CADnetwork®

Premium. Performance. Innovation.

# BIOS Setup

## Deep Learning Box Rack

# Contents

**BIOS Setup**

# Contents

# BIOS setup

## 3.1 Managing and updating your BIOS

The following utilities allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup:

1. CrashFree BIOS 3
   To recover the BIOS using a bootable USB flash disk drive when the BIOS file fails or gets corrupted.
2. EzFlash
   Updates the BIOS using a USB flash disk.
3. BUPDATER
   Updates the BIOS in DOS mode using a bootable USB flash disk drive.

Refer to the corresponding sections for details on these utilities.

Save a copy of the original motherboard BIOS file to a bootable USB flash disk drive in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the BUPDATER utility.

### 3.1.1 CrashFree BIOS 3 utility

The CrashFree BIOS 3 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can update a corrupted BIOS file using a USB flash drive that contains the updated BIOS file.

Prepare a USB flash drive containing the updated motherboard BIOS before using this utility.

#### Recovering the BIOS from a USB flash drive

To recover the BIOS from a USB flash drive:

1. Insert the USB flash drive with the original or updated BIOS file to one USB port on the system.
2. The utility will automatically recover the BIOS. It resets the system when the BIOS recovery finished.

DO NOT shut down or reset the system while recovering the BIOS! Doing so would cause system boot failure!

The recovered BIOS may not be the latest BIOS version for this motherboard. Visit the website at www..com to download the latest BIOS file.

## 3.1.2 EzFlash Utility

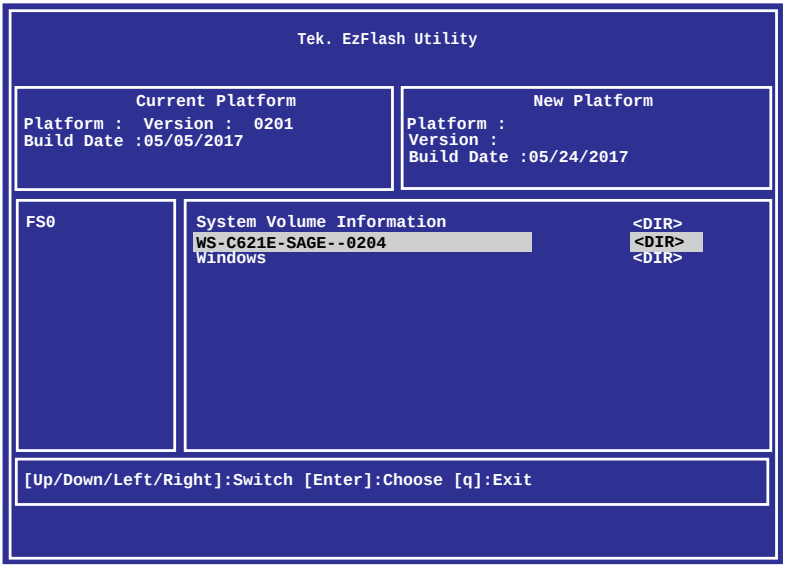
The EzFlash Utility feature allows you to update the BIOS using a USB flash disk without having to use a DOS-based utility.

Download the latest BIOS from the website at www..com before using this utility.

The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be the same as shown.

To update the BIOS using EzFlash Utility:

1. Insert the USB flash disk that contains the latest BIOS file to the USB port.
2. Enter the BIOS setup program. Go to the **Tool** menu to select **Start EzFlash** and press <Enter> to enable it.




3. Press <Tab> to switch to the **Drive** field.
4. Press the Up/Down arrow keys to find the USB flash disk that contains the latest BIOS then press <Enter>.
5. Press <Tab> to switch to the **Folder Info** field.
6. Press the Up/Down arrow keys to find the BIOS file then press <Enter>.
7. Reboot the system when the update process is done.

- This function can support devices such as a USB flash disk with FAT 32/16 format and single partition only.
- DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!

Ensure to load the BIOS default settings to ensure system compatibility and stability. Press <F5> and select Yes to load the BIOS default settings.

## 3.1.3 BUPDATER utility

The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be the same as shown.

The BUPDATER utility allows you to update the BIOS file in DOS environment using a bootable USB flash disk drive with the updated BIOS file.

### Updating the BIOS file

To update the BIOS file using the BUPDATER utility:

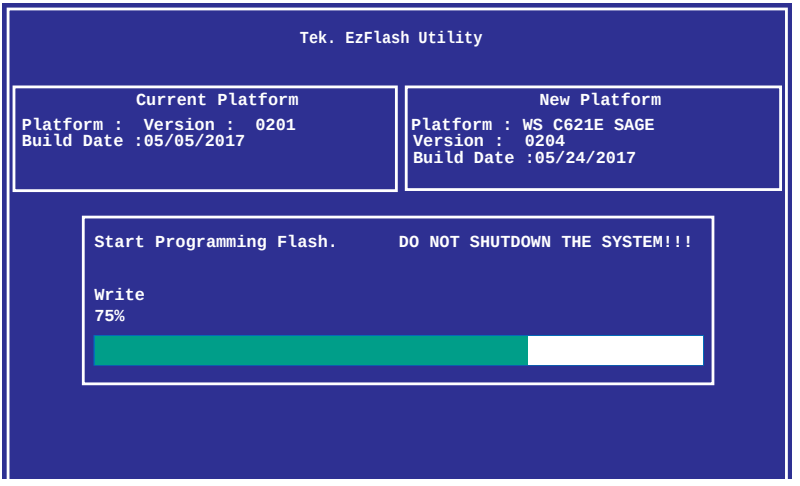
1. Visit the website at www..com and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable USB flash disk drive.
2. Download the BUPDATER utility (BUPDATER.exe) from the support website at support..com to the bootable USB flash disk drive you created earlier.
3. Boot the system in DOS mode, then at the prompt, type:

   BUPDATER /i[filename].CAP

   where [filename] is the latest or the original BIOS file on the bootable USB flash disk drive, then press <Enter>.

```
A:\>BUPDATER /i[file name]CAP
```

The utility verifies the file, then starts updating the BIOS file.




DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!

The utility returns to the DOS prompt after the BIOS update process is completed.

4. Reboot the system from the hard disk drive.

## 3.2 BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section **3.1 Managing and updating your BIOS**.

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to “Run Setup.” This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the firmware chip.

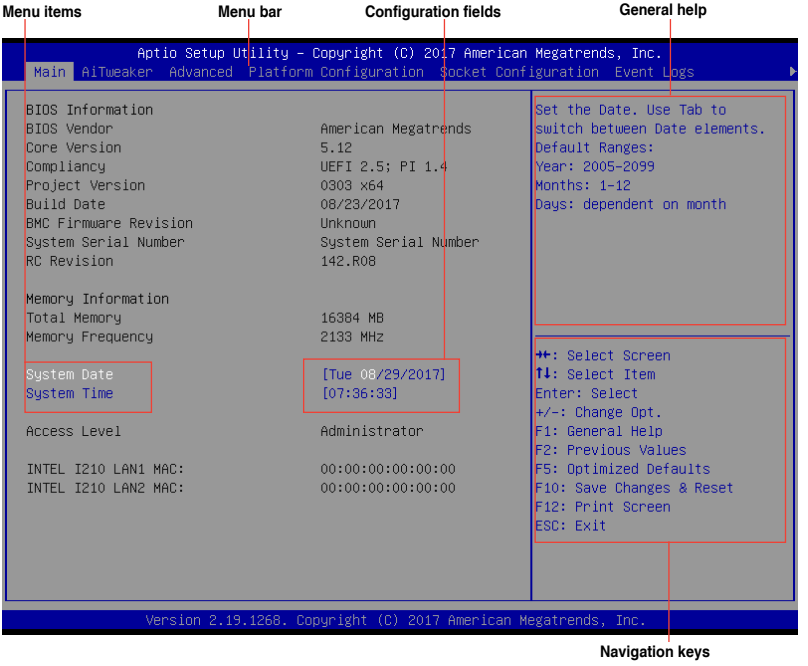
The firmware chip on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing <Ctrl>+<Alt>+<Del>, or by pressing the reset button on the system chassis. You can also restart by turning the system off then back on. Do this last option only if the first two failed.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Press <F5> and select Yes to load the BIOS default settings.
- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
- Visit the  website (www..com) to download the latest BIOS file for this motherboard.

## 3.2.1 BIOS menu screen




## 3.2.2 Menu bar

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

| | |
|---|---|
| **Main** | For changing the basic system configuration |
| **Ai Tweaker** | For changing the overclocking settings |
| **Advanced** | For changing the advanced system settings |
| **Platform Configuration** | For changing the platform settings |
| **Socket Configuration** | For changing the socket settings |
| **Event Logs** | For changing the event log settings |
| **Server Mgmt** | For changing the server mgmt settings |
| **Monitor** | For displaying the system temperature, power status, and changing the fan settings |
| **Security** | For changing the security settings |
| **Boot** | For changing the system boot configuration |
| **Tool** | For configuring options for special functions |
| **Save & Exit** | For selecting the save & exit options |

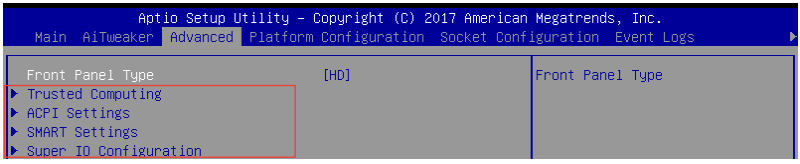
To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.

### 3.2.3 Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting Main shows the Main menu items. The other items (Advanced, Platform Configuration, Socket Configuration, Event Logs, Server Mgmt, Monitor, Security, Boot, Tool, and Save & Exit) on the menu bar have their respective menu items.

### 3.2.4 Submenu items

A solid triangle before each item on any menu screen means that the item has a submenu. To display the submenu, select the item and press <Enter>.




### 3.2.5 Navigation keys

At the bottom right corner of a menu screen are the navigation keys for the BIOS setup program. Use the navigation keys to select items in the menu and change the settings.

### 3.2.6 General help

At the top right corner of the menu screen is a brief description of the selected item.

### 3.2.7 Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable. A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it and press <Enter> to display a list of options.

### 3.2.8 Pop-up window

Select a menu item and press <Enter> to display a pop-up window with the configuration options for that item.

### 3.2.9 Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> /<Page Down> keys to display the other items on the screen.

## 3.3 Main menu

When you enter the BIOS Setup program, the Main menu screen appears. The Main menu provides you an overview of the basic system information, and allows you to set the system date and time.

## 3.4 Ai Tweaker menu

The Ai Tweaker menu items allow you to configure overclocking-related items.

Be cautious when changing the settings of the Ai Tweaker menu items. Incorrect field values can cause the system to malfunction

The configuration options for this section vary depending on the CPU and DIMM model you installed on the motherboard.

### Ai Overclock Tuner

Allows you to select the CPU overclocking options to achieve the desired CPU internal frequency.
Configuration options: [Auto] [Manual] [OC Tune]

The following item appears only when you set the **Ai Overclocking Tuner** to **[Manual]**.

#### BCLK Frequency

This item allows you to set the BCLK (base clock) frequency to enhance the system performance. Use the <+> or <-> to adjust the value. The values range from 80.0 MHz to 300.0 MHz.

We recommend you to set the value based on the CPU specification, as high BCLK frequencies may damage the CPU permanently.

The following item appears only when you set the **Ai Overclocking Tuner** to **[OC Tune]**.

#### OC Tune Level

Allows you to select the OC Tune Level.
Configuration options: [Level 1] [Level 2] [Level 3]

## 3.5 Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.

### 3.5.1 Trusted Computing

The items in this menu allow you configure BIOS support for security device.

### 3.5.2 ACPI Settings

The items in this menu allow you to configure the system ACPI parameters.

#### Enable ACPI Auto Configuration

Allows you to enable or disable the BIOS ACPI Auto Configuration.
Configuration options: [Disabled] [Enabled]

#### Enable Hibernation

Allows you to enable or disable the ability of the system to hibernate (OS/S4 Sleep State).
Configuration options: [Disabled] [Enabled]

This option may be not be effective with some OS.

#### ACPI Sleep State

Allows you to select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
Configuration options: [Suspend Disabled] [S3 (Suspend to RAM)]

### 3.5.3 SMART Self Test

The items in this menu allow you to configure the SMART Self Test settings.

### 3.5.4 Super IO Configuration

The items in this menu allow you to configure the system Super IO Chip parameters.

#### Serial Port 1 Configuration

Allows you to set the parameters of Serial Port 1.

**Serial Port**

Allows you to enable or disable Serial Port.
Configuration options: [Disabled] [Enabled]

The following item appears only when you set **Serial Port** to **[Enabled]**.

**Change Settings**

Allows you to choose the setting for Super IO device.

Configuration options: [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;]

## 3.5.5 Serial Port Console Redirection

The items in this menu allow you to configure the Serial Port Console Redirection settings.

## 3.5.6 Onboard LAN Configuration

The items in this menu allow you to configure tne onboard LAN parameters.

### Onboard I210 LAN Configuration

**Intel LAN1 Enable**

Allows you to enable or disable the Intel LAN.

Configuration options: [Disabled] [Enabled]

The following item appears only when you set **Intel LAN1 Enable** to **[Enabled]**.

**Intel LAN ROM Type**

Allows you to select the Intel LAN ROM type.

Configuration options: [Disabled] [PXE] [iSCSI]

**Intel LAN2 Enable**

Allows you to enable or disable the Intel LAN.

Configuration options: [Disabled] [Enabled]

The following item appears only when you set **Intel LAN2 Enable** to **[Enabled]**.

**Intel LAN ROM Type**

Allows you to select the Intel LAN ROM type.

Configuration options: [Disabled] [PXE] [iSCSI]

## 3.5.7 APM

Allows you to configure the Advance Power Management (APM) settings.

### Restore AC Power Loss

When set to [Power Off], the system goes into off state after an AC power loss. When set to [Power On], the system will reboot after an AC power loss. When set to [Last State], the system goes into either off or on state, whatever the system state was before the AC power loss.
Configuration options: [Power Off] [Power On] [Last State]

### Power On By PCIE

[Disabled] Disables the PCIE devices to generate a wake event.
[Enabled] Enables the PCIE devices to generate a wake event.

### Power On By RTC

[Disabled] Disables RTC to generate a wake event.
[Enabled] When set to [Enabled], the items **RTC Alarm Date (Days)** and **Hour/Minute/Second** will become user-configurable with set values.

## 3.5.8 PCI Subsystem Settings

Allows you to configure PCI, PCI-X, and PCI Express Settings.

### Load RT32 Image

Allows you to enable or disable RT32 Image Loading.
Configuration options: [Disabled] [Enabled]

### Above 4G Decoding

Allows you to enable or disable 64-bit capable devices to be decoded in above 4G address space. It only works if the system supports 64-bit PCI decoding.
Configuration options: [Disabled] [Enabled]

### SR-IOV Support

This option enables or disables SIngle Root IO Virtualization Support if the system has SRIOV capable PCIe devices.
Configuration options: [Disabled] [Enabled]

### PCIE OPROM Slot Options

#### PCIE1-7 Slot OPROM

This option allows you to enable or disable the OPROM of the PCIe slots.
Configuration options: [Disabled] [Enabled]

## 3.5.9 Network Stack Configuration

The items in this menu allow you to configure Ipv4 / Ipv6 PXE support.

## 3.5.10 CSM Configuration

This item allows you to configure the CSM (Compatibility Support Module) items to fully support the various VGA, bootable devices and add-on devices for better compatibility.

### CSM Support

This option allows you to enable or disable CSM Support.
Configuration options: [Disabled] [Enabled]

The following items appear only when you set the **CSM Support** to **[Enabled]**.

**GateA20 Active**

This allows you to set the GA20 option.

| | |
|---|---|
| [Upon Request] | GA20 can be disabled using BIOS services. |
| [Always] | Do not allow disabling GA20; this option is useful when any RT code is executed above 1MB. |

**Option ROM Messages**

This allows you to set the display mode for option ROM.
Configuration options: [Force BIOS] [Keep Current]

**INT19 Trap Response**

This option allows you to control the BIOS reaction on INT19 trapping by Option ROM.

| | |
|---|---|
| [Immediate] | Execute the trap right away. |
| [Legacy only] | Execute the trap during legacy boot. |

**Boot Option filter**

This option allows you to control the Legacy/UEFI ROMs priority.
Configuration options: [UEFI and Legacy] [Legacy only] [UEFI only]

**Network / Storage / Video**

This option allows you to control the execution of UEFI and Legacy PXE/ Storage/ Video OpROM.
Configuration options: [UEFI ] [Legacy]

**Other PCI devices**

This item determines the OpROM execution policy for devices other than Network, Storage, or Video.
Configuration options: [UEFI ] [Legacy]

### 3.5.11 NVMe Configuration

You may view the NVMe controller and Drive information if an NVMe device is connected.

### 3.5.12 USB Configuration

The items in this menu allow you to change the USB-related features.

### 3.5.13 iSCSI Configuration

Allows you to configure the iSCSi parameters.

### 3.5.14 Intel(R) Virtual RAID on CPU

Allows you to configure the view the RAID volumes and VMD controllers on the system.

## 3.6 Platform Configuration menu

The IntelRCSetup menu items allow you to change the platform settings.

Take caution when changing the settings of the Platform Configuration menu items. Incorrect field values can cause the system to malfunction.

### 3.6.1 PCH Configuration

While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show **Not Present** if no SATA device is installed to the corresponding SATA port.

#### PCH SATA Configuration

**SATA Controller**

Allows you to enable or disable the SATA Controller.
Configuration options: [Disabled] [Enabled]

The following item appears only when you set **SATA Controller** to **[Enabled]**.

**Configure SATA as**

Allows you to identify the SATA port connected to Solid State Drive or Hard Disk Drive.
Configuration options: [AHCI] [RAID]

**Support Aggressive Link Power Management**

Allows you to enable or disable the Support Aggressive Link Power (SALP) Management.
Configuration options: [Disabled] [Enabled]

**SATA Port 0-7**

**Port 0-7**
Allows you to enable or disable the SATA port.
Configuration options: [Disabled] [Enabled]

### 3.6.2 Miscellaneous Configuration

#### Active Video

Allows you to select the video type.
Configuration options: [Onboard Device] [Offboard Device]

### 3.6.3 Server ME Configuration

Displays the Server ME Technology parameters on your system.

### 3.6.4 Runtime Error Logging

Displays the Server ME Technology parameters on your system.

## 3.7 Socket Configuration menu

The IntelRCSetup menu items allow you to change the socket settings.

### 3.7.1 Processor Configuration

The items in this menu show the processor-related information that the BIOS automatically detects.

**Hyper-threading [ALL]**

This item allows a hyper-threading processor to appear as two logical processors, allowing the operating system to schedule two threads or processors simultaneously.
Configuration options: [Disabled] [Enabled]

### 3.7.2 Common RefCode Configuration

This menu displays and provides options to change the Common RefCode Settings.

### 3.7.3 UPI Configuration

This menu displays and provides options to change the UPI Settings.

### 3.7.4 Memory Configuration

This menu displays and provides options to change the Memory Settings.

**Memory Topology**

Displays memory topology with DIMM population information.

### 3.7.5 IIO Configuration

This menu displays and provides options to change the IIO Settings.

## 3.7.6 Advanced Power Management Configuration

This menu displays and provides options to change the Power Management Settings.

### CPU P State Control

**Boot performance mode**

Allows you to switch between Boot performance mode.
Configuration options: [Max Performance] [Max Efficient] [Set by Intel Node Manager]

**Energy Efficient Turbo**

Allows you to enable or disable Energy Efficient Turbo.
Configuration options: [Disabled] [Enabled]

**Turbo Mode**

Allows you to enable or disable Turbo Mode.
Configuration options: [Disabled] [Enabled]

### Hardware PM State Control

**Hardware P-States**

Allows you to switch between Hardware P-States mode.
Configuration options: [Disabled] [Native Mode] [Out of Band Mode]
[Native Mode with no Legacy Support]

### CPU C State Control

**CPU C6 Report**

Allows you to select CPU C6 Report.
Configuration options: [Disabled] [Enabled] [Auto]

**OS ACPI Cx**

Allows you to select OS ACPI Cx Report.
Configuration options: [ACPI C2] [ACPI C3]

### Package C State Control

**Package C State**

Allows you to select Package C State.
Configuration options: [C0/C1 state] [C2 state] [C6(non Retention state)]
[C6(Retention state)] [No Limit] [Auto]

### CPU Thermal Management

**CPU T State Control**

**Software Controlled T-States**

Allows you to enable or disable Software Controlled T-States.
Configuration options: [Disabled] [Enabled]

### CPU - Advanced PM Tuning

**Energy Perf BIAS**

**Power Performance Tuning**

Configuration options: [OS Controls EPB] [BIOS Controls EPB]

## 3.8 Event Logs menu

The Event Logs menu allows to veiw and configure Smbios Event log settings.

### 3.8.1 Change Smbios Event Log Settings

Press <Enter> to change the Smbios Event Log configuration.

### 3.8.2 View Smbios Event Log

Press <Enter> to view all smbios event logs.

## 3.9 Server Mgmt menu

The Server Mgmt menu items allow you to set BMC and SEL configurations.

The items in this menu is only enabled for the (BMC) model. does not support the items in this menu.

### 3.9.1 System Event Log

Allows you to change the SEL event log configuration.

### 3.9.2 BMC network configuration

The sub-items in this configuration allow you to configure the BMC network parameters.

### 3.9.3 View System Event Log

This item allows you to view the system event log records.

## 3.10 Monitor menu

The Monitor menu displays the system temperature/power status, and allows you to change the fan settings.

## 3.11 Security menu

This menu allows a new password to be created or a current password to be changed. The menu also enables or disables the Secure Boot state and lets the user configure the System Mode state.

## 3.12 Boot menu

The Boot menu items allow you to change the system boot options.

### Boot Option Priorities

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

- To select the boot device during system startup, press <F8> when Logo appears.
- To access Windows OS in Safe Mode, please press <F8> after POST.

### Network Device BBS Priorities

This item allows you to set the booting from network.

### Hard Drive BBS Priorities

These items appear only when you connect SATA ODD or hard drive to the SATA ports and allow you to set the booting order of the SATA devices.

## 3.13 Tool menu

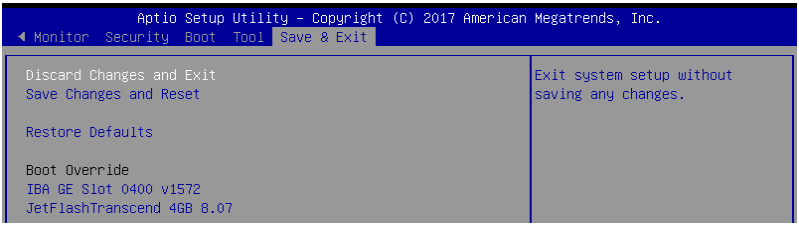
The Tool menu items allow you to configure options for special functions. Select an item then press <Enter> to display the submenu.


### Start EzFlash

Allows you to run EzFlash BIOS ROM Utility when you press <Enter>. Refer to the EzFlash Utility section for details.

## 3.14 Save & Exit menu

The Exit menu items allow you to save or discard your changes to the BIOS items.




Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

### Discard Changes and Exit

Exit System setup without saving any changes.

### Save Changes and Reset

Exit System setup after saving the changes.

### Restore Defaults

Restore/load default values for all the setup options.

### Boot Override

These items displays the available devices. The device items that appears on the screen depends on the number of devices installed in the system. Click an item to start booting from the selected device.