration*

Calls a submenu used to set up the USB components on the system board (see "USB Configuration" on page 28).

*System Monitoring*

Calls a submenu used to monitor the system (see "System Monitoring" on page 30).

*Onboard Devices*

Calls a submenu used to configure Onboard Devices. Some of them are only available under special preconditions (see "Onboard Device" on page 31).

*Super IO Configuration*

Calls a submenu used to configure System Super IO Chip parameters (see "Super IO Configuration" on page 32).

*Serial Port Console Redirection*

Calls a submenu used to view and set parameters for the terminal communication via Serial Port Console Redirection. Some of them are only available under special preconditions (see "Serial Port Console Redirection" on page 33).

*Graphic Output Protocol Policy*

This submenu is only displayed when the system board is in UEFI mode (see "Graphic Output Protocol Policy" on page 36).

*Network Stack*

Calls a submenu used to set up the UEFI network stack (see "Network Stack" on page 36).

*Option ROM Configuration*

Calls a submenu to enable or disable the legacy Option ROMs of the PCI Express expansion cards (see "Option ROM Configuration" on page 37).

*PCI Status*

Calls a submenu used to watch the status of the PCI Express expansion cards (see "PCI Status" on page 38).

*iSCSI Configuration*

Calls a submenu used to configure a UEFI driver for a LAN controller (see "iSCSI Configuration" on page 38).

*Driver Health*

Calls a submenu used to display the health states of the UEFI drivers supporting the Driver Health interface (see "Driver Health" on page 39).

# 4.1 PCI Subsystem Settings

The following parameters can be set in this menu. Some of them are only available under special preconditions.

*ASPM Support*

Active State Power Management (ASPM) is used to power-manage the PCI Express links, thus consuming less power. Even if ASPM is generally enabled by this selection, it will only be enabled for a specific link if the appropriate PCI Express expansion card or onboard controller supports it also.

*Disabled*

ASPM is disabled. Power consumption for PCI Express links is not reduced. Best compatibility.

*Auto*

Tries to configure maximum possible energy saving. Low power mode for PCI Express links is set to L0s (one direction) or L1 (bidirectional).

*Limit to L0s*

Low power mode for PCI Express links is set to L0s (one direction). Tradeoff between compatibility and energy saving.

The latency for PCI Express devices may increase if ASPM is not disabled. Several expansion cards do not support this feature correctly, which may lead to an undefined system behavior.

*Above 4G Decoding*

Specifies if memory resources above the 4 GB address boundary can be assigned to PCI devices. The selection depends on the operating system and the populated adapter cards.

*Disabled*

Only memory resources below the 4 GB address boundary will be assigned to the PCI devices. This selection is mandatory when using a 32-bit operating system, but is also supported on 64-bit operating systems.

*Enabled*

Memory resources above the 4 GB address boundary may be assigned to PCI devices, which are capable of 64-bit address decoding. This selection is supported only on 64-bit operating systems. It may be required if the populated PCI Express devices

(e.g. coprocessors adapter cards) are claiming a huge amount of memory resources, which no longer fits into the address space below 4 GB.

The PCI address decoding of 32-bit operating systems is limited by the 4 GB address boundary, even if the available PCI devices would also support 64-bit address decoding.

*DMI Control*

Selects the speed of the bus connection between CPU and chipset. Lower speed means less power consumption but also lower system performance.

*GEN1*

The bus connection between CPU and chipset is configured to run at 2.5GT/s.

*GEN2*

The bus connection between CPU and chipset is configured to run at 5.0GT/s.

*Consistent Device Naming*

Specifies if the device names printed on the chassis or in system setup (e.g. “Slot 1”) are also reported to the operating system. The operating system can use this device names for user communication. This may help to avoid cabling error and to increase reliability.

*Disabled*

Device names are not reported to the operating system.

*Enabled*

Device names are reported to the operating system.

## 4.2 Trusted Computing

Opens the submenu used to activate TPM and adjust TPM settings.

If this setup menu is available, the system board includes a security and encryption chip (TPM – Trusted Platform Module) that complies with TCG Specification 1.2. This chip allows security-relevant data (passwords etc.) to be stored securely. The use of TPM is standardised and is specified by the Trusted Computing Group (TCG).

*TPM Support*

Specifies whether the TPM (Trusted Platform Module) hardware is available.

If the TPM is disabled, the system behaves like any other system without TPM hardware.

*Disabled*

Trusted Platform Module is not available.

*Enabled*

Trusted Platform Module is available.

*TPM State*

Specifies if TPM (Trusted Platform Module) is useable by OS.

*Disabled*

Trusted Platform Module is not useable.

*Enabled*

Trusted Platform Module is useable.

*Pending TPM operation*

Schedules a TPM operation to be executed during next boot.

*None*

No TPM operation will be executed.

*Enable Take Ownership*

Allows the OS to take ownership of the TPM.

*Disable Take Ownership*

Disallows the OS to take ownership of the TPM.

*TPM Clear*

TPM will be reset to factory default. All keys within the TPM will be cleared.

## 4.3 CPU Configuration

The following parameters can be set in this menu. Some of them are only available under special preconditions.

*Socket 0 CPU Information*

Opens a submenu to display *Socket 0 CPU* information.

*Hyper-Threading*

Hyper-threading technology allows a single physical processor core to appear as several logical processors. With this technology the operating system can better utilize the internal processor resources, which in turn leads to increased performance. The advantages of this technology can only be used by an operating system which supports ACPI. This setting has no effect on operating systems which do not support ACPI.

*Disabled*

An ACPI operating system can only use the first logical processor of a processor core. This setting should only be used if hyper-threading technology has not been correctly implemented in the ACPI operating system.

*Enabled*

An ACPI operating system can use all logical processors within a physical processor.

*Active Processor Cores*

For processors that contain multiple processor cores, the number of active processor cores can be limited. Inactive processor cores will not be used and hidden from the operating system.

*All*

All available processor cores are active and can be used.

*1...n*

Only the selected number of processor cores are active. The remaining processor cores are deactivated.

This selection may solve problems with specific software packages or system licenses.

*Limit CPUID Maximum*

Defines the number of CPUID functions which can be called by the processor. Some operating systems cannot process new CPUID commands which support more than three functions. This parameter should be enabled for these operating systems.

*Disabled*

All CPUID functions are supported.

*Enabled*

For reasons of compatibility with the operating system, only a reduced number of CPUID functions are supported by the processor.

*Execute Disable Bit*

Defines the protection for executable memory areas (anti-virus protection). The function is only effective if it is also supported by the operating system. The eXecute Disable bit (XD bit) is also known as NX (No eXecute) bit.

*Disabled*

Prevents the operating system from being able to switch on the function *Execute Disable*.

*Enabled*

Enables the operating system to switch on the function *Execute Disable*.

*Hardware Prefetcher*

If activated memory content, that is likely required, is preloaded automatically to the cache when the memory bus is inactive. Fetching content form cache instead of memory reduces the latency especially for applications with linear data access.

With this parameter you can change the performance settings for non-standard applications. It is recommended that you should adhere to the default settings for standard applications.

*Disabled*

Deactivates the hardware prefetcher of the CPU.

*Enabled*

Activates the hardware prefetcher of the CPU.

*Adjacent Cache Line Prefetch*

Available if the processor offers a mechanism for loading an additional adjacent 64 Byte cache line during every cache request of the processor. This will increase cache hit ratio for applications with high spatial locality.

With this parameter you can change the performance settings for non-standard applications. It is recommended that you should adhere to the default settings for standard applications.

*Disabled*

The processor loads the requested cache line.

*Enabled*

The processor loads the requested cache line and the adjacent cache line.

*DCU Streamer Prefetcher*

If activated data content, that is likely required, is preloaded automatically to the L1 data cache when the memory bus is inactive. Fetching content from cache instead of memory reduces the latency especially for applications with linear data access.

With this parameter you can change the performance settings for non-standard applications. It is recommended that you should adhere to the default settings for standard applications.

*Disabled*

Deactivates the *DCU Streamer Prefetcher* of the CPU.

*Enabled*

Activates the *DCU Streamer Prefetcher* of the CPU.

*Intel Virtualization Technology*

Supports the virtualization of platform hardware and several software environments, based on VMX (Virtual Machine Extensions) to support the use of several software environments using virtual computers. Virtualization technology extends the processor support for virtualization purposes with the 16 Bit and 32 Bit protected modes and with the EM64T (Intel® Extended Memory 64 Technology) mode.

*Disabled*

A VMM (Virtual Machine Monitor) cannot use the additional hardware features.

*Enabled*

A VMM can use the additional hardware features.

*VT-d*

VT-d (Virtualization Technology for Directed I/O) provides hardware support for sharing I/O devices between multiple virtual machines. VMMs (Virtual Machine Monitors) can use VT-d for managing multiple virtual machines accessing the same physical I/O device.

*Disabled*

VT-d is disabled and not available for VMMs.

*Enabled*

VT-d for VMMs is enabled.

*Enhanced SpeedStep*

Defines the processor voltage and frequency. EIST (Enhanced Intel SpeedStep® Technology) is an energy saving function.

The processor voltage is adapted to the respective system requirements. A reduction in the clock frequency causes less power to be required by the system.

*Disabled*

Enhanced SpeedStep functionality is disabled.

*Enabled*

Enhanced SpeedStep functionality is enabled.

*Turbo Mode*

Allows the processor to run faster than the marked frequency if the OS requests the highest performance state (P0). This feature is also known as Intel® Turbo Boost Technology.

*Disabled*

*Turbo Mode* is disabled.

*Enabled*

*Turbo Mode* is enabled.

*CPU C3 Report*

Exposes processor C-3 state as ACPI C-2 / C-3 state to OS Power Management (OSPM) if supported by the respective Legacy OS in use.

*Disabled*

CPU C3 is not exposed as ACPI C-2 state to OSPM.

*Enabled*

CPU C3 is exposed as ACPI C-2 state to OSPM.

*CPU C6 Report*

Passes processor C6 state as ACPI C-3 state to OSPM to enable Processor Deep Power Down Technology.

*Disabled*

CPU C6 is not exposed as ACPI C-3 state to OSPM.

*Enabled*

CPU C6 is exposed as ACPI C-3 state to OSPM.

*CPU C7 Report*

Passes processor C7 state as ACPI C-3 state to OSPM to enable Processor Deep Power Down Technology.

*Disabled*

CPU C7 is not exposed as ACPI C-3 state to OSPM.

*Enabled*

CPU C7 is exposed as ACPI C-3 state to OSPM.

## 4.4 Runtime Error Logging

*PCI Error Logging*

Specifies whether PCI errors will be entered in the SMBIOS event log.

To be able to recognise PCI errors, the creation of PERR# (PCI parity errors) or SERR# (PCI system errors) must be enabled in advance in the menu PCI Subsystem Settings.

*Disabled*

No PCI errors will be entered in the SMBIOS event log.

*Enabled*

PCI errors will be entered in the SMBIOS event log.

# 4.5 SATA Configuration

The following parameters can be set in this menu. Some of them are only available under special preconditions.

*SATA Mode*

Defines in which mode the SATA ports operate.

*IDE Mode*

SATA interface is in IDE Mode.

*AHCI Mode*

SATA interface is in AHCI Mode.

*RAID Mode*

SATA interface is in RAID Mode.

*Aggressive LPM Support*

Allows in AHCI Mode to enable Aggressive Link Power Management (ALPM) to save energy.

*Disabled*

ALPM is deactivated.

*Enabled*

ALPM is activated.

# 4.6 USB Configuration

*USB Devices*

Displays number of available USB devices, USB keyboards, USB Mouse and USB Hubs.

*xHCI Mode*

Specifies in which mode USB devices can be operated at the blue marked USB 3.0 connectors.

If you use an operating system which does not support USB 3.0 (e.g Windows XP) it is recommended to choose the Disabled state for xHCI Mode.

*Smart Auto*

Depending on whether operating system used supports USB 3.0 (xHCI Mode) or USB 2.0 (EHCI Mode) the following system boots uses automatically the preset mode as long as the system has not been without current. For the setting Smart Auto it is recommended to set the menu item *Low Power Soft Off* to Disabled.

*Auto*

USB 3.0 devices work during the BIOS POST in USB 2.0 mode. Operating systems with USB 3.0 support will switch to USB 3.0 mode during the operating system boot.

*Enabled*

During the BIOS POST all USB 3.0 devices will be operated in USB 3.0 mode. For operating systems without USB 3.0 support these devices will not be available to the operating system.

*Disabled*

USB 3.0 devices are functioning during BIOS POST as well as for the operating system in USB 2.0 mode.

*Legacy USB Support*

Specifies whether Legacy USB Support is available. This function has to be enabled or set to Auto if it may be necessary to boot the operating system from a USB device.

*Disabled*

Legacy USB Support is not available. A USB keyboard or USB mouse can only be used if supported by the operating system. The operating system cannot be booted from a USB device

*Enabled*

Legacy USB Support is available. The USB keyboard or USB mouse can also be used with operating systems that do not support USB. The operating system can be booted from a USB device.

*Auto*

Legacy USB Support will be disabled if no USB devices are connected.

The Legacy USB Support function should be disabled if the operating system supports USB and you do not want to boot the operating system from USB devices.

*Onboard USB Controllers*

Allows the USB controllers on the system board to be enabled or disabled. If the onboard USB controllers are disabled, all USB devices connected are not available. Besides locally connected keyboard, mouse and mass storage, also keyboard, mouse and mass storage via iRMC and internally connected USB devices do not work.

*Enabled*

Onboard USB controllers are enabled and work as configured.

*Disabled*

Onboard USB controllers are disabled.

*Mass Storage Device(s)*

Allows the user to force a specific device emulation. If *Auto* is selected the devices are emulated according to their media format. Optical drives are emulated as *CD-ROM*, drives without media will be emulated according to the drive type.

*Auto*

Emulation is selected according to the USB device.

*Floppy*

Forces USB Floppy emulation.

*Hard Disk*

Forces USB Hard Disk emulation.

*CD-ROM*

Forces USB CD-ROM emulation.

### 4.6.1 USB Port Security

Opens the submenu to configure availability of USB Ports.

*USB Port Control*

Configures the usage of the USB ports. Any disabled USB ports are neither available during POST nor are they available under the operating system.

*Enable all ports*

All USB ports are enabled.

*Enable front and internal ports*

All front and internal USB ports are enabled.

*Enable rear and internal ports*

All rear and internal USB ports are enabled.

*Enable internal ports only*

Only the internal USB ports are enabled.

## 4.7 System Monitoring

*Fan Control*

Controls the speed of the fans. Depending on the system configuration and applications used, you can change the preset mode. If the system is fully configured with all available expansions/upgrades silent mode is not recommended.

*Enhanced*

The fan speed is automatically increased to maximize CPU performance.

*Auto*

The fan speed is adjusted automatically. Tradeoff between system temperature and CPU performance.

*Disabled*

All fans are set to full speed.

## 4.8 Onboard Device

Opens the submenu to configure Onboard Devices. Some of them are only available under special preconditions.

*LAN n Controller*

Specifies if the respective onboard LAN controller is operational. If multiple onboard LAN controllers are present, each can be enabled/disabled individually.

*Disabled*

LAN controller is disabled.

*Enabled*

LAN controller is enabled.

*LAN n Oprom*

LAN controllers can be used as boot devices if a suitable Option ROM is started during BIOS POST. This parameter specifies whether an Option ROM should be started and if so which type of Option ROM.

*Disabled*

Do not start any Option ROM.

*PXE*

Starts the PXE Option ROM to provide the functionality for booting via PXE.

*iSCSI*

Starts the iSCSI Option ROM to provide the functionality for booting via iSCSI.

# 4.9 Super IO Configuration

Displays System Super IO Chip Parameters.

*Super IO Chip*
Displays information about Super IO Chip.

## 4.9.1 Serial Port 1 Configuration

Set Parameters of Serial Port 0 (COMA).

*Serial Port*
Specifies whether the serial port is available.

*Disabled*
The serial port is not available.

*Enabled*
The serial port is available.

*Device Settings*
Displays the base I/O address and the interrupt used to access the corresponding serial port, e.g. IO=3F8h; IRQ=4.

*Change Settings*
Selects the base I/O address and the interrupt used to access the corresponding serial port.

*Auto*
[*IO=3F8h; IRQ=4;*]
[*IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;*]
[*IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;*]
[*IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;*]
[*IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;*]

The serial port uses the selected address and interrupt from the list above. In case of a resource conflict the setting might be changed to 'Auto'.

## 4.10 Serial Port Console Redirection

*Console Redirection*

Enables or disables the Console Redirection.

*Disabled*

Console Redirection is disabled.

*Enabled*

Console Redirection is enabled.

*Terminal Type*

Specifies the terminal type.

Allowed values are:
*VT100, VT100+, VT-UTF8, ANSI*

The assigned Terminal Type is used to transfer the data to the host.

*Bits per Second*

Specifies the transfer rate for communication with the host.

Allowed values are:
*9600, 19200, 38400, 57600, 115200*

The data is transferred to the host at the rate set.

*Data Bits*

Specifies the number of data bits used for communication with the host.

*7* 7 Data bits are used for communication.

*8* 8 Data bits are used for communication.

*Parity*

Specifies parity bit usage for communication with the host. Parity bits are used for error detection.

*None*

No parity bit is used. No error detection available.

*Even*

Parity bit is 0 if the number of 1s in the data bits is even.

*Odd*

Parity bit is 0 if the number of 1s in the data bits is odd.

*Mark*
Parity bit is always 1.

*Space*
Parity bit is always 0.

*Stop Bits*
Specifies the number of Stop Bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

*1* One Stop Bit is used.

*2* Two Stop Bits are used.

*Flow Control*
This setting determines how the transfer via the interface is controlled.

*None* The interface is operated without transfer control.

*Hardware CTS/RTS*
The transfer control is performed by the hardware. This mode must also be supported by the cable.

*VT-UTF8 Combo Key Support*
VT-UTF8 is the preferred terminal type for out-of-band management.

*Disabled*
Disables *VT-UTF8 Combination Key Support* for ANSI/VT100 terminals.

*Enabled*
Enables *VT-UTF8 Combination Key Support* for ANSI/VT100 terminals.

*Recorder Mode*
Specifies if only text will be sent. This is to capture terminal data.

*Disabled*
*Recorder Mode* is not available.

*Enabled*
*Recorder Mode* is available.

*Resolution 100x31*
Specifies if extended terminal resolution is available.

*Disabled*
Extended terminal resolution is not available.

*Enabled*
Extended terminal resolution is available.

*Legacy OS Redirection Resolution*
Specifies the numbers of rows and columns used for legacy OS Redirection.

*80x24*
Resolution of 80x24 is used.

*80x25*
Resolution of 80x25 is used.

*Putty KeyPad*
Selects FunctionKey and KeyPad on Putty.

*VT100, LINUX, XTERMR6, SCO, ESCN, VT400*
For details please refer to Putty application itself.

*Redirection after BIOS POST*
This setting specifies if BootLoader is selected when Legacy console redirection is disabled before booting to Legacy OS. Default value is Always Enable which means Legacy console Redirection is enabled for Legacy OS.

*Always Enable*
Legacy console Redirection is enabled for Legacy OS.

*BootLoader*
Legacy console Redirection is disabled for Legacy OS.

## 4.11 Graphic Output Protocol Policy

The system board is running in UEFI mode (*Boot - CSM Parameter - Launch CSM* is set to *Disabled*). The UEFI driver of the graphic device provides controls via Graphic Output Protocol (GOP) interface.

*UEFI GOP driver name*

The UEFI driver name of the currently used graphic output protocol (GOP) is displayed.

*Output Select*

The UEFI GOP driver provides items the graphic output can be directed to.

*BIST Enable*

Enables BIST (Built-In-Self-Test) for graphic controller(s) in general.

BIST support is optional.

*Disabled*

BIST is disabled.

*Enabled*

BIST is enabled.

## 4.12 Network Stack

*Network Stack*

Configures whether the UEFI Network Stack is available for network access under UEFI. E.g.: is the UEFI Network Stack not available there is no UEFI installation possible via PXE.

*Disabled*

The UEFI Network Stack is not available.

*Enabled*

The UEFI Network Stack is available.

*Ipv4 PXE Support*

Specifies whether the PXE UEFI Boot via Ipv4 for installation of operating systems is available in UEFI mode.

*Disabled*

PXE UEFI Boot via Ipv4 is not available.

*Enabled*

PXE UEFI Boot via Ipv4 is available.

*Ipv6 PXE Support*

Specifies whether the PXE UEFI Boot via Ipv6 for installation of operating systems is available in UEFI mode.

*Disabled*

PXE UEFI Boot via Ipv6 is not available.

*Enabled*

PXE UEFI Boot via Ipv6 is available.

## 4.13 Option ROM Configuration

*Launch Slot n OpROM*

Controls if legacy Option ROMs of expansion cards mounted in this slot shall be started.

*Disabled*

Does not start Option ROMs of expansion cards in this slot.

*Enabled*

Starts Option ROMs of expansion cards in this slot.

## 4.14 PCI Status

This submenu displays the current status of the expansion card in the slots.

*PCI Slot n*
Displays the current status of the expansion card in this slot.

*Failed*
An error was detected for this slot. The expansion card in this slot may have a problem.

*Enabled*
No errors were reported for this slot. The expansion card in this slot can be used without restriction.

*Empty*
There is no expansion card in this slot.

## 4.15 iSCSI Configuration

If a UEFI driver for a LAN controller (onboard LAN or PCIe card) is loaded the parameter for booting via iSCSI can be configured here. The menu is intended for UEFI drivers only. The menu does not apply to legacy OpROMs.

If no UEFI driver for a LAN controller is loaded or there is no LAN controller present in the system, this menu is not used.

## 4.16 UEFI Device Driver Setup

An UEFI Device Driver might support an interface to UEFI FW Setup and provides a list of information and control items. Available UEFI Device Drivers are for example Intel® Ethernet Connection I217-LM and Intel® I210 Gigabit.

## 4.17 Driver Health

If a UEFI driver of a PCI express device supports the Driver Health Protocol, the UEFI firmware can query the UEFI driver for the health status of the devices it is managing.

The health states of the UEFI drivers supporting the Driver Health interface are displayed in this menu.

# 5 Security menu

The following parameters can be set in this menu. Some of them are only available under special preconditions.

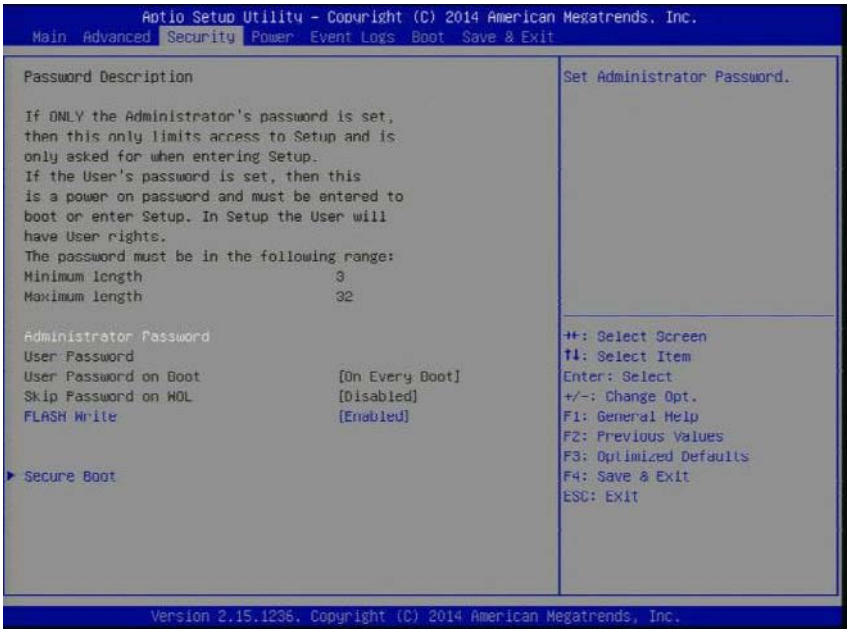


Figure 4: Example for the "Security" menu

### Neither administrator nor user password is assigned

Entering BIOS setup utility as well as booting the system are unrestricted.

### Only administrator password is assigned

If ONLY administrator password is assigned solely the BIOS setup utility is protected. Booting the system is unrestricted. In case of entering BIOS setup utility with administrator password you will obtain administrator level and have full access to BIOS setup utility. Entering BIOS setup utility without password results in limited BIOS setup utility access as you only obtain user level.

### Only user password is assigned

If ONLY user password is assigned the BIOS setup utility as well as booting the system are protected by user password. In case of entering BIOS setup utility with user password the user obtains administrator level and has full access to BIOS setup utility. Entering the BIOS setup utility without password is prohibited.

### Administrator AND user password are assigned

If administrator and user password are assigned the BIOS setup utility rights depend on the entered password. Entering BIOS setup utility with administrator password results in full BIOS setup utility access, typing the user password results in limited access. Booting the system is possible with user password as well as with administrator password.

Deleting Administrator Password clears the User Password as well.

The system shuts down after three times password attempts. If this happens, turn off the server, turn it back on, and then enter the correct password.

*Administrator Password*

When you press the Enter key, a window opens where you can define the administrator password. Enter a character string to define a password. If you confirm an empty password field, the password will be deleted.

To call up the complete BIOS setup utility, you need the administrator access level. If the administrator password is assigned the user password allows only a very limited access to the BIOS setup utility.

*User Password*

When you press the Enter key, a window opens where you can define the user password. Enter a character string to define a password. The user password prevents unauthorized access to your system.

*User Password on Boot*

Specifies whether a User Password prompt appears when booting.

*Every Boot*

The password prompt appears on all boot.

*Disabled*

The password is always taken from non-volatile storage and there is no password prompt displayed.

*Skip Password on WOL*

Establishes whether the user password is bypassed or must be entered when booting with Wake On LAN.

*Disabled*

The user password must be entered via the keyboard when booting the operating system.

*Enabled*

The user password is deactivated when booting with Wake On LAN.

*FLASH Write*

Assigns write protection to the system BIOS.

*Disabled*

The system BIOS cannot be written. Flash-BIOS update is not possible.

*Enabled*

The system BIOS can be written. Flash BIOS update is possible.

# 5.1 Secure Boot Configuration

Opens the submenu for configuring *Secure Boot*.

*Secure Boot* defines a firmware execution authentication process.

As an industry standard, *Secure Boot* defines how platform firmware manages certificates, authenticates firmware, and how the operating system interfaces with this process.

*Secure Boot* is based on the Public Key Infrastructure (PKI) process to authenticate modules before they are allowed to execute.

*Platform Mode*
Shows whether the system is in user mode or setup mode.

*User*
In user mode, the *Platform Key (PK)* is installed. *Secure Boot* can be enabled or disabled via the *Secure Boot Control* menu option.

*Setup*
In setup mode, the *Platform Key (PK)* is not installed. *Secure Boot* is disabled and cannot be enabled via the *Secure Boot Control* menu option.

*Secure Boot*
Indicates whether the *Secure Boot* function is active.

*Disabled*
*Secure Boot* is not active.

*Enabled*
*Secure Boot i*s active.

*Secure Boot Control*
Specifies whether booting of unsigned boot loaders / UEFI OpROMs is permitted.

The associated signatures are saved in the BIOS or can be reloaded in the *Key Management* submenu.

*Disabled*
All boot loaders / OpROMs (Legacy / UEFI) can be executed.

*Enabled*
Only booting of signed boot loaders / UEFI OpROMs is permitted.

*Secure Boot Mode*

Specifies whether the *Key Management* submenu is available.

*Default*

The *Key Management* submenu is not available.

*Custom*

The *Key Management* submenu is available.

### 5.1.1 Key Management

Submenu for deleting, changing and adding the key and signature databases required for *Secure Boot.*

Without the installed Platform Key (PK), the system is in setup mode (*Secure Boot* is disabled). As soon as the PK is installed, the system switches to user mode (*Secure Boot* can be enabled).

*Factory Default Key Provisioning*

If the system is in setup mode (no Platform Key is installed), it is possible to install the default Secure Boot keys and signature databases.

*Disabled*

The available Secure Boot keys and signature databases remain unchanged.

*Enabled*

If the PK, KEK, DB, DBX signature databases are not available, the default Secure Boot keys and signature databases will be installed after rebooting the system.

*Delete All Secure Boot Variables*

This menu item is only visible when *Factory Default Key Provisioning* is set to *Disabled*.

Puts the system in setup mode (*Secure Boot* is disabled). All keys and signature databases (PK, KEK, DB, DBX) in the system are deleted.

*Enroll All Factory Default Keys*

This menu item is only visible when *Factory Default Key Provisioning* is set to *Enabled*.

Puts the system in setup mode (*Secure Boot* is disabled). All keys and signature databases (PK, KEK, DB, DBX) in the system are deleted.

*Save Secure Boot Keys*

Saves the Secure Boot Key and Key Databases to the selected drive.

### Platform Key

*Platform Key (PK)*

Shows the current status of the *Platform Key (PK)*.

*Installed*

The PK is installed. System is in user mode.

*Not Installed*

The PK is not installed. The system is in setup mode.

*Set new PK*

Sets the *Platform Key (PK)*. After selecting the drive, the corresponding file must be selected in the browser.

*Delete PK*

Deletes the *Platform Key (PK),* which puts the system in setup mode and disables Secure Boot.

### Key Exchange

*Key Exchange Key Database (KEK)*

Shows the current status of the Key Exchange Key Database (KEK).

*Installed*

The KEK Database is installed.

*Not Installed*

The KEK Database is not installed.

*Set new KEK*

Sets the *Key Exchange Key Database (KEK)* After selecting the drive, the corresponding file must be selected in the browser.

*Delete KEK*

Deletes the *Key Exchange Key Database (KEK)*.

*Append KEK*

Adds an entry to the *Key Exchange Key Database (KEK)*. After selecting the drive, the corresponding file must be selected in the browser.

### Authorized Signatures

*Authorized Signature Database (DB)*

Shows the current status of the *Authorized Signature Database (DB)*.

*Installed*

The DB is installed.

*Not Installed*

The DB is not installed.

*Set new DB*

Sets the *Authorized Signature Database (DB)*. After selecting the drive, the corresponding file must be selected in the browser.

*Delete DB*

Deletes the *Authorized Signature Database (DB)*.

*Append DB*

Adds an entry to the *Authorized Signature Database (DB)*. After selecting the drive, the corresponding file must be selected in the browser.

### Forbidden Signatures

*Forbidden Signature Database (DBX)*

Shows the current status of the *Forbidden Signature Database (DBX)*.

*Installed*

The DBX is installed.

*Not Installed*

The DBX is not installed.

*Set new DBX*

Sets the *Forbidden Signature Database (DBX)*. After selecting the drive, the corresponding file must be selected in the browser.

*Delete DBX*

Deletes the *Forbidden Signature Database (DBX)*.

*Append DBX*

Adds an entry to the *Forbidden Signature Database (DBX)*. After selecting the drive, the corresponding file must be selected in the browser.

# 6 Power menu

The following parameters can be set in this menu. Some of them are only available under special preconditions.


Figure 5: Example for the "Power" menu

*Power-on Source*

Specifies whether the switch on sources for the system are managed by the BIOS or the ACPI operating system.

*BIOS Controlled*

The switch on sources are managed by the BIOS.

*ACPI Controlled*

The switch on sources are managed by the ACPI operating system.

*Low Power Soft Off*

Enables the power consumption to be reduced when the system is shut down.

If *Low Power Soft Off* is active, the system can only be turned on using the On/Off button on the housing. It is not possible to turn on using the USB keyboard power button or *Wake on LAN*.

*Disabled*

*Low Power Soft Off* is not active.

*Enabled*

*Low Power Soft Off* is active.

*Power Failure Recovery*

Specifies the system restart behavior after a power failure.

*Always Off*

The system performs a status check and then switches off.

*Previous State*

The system performs a status check and then returns the mode it was in before the power failure occurred (*On* or *Off*).

*Always On*

The system performs a status check and then switches on.

For the UPS scheduled operation, set it to *Always On*. Otherwise, the server may not be turned on at the set time.

*Disabled*

The system does not switch on.

*Hibernate like Soft Off*

In order to also reduce the energy consumption in hibernate mode (S4), the system will instead be brought into *Low Power Soft Off* when it is switched off. However, the energy consumption will only reduce if *Low Power Soft Off* is enabled.

*Disabled*

The system will be brought into hibernate mode (S4).

*Enabled*

Instead of going into hibernate mode (S4), the system will be brought into *Low Power Soft Off*.

## 6.1 Wake-Up Resources

*LAN*

Determines whether the system can be switched on via a LAN controller (on the system board or expansion card).

*Disabled*

The system cannot be switched on via a LAN controller.

*Enabled*

The system can be switched on via a LAN controller.

*Wake On LAN boot*

Specifies the system behaviour when switched on by means of network signals.

*Boot Sequence*

The system boots up according to the device sequence specified in the Boot menu when switched on via LAN.

*Force LAN Boot*

The system is booted remotely via LAN when switched on via LAN.

*Wake Up Timer*

Allows the system to be switched on at a specified time.

*Disabled*

*Wake Up Timer* is deactivated.

*Enabled*

*Wake Up Timer* is active. The System will be switched on to the specified time.

*Wake Up Mode*

Specifies if the system wakes up at the specified time every day or only once a month.

*Weekly*

The system wakes up at the specified days and time every week.

*Daily*

The system wakes up every day at the specified time.

*Monthly*

The system wakes up each month on the specified day at the specified time.

*Wake Up Day*

This menu item is only visible when *Wake Up Mode* is set to *Monthly*.

Specifies the day of month when the system is to wake up.

Allowed values are 1... 31.

# 7 Event Logs

The following parameters can be set in this menu. Some of them are only available under special preconditions.

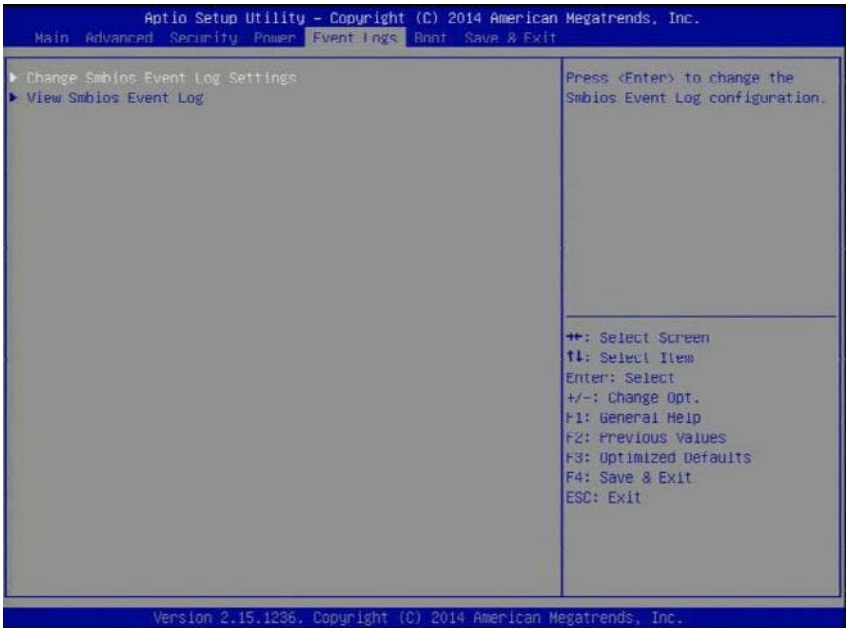


Figure 6: Example for the "Event Logs" menu

## 7.1 Change Smbios Event Log Settings

*Smbios Event Log*

Specifies whether SMBIOS Event Log is activated.

*Disabled*

Smbios Event Log is deactivated.

*Enabled*

Smbios Event Log is activated.

*Erase Event Log*

Specifies wheter the Smbios Event Log is to be cleared.

*No*
The Smbios Event Log is not cleared.

*Yes, Next reset*
The Smbios Event Log is cleared once at next reset. Afterwards this selection is automatically changed to *No* again.

*Yes, Every reset*
The Smbios Event Log is cleared at every reset.

*When Log is full*
Specifies the behaviour when the Smbios Event Log is full.

*Do Nothing*
If the Smbios Event Log is full no further entries are added. The Smbios Event Log must be cleared first before new entries can be added.

*Erase Immediately*
If the Smbios Event Log is full it will be cleared immediately. All present entries will be lost!

*Log System Boot Event*
Specifies if every system boot event is recorded in Smbios Event Log.

*Disabled*
No system boot event is recorded in Smbios Event Log.

*Enabled*
Every system boot event is recoreded in Smbios Event Log.

*MECI*
(Multiple Event Count Increment)

The number of occurrences of a duplicate event that must pass before the multiple-event counter associated with the log entry is updated, specified as a numeric value.

Allowed values are:
*1* to *255*

*METW*
(Multiple Event Time Window)

The number of minutes which must pass between duplicate log entries which utilize a multiple-event counter.

Allowed values in minutes are:
*0* to *99*

*Log OEM Codes*

Enables or disables the logging of EFI status codes as OEM codes (if not already converted to legacy).

*Disabled*

Disables the logging of EFI status codes as OEM codes.

*Enabled*

Enables the logging of EFI status codes as OEM codes.

*Convert OEM Codes*

Enables or disables the converting of EFI status codes to standard Smbios types. (Not all may be translated).

*Disabled*

Disables the converting of EFI Status Codes to Standard Smbios Types.

*Enabled*

Enables the converting of EFI Status Codes to Standard Smbios Types.

## 7.2 View Smbios Event Log

Calls a submenu used to show all Smbios Event Log entries.

# 8 Boot menu

The following parameters can be set in this menu. Some of them are only available under special preconditions.

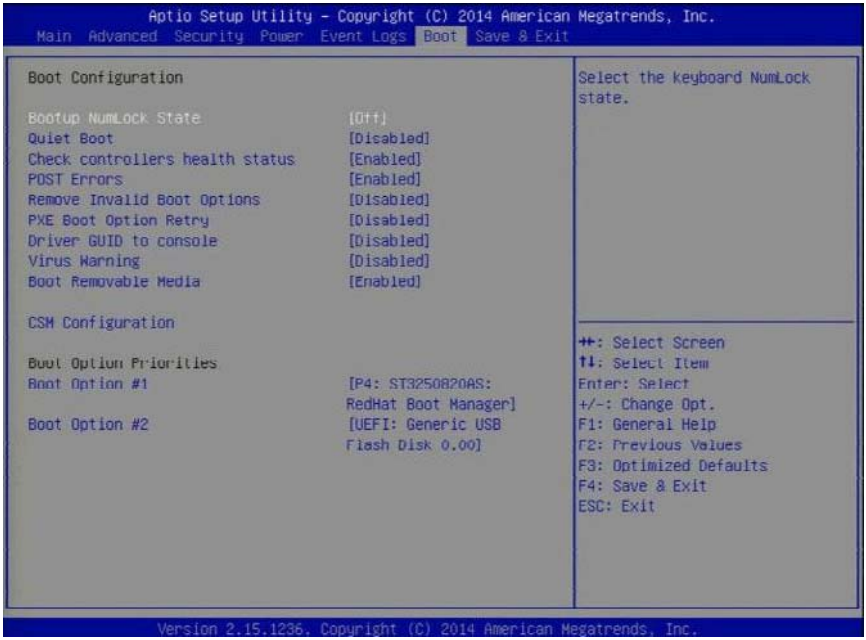

Figure 7: Example for the "Boot" menu

This menu can be used to define the sequence of the drives from which the system is booted. Up to eight drives (and also, for example, USB interfaces) can be listed.

For references to the operation please see the help area in this menu.

*Bootup NumLock State*

Determines the setting of the NumLock function when the system is started up. NumLock controls the usage of the numeric keypad.

*On*

NumLock is enabled and the numeric keypad can be used.

*Off*

NumLock is disabled and the cursor functions of the numeric keys can be used.

The Num indicator on the keyboard reports the current Bootup NumLock State. The Num key on the keyboard allows to toggle between On and Off.

*Quiet Boot*

The boot logo is displayed on the screen instead of the POST startup information.

*Disabled*

The POST startup information will be displayed on the screen.

*Enabled*

The boot logo is displayed.

*Check Controllers Health Status*

If a UEFI driver option ROM of a PCIe devices supports the Controller Health interface, the UEFI FW can query the UEFI driver option ROM for the health status of the devices it is managing.

*Disabled*

The controller health status is not checked by the UEFI FW.

*Enabled*

The UEFI FW checks the controller health status.

*POST Errors*

Defines whether the system boot process is aborted and the system is halted when an error is detected.

*Disabled*

System boot is not aborted. The error is ignored, depending on the severity.

*Enabled*

If the self-test detects an error, system boot is aborted after the self-test and the system is halted.
The system boot can be continued by pressing the F1 key or the setup utility can be entered by pressing the F2 key.

*Remove Invalid Boot Options*

Specifies if UEFI Boot Options for devices no longer connected to the system will be removed from Boot Option Priority list.

*Disabled*

UEFI Boot Options will not be removed from Boot Option Priority list.

*Enabled*

UEFI Boot Options will be removed from Boot Option Priority list.

*PXE Boot Option Retry*

Specifies if NON-EFI based PXE boot options will be retried without waiting for user input.

*Disabled*

NON-EFI boot options would not be retried without waiting for user input.

*Enabled*

NON-EFI boot options will be retried without waiting for user input.

*Driver GUID to console*

Specifies if the GUID (Globally Unique Identifier) of each started UEFI driver is reported to the console. This may be helpful, during investigating problems in the early system startup phase.

*Disabled*

The Driver GUID is not reported to the console.

*Enabled*

The Driver GUID is reported to the console.

*Virus Warning*

Checks the boot sectors of the hard disk drive to see if any changes have been made since the previous system start-up. If the boot sectors have been changed and the reason for this is unknown, a suitable computer virus detection program should be run.

*Disabled*

The boot sectors are not checked.

*Enabled*

Displays a warning if the boot sector has been changed since the previous system start-up (e.g. new operating system or virus attack). The warning will stay on the screen until you acknowledge the changes choosing *Confirm* or deactivate the function.

*Boot Removable Media*

Specifies if support for booting to removable devices such as USB-Stick is available.

*Disabled*

Booting to removable devices is deactivated.

*Enabled*

Booting to removable devices is activated.

*CSM Configuration*

Opens the submenu for configuring the Compatibility Support Module (CSM) (see "CSM Configuration" on page 61).

*Boot Option Priorities*

Displays the current boot order.

- Press the cursor keys ↑ or ↓ to select the device for which you want to change the boot order.
- Press the Enter key and select the device to exchange the boot order.
- Press the Enter key and select *Disabled* to remove the selected device from the boot order.

# 8.1 CSM Configuration

Opens the submenu of Compatibility Support Module (CSM) for configuration.

This submenu is only available when the "Secure Boot Control" menu under Setup/Secure Boot Configuration is deactivated.

*Launch CSM*

Specifies whether the Compatibility Support Module (CSM) is executed. A legacy operating system can only be started if the CSM was loaded.

*Enabled*

The CSM is executed so that a Legacy or UEFI operating system can be started.

*Disabled*

The CSM is not executed so that a only a UEFI operating system can be started.

*Boot option filter*

Specifies from which drives can be booted.

*UEFI and Legacy*

It is possible to boot with UEFI OS as well as with Legacy OS drives.

*Legacy only*

It is only possible to boot from drives with Legacy OS.

*UEFI only*

It is only possible to boot from drives with UEFI OS.

*Launch PXE OpROM Policy*

Specifies which PXE Option ROM will be started. For PXE boot there is available the normal (Legacy) PXE boot as well as a UEFI PXE boot.

*Do not launch*

No Option ROMs are started.

*UEFI only*

Only UEFI Option ROMs are started.

*Legacy only*

Only Legacy Option ROMs are started.

*Launch Storage OpROM policy*

Specifies which Storage Option ROM will be started.

*Do not launch*

No Storage Option ROMs are started.

*UEFI only*

Only UEFI Storage Option ROMs are started.

*Legacy only*

Only Legacy Storage Option ROMs are started.

*Other PCI device ROM priority*

Specifies which Option ROM is started for devices except network, mass storage devices or video.

*UEFI OpROM*

Only UEFI Option ROMs are started.

*Legacy OpROM*

Only Legacy Option ROMs are started.

# 9 Save & Exit menu

The following parameters can be set in this menu.

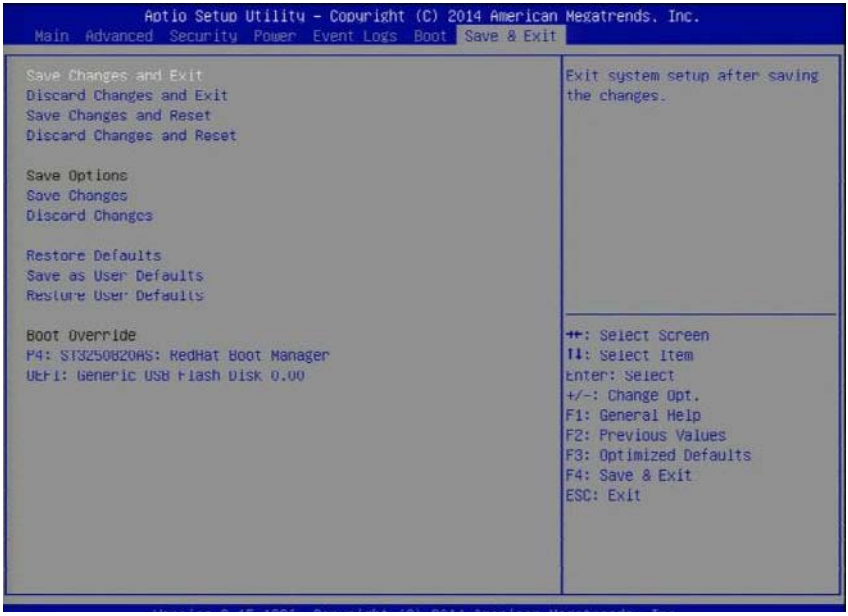


Figure 8: Example for the "Save & Exit" menu

*Save Changes and Exit*

To save the current menu entries and exit the BIOS setup utility, select *Save Changes and Exit* followed by *Yes*.

The new settings will be effective and the POST continues as long as no changed option requires a reset.

*Discard Changes and Exit*

Select *Discard Changes and Exit* followed by *Yes* to discard the changes you have made since entering BIOS setup utility or since invoking *Save Changes*.

The BIOS setup utility will be closed and the POST continues.

*Save Changes and Reset*

To save the current menu entries and exit the BIOS setup utility, select *Save Changes and Reset* followed by *Yes*.

A reset is initiated and the new settings will be effective.

*Discard Changes and Reset*

Select *Discard Changes and Reset* followed by *Yes* to discard the changes you have made since entering BIOS setup utility or since invoking *Save Changes*.
The BIOS setup utility will be closed and a reset is initiated.

### Save options

*Save Changes*

Select *Save Changes* followed by *Yes* to safe the changes you have made so far without leaving BIOS setup utility.

*Discard Changes*

Select *Discard Changes* followed by *Yes* to discard the changes you have made since entering BIOS setup utility or since invoking *Save Changes* without leaving BIOS setup utility.

*Restore Defaults*

To reset all BIOS setup utility menus to use default values, select *Restore Defaults* followed by *Yes*.
If you want to exit BIOS setup utility with these settings, select *Save Changes and Exit* followed by *Yes*.

*Save as User Defaults*

Select *Save as User Defaults* followed by *Yes* to save the changes you have done so far as user defaults.

*Restore User Defaults*

To reset all BIOS setup utility menus to use user default values, select *Restore User Defaults* followed by *Yes*. If you want to exit BIOS setup utility with these settings, select *Save Changes and Exit* followed by *Yes*.

*Boot Override*

Use the ↑ and ↓ cursor keys to select the drive from which you want to start the operating system. Press Enter to initiate the boot from the selected drive.

# 10 Flash BIOS Update

To perform a Flash BIOS update you must first download the necessary files from the internet.

**CAUTION!**

The BIOS is stored in a flash memory device. If an error occurs during the Flash BIOS update procedure, the BIOS image in the flash memory may be destroyed. You can then only restore the BIOS using the *Flash Memory Recovery Mode*, see "Flash Memory Recovery Mode" on page 67. If this is also not possible, the flash memory device has to be replaced. Contact your customer support Service Desk.

- Preventively note down the settings in the BIOS setup utility.
  A Flash BIOS update does not normally affect the settings in the BIOS setup utility.
- Select your system via *Select Product* or look under *Product Search by Serial-/Identnumber* for your system.
- Click on *Driver & Downloads* and then select your operating system.
- Select *Flash-BIOS*.

### Flash BIOS Update - Desk Flash Instant

- Download the file *Flash BIOS Update - Desk Flash Instant* for a Flash BIOS Update under Windows.

### Admin package - Compressed Flash Files

- If the operating system which you use is not selectable select any operating system and download the file *Admin package - Compressed Flash Files* for a Flash BIOS Update with a USB stick.

### Flash BIOS Update under Windows

- Boot the operating system.

The execution of *Desk Flash Instant* is limited to Administrator Privileges.

- ► Open the Windows explorer, select the downloaded *Flash BIOS Update - Desk Flash Instant* and start the Flash BIOS Update with a double click. Then follow the instructions on the screen.
- ► After the Flash BIOS Update the system is restarted automatically. It will be booted with the new BIOS revision.
- ► Check the settings in the BIOS setup utility. If necessary, reconfigure the settings again.

### Flash BIOS Update with a USB stick

- ► Make sure, that you have a bootable USB stick.

i If your USB stick is not bootable proceed as follows:

- ► Select under *Admin package - Compressed Flash Files* the menu item *Installation Description - More information*.
- ► Follow the instructions.

  You need a USB stick on which the BIOS update files will be stored. The data on the USB stick will be fully erased and overwritten.

  Make sure, that all data are saved before.
- ► Unzip the downloaded zip file from *Admin package - Compressed Flash Files* and copy all files and directories to the root of your bootable USB stick.

- ► Boot the system from the inserted bootable USB stick.
- ► Wait until the screen output appears.
- ► Press the function key F12 and select the bootable USB stick with the arrow keys ↑ and ↓.
- ► Change the directory with `cd DOS` and start the Flash BIOS Update with the command `DosFlash`. Then follow the instructions on the screen.
- ► After the Flash BIOS Update the system is restarted automatically. The system will be booted with the new BIOS revision.
- ► Check the settings in the BIOS setup utility. If necessary, reconfigure the settings again.

# 10.1 Flash Memory Recovery Mode

- ► Prepare a bootable USB stick as described in section *Flash BIOS Update with a USB stick*.
- ► Switch off the system and disconnect the power plug.
- ► Open the chassis and switch on "Recovery" (BIOS-RCV) using the jumper / DIP switch on the system board.
- ► Reconnect the power plug and boot the system with the inserted bootable USB stick.
- ► Boot the system from the inserted bootable USB stick.
- ► Change the directory with `cd DOS` and start the Flash BIOS Update with the command `DosFlash`. Then follow the instructions on the screen.
- ► Observe the update process on the screen, until it is finished. The recovery update may take several minutes.
- ► Switch-off the system and disconnect the power plug.
- ► Remove the USB stick.
- ► Return the "Recovery" (BIOS-RCV) jumper / DIP switch which have been changed to the initial position.
- ► Reconnect the power plug and switch on the system.
  The system will be booted with the new BIOS revision.
- ► Check the settings in the BIOS setup utility. If necessary, reconfigure the settings again.

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