

# ***H61MLV2 UEFI BIOS Manual***

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## **UEFI BIOS Setup**

### **Introduction**

The purpose of this manual is to describe the settings in the AMI UEFI BIOS Setup program on this motherboard. The Setup program allows users to modify the basic system configuration and save these settings to NVRAM.

UEFI BIOS determines what a computer can do without accessing programs from a disk. This system controls most of the input and output devices such as keyboard, mouse, serial ports and disk drives. BIOS activates at the first stage of the booting process, loading and executing the operating system. Some additional features, such as virus and password protection or chipset fine-tuning options are also included in UEFI BIOS.

The rest of this manual will guide you through the options and settings in UEFI BIOS Setup.

### **Plug and Play Support**

This AMI UEFI BIOS supports the Plug and Play Version 1.0A specification.

### **EPA Green PC Support**

This AMI UEFI BIOS supports Version 1.03 of the EPA Green PC specification.

### **ACPI Support**

AMI ACPI UEFI BIOS support Version 1.0/2.0 of Advanced Configuration and Power interface specification (ACPI). It provides ASL code for power management and device configuration capabilities as defined in the ACPI specification, developed by Microsoft, Intel and Toshiba.

### **PCI Bus Support**

This AMI UEFI BIOS also supports Version 2.3 of the Intel PCI (Peripheral Component Interconnect) local bus specification.

### **DRAM Support**

DDR3 SDRAM (Double Data Rate III Synchronous DRAM) is supported.

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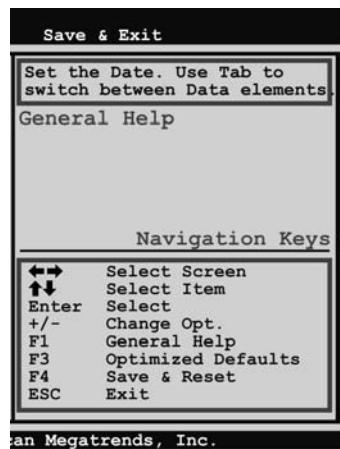
## **Supported CPUs**

This AMI UEFI BIOS supports the Intel CPU.

## **Using Setup**

When starting up the computer, press <Del> during the **Power-On Self-Test (POST)** to enter the UEFI BIOS setup utility.

In the UEFI BIOS setup utility, you will see **General Help** description at the top right corner, and this is providing a brief description of the selected item. **Navigation Keys** for that particular menu are at the bottom right corner, and you can use these keys to select item and change the settings.



## **Notice**

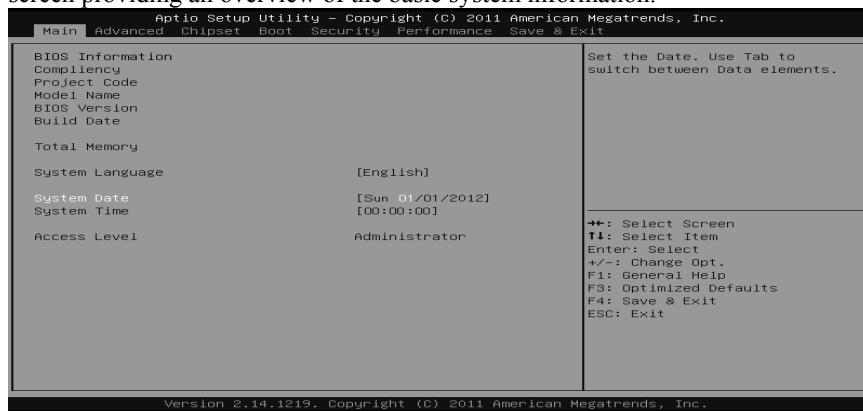
- The default UEFI BIOS settings apply for most conditions to ensure optimum performance of the motherboard. If the system becomes unstable after changing any settings, please load the default settings to ensure system's compatibility and stability. Use Load Setup Default under the Exit Menu.
- For better system performance, the UEFI BIOS firmware is being continuously updated. The UEFI BIOS information described in this manual is for your reference only. The actual UEFI BIOS information and settings on board may be slightly different from this manual.
- The content of this manual is subject to be changed without notice. We will not be responsible for any mistakes found in this user's manual and any system damage that may be caused by wrong-settings.

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## **1 Main Menu**

Once you enter AMI UEFI BIOS Setup Utility, the Main Menu will appear on the screen providing an overview of the basic system information.



### **BIOS Information**

Shows system information including UEFI BIOS version, model name, marketing name, built date, etc.

### **Total Memory**

Shows system memory size, VGA shard memory will be excluded.

### **System Date**

Set the system date. Note that the ‘Day’ automatically changes when you set the date.

### **System Time**

Set the system internal clock.

### **Access Level**

Shows the access level of current user.

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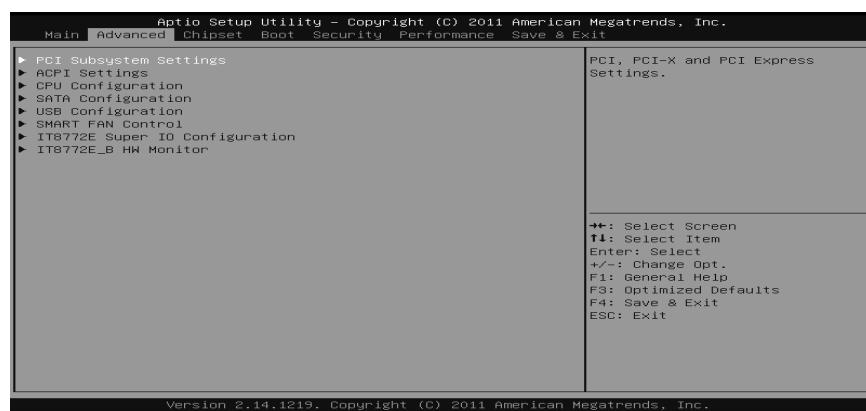
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## 2 Advanced Menu

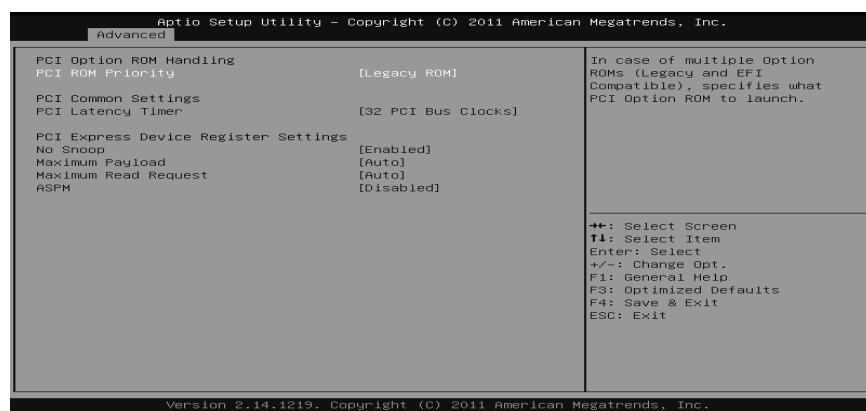
The Advanced Menu allows you to configure the settings of CPU, Super I/O, Power Management, and other system devices.

### Notice

- Beware of that setting inappropriate values in items of this menu may cause system to malfunction.



### PCI Subsystem Settings



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## **PCI ROM Priority**

In case of multiple option ROMs (Legacy and EFI Compatible), this item specifies what PCI Option ROM to launch

Options: Legacy ROM (Default) / EFI Compatible ROM

## **PCI Latency Timer**

This item sets the value to be programmed into PCI Latency Timer Register.

Options: 32 PCI Bus Clocks (Default) / 64 PCI Bus Clocks / 96 PCI Bus Clocks / 128 PCI Bus Clocks / 160 PCI Bus Clocks / 192 PCI Bus Clocks / 224 PCI Bus Clocks / 248 PCI Bus Clocks

## **No Snoop**

This item enables or disables PCI Express Device No Snoop option.

Options: Enabled (Default) / Disabled

## **Maximum Payload**

This item sets Maximum Payload of PCI Express Device or allows System BIOS to select the value.

Options: Auto (Default) / 128 Bytes / 256 Bytes / 512 Bytes / 1024 Bytes / 2048 Bytes / 4096 Bytes

## **Maximum Read Request**

This item sets Maximum Read Request Size of PCI Express Device or allows System BIOS to select the value.

Options: Auto (Default) / 128 Bytes / 256 Bytes / 512 Bytes / 1024 Bytes / 2048 Bytes / 4096 Bytes

## **ASPM**

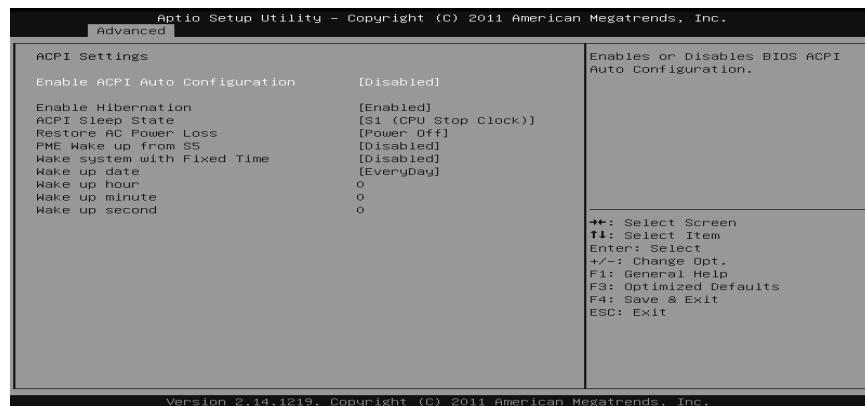
This item sets the ASPM Level: Force LO – Force all links to LO State; Auto – BIOS auto configures; Disabled – Disables ASPM.

Options: Disabled (Default) / Auto / Force LO

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## ACPI Settings



### **Enable ACPI Auto Configuration**

This item enables or disables BIOS ACPI auto configuration function.

Options: Disabled (Default) / Enabled

### **Enable Hibernation**

This item enables or disables system ability to hibernate (0S/S4 sleep state). This option may be not effective with some OS.

Options: Enabled (Default) / Disabled

### **ACPI Sleep State**

This item selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

Options: S1 (CPU Stop Clock) (Default) / Suspend Disabled

### **Restore AC Power Loss**

This setting specifies how your system should behave after a power fail or interrupts occurs. Power Off: Leaving the system in power-off status after power recovers. Power ON: Powering on the system immediately when power returns. Last State: 1. Leaving the system in power-off if the system shuts down at DC off status; 2. Powering on the system immediately if the system shuts down at DC on status.

Options: Power Off (Default) / Power On / Last Stat

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## **PME Wake up from S5**

The item enables the system to wake from S5 using PME event.  
Options: Disabled (Default) / Enabled

## **Wake system with Fixed Time**

This item enables or disables the system to wake on by alarm event. When this item is enabled, the system will wake on the hr::min::sec specified.  
Options: Disabled (Default) / Enabled

## **Wake up date**

You can choose which date the system will boot up.

## **Wake up hour / Wake up minute / Wake up second**

You can choose the system boot up time, input hour, minute and second to specify.

## **CPU Configuration**



## **Active Processor Cores**

This item sets number of cores to enable in each processor package.  
Options: All (Default) / 1 / 2 / 3

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## **Limit CPUID Maximum**

When the computer is booted up, the operating system executes the CPUID instruction to identify the processor and its capabilities. Before it can do so, it must first query the processor to find out the highest input value CPUID recognizes. This determines the kind of basic information CPUID can provide the operating system.

Options: Disabled (Default) / Enabled

## **Execute-Disable Bit**

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.).

Options: Enabled (Default) / Disabled

## **Intel Virtualization Technology**

Virtualization Technology can virtually separate your system resource into several parts, thus enhance the performance when running virtual machines or multi interface systems.

Options: Disabled (Default) / Enabled

## **Hardware Prefetcher**

The processor has a hardware prefetcher that automatically analyzes its requirements and prefetches data and instructions from the memory into the Level 2 cache that are likely to be required in the near future. This reduces the latency associated with memory reads.

Options: Enabled (Default) / Disabled

## **Adjacent Cache Line Prefetch**

The processor has a hardware adjacent cache line prefetch mechanism that automatically fetches an extra 64-byte cache line whenever the processor requests for a 64-byte cache line. This reduces cache latency by making the next cache line immediately available if the processor requires it as well.

Options: Enabled (Default) / Disabled

## **CPU C3 Report**

This item allows you to enable or disabled CPU C3 (ACPI C2) report to OS.

Options: Enabled (Default) / Disabled

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## **CPU C6 Report**

This item allows you to enable or disabled CPU C6 (ACPI C3) report to OS.  
Options: Enabled (Default) / Disabled

## **SATA Configuration**



### **SATA Controller(s)**

This item enables/disables Serial ATA Device.  
Options: Enabled (Default) / Disabled

### **SATA Mode Selection**

This item determines how SATA controller(s) operate.  
Options: IDE (Default) / AHCI

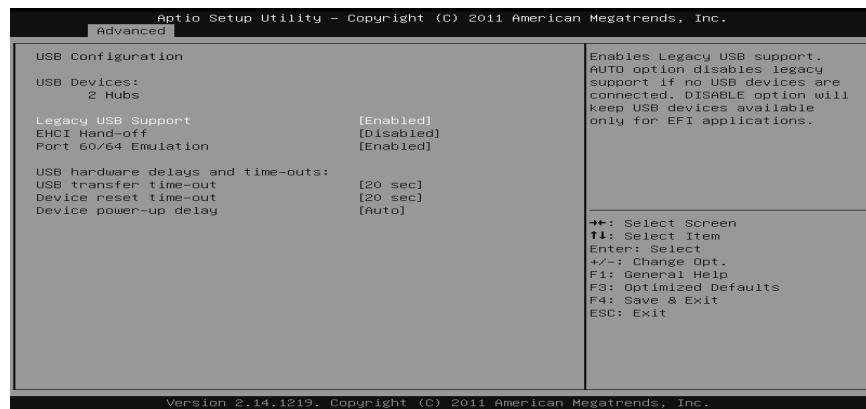
### **SMART Self Test**

This item allows you run SMART self test on all HDDs during POST.  
Options: Disabled (Default) / Enabled

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## USB Configuration



### **Legacy USB Support**

This item determines if the BIOS should provide legacy support for USB devices like the keyboard, mouse, and USB drive. This is a useful feature when using such USB devices with operating systems that do not natively support USB (e.g. Microsoft DOS or Windows NT).

Options: Enabled (Default) / Disabled / Auto

### **EHCI Hand-Off**

This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

Options: Disabled (Default) / Enabled

### **Port 60/64 Emulation**

This items enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.

Options: Enabled (Default) / Disabled

### **USB transfer time-out**

The time-out value for Control, Bulk, and Interrupt transfers.

Options: 20 sec (Default) / 1 sec / 5 sec / 10 sec

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## **Device reset time-out**

The item sets USB mass storage device Start Unit command time-out.  
Options: 20 sec (Default) / 10 sec / 30 sec / 40 sec

## **Device power-up delay**

“Auto” uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.  
Options: Auto (Default) / Manual

## **Device power-up delay in seconds**

Delay range is 1 ~ 40 seconds, in one second increments.  
Options: 5 (Default)

## **SMART FAN Control**



### **CPU Smart FAN**

This item allows you to control the CPU Smart Fan function.  
Options: Disabled (Default) / Auto

### **CPU FAN Calibrate**

Press [ENTER] to calibrate CPU FAN.

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## **Control Mode**

This item provides several operation modes of the fan.  
Options: Quiet / Aggressive / Manual

## **Fan Ctrl OFF(°C)**

When CPU temperature is lower than this value, the CPU fan will keep lowest RPM.  
Options: 10 (°C) (default)

## **Fan Ctrl On(°C)**

When CPU temperature is higher than this value, the CPU fan controller will turn on.  
Options: 20 (°C) (Default)

## **Fan Ctrl Start Value**

This item sets CPU FAN Start Speed Value.  
Options: 50 (Default)

## **Fan Ctrl Sensitive**

The bigger the numeral is, the higher the FAN speed is.  
Options: 30 (Default)

## **Super IO Configuration**



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## Serial Port 1 Configuration



### Serial Port

This item enables or disables Serial Port (COM).

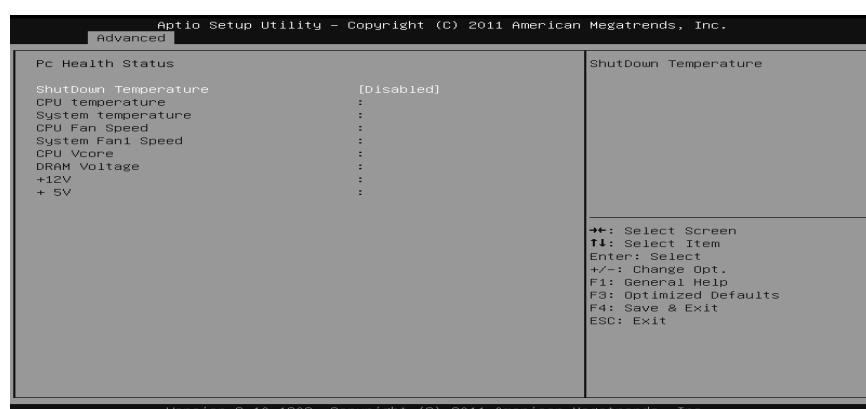
Options: Enabled (Default) / Disabled

### Change Settings

This item allows you to select an optimal setting for Super IO device.

Options: Auto (Default) / 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

## H/W Monitor



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## **Shutdown Temperature**

This item allows you to set up the CPU shutdown Temperature.

Options: Disabled (Default) / 70°C/158°F / 75°C/167°F / 80°C/176°F / 85°C/185°F / 90°C/194°F

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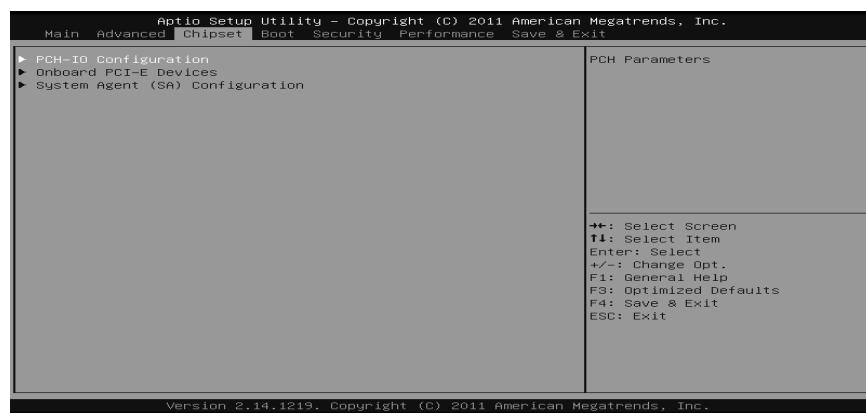
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## **3 Chipset Menu**

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components.

### **Notice**

- Beware of that setting inappropriate values in items of this menu may cause system to malfunction.



### **PCH-IO Configuration**



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## PCI Express Configuration



### **ASPM**

This item sets PCI Express Active State Power Management settings.  
Options: Disabled (Default) / L0s / L1 / L0sL1 / Auto

### **PCIE Speed**

This item selects PCI Express port speed.  
Options: Auto (Default) / Gen1 / Gen2

## USB Configuration



### **EHC11/2**

This item controls the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled.  
Options: Enabled (Default) / Disabled

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## PCH Azalia Configuration



### **Azalia**

This item controls detection of the Azalia device.  
Disabled = Azalia will be unconditionally disabled.  
Enabled = Azalia will be unconditionally Enabled.  
Auto = Azalia will be enabled if present, disabled otherwise.  
Options: Auto (Default) / Disabled / Enabled

### **EuP Control**

When EuP is enabled, the system will meet EuP requirement.  
Options: Disabled (Default) / Enabled in S5 / Enabled in S4-S5

### **SLP\_S4 Assertion Width**

This item selects a minimum assertion width of the SLP\_S4# signal.  
Options: 4-5 Seconds (Default) / Disabled / 1-2 Seconds / 2-3 Seconds / 3-4 Seconds

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## On Board PCIe Device



### **Launch Storage OpROM**

This item enables or disables boot Options for legacy mass storage devices with option ROM.

Options: Enabled (Default) / Disabled

### **Launch Video OpROM**

This item enables or disables execution of the legacy option ROM for video devices.

Options: Enabled (Default) / Disabled / Enabled when no UEFI Driver

### **Onboard PCIE LAN**

This item controls the PCI Express Root Port.

Options: Enabled (Default) / Disabled

### **Onboard LAN Option ROM**

This item enables or disables onboard LAN option ROM.

Options: Disabled (Default) / Enabled

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## System Agent (SA) Configuration

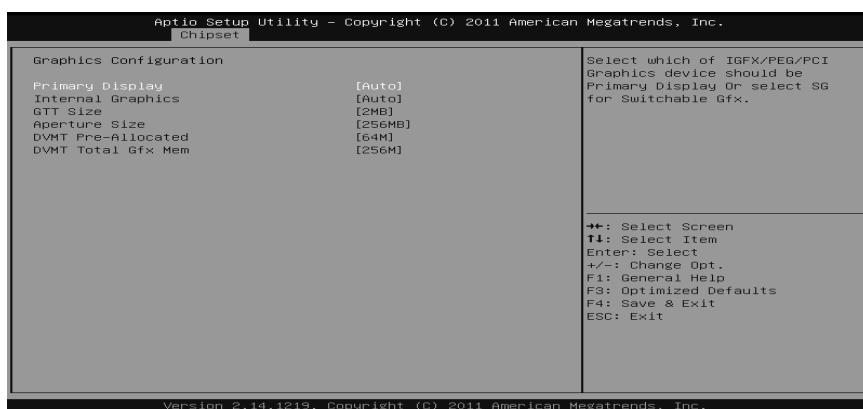


### **VT-d**

This item allows you check to enable VT-d function on MCH.

Options: Disabled (Default) / Enabled

## **Graphics Configuration**



### **Primary Display**

This item selects which of IGFX/PEG/PCI Graphics device should be Primary Display or select SG for Switchable Gfx.

Options: Auto (Default) / IGFX / PEG / PCI

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## ***Internal Graphics***

This item keeps IGD enabled based on the setup options.

Options: Auto (Default) / Disabled / Enabled

## ***GTT Size***

This item select GTT Size.

Options: 2MB (Default) / 1MB

## ***Aperture Size***

This item select Aperature Size.

Options: 256MB (Default) / 128MB / 512MB

## ***DVMT Pre-Allocated***

This item select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

Options: 64M (Default) / 32M / 96M / 128M / 160M / 192M / 224M / 256M / 288M / 320M / 352M / 384M / 416M / 448M / 480M / 512M / 1024M

## ***DVMT Total Gfx Mem***

This item select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

Options: 256MB (Default) / 128MB / MAX

## **NB PCIe Configuration**



## ***PEX16\_1 – Gen X***

This item configures PEG0 B0:D1:F0 Gen1-Gen3.

Options: Auto (Default) / Gen1 / Gen2 / Gen3

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## **PEG0 ASPM**

This item controls ASPM support for the PEG: Device 1 Function0. This has no effect if PEG is not the currently active device.

Options: Disabled (Default) / Auto / ASPM L0s / ASPM L1 / ASPM L0sL1

## **De-emphasis Control**

This item configures the De-emphasis control on PEG.

Options: -3.5 dB (Default) / -6 dB

## **PEG Sampler Calibrate**

This item enables or disables PEG Sampler Calibrate. Auto means Disabled for SNB MB/DT, Enabled for IVB A0 B0.

Options: Auto (Default) / Enabled / Disabled

## **Swing Control**

This item performs PEG Swing Control, on IVB C0 and Later.

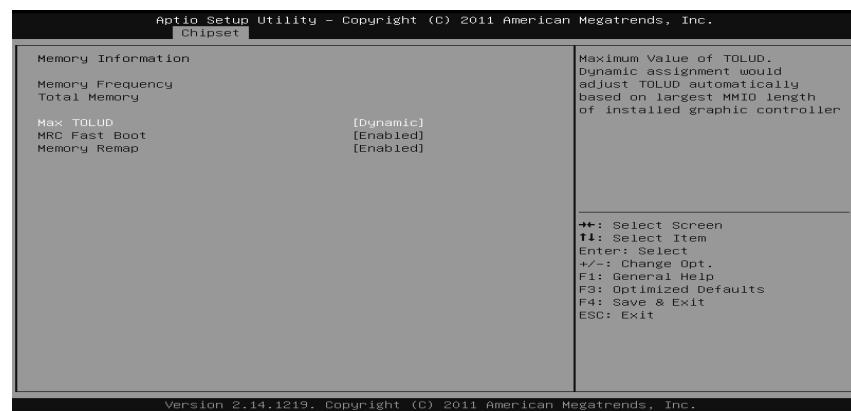
Options: Full (Default) / Reduced / Half

## **Gen3 Equalization**

This item performs PEG Gen3 Equalization steps.

Options: Enabled (Default) / Disabled

## **Memory Configuration**



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## ***Max TOLUD***

This item sets maximum value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.  
Options: Dynamic (Default) / 1 GB / 1.25 GB / 1.5 GB / 1.75 GB / 2 GB / 2.25 GB / 2.5 GB / 2.75 GB / 3 GB / 3.25 GB

## ***MRC Fast Boot***

This item enables or disables MRC Fast Boot.  
Options: Enabled (Default) / Disabled

## ***Memory Remap***

This item enables or disables memory remap above 4G.  
Options: Enabled (Default) / Disabled

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## 4 Boot Menu

This menu allows you to setup the system boot options.



### Setup Prompt Timeout

This item sets number of seconds to wait for setup activation key.

Options: 2 (Default)

### Bootup NumLock State

This item selects the keyboard NumLock state.

Options: On (Default) / Off

### Full Screen LOGO Display

This item allows you to enable/disable Full Screen LOGO Show function.

Options: Enabled (Default) / Disabled

### GateA20 Active

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

Options: Upon Request (Default) / Always

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## **Option ROM Messages**

This item sets the display mode for Option ROM.  
Options: Force BIOS (Default) / Keep Current

## **Interrupt 19 Capture**

Interrupt 19 is the software interrupt that handles the boot disk function. When set to Enabled, this item allows the option ROMs to trap interrupt 19.  
Options: Enabled (Default) / Disabled

## **CSM Support**

This item enables / disables CSM Support. If Auto is selected, based on OS, CSM will be enabled / disabled automatically.  
Options: Enabled (Default) / Disabled / Auto

## **BIOS Flash protection**

While enabled, it can't flash write and flash erase by SMI.  
Options: Enabled (Default) / Disabled

## **Boot Success Beep**

When this item is set to Enabled, BIOS will let user know boot success with beep.  
Options: Enabled (Default) / Disabled

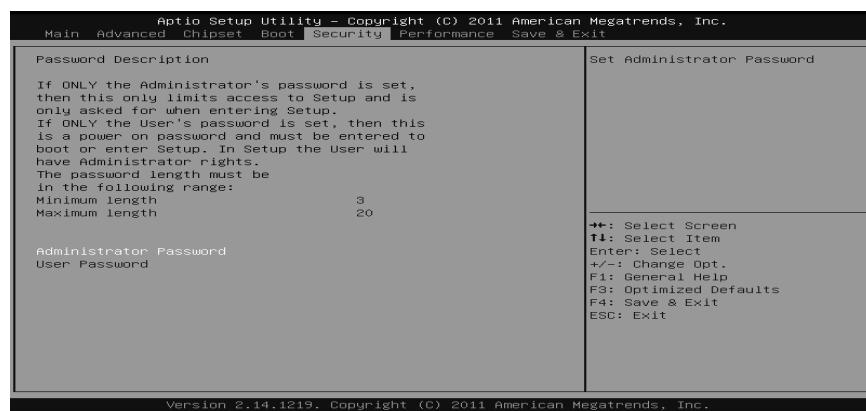
## **UEFI Boot**

This option enables/disables boot from the UEFI Devices.  
Options: Disabled (Default) / Enabled

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## **5 Security Menu**



### **Administrator Password**

This item sets Administrator Password.

### **User Password**

This item sets User Password.

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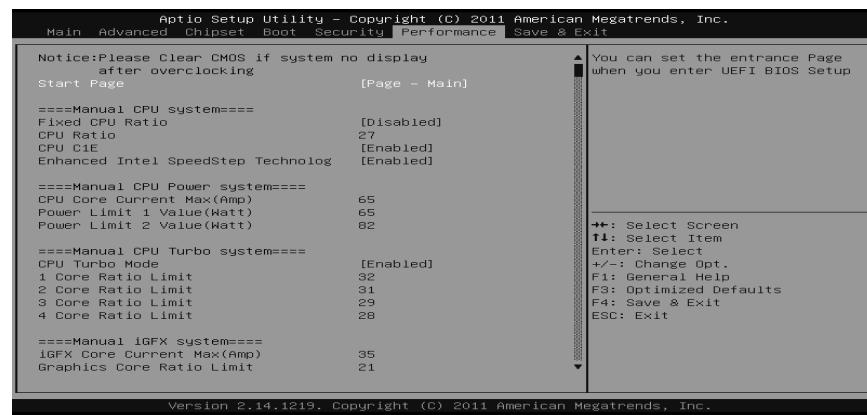
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## **6 Performance Menu**

This submenu allows you to change voltage and clock of various devices.  
(However, we suggest you use the default setting. Changing the voltage and clock improperly may damage the device.)

### **Notice**

- Beware of that setting inappropriate values in items of this menu may cause system to malfunction.



### **Start Page**

You can set the entrance page when you enter UEFI BIOS Setup.  
Options: Page – Main (Default) / Page – Advanced / Page – Chipset / Page – Boot / Page – Security / Page – Performance / Page – Save & Exit

### **Fixed CPU Ratio**

This item enables/disables Fixed CPU Ratio all the time.  
Options: Disabled (Default) / Enabled

### **CPU Ratio**

This item allows you to set the CPU ratio. This item is adjustable only when Fixed CPU Ratio is set to Enabled.  
Options: 27 (Default) / 16 ~ 36

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## **CPU C1E**

C1E is “Enhanced Halt State” function, this function helps to save power and decrease heat by lowering CPU frequency while the processor is not working.

Options: Enabled (Default) / Disabled

## **Enhanced Intel SpeedStep Technology**

This item enables/disables Enhanced Intel SpeedStep Technology.

Options: Enabled (Default) / Disabled

## **CPU Core Current Max (Amp)**

This item sets the Max instantaneous current allowed at any given time.

Options: 65 (Default)

## **Power Limit 1 Value (Watt)**

This item sets the power limit value which CPU must not exceed over a specific time.

Options: 65 (Default)

## **Power Limit 2 Value (Watt)**

This item sets the power limit value.

Options: 82 (Default)

## **CPU Turbo Mode**

This item enables/disables Turbo Mode.

Options: Enabled (Default) / Disabled

## **iGFX Core Current Max (Amp)**

This item sets iGFX core current MAX

Options: 35 (Default)

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## **Graphics Core Ratio Limit**

This item sets Graphics Core Ratio Limit.  
Options: 21 (Default)

## **DDR3 DRAM Timing Control**

This item allows you to choose to manually or automatically regulate the DRAM Timing.  
Options: By SPD (Default) / Manual

## **DDR3 DRAM Multiplier**

This item allows you to set DDR3 DRAM Multiplier.  
Options: 13.33(Default) / 10.67 / 14 / 16 / 18 / 20 / 22 / 26 / 28

## **DDR3 DRAM Command Rate**

This item allows you to set DDR3 DRAM Multiplier.  
Options: Auto (Default) / 1T / 2T

## **CAS# Latency (tCL)**

This item allows you to select CAS Latency of DDR3.  
Options: 9 (Default) / 3 ~ 15

## **Row Precharge Time (tRP)**

This item allows you to select Row Precharge Time of DDR3.  
Options: 9 (Default) / 3 ~ 15

## **RAS# to CAS# Delay (tRCD)**

This item allows you to select Row Address to Column Address Delay of DDR3.  
Options: 9 (Default) / 3 ~ 15

## **RAS# Active Time (tRAS)**

This item allows you to select Row Active Time of DDR3.  
Options: 24 (Default) / 9 ~ 63

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## **Write Recovery Time (tWR)**

This item allows you to select Internal Write to Read Command Delay of DDR3.  
Options: 10 (Default) / 3 ~ 31

## **Row Refresh Cycle Time (tRFC)**

This item allows you to select Minimum Refresh Recovery Time of DDR3.  
Options: 74 (Default) / 15 ~ 255

## **Write to Read Delay (tWTR)**

This item allows you to select Internal Write to Read Command Delay of DDR3.  
Options: 5 (Default) / 3 ~ 31

## **Active to Active Delay (tRRD)**

This item allows you to select Row Active to Row Active Delay of DDR3.  
Options: 4 (Default) / 4 ~ 15

## **Read CAS# Precharge (tRTP)**

This item allows you to select Read to Precharge Delay of DDR3.  
Options: 5 (Default) / 4 ~ 15

## **Four Active Window Delay (tFAW)**

This item allows you to select Four Active Window Delay of DDR3.  
Options: 20 (Default) / 4 ~ 63

## **CAS Write Latency (CWL)**

This item allows you to select CAS Write Latency of DDR3.  
Options: 7 (Default) / 5 ~ 15

## **DRAM Voltage**

This item sets DRAM Voltage.

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## **DDR3 A1/B1 Information**

These items display SPD information of DDR3 memory.

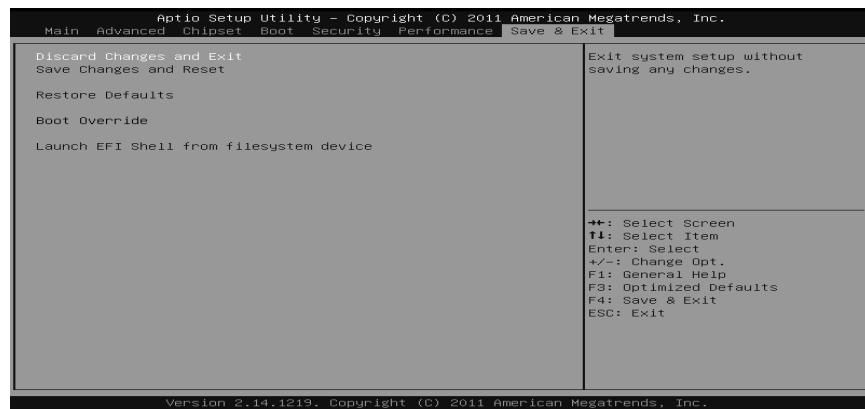


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## **7 Exit Menu**

This menu allows you to load the optimal default settings, and save or discard the changes to the BIOS items.



### **Discard Changes and Exit**

Abandon all changes made during the current session and exit setup.

### **Save Changes and Reset**

Reset the system after saving the changes.

### **Restore Defaults**

This selection allows you to reload the BIOS when problem occurs during system booting sequence. These configurations are factory settings optimized for this system.

### **Launch EFI Shell from file system device**

Attempts to launch EFI Shell application (Shellx64.efi) form one of the available file system devices.