BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section **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.
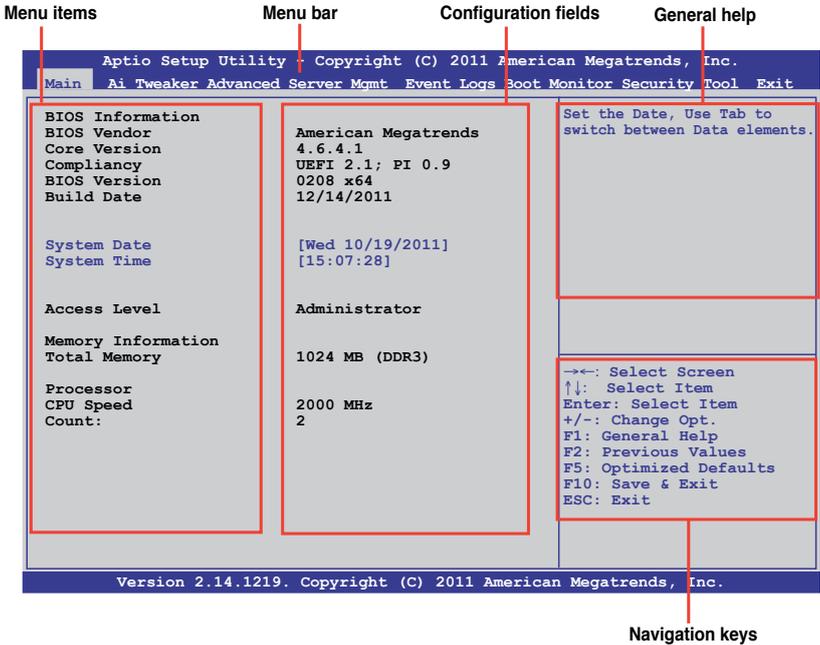
If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

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.

BIOS menu screen

Menu items   Menu bar   Configuration fields   General help

```
        Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Main  Ai Tweaker Advanced Server Mgmt  Event Logs Boot Monitor Security Tool  Exit

  BIOS Information                                      Set the Date, Use Tab to
  BIOS Vendor           American Megatrends            switch between Data elements.
  Core Version          4.6.4.1
  Compliancy            UEFI 2.1; PI 0.9
  BIOS Version          0208 x64
  Build Date            12/14/2011

  System Date           [Wed 10/19/2011]
  System Time           [15:07:28]

  Access Level          Administrator

  Memory Information
  Total Memory          1024 MB (DDR3)                 →←: Select Screen
                                                       ↑↓:  Select Item
  Processor                                            Enter: Select Item
  CPU Speed             2000 MHz                        +/-: Change Opt.
  Count:                2                               F1: General Help
                                                        F2: Previous Values
                                                        F5: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit


        Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

Navigation keys

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 Ai Tweaker settings
Advanced	For changing the advanced system settings
Server Mgmt	For changing the server management settings
Event Logs	For changing the event log settings
Boot	For changing the system boot configuration
Monitor	For displaying the system temperature, power status, and changing the fan settings
Security	For changing the security settings
Tool	For configuring options for special functions
Exit	For selecting the 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.

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 (Event Logs, Advanced, Monitor, Boot, Tool, and Exit) on the menu bar have their respective menu items.

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>.

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.

General help

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

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.

Pop-up window

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

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.

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, time, language, and security settings.

> The Server Management tab and menu appear only when you install ASMB card on the motherboard.

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Main   Ai Tweaker Advanced Server Mgmt Event Logs Boot Monitor Security Tool Exit

  BIOS Information                              Set the Date, Use Tab to
  BIOS Vendor            American Megatrends    switch between Data elements.
  Core Version           4.6.4.1
  Compliancy             UEFI 2.1; PI 0.9
  BIOS Version           0208 x64
  Build Date             12/14/2011

  System Date            [Wed 10/19/2011]
  System Time            [15:07:28]


  Access Level           Administrator

  Memory Information
  Total Memory           1024 MB (DDR3)
                                              →←: Select Screen
  Processor                                   ↑↓:  Select Item
  CPU Speed              2000 MHz              Enter: Select Item
  Count:                2                      +/-: Change Opt.
                                              F1: General Help
                                              F2: Previous Values
                                              F5: Optimized Defaults
                                              F10: Save & Exit
                                              ESC: Exit


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```

System Date [Day xx/xx/xxxx]

Allows you to set the system date.

System Time [xx:xx:xx]
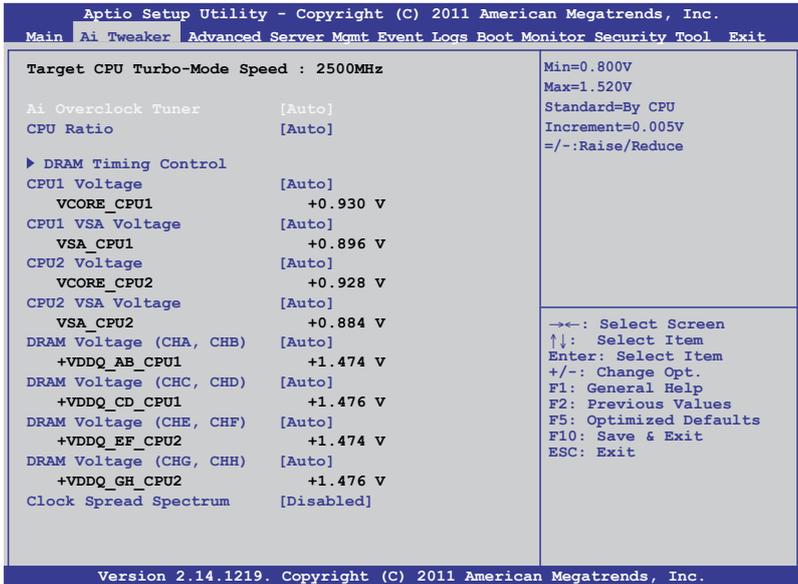
Allows you to set the system time.

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.

```
            Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
   Main  Ai Tweaker  Advanced Server Mgmt Event Logs Boot Monitor Security Tool  Exit

   Target CPU Turbo-Mode Speed : 2500MHz              Min=0.800V
                                                      Max=1.520V
   Ai Overclock Tuner          [Auto]                 Standard=By CPU
   CPU Ratio                   [Auto]                 Increment=0.005V
                                                      =/-:Raise/Reduce
 ▶ DRAM Timing Control
   CPU1 Voltage                [Auto]
      VCORE_CPU1                   +0.930 V
   CPU1 VSA Voltage            [Auto]
      VSA_CPU1                     +0.896 V
   CPU2 Voltage                [Auto]
      VCORE_CPU2                   +0.928 V
   CPU2 VSA Voltage            [Auto]
      VSA_CPU2                     +0.884 V         →←: Select Screen
   DRAM Voltage (CHA, CHB)     [Auto]              ↑↓:  Select Item
      +VDDQ_AB_CPU1                +1.474 V         Enter: Select Item
   DRAM Voltage (CHC, CHD)     [Auto]              +/-: Change Opt.
      +VDDQ_CD_CPU1                +1.476 V         F1: General Help
   DRAM Voltage (CHE, CHF)     [Auto]              F2: Previous Values
      +VDDQ_EF_CPU2                +1.474 V         F5: Optimized Defaults
   DRAM Voltage (CHG, CHH)     [Auto]              F10: Save & Exit
      +VDDQ_GH_CPU2                +1.476 V         ESC: Exit
   Clock Spread Spectrum       [Disabled]


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```

Ai Overclock Tuner [Auto]

Allows you to select the CPU overclocking options to achieve the desired CPU internal frequency. Select any of these preset overclocking configuration options:

[Auto]   Loads the optimal settings for the system.

[Manual]   Allows you to individually set overclocking parameters.

BCLK Frequency [XXX]

Allows you to adjust the CPU and VGA frequency to enhance the system performance. Set **Ai Overclock Tuner** to [Manual] to show BCLK Frequency. Use the <+> and <-> keys to adjust the value. You can also key in the desired value using the numeric keypad. The values range from 80.0MHz to 300.0MHz.

CPU Ratio [Auto]

This item allows users adjust the maximum non-turbo CPU ratio. Use the <+> and <-> keys to adjust the value. The values range from 12 to 57 with 1 interval.

CPU1 Voltage [Auto]

Use the <+> and <-> keys to adjust the value. The values range from 0.800V to 1.520V with 0.005V interval.

CPU1 VSA Voltage [Auto]

Use the <+> and <-> keys to adjust the value. The values range from 0.800V to 1.520V with 0.005V interval.

CPU2 Voltage [Auto]

Use the <+> and <-> keys to adjust the value. The values range from 0.800V to 1.520V with 0.005V interval.

CPU2 VSA Voltage [Auto]

Use the <+> and <-> keys to adjust the value. The values range from 0.800V to 1.520V with 0.005V interval.

DRAM Voltage (CHA, CHB) [Auto]

Use the <+> and <-> keys to adjust the value. The values range from 1.20V to 1.52V with 0.005V interval.

DRAM Voltage (CHC, CHD) [Auto]

Use the <+> and <-> keys to adjust the value. The values range from 1.20V to 1.52V with 0.005V interval.

DRAM Voltage (CHE, CHF) [Auto]

Use the <+> and <-> keys to adjust the value. The values range from 1.20V to 1.52V with 0.005V interval.

DRAM Voltage (CHG, CHH) [Auto]

Use the <+> and <-> keys to adjust the value. The values range from 1.20V to 1.52V with 0.005V interval.

Clock Spread Spectrum [Disabled]

[Disabled] Enhances BCLK overclocking ability.
[Enabled] For [EMI] control.

DRAM Timing Control

```
          Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
        Ai Tweaker

   Primary Timings                                         Min=0.800V
   DRAM CAS# Latency              [Auto]                   Max=1.520V
   DRAM CAS# Latency          9                            Standard=By CPU
   DRAM RAS# to CAS# Delay        [Auto]                   Increment=0.005V
   DRAM RAS# to CAS# Delay    9                            =/-:Raise/Reduce
   DRAM RAS# PRE Time             [Auto]
   DRAM RAS# PRE Time         9
   DRAM RAS# ACT Time             [Auto]
   DRAM RAS# ACT Time         24
   DRAM COMMAND Mode              [Auto]
   DRAM COMMAND Mode          1

   Secondary Timings
   DRAM RAS# to RAS# Delay        [Auto]                   →←:  Select  Screen
   DRAM RAS# to RAS# Delay    4                            ↑↓:    Select  Item
   DRAM REF Cycle Time            [Auto]                   Enter: Select  Item
   DRAM REF Cycle Time        74                           +/-:  Change  Opt.
   DRAM WRITE Recovery Time       [Auto]                   F1:  General  Help
   DRAM WRITE Recovery Time   10                           F2: Previous Values
   DRAM READ to PRE Time          [Auto]                   F5: Optimized Defaults
   DRAM READ to PRE Time      5                            F10:  Save  &  Exit
   DRAM FOUR ACT WIN Time         [Auto]                   ESC: Exit
   DRAM FOUR ACT WIN Time     20
   DRAM WRITE to READ Delay       [Auto]
   DRAM WRITE to READ Delay   5


   DRAM Write Latency             [Auto]
   DRAM Write Latency         7

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```

Use the scroll to view items.

Primary Timings

DRAM CAS# Latency [Auto]
Use the <+> and <-> keys to adjust the value. The values range from 3 to 15 with 1 interval.

DRAM RAS# to CAS# Delay [Auto]
Use the <+> and <-> keys to adjust the value. The values range from 4 to 15 with 1 interval.

DRAM RAS# PRE Time [Auto]
Use the <+> and <-> keys to adjust the value. The values range from 4 to 15 with 1 interval.

DRAM RAS# ACT Time [Auto]
Use the <+> and <-> keys to adjust the value. **The values range from 4 to 40** with 1 interval.

DRAM COMMAND Mode [Auto]
Use the <+> and <-> keys to adjust the value. **The values range from 1 to 3** with 1 interval.

Secondary Timings

DRAM RAS# to RAS# Delay [Auto]
Use the <+> and <-> keys to adjust the value. **The values range from 4 to 7** with 1 interval.

DRAM REF Cycle Time [Auto]
Use the <+> and <-> keys to adjust the value. **The values range from 48 to 511 with 1 interval.**

DRAM WRITE Recovery Time [Auto]
Use the <+> and <-> keys to adjust the value. **The values range from 5 to 31** with 1 interval.

DRAM READ to PRE Time [Auto]
Use the <+> and <-> keys to adjust the value. **The values range from 4 to 15** with 1 interval.

DRAM FOUR ACT WIN Time [Auto]
Use the <+> and <-> keys to adjust the value. **The values range from 16 to 63 with 1 interval.**

DRAM WRITE to READ Delay [Auto]
Use the <+> and <-> keys to adjust the value. **The values range from 4 to 15** with 1 interval.

DRAM WRITE Latency [Auto]
Use the <+> and <-> keys to adjust the value. **The values range from 1 to 15** with 1 interval.

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.

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main Ai Tweaker  Advanced  Server Mgmt Event Logs Boot Monitor Security Tool  Exit
  ┌──────────────────────────────────────────────┬──────────────────────────────────┐
  │ ▶ CPU Configuration                          │ CPU Configuration Parameters     │
  │ ▶ CPU Power Management Configuration          │                                  │
  │ ▶ Chipset Configuration                       │                                  │
  │ ▶ PCH SATA Configuration                      │                                  │
  │ ▶ PCH SCU SAS Configuration                   │                                  │
  │ ▶ PCI Subsystem Setting                       │                                  │
  │ ▶ USB Configuration                           │                                  │
  │ ▶ ACPI Settings                               │                                  │
  │ ▶ WHEA Configuration                          │ →←: Select Screen                │
  │ ▶ APM                                         │ ↑↓:  Select Item                 │
  │ ▶ Serial Port Console Redirection             │ Enter: Select Item               │
  │ ▶ Onboard LAN Configuration                   │ +/-: Change Opt.                 │
  │ ▶ ME Subsystem                                │ F1: General Help                 │
  │ ▶ Marvell SATA Configuration                  │ F2: Previous Values              │
  │ ▶ Legacy Devices Configuration                │ F5: Optimized Defaults           │
  │ ▶ Runtime Error Logging                       │ F10: Save & Exit                 │
  │                                               │ ESC: Exit                        │
  └──────────────────────────────────────────────┴──────────────────────────────────┘
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```

4.5.1   CPU Configuration

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                    Advanced
  ┌──────────────────────────────────────────────┬──────────────────────────────────┐
  │  CPU Confguration                             │ Socket specific CPU Information   │
  │                                               │                                  │
  │ ▶ Socket 1 CPU Information                    │                                  │
  │ ▶ Socket 2 CPU Information                    │                                  │
  │                                               │                                  │
  │   CPU Speed                    2000 MHz       │                                  │
  │                                               │                                  │
  │   64-bit                       Supported      │                                  │
  │                                               │                                  │
  │   Hyper Threading              [Enabled]      │ →←: Select Screen                │
  │   Active Processor Cores       [All]          │ ↑↓:  Select Item                 │
  │   Limit CPUID Maximum          [Disabled]     │ Enter: Select Item               │
  │   Execute Disable Bit          [Enabled]      │ +/-: Change Opt.                 │
  │   Server Class                 [Custom]       │ F1: General Help                 │
  │   Hardware Prefetcher          [Enabled]      │ F2: Previous Values              │
  │   Adjacent Cache Line Prefetch [Enabled]      │ F5: Optimized Defaults           │
  │   DCU Streamer Prefetcher      [Enabled]      │ F10: Save & Exit                 │
  │   DCU IP Pretecher             [Enabled]      │ ESC: Exit                        │
  │   Intel Virtualization Technology [Enabled]   │                                  │
  │   Local APIC Mode              [Auto]         │                                  │
  └──────────────────────────────────────────────┴──────────────────────────────────┘
          Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

Socket 1 CPU Information

Enter to view socket specific CPU Information.

```
        Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                 Advanced

  Socket 1 CPU Information

  Intel(R) Xeon(R) CPU E5-2660 0 @ 2.20GHz

  CPU Signature                206d6
  Microcode Patch              613
  Max CPU Speed                2200 MHz
  Min CPU Speed                1200 MHz
  Processor Cores              6
  Intel HT Technology          Supported
  Intel VT-X Technology        Supported
                                                 →←: Select Screen
  L1 Data Cache                32kB x8            ↑↓: Select Item
  L1 Code Cache                32kB x8            Enter: Select Item
  L2 Cache                     256kB x8           +/-: Change Opt.
  L3 Cache                     20480 kB           F1: General Help
                                                 F2: Previous Values
                                                 F5: Optimized Defaults
                                                 F10: Save & Exit
                                                 ESC: Exit

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```

Socket 2 CPU Information

Enter to view socket specific CPU Information.

```
        Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                 Advanced

   Socket 2 CPU Information

   Intel(R) Xeon(R) CPU E5-2660 0 @ 2.20GHz

   CPU Signature               206d6
   Microcode Patch             613
   Max CPU Speed               2200 MHz
   Min CPU Speed               1200 MHz
   Processor Cores             8
   Intel HT Technology         Supported
   Intel VT-X Technology       Supported
                                                 →←: Select Screen
   L1 Data Cache               32 kB x 8          ↑↓: Select Item
   L1 Code Cache               32 kB x 8          Enter: Select Item
   L2 Cache                    256 kB x 8         +/-: Change Opt.
   L3 Cache                    20480 kB           F1: General Help
                                                 F2: Previous Values
                                                 F5: Optimized Defaults
                                                 F10: Save & Exit
                                                 ESC: Exit

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```

Hyper Threading [Enabled]

This item allows you to enable/disable the Intel Hyper-Threading Technology function. Enable for Windows XP and Linux or disable for other OS. When disabled, only one thread per activated core is enabled.
Configuration options: [Disabled] [Enabled]

Active Processor Cores [All]

This item sets the number of cores to enable in each processor package.
Configuration options: [All] [1] [2] [3] [4] [5] [6] [7]

Limit CPUID Maximum [Disabled]

Setting this item to [Enabled] allows legacy operating system to boot even without support for CPUs with extended CPUID functions.
Configuration options: [Disabled] [Enabled]

Execute Disable Bit [Enabled]

XP 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).
Configuration options: [Disabled] [Enabled]

Server Class [Custom]

Use Intel recommended prefetch settings.
Configuration options: [Enterprise] [High Performance(HPC)] [Custom]

> You can only customize the items below when you enable the Server Class to **[Custom]**.

Hardware Prefetcher [Enabled]
This item allows you to turn on/off the mid level cache(L2) streamer prefetcher.Configuration options: [Disabled] [Enabled]

Adjacent Cache Line Prefetch [Enabled]
This item allows you to turn on/off prefetching of adjacent cache lines.
Configuration options: [Disabled] [Enabled]

DCU Streamer Prefetcher [Enabled]
This item allows you to enable/disable prefetching of next L1 data line based upon multiple loads in same cache line.
Configuration options: [Disabled] [Enabled]

DCU IP Prefetcher [Enabled]
This item allows you to enable/disable prefetching of next L1 line based upon sequential load history.
Configuration options: [Disabled] [Enabled]

Intel Virtualization Technology [Enabled]

When this item is enabled, VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
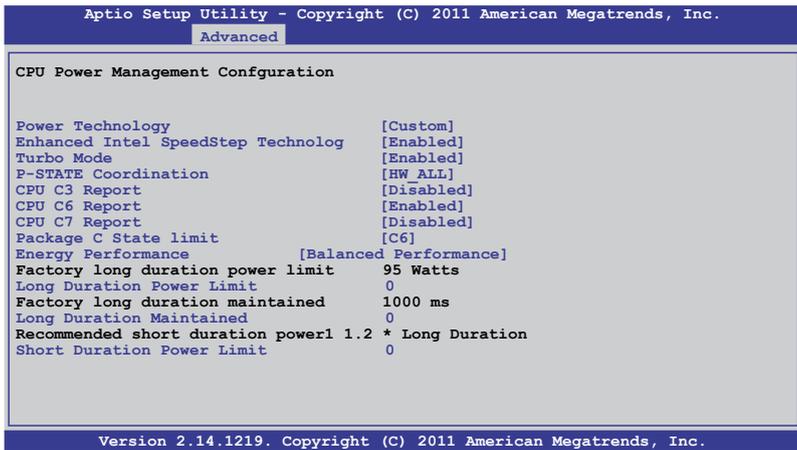Configuration options: [Disabled] [Enabled]

Local APIC Mode [Auto]

Allows you to enable one or both the Advanced Programmable Interrupt Controllers (APIC) with APIC ID values greater than 254.

Configuration options: [Auto] [xAPIC] []x2APIC]

CPU Power Management Configuration

```
        Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                     Advanced

CPU Power Management Confguration


Power Technology                        [Custom]
Enhanced Intel SpeedStep Technolog      [Enabled]
Turbo Mode                              [Enabled]
P-STATE Coordination                    [HW_ALL]
CPU C3 Report                           [Disabled]
CPU C6 Report                           [Enabled]
CPU C7 Report                           [Disabled]
Package C State limit                   [C6]
Energy Performance          [Balanced Performance]
Factory long duration power limit       95 Watts
Long Duration Power Limit               0
Factory long duration maintained        1000 ms
Long Duration Maintained                0
Recommended short duration power1 1.2 * Long Duration
Short Duration Power Limit               0



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```

Power Technology [Custom]
This item allows you to enable power management features.

Configuration options: [Disable] [Energy Efficient] [Custom]

> You can only customize the items below when you enable the Power Technology to **[Custom]**.

Enhanced Intel SpeedStep Technology [Enabled]
Enable Intel SpeedStep for allowing the system operation system to dynamically adjust processor voltage and cores frequency to result in decreased average power consumption and decreased average heat production.
Configuration options: [Disabled] [Enabled]

Turbo Mode [Enabled]
This item automatically allows processor cores to run faster than the base operating frequency if it's operating below power, current, and temperature specification limit.
Configuration options: [Disabled] [Enabled]

P-STATE Coordination [HW_ALL]
This item allows you to change P-STATE Coordination type.
Configuration options: [HW_ALL] [SW_ALL] [SW_ANY]

CPU C3 Report [Disabled]
This item allows you to enable/disable CPU C3(ACPI C2) report.
Configuration options: [Disabled] [Enabled]

CPU C6 Report [Enabled]
This item allows you to enable/disable CPU C6(ACPI C3) report.
Configuration options: [Disabled] [Enabled]

CPU C7 Report [Disabled]
This item allows you to enable/disable CPU C7(ACPI C3) report.
Configuration options: [Disabled] [Enabled]

Package C State limit [C6]
This item allows you to set package C State limit.
Configuration options: [C0] [C2] [C6] [C7] [No Limit]

Energy Performance [Balanced Performance]
This item allows you to optimize between performance and power savings. Configuration options: [Performance] [Balanced Performance] [Balanced Energy] [Energy Efficient]

Factory long duration power limit   95Watts

Long Duration Power Limit   0
Allows you to set long duration power limit in watts. Use the <+> and <-> keys to adjust the value.

Factory long duration maintained   1000 ms

Long Duration Maintained   0
Allows you to set time window which the long duration power is maintained. Use the <+> and <-> keys to adjust the value.

Recommended short duration power1   1.2 * Long Duration

Short Duration Power Limit   0
Allows you to set short duration power limit in watts. Use the <+> and <-> keys to adjust the value.

Chipset Configuration

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                  Advanced

  ▶ QPI Configuration                          QPI Configuration Page
  ▶ Memory Configuration
  ▶ CPU IIO Bridge Configuration
  ▶ PCH Configuration
  ▶ Intel(R) VT for Directed I/O Configuration
```

QPI Configuration

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                  Advanced

  Current QPI Link Speed        Fast              Enable/Disable Isoc
  Current QPI Link Freq         7.2 GT/s
  Isoc                          [Enabled]
  QPI Link Speed Mode           [Fast]
  QPI Link Frequency Select     [Auto]
  QPI Link0s                    [Disabled]
  QPI Link0p                    [Disabled]
  QPI Link1                     [Enabled]
```

Isoc [Enabled]
Configuration options: [Disabled] [Enabled]

QPI Link Speed Mode [Fast]
This item allows you to select the QPI link speed as either the fast mode or
slow mode.
Configuration options: [Slow] [Fast]

QPI Link Frequency Select [Auto]
This item allows for selecting the QPI link frequency
Configuration options: [Auto] [6.4 GT/s] [7.2 GT/s (Fast Mode Only)] [8.0 GT/s
(Fast Mode Only)]

QPI Link0s [Disabled]
Configuration options: [Disabled] [Enabled]

QPI Link0p [Disabled]
Configuration options: [Disabled] [Enabled]

QPI Link1 [Enabled]
Configuration options: [Disabled] [Enabled]

Memory Configuration

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                          Advanced

  Compatibility RID              [Enabled]            Support for Compatibility
  Memory Configuration                                Revision ID(CRID)
                                                      Functionality mentioned in
  Total Memory                   16384 MB (DDR3)      Sandybridge bios spec
  Current Memory Mode            Independent
  Currently Memory Speed         1333 MHz
  Mirroring                      Not Possible
  Sparing                        Not Possible
  Memory Mode                    [Independent]
  Numa                           [Enabled]
  DDR Speed                      [Auto]
  Channel Interleaving           [Auto]
  Rank Interleaving              [Auto]
  Patrol Scrub                   [Disabled]          →←: Select Screen
  Demand Scrub                   [Enabled]           ↑↓:  Select Item
  Data Scrambling                [Enabled]           Enter: Select Item
  Device Tagging                 [Disabled]          +/-: Change Opt.
  Thermal Throttling             [CLTT]              F1: General Help
  Enable High Temp.              [Disabled]          F2: Previous Values
  Allow 2x Refresh               [Enabled]           F5: Optimized Defaults
  Altitude                       [300 M]             F10: Save & Exit
  Memory HOT sensor support      [Enabled]           ESC: Exit
  ▶ DIMM Information


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```

Compatibility RID [Enabled]
Supports compatibility revision ID (CRID) functionality mentioned in Sandybridge
BIOS spec.

Configuration options: [Enabled] [Disabled]

Memory Mode [Independent]
Select the mode for memory initializaton.

Configuration options: [Independent]

Numa [Enalbled]
Allows you to disable or enable Non Uniform Memory Access.

Configuration options: [Enabled] [Disabled]

DDR Speed [Auto]
This item allows you to configure force DDR speed.

Configuration options: [Auto] [Force DDR3 800] [Force DDR3 1066] [Force
DDR3 1333] [Force DDR3 1600] [Force DDR3 1866] [Force DDR3 2133] [Force
DDR3 2400] [Force DDR3 2666]

Channel Interleaving [Auto]
Select different channel interleaving setting.

Configuration options: [Auto] [1 Way] [2 Way] [3 Way] [4 Way]

Rank Interleaving [Auto]
Select different rank interleaving setting.

Configuration options: [Auto] [1 Way] [2 Way] [4 Way] [8 Way]

Patrol Scrub [Disabled]
This item allows you to enable/disable Patrol Scrub.

Configuration options: [Disabled] [Enabled]

Demand Scrub [Enabled]
This item allows you to enable/disable Demand Scrubbing Feature.

Configuration options: [Enabled] [Disabled]

Data Scrambling [Enabled]
This item allows you to enable/disable Data Scrambling.

Configuration options: [Enabled] [Disabled]

Device Tagging [Disabled]
This item allows you to enable/disable Device Tagging.

Configuration options: [Enabled] [Disabled]

Thermal Throttling [CLTT]
Configuration options: [Disabled] [OLTT] [CLTT]

Enable High Temp. [Disabled]
This item allows you to enable/disable high temperature mode.

Configuration options: [Disabled] [Enabled]

Allow 2x Refresh [Enabled]
This item allows you to enable/disable refreshing function.

Configuration options: [Disabled] [Enabled]

Altitude [300 M]
Shows system altitude above the sea level in meters.

Configuration options: [Auto] [300 M] [900 M] [1500 M] [3000 M]

Memory Hot sensor support [Enabled]
Configuration options: [Disabled] [Enabled]

DIMM Information

```
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                          Advanced

CPU1 DIMM Information

DIMM_A1                        Present 8192 MB(Indep

DIMM_B1                        Not Present

DIMM_C1                        Not Present

DIMM_D1                        Not Present


CPU2 DIMM Information

DIMM_E1                        Not Present

DIMM_F1                        Not Present

DIMM_G1                        Present 8192 MB Inde[

DIMM_H1                        Not Present
```

CPU IIO Bridge Configuration

```
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Intel(R) I/OAT                    [Disabled]
DCA Support                       [Enabled]
VGA Priority                      [Offboard]
TargetVGA                         VGA From CPU

















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```

Intel(R) I/OAT [Disabled]
This item allows you to enable/disable Intel I/O acceleration technology.

Configuration options: [Disabled] [Enabled]

DCA Support [Enabled]
This item allows you to enable/disable direct cache access support.

Configuration options: [Disabled] [Enabled]

VGA Priority [offboard]

This item allows you to decide the priority between onboard and 1st offboard video device found.

Configuration options: [Onboard] [Offboard]

PCH Configuration

```
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                      Advanced

    Name                            Patsburg              Support for PCH Compatibility
    Stepping                        06 (C1 Stepping)      Revision ID(CRID)
                                                          Functionality.
    SB Chipset Configuration
    PCH Compatibility RID           [Disabled]

    Deep Sx                         [Disabled]
    SCU devices                     [Enabled]
    Onboard SATA RAID Oprom         [Enabled]

    Audio Configuration
    Azalia HD Audio                 [Enabled]

    High Precision Event Timer Configuration
    High Precision Timer            [Enabled]            →←: Select Screen
                                                         ↑↓:  Select Item
                                                         Enter: Select Item
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F5: Optimized Defaults
                                                         F10: Save & Exit
                                                         ESC: Exit

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```

PCH Compatibility RID [Disabled]

This item allows support for PCH compatibility.

Configuration options: [Disabled] [Enabled]

Deep Sx [Disabled]

Configuration options: [Disabled] [Enabled in S5 (Battery)] [Enabled in S5] [Enabled in S4 and S5 (Battery)] [Enabled in S4 and S5]

Mobile platforms support deep S4/S5 in DC only and desktop platforms support deep S4/S5 in AC only.

SCU devices [Enabled]

This item allows you to enable/disable Patsburg SCU devices.

Configuration options: [Enabled] [Disabled]

Onboard SATA RAID Oprom [Enabled]

This item allows you to enable/disable onboard SATA RAID option rom if Launch Storage Oprom is enabled.

Configuration options: [Disabled] [Enabled]

Audio Configuration

Azalia HD Audio [Enabled]
This item allows you to enable/disable Azalia HD Audio.

Configuration options: [Disabled] [Enabled]

High Precision Event Timer Configuration

High Precision Timer [Enabled]
This item allows you to enable/disable High Precision Event Timer.

Configuration options: [Disabled] [Enabled]

Intel(R) VT for Directed I/O Configuration

```
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                  Advanced

  Intel(R) VT-d                     [Enabled]      Enables or Disables BIOS ACPI
                                                   Auto Configuration.

```

Intel(R) VT-d [Disabled]
This item allows you to enable or disable Intel VT-d.

Configuration options: [Enabled] [Disabled]

The following item appears only when you set **Intel(R) VT-d** to [Enabled].

Coherency Support [Disabled]
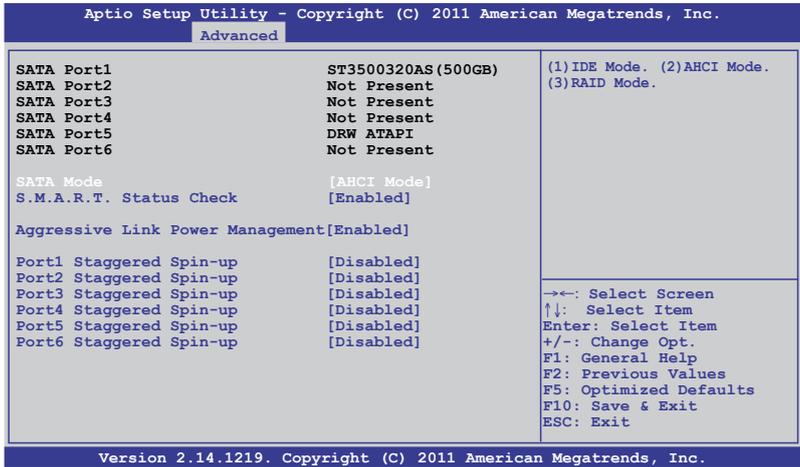This item allows you to enable/disable VT-d Engine Coherency support.
Configuration options: [Disabled] [Enabled]

ATS Support [Disabled]
This item allows you to enable/disable VT-d Engine address translation services (ATS) support.
Configuration options: [Disabled] [Enabled]

PCH SATA Configuration

```
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                        Advanced

   SATA Port1                    ST3500320AS(500GB)    (1)IDE Mode. (2)AHCI Mode.
   SATA Port2                    Not Present           (3)RAID Mode.
   SATA Port3                    Not Present
   SATA Port4                    Not Present
   SATA Port5                    DRW ATAPI
   SATA Port6                    Not Present

   SATA Mode                     [AHCI Mode]
   S.M.A.R.T. Status Check       [Enabled]

   Aggressive Link Power Management[Enabled]

   Port1 Staggered Spin-up       [Disabled]
   Port2 Staggered Spin-up       [Disabled]
   Port3 Staggered Spin-up       [Disabled]          →←: Select Screen
   Port4 Staggered Spin-up       [Disabled]          ↑↓: Select Item
   Port5 Staggered Spin-up       [Disabled]          Enter: Select Item
   Port6 Staggered Spin-up       [Disabled]          +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F5: Optimized Defaults
                                                     F10: Save & Exit
                                                     ESC: Exit

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```

SATA Mode [AHCI Mode]

This item allows you to set the SATA configuration.

Configuration options: [Disabled] [IDE Mode] [AHCI Mode] [RAID Mode]

- If you want to use the Serial ATA hard disk drives as Parallel ATA physical storage devices, set this item to [IDE Mode].

- If you want the Serial ATA hard disk drives to use the Advanced Host Controller Interface (AHCI), keep the default setting [AHCI Mode]. The AHCI allows the onboard storage driver to enable advanced Serial ATA features that increases storage performance on random workloads by allowing the drive to internally optimize the order of commands.

- If you want to create RAID sets with LSI MegaRAID utility, or Intel® Rapid Storage Technology Enterprise from the Serial ATA hard disk drives, set this item to [RAID Mode].

AHCI Mode
Allows you to enable the Aggressive Link Power Management and support Staggered Spin-up.

S.M.A.R.T. Status Check [Enabled]
S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a monitor system. When hard disk read/write errors occur, this feature allows the hard disk to report warning messages during the POST.

Configuration options: [Enabled] [Disabled]

Aggressive Link Power Management [Enabled]
Configuration options: [Enabled] [Disabled]

Port 1-6 Staggered Spin-up [Disabled]
Configuration options: [Enabled] [Disabled]

IDE Mode
Allows you to to enable or disable the SATA controllers.

Serial-ATA Controller 0 [Enhanced]
This item appears only when you set the **SATA Mode** item to [IDE Mode]. Set to [Enhanced] to support two SATA 6.0 Gb/s and two SATA 3.0 Gb/s devices. Set to [Compatible] when using Windows 98/NT/2000/MS-DOS. Up to four SATA devices are supported under these operating systems.

Configuration options: [Disabled] [Enhanced] [Compatible]

Serial-ATA Controller 1 [Enhanced]
This item appears only when you set the SATA Mode item to [IDE Mode]. Set to [Enhanced] to support two SATA 3.0 Gb/s devices.

Configuration options: [Disabled] [Enhanced]

S.M.A.R.T. Status Check [Enabled]
S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a monitor system. When read/write of your hard disk errors occur, this feature allows the hard disk to report warning messages during the POST.

Configuration options: [Enabled] [Disabled]

PCH SCU Configuration

This menu automatically detects and displays Device 1-4.

```
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                    Advanced

    Device1                    Not Present
    Device2                    Not Present
    Device3                    Not Present
    Device4                    Not Present




                                              →←: Select Screen
                                              ↑↓:  Select Item
                                              Enter: Select Item
                                              +/-: Change Opt.
                                              F1: General Help
                                              F2: Previous Values
                                              F5: Optimized Defaults
                                              F10: Save & Exit
                                              ESC: Exit

        Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```
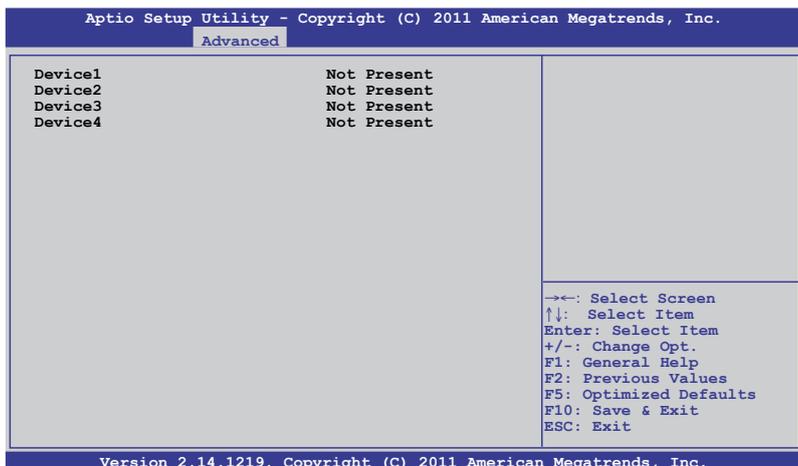
PCI Subsystem Settings

```
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                  Advanced

    PCI Bus Driver Version              V 2.05.00            In case of multiple Option
                                                            ROMs (Legacy and EFI
    PCI Option ROM Handling                                 Compatible), specifies what
    PCI ROM Priority            [EFI Compatible ROM]        PCI option ROM to lanuch.

    PCI Common Settings

    PCI Latency Timer           [32 PCI Bus Clocks]
    VGA Palette Snoop           [Disabled]
    PERR# Generation            [Disabled]
    SERR# Generation            [Disabled]
    Load RT32 Image             [Enabled]

  ▶ PCI Express Settings                                    →←: Select Screen
  ▶ PCIE Slot Option Rom Configuration                      ↑↓:  Select Item
                                                            Enter: Select Item
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F5: Optimized Defaults
                                                            F10: Save & Exit
                                                            ESC: Exit

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```

PCI ROM Priority [EFI Compatible ROM]

This item specifies which PCI option ROM to launch between multiple option ROMs (Legacy and EFI Compatible).

Configuration options: [Legacy ROM] [EFI Compatible ROM]

PCI Latency Timer [32 PCI Bus Clocks]

This item configures the value to be programmed into PCI Latency Timer Register.
Configuration options: [32 PCI Bus Clocks] [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]

VGA Palette Snoop [Disabled]

This item enables or disables VGA pallette register snooping.
Configuration options: [Disabled] [Enabled]

PERR# Generation [Disabled]

This item enables or disables PCI device to generate PERR#.
Configuration options: [Disabled] [Enabled]

SERR# Generation [Disabled]

This item enables or disables PCI device to generate SERR#.
Configuration options: [Disabled] [Enabled]

PCI Express Settings

```
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              Advanced

  PCI Express Link Register Settings                Enables or Disables PCI
                                                    Express Device Relaxed
  ASPM Support                      [Disabled]      Ordering.
  WARNING: Enabling ASPM may cause some
           PCI-E device to fail




                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select Item
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F5: Optimized Defaults
                                                    F10: Save & Exit
                                                    ESC: Exit

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```

ASPM Support [Disabled]
This item allows you to set the ASPM level.
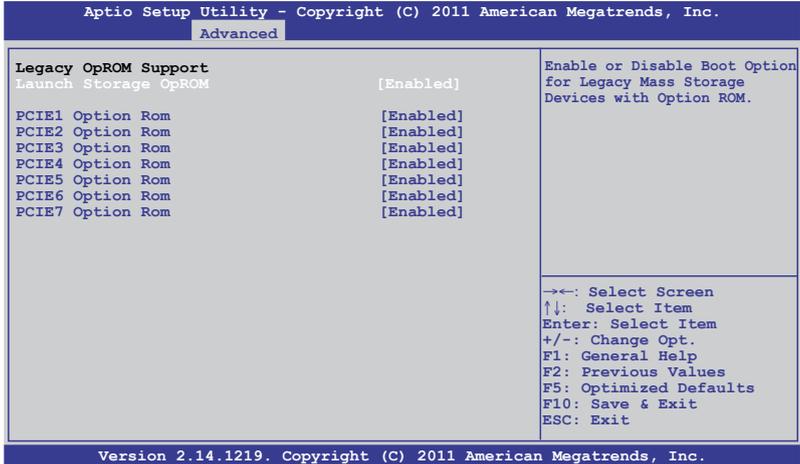
Configuration options: [Disabled] [Auto] [Force L0s]

[Force L0s]   Force all links to L0s state.

[Auto]   BIOS auto configure.

[Disabled]   Disabled ASPM.

PCIE Slot Option ROM Configuration

```
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                        Advanced

  Legacy OpROM Support                                        Enable or Disable Boot Option
  Launch Storage OpROM                      [Enabled]         for Legacy Mass Storage
                                                              Devices with Option ROM.
  PCIE1 Option Rom                          [Enabled]
  PCIE2 Option Rom                          [Enabled]
  PCIE3 Option Rom                          [Enabled]
  PCIE4 Option Rom                          [Enabled]
  PCIE5 Option Rom                          [Enabled]
  PCIE6 Option Rom                          [Enabled]
  PCIE7 Option Rom                          [Enabled]


                                                              →←: Select Screen
                                                              ↑↓:  Select Item
                                                              Enter: Select Item
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F5: Optimized Defaults
                                                              F10: Save & Exit
                                                              ESC: Exit

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```

Launch Storage OpROM [Enabled]
This item allows you to enable or disable boot option for Legacy Mass Storage
devices with Option ROM.

Configuration options: [Disabled] [Enabled]

PCIE1 Option Rom [Enabled]
Configuration options: [Disabled] [Enabled]

PCIE2 Option Rom [Enabled]
Configuration options: [Disabled] [Enabled]

PCIE3 Option Rom [Enabled]
Configuration options: [Disabled] [Enabled]

PCIE4 Option Rom [Enabled]
Configuration options: [Disabled] [Enabled]

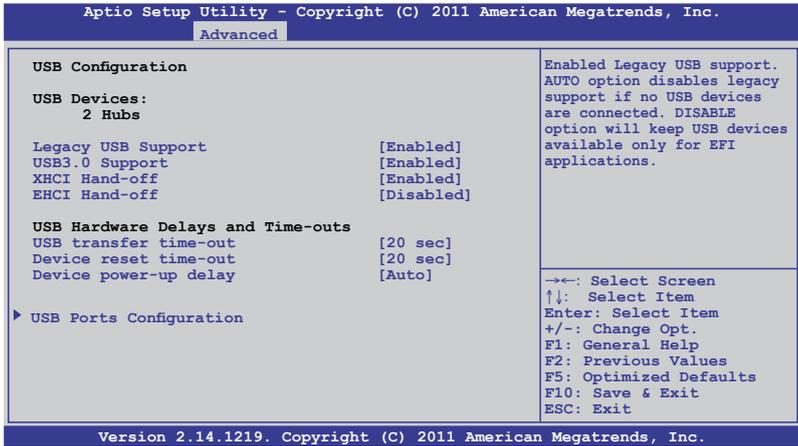*PCIE5 Option Rom [Enabled]*
Configuration options: [Disabled] [Enabled]

PCIE6 Option Rom [Enabled]
Configuration options: [Disabled] [Enabled]

PCIE7 Option Rom [Enabled]
Configuration options: [Disabled] [Enabled]

USB Configuration

```
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                  Advanced

   USB Configuration                                            Enabled Legacy USB support.
                                                                AUTO option disables legacy
   USB Devices:                                                 support if no USB devices
       2 Hubs                                                   are connected. DISABLE
                                                                option will keep USB devices
   Legacy USB Support                  [Enabled]                available only for EFI
   USB3.0 Support                      [Enabled]                applications.
   XHCI Hand-off                       [Enabled]
   EHCI Hand-off                       [Disabled]

   USB Hardware Delays and Time-outs
   USB transfer time-out               [20 sec]
   Device reset time-out               [20 sec]
   Device power-up delay               [Auto]                   →←: Select Screen
                                                                ↑↓: Select Item
 ▶ USB Ports Configuration                                      Enter: Select Item
                                                                +/-: Change Opt.
                                                                F1: General Help
                                                                F2: Previous Values
                                                                F5: Optimized Defaults
                                                                F10: Save & Exit
                                                                ESC: Exit

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```

Legacy USB Support [Enabled]
This item enables or disables Legacy USB device support.
Configuration options: [Enabled] [Disabled] [Auto]

USB3.0 Support [Enabled]
This item enables or disables USB3.0 (XHCI) Controller support.
Configuration options: [Disabled] [Enabled]

XHCI Hand-off [Enabled]
This is a workaround for OSes without XHCI ownership change should be claimed by XHCI driver.
Configuration options: [Disabled] [Enabled]

EHCI Hand-off [Disabled]
This is a workaround for OSes without EHCI ownership change should be claimed by EHCI driver.
Configuration options: [Disabled] [Enabled]

USB Hardware Delays and Time-outs

USB transfer time-out [20 sec]
This item sets the time-out value for control, bulk, and interrupt transfer.
Configuration options: [1 sec] [5 sec] [10 sec] [20 sec]

Device reset time-out [20 sec]
USB mass storage device Start Unit command time-out.
Configuration options: [10 sec] [20 sec] [30 sec] [40 sec]
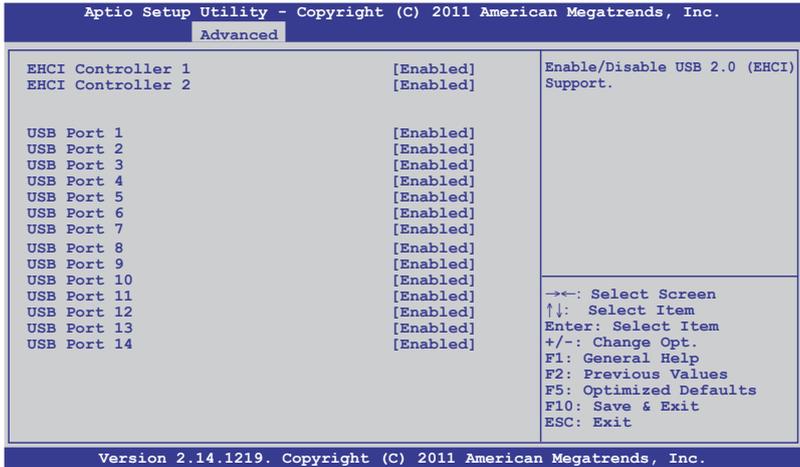
Device power-up delay [Auto]

This item sets the maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default values: for a Root port, it is 100ms; for a Hub port, the delay is taken from Hub descriptor.
Configuration options: [Manual] [Auto]

> *Device power-up delay in seconds [X]*
> This item appears only when you set the **Device power-up delay** item to [Manual]. Use the <+> and <-> keys to adjust the value. The values range from 1 to 40 with a one-second interval.

USB Ports Configuration

```
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  EHCI Controller 1              [Enabled]      Enable/Disable USB 2.0 (EHCI)
  EHCI Controller 2              [Enabled]      Support.


  USB Port 1                     [Enabled]
  USB Port 2                     [Enabled]
  USB Port 3                     [Enabled]
  USB Port 4                     [Enabled]
  USB Port 5                     [Enabled]
  USB Port 6                     [Enabled]
  USB Port 7                     [Enabled]
  USB Port 8                     [Enabled]
  USB Port 9                     [Enabled]
  USB Port 10                    [Enabled]      →←: Select Screen
  USB Port 11                    [Enabled]      ↑↓: Select Item
  USB Port 12                    [Enabled]      Enter: Select Item
  USB Port 13                    [Enabled]      +/-: Change Opt.
  USB Port 14                    [Enabled]      F1: General Help
                                                F2: Previous Values
                                                F5: Optimized Defaults
                                                F10: Save & Exit
                                                ESC: Exit

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```

> *EHCI Controller 1/2 [Enabled]*
> This item allows you to enable or disable USB 2.0 (EHCI) Support. If we disable the EHCI Controller in BIOS > South Bridge > USB configuration, the USB device will all disable in OS.
>
> Configuration options: [Disabled] [Enabled]
>
> *USB Port 1/14 [Enabled]*
> These items allow you to enable or disable USB ports 1 to 14.
>
> Configuration options: [Disabled] [Enabled]

ACPI Settings

```
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   ACPI Settings                                      Enables or Disables BIOS ACPI
                                                      Auto Configuration.
   Enable ACPI Auto Configuration        [Disabled]


   Enable Hibernation                    [Enabled]
   ACPI Sleep State            [S3 (Suspend to RAM)]
   Lock Legacy Resources                 [Disabled]
```

Enable ACPI Auto Configuration [Disabled]

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

> The following item appears only when you set **Enabled ACPI Auto Configuration** to [Disabled].

Enable Hibernation [Enabled]

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

Configuration options: [Disabled] [Enabled]

ACPI Sleep State [S3 (Suspend to RAM)]

Allows you to set the ACPI Sleep State.

Configuration options: [Suspend Disabled] [S1 (CPU Stop Clock)] [S3 (Suspend to RAM)]

Lock Legacy Resources [Disabled]

Allows to enable or disable Lock Legacy Resources.

Configuration options: [Disabled] [Enabled]

4.5.9   WHEA Configuration

```
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   WHEA Support                  [Enabled]            Enable or disable Windows
                                                      Hardware Error Architecture.
```

WHEA Support [Enabled]

Allows you to enable or disable the Windows Hardware Error Architecture support.
Configuration options: [Disabled] [Enabled]

APM setting

```
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    Restrore AC Power Loss          [Last State]              Specify what state to go to
    Power On By PS/2 Keyboard       [Disabled]                when power is re-applied after
    Power On By PS/2 Mouse          [Disabled]                a power failure (G3 state).
    Power On By PCIE                [Disabled]
    Power On By Ring                [Disabled]
    Power On By RTC                 [Disabled]
```

Restore AC Power Loss [Last State]
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 PS/2 Keyboard [Disabled]
[Disabled]   Disables the PS/2 Keyboard from generating a wake event.

[Enabled]   Enables the PS/2 Keyboard to generate a wake event.

Power On By PS/2 Mouse [Disabled]
[Disabled]   Disables the PS/2 Mouse from generating a wake event.

[Enabled]   Enables the PS/2 Mouse to generate a wake event.

Power On By PCIE [Disabled]
[Disabled]   Disables the PCIE devices from generating a wake event.

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

Power On By Ring [Disabled]
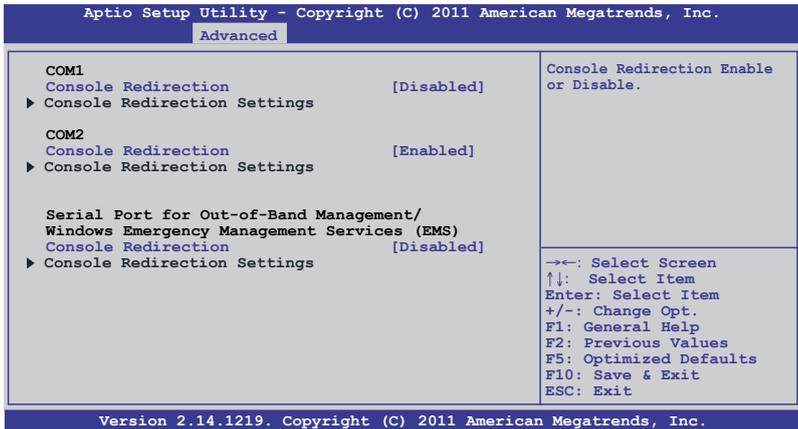[Disabled]   Disables the Ring devices from generating a wake event.

[Enabled]   Enables the Ring devices to generate a wake event.

Power On By RTC [Disabled]
[Disabled]   Disables RTC from generating 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.

Serial Port Console Redirection

```
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     COM1                                                  Console Redirection Enable
     Console Redirection               [Disabled]          or Disable.
   ▶ Console Redirection Settings

     COM2
     Console Redirection               [Enabled]
   ▶ Console Redirection Settings


     Serial Port for Out-of-Band Management/
     Windows Emergency Management Services (EMS)
     Console Redirection               [Disabled]          →←: Select Screen
   ▶ Console Redirection Settings                          ↑↓:  Select Item
                                                           Enter: Select Item
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F5: Optimized Defaults
                                                           F10: Save & Exit
                                                           ESC: Exit

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```

COM1

Console Redirection [Disabled]

This item enables or disables the console redirection feature.
Configuration options: [Disabled] [Enabled]

> The following item appears only when you set **Console Redirection** to [Enabled].

Console Redirection Settings

This item becomes configurable only when you enable the **Console Redirection** item. The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Terminal Type [VT-UTF8]
Allows you to set the terminal type.

[VT100]   ASCII char set

[VT100+]   Extends VT100 to support color, function keys, etc.

[VT-UTF8] Uses UTF8 encoding to map Unicode chars onto 1 or more bytes

[ANSI]   Extended ASCII char set

Bits per second [57600]
Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Configuration options: [9600] [19200] [38400] [57600] [115200]

Data Bits [8]
Configuration options: [7] [8]

Parity [None]
A parity bit can be sent with the data bits to detect some transmission errors.

[Mark] and [Space] parity do not allow for error detection.

[None]   No parity bit

[Even]   Parity bit is 0 if the num of 1's in the data bits is even

[Odd]   Parity bit is 0 if num of 1's in the data bits is odd

[Mark]   Parity bit is always 1

[Space]   Parity bit is always 0

Stop Bits [1]
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning.) The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Configuration options: [1] [2]

Flow Control [VT100]
Microsoft Windows Emergency Management Services (EMS) allow for remote management of a Windows Server OS through a serial port.
Configuration options: [VT100] [Hardware RTS/CTS] [Software Xon/Xoff]

Recorder Mode [Disabled]
With this mode enabled, only text will be sent. This is to capture Terminal data.
Configuration options: [Disabled] [Enabled]

Recorder 100x31 [Disabled]
This item allows you to enable or disable extended terminal resolution.
Configuration options: [Disabled] [Enabled]

Legacy OS Redirction Resolution [80x24]
This item configures the number of rows and columns supported on legacy OS.
Configuration options: [80x24] [80x25]

COM2
Console Redirection [Disabled]
Enables or disables the console redirection feature.
Configuration options: [Disabled] [Enabled]

Console Redirection Settings
Please refer to the description of the **Console Redirection Settings** item under **COM1** for details.

Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS)

Console Redirection [Disabled]
Enables or disables the console redirection feature.
Configuration options: [Disabled] [Enabled]

The following item appears only when you set **Console Redirection** to [Enabled].

Console Redirection Settings

Out-of-Band Mgmt Port [COM1]
Microsoft Windows Emergency Management Services (EMS) allow for remote management of a Windows Server OS through a serial port.
Configuration options: [COM1] [COM2]

Terminal Type [VT-UTF8]
Microsoft Windows Emergency Management Services (EMS) allow for remote management of a Windows Server OS through a serial port.
Configuration options: [VT100] [VT100+] [VT-UTF8] [ANSI]

Bits per second [115200]
Microsoft Windows Emergency Management Services (EMS) allow for remote management of a Windows Server OS through a serial port.
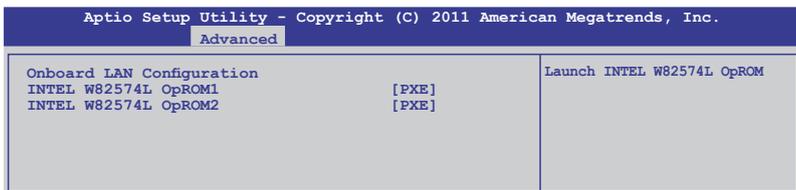Configuration options: [9600] [19200] [57600] [115200]

Flow Control [VT100]
Microsoft Windows Emergency Management Services (EMS) allow for remote management of a Windows Server OS through a serial port.
Configuration options: [VT100] [Hardware RTS/CTS] [Software Xon/Xoff]

Onboard LAN Configuration

```
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   Onboard LAN Configuration                                 Launch INTEL W82574L OpROM
   INTEL W82574L OpROM1                    [PXE]
   INTEL W82574L OpROM2                    [PXE]
```

INTEL W82574L OpROM1 [PXE]
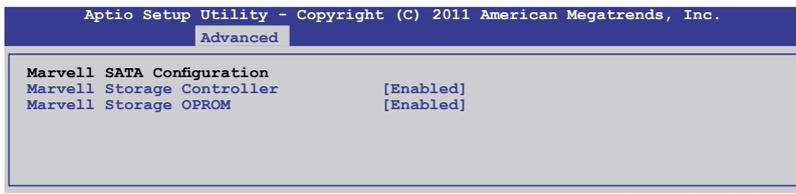This item launched INTEL W82574L OpROM1.
Configuration options: [Disabled] [PXE] [iSCSI]

INTEL W82574L OpROM2 [PXE]
This item launched INTEL W82574L OpROM2.
Configuration options: [Disabled] [PXE] [iSCSI]

Marvell SATA Configuration

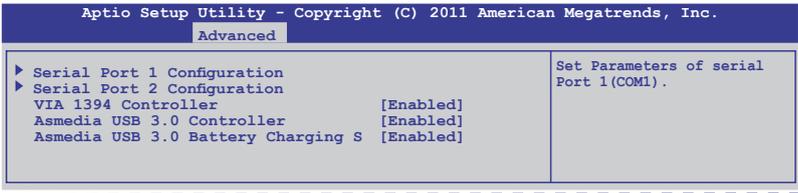### Marvell Storage Controller [Enabled]
Configuration options: [Disabled] [Enabled]

Marvell Storage OPROM [Enabled]
Configuration options: [Disabled] [Enabled]

Onboard Devices Configuration

```
        Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                        Advanced

 ▶ Serial Port 1 Configuration                      Set Parameters of serial
 ▶ Serial Port 2 Configuration                      Port 1(COM1).
   VIA 1394 Controller              [Enabled]
   Asmedia USB 3.0 Controller       [Enabled]
   Asmedia USB 3.0 Battery Charging S  [Enabled]
```

Serial Port1/2 Configuration

This item allows you to set parameters of serial ports 1 and 2.

> *Serial Port [Enabled]*
> This item allows you to enable or disable the Serial Port.
>
> Configuration options: [Disabled] [Enabled]
>
> *Device Mode [Standard Serial Port Mode]*
> This item allows you to change the serial port mode.
>
> Configuration options: [Standard Serial Port Mode]

VIA 1394 Controller [Enabled]

This item allows you to enable or disable VIA 1394.

Configuration options: [Disabled] [Enabled]

Asmedia USB 3.0 Controller [Enabled]

This item allows you to enable or disable Asmedia USB 3.0.

Configuration options: [Disabled] [Enabled]

> *Asmedia USB 3.0 Battery Charging S [Enabled]*
> This item allows you to enable or disable Asmedia USB 3.0 Battery Charging
> S.
>
> Configuration options: [Disabled] [Enabled]

Runtime Error Logging

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                       Advanced

  Runtime Error Logging Support        [Disabled]
```

Runtime Error Logging Support [Disabled]

This item allows you to enable or disable Runtime Error Logging Support.

Configuration options: [Disabled] [Enabled]

> The following item appears only when you set **Runtime Error Logging Support** to [Enabled].

PCI Error Logging Support [Disabled]

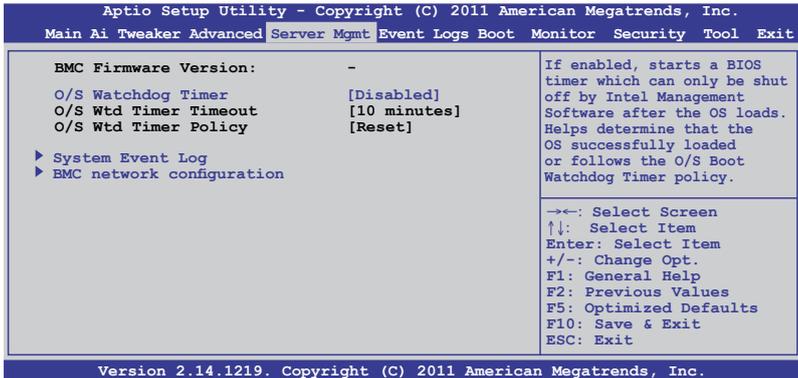This item allows you to enable or disable PCI Error Logging.

Configuration options: [Disabled] [Enabled].

Server Management menu

The Server Management menu displays the server management status, and allows you to change the settings.

> The Server Management menu appears only when you install ASMB card on the motherboard.

```
              Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Ai Tweaker  Advanced  Server Mgmt  Event Logs  Boot   Monitor   Security   Tool   Exit

       BMC Firmware Version:            -               If enabled, starts a BIOS
                                                        timer which can only be shut
       O/S Watchdog Timer              [Disabled]       off by Intel Management
       O/S Wtd Timer Timeout           [10 minutes]     Software after the OS loads.
       O/S Wtd Timer Policy            [Reset]          Helps determine that the
                                                        OS successfully loaded
     ▶ System Event Log                                 or follows the O/S Boot
     ▶ BMC network configuration                        Watchdog Timer policy.


                                                        →←: Select Screen
                                                        ↑↓:  Select Item
                                                        Enter: Select Item
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F5: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit

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```

O/S Watchdog Timer [Disabled]
If enabled, starts a BIOS timer which can only be shut off by Intel Management Software after the OS loads. Helps determine that the OS sucessfully loaded or follows the **O/S Boot Watchdog TImer Policy**.
Configuration options: [Enabled] [Disabled]

O/S Wtd Timer Timeout [10 minutes]
Allows to configure the length of the O/S Boot Watchdog Timer. Not available if **O/S Boot Watchdog Timer** is disabled.
Configuration options: [5 minutes] [10 minutes] [15 minutes] [20 minutes]

O/S Wtd Timer Policy [Reset]
Allows to configure how the system should respond if the **OS Boot Watchdog Timer** expires. Not available if **O/S Boot Watchdog Timer** is disabled.
Configuration options: [Do Nothing] [Reset] [Power Down]

System Event Log

```
            Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                                  Server Mgmt

    Enabling/Disabling Options                    Change this to enable or
                                                  disable all features of
    SEL Components              [Disabled]        system Event Logging during
                                                  boot.
    Erasing Settings
    Erase SEL                   [No]
    When SEL is Full            [Do Nothing]

    Note: All values changed here do not take effect
          until computer is restarted.            →←: Select Screen
                                                  ↑↓:  Select Item
                                                  Enter: Select Item
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F2: Previous Values
                                                  F5: Optimized Defaults
                                                  F10: Save & Exit
                                                  ESC: Exit

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```

SEL Components [Disabled]

Allows you to enable or disable all features of system Event Logging during boot.
Configuration options: [Disabled] [Enabled]

> • The following items appears only when you set **SEL Components** to [Enabled].
>
> • All values changed here do not take effect until computer is restarted.

Erase SEL [No]

Allows to choose options for erasing SEL.
Configuration options: [No] [Yes, On next reset] [Yes, On every reset]

When SEL is Full [Do Nothing]

Allows to choose options for reactions to a full SEL.
Configuration options: [Do Nothing] [Erase Immediately]

BMC network configuration

```
            Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                                    Server Mgmt
  BMC network configuration                             Select to configure LAN
                                                        channel parameters
  Lan1                                                  statically or dynamically(by
                                                        BIOS or BMC). Unspecified
  Lan1 IP Address in BMC:          000.000.000.000      option will not modify any
  Lan1 Subnet Mask in BMC:         000.000.000.000      BMC network parameters
  Lan1 Gateway Address in BMC:     000.000.000.000      during BIOS phase
  Lan1 MAC Address in BMC:         00.00.00.00.00.00
  Lan1 Address Source in BMC:      DHCP Mode

  Configuration Address source     [Previous State]
                                                        →←: Select Screen
                                                        ↑↓:  Select Item
                                                        Enter: Select Item
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F5: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit

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```

Configuration Address source [Previous State]

Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase. Configuration options: [Previous State] [Static Mode] [DHCP Mode]

The following items appears only when you set **Configuration Address source** to [Static Mode].

Station IP address [0.0.0.0]
Allows to input Station IP address.

Subnet mask [0.0.0.0]
Allows to input Subnet mask.
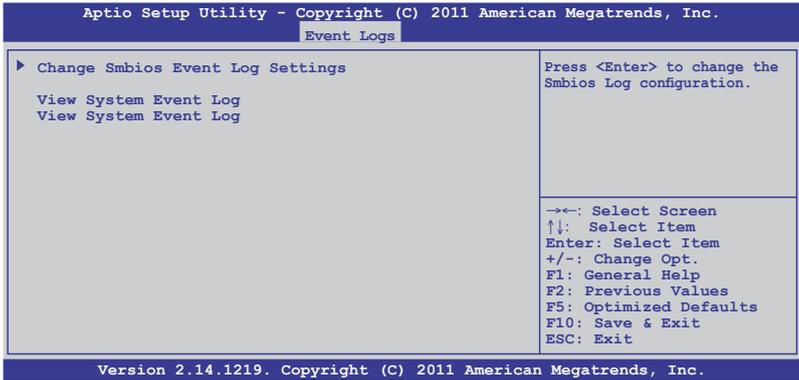
Gateway IP address [0.0.0.0]
Allows to input Gateway IP address.

Event Logs menu

The Event Logs allows you to change or view the event log settings.

> The Event Logs menu appears when the ASMB card is not installed on the motherboard.

```
              Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                      Event Logs

  ▶ Change Smbios Event Log Settings                     Press <Enter> to change the
                                                         Smbios Log configuration.
    View System Event Log
    View System Event Log




                                                         →←: Select Screen
                                                         ↑↓:  Select Item
                                                         Enter: Select Item
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F5: Optimized Defaults
                                                         F10: Save & Exit
                                                         ESC: Exit

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```

> All values changed here do not take effect until computer is restarted.

Change Smbios Event Log Settings

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

> For more information on this configuration, refer to **4.7.1 Change Smbios Event Log Settings**.

View Smbios Event Log
Press <Enter> to view all smbios event logs.

View System Event Log
Press <Enter> to view all system event logs.

Change Smbios Event Log Settings

```
        Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                              Event Logs

   Enabling/Disabling Options                            Change this to enable or
                                                         disable all features of
   Smbios Event Log                 [Enabled]            Smbios Event Logging during
                                                         boot.
   Erasing Settings
   Erase Event Log                  [No]
   When Log is Full                 [Do Nothing]

   Smbios Event Log Standard Settings
   Log System Boot Event            [Disabled]           →←: Select Screen
   MECI                             1                     ↑↓: Select Item
   METW                             60                    Enter: Select Item
                                                         +/-: Change Opt.
   Custom Option                                         F1: General Help
   Log OEM Codes                    [Enabled]            F2: Previous Values
   Convert OEM Codes                [Disabled]           F5: Optimized Defaults
   Note: All values changed here do not take effect     F10: Save & Exit
        until computer is restarted.                     ESC: Exit

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```

All values changed here do not take effect until computer is restarted.

Enabling/Disabling Options

Smbios Event Log [Enabled]
Change this to enable or disable all features of Smbios Event Logging during boot.

Configuration options: [Disabled] [Enabled]

Erasing Settings

Erase Event Log [No]
Choose options for erasing Smbios Event Log. Erasing is done prior to any logging activation during reset.

Configuration options: [No] [Yes, Next reset] [Yes, Every reset]

When Log is Full [Do Nothing]
This item allows you to choose options for reactions to a full Smbios Event Log.

Configuration options: [Do Nothing] [Erase Immediately]

Smbios Event Log Standard Settings

Log System Boot Event [Disabled]
This item allows you to choose options to enable/disable logging of System boot event.

Configuration options: [Enabled] [Disabled]

MECI [1]

This item allows you to set Mutiple Event Count Increment (MECI). The number of occurrences of a duplicate event that must pass before the multiplt-event counter associated with the log entry is updated, specified as a numeric value in the range 1 to 255.

METW [60]

This item allows you to set Mutiple Event Time Windows (METW). The number of minutes which must pass between duplicate log entries which utilize a multiple-event counter. The value ranges from 0 to 99 minutes.

Custom Options

Log OEM Codes [Enabled]

This item allows you to enable or disable the logging of EFI Status Codes as OEM Codes (if not already converted to legacy).

Configuration options: [Disabled] [Enabled]

Convert OEM Codes [Disabled]

This item allows you to enable or disable the converting of EFI Status Codes to Standard Smbios Types (Not all may be translated).

Configuration options: [Disabled] [Enabled]

Boot menu

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

```
          Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Ai Tweaker  Advanced  Server Mgmt  Event Logs  Boot  Monitor  Security  Tool  Exit

    Boot Configuration                                    Number of seconds to wait for
    Setup Prompt Timeout      1                           setup activation key.
    Bootup NumLock State      [On]                        65535(0xFFFF) means indefinite
                                                          waiting.
    Full Screen Logo          [Enabled]

    CSM16 Module Version      07.67

    GateA20 Active            [Upon Request]
    Option ROM Messages       [Force BIOS]
    Interrupt 19 Capture      [Enabled]
    Boot Device Seeking       [Endless PXE]
    UEFI Boot                 [Disabled]                  →←: Select Screen
                                                          ↑↓:  Select Item
    Boot Option Priorities                                Enter: Select Item
    Boot Option #1            [AMI Virtual CDROMO...]     +/-: Change Opt.
    Boot Option #2            [IBA GE Slot 0600 v...]     F1: General Help
                                                          F2: Previous Values
                                                          F5: Optimized Defaults
    CD/DVD ROM Drive BBS Priorities                       F10: Save & Exit
    Hard Drive BBS Priorities                             ESC: Exit
    Network Device BBS Priorities

          Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

Setup Prompt Timeout [xx]
Use the <+> and <-> keys to adjust the number of seconds to wait for setup activation key.

Bootup NumLock State [On]
This item allows you to select the power-on state for the NumLock.
Configuration options: [Off] [On]

Full Screen Logo [Enabled]
This item allows you to enable or disable the full screen logo display feature.
Configuration options: [Disabled] [Enabled]

> 2. Set Full Screen Logo to [Disabled] to select the desired Post Report waiting time from 1~10 sec.

Post Report [5 sec]
Allows you to select a desired post report waiting time. This item only appears when you set the **Full Screen Logo** to [Disabled].

Configuration options: [1 sec] - [10 sec] [Until Press ESC

CSM16 Module Version

GateA20 Active [Upon Request]

[Upon Request] GA20 can be disabled using BIOS services.

[Always]   Do not allow disable GA20; this optionis useful when any RT code
                is executed above 1MB.

Option ROM Messages [Force BIOS]

Allows you to set the display mode for Options ROM.

Configuration options: [Force BIOS] [Keep Current]

Interrupt 19 Capture [Enabled]

Allows Option ROMs to trap interrupt 19.

Configuration options: [Disabled] [Enabled]

Boot Device Seeking [Endless PXE]

[Endless PXE] Continuous seek remote boot image until boot image found or user
                abort (press Ctrl+Alt+Del).

[Normal]   Seek remote boot image once then stop.

UEFI Boot [Disabled]

Enables or disables UEFI Boot.

Configuration options: [Disabled] [Enabled]

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 Boot Logo appears.

- To access Windows OS in Safe Mode, please press <F8> after POST.

Boot Option #1/#2/#3/#4 [IBAGE Slot 0600 v...]

Configuration options: [SATA P2: DVD   ...] [SATA P3: WDC WD80...] [AMI
Virtual CDROM...] [IBA GE Slot 0600 v...]

These items appear only when you connect SATA ODD or hard drive to the SATA
ports.

CD/DVD ROM Drive BBS Priorities
Hard Drive BBS Priorities
Network Device BBS Priorities

These settings allow you to set the booting order of the SATA devices.

Setup Mode [EZ Mode]

[Advanced Mode]   Sets Advanced Mode as the default screen for entering the BIOS setup program.

[EZ Mode]   Sets EZ Mode as the default screen for entering the BIOS setup program.

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. Select [Disabled] to disallow this function.

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

Boot Override

These items displays the available devices. The number of 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.

Monitor menu

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

```
                  Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
  Main Ai Tweaker  Advanced  Server Mgmt  Event Logs  Boot   Monitor  Security  Tool  Exit

  CPU1 Temperature                90.0°C/194.0°F          ▲
  CPU2 Temperature                90.0°C/194.0°F
  TR1 Temperature                 18.0°C/64.4°F
  TR2 Temperature                 6.0°C/42.8°F
  CPU FAN1 Speed                  3658 RPM
  CPU FAN2 Speed                  3678 RPM
  FRNT FAN1 Speed                 N/A
  FRNT FAN2 Speed                 N/A
  FRNT FAN3 Speed                 N/A
  FRNT FAN4 Speed                 N/A
  REAR FAN1 Speed                 N/A
  REAR FAN2 Speed                 N/A
  +VTT_CPU                        +1.026 V
  VCORE_CPU1                      +0.996 V
  VCORE_CPU2                      +0.996 V
  VSA_CPU1                        +0.898 V          →←: Select Screen
  VSA_CPU2                        +0.912 V          ↑↓:  Select Item
  +VDDQ_AB_CPU1                   +1.510 V          Enter: Select Item
  +VDDQ_CD_CPU1                   +1.526 V          +/-: Change Opt.
  +VDDQ_EF_CPU2                   +1.474 V          F1: General Help
  +VDDQ_GH_CPU2                   +1.474 V          F2: Previous Values
  +5VSB                           +4.921 V          F5: Optimized Defaults
  +5V                             +4.966 V          F10: Save & Exit
  +12V                            +11.592 V    ▼    ESC: Exit
  +3.3V                           +3.264 V

  ─────────────────────────────────────────────────────────────────
  VBAT                            +3.168 V          ▓
  +3.3VSB                         +3.234 V          ▓

  FAN Speed Control               [Generic Mode]    ▼

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```

Use the scroll to view items.

CPU 1/2; TR1 1/2 Temperature [xxxºC/xxxºF]

The onboard hardware monitor automatically detects and displays the CPU and motherboard component temperatures. Select **Ignore** if you do not wish to display the detected temperatures.

CPU FAN1/2 Speed; FRNT FAN1–4 Speed; REAR FAN1/2 Speed [xxxx RPM] or [Ignore] / [N/A]

The onboard hardware monitor automatically detects and displays the speed of CPU fans, front fans, and rear fan in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows **N/A**.

+VTT_CPU Voltage, VCORE1/2 Voltage, VSA_CPU1/2 +VDDQ_AB_ CPU1 Voltage, +VDDQ_CD_CPU1 Voltage, +VDDQ_EF_CPU2 Voltage, +VDDQ_GH_CPU2 Voltage, +5VSB Voltage, +5V Voltage, +12V Voltage, +3.3V Voltage, VBAT Voltage, +3.3VSB Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.
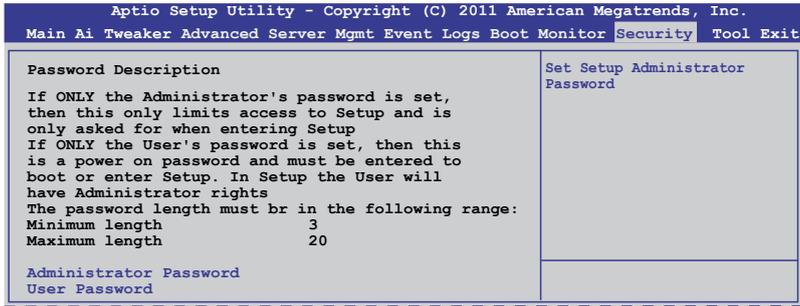
FAN Speed Control [Generic Mode]

This item allows you to configure the Smart Fan feature that smartly adjusts the fan speeds for more efficient system operation.

Configuration options: [Generic Mode] [High Speed Mode] [Full Speed Mode]

Security menu

The Security menu items allow you to change the system security settings.

```
        Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
   Main Ai Tweaker Advanced Server Mgmt Event Logs Boot Monitor Security  Tool Exit

    Password Description                            Set Setup Administrator
                                                    Password
    If ONLY the Administrator's password is set,
    then this only limits access to Setup and is
    only asked for when entering Setup
    If ONLY the User's password is set, then this
    is a power on password and must be entered to
    boot or enter Setup. In Setup the User will
    have Administrator rights
    The password length must br in the following range:
    Minimum length          3
    Maximum length          20

    Administrator Password
    User Password
```

> If you have forgotten your BIOS password, erase the CMOS Real Time
> Clock (RTC) RAM to clear the BIOS password. See section **2.6 Jumpers** for
> information on how to erase the RTC RAM.

Administrator Password

If you have set an administrator password, we recommend that you enter the administrator password for accessing the system. Otherwise, you might be able to see or change only selected fields in the BIOS setup program.

To set an administrator password:

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

To change an administrator password:

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

To clear the administrator password, follow the same steps as in changing an administrator password, but press <Enter> when prompted to create/confirm the password.

User Password

If you have set a user password, you must enter the user password for accessing the system.

To set a user password:

1. Select the **User Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

To change a user password:

1. Select the **User Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

To clear the user password, follow the same steps as in changing a user password, but press <Enter> when prompted to create/confirm the password.

Tool menu

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

```
           Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Main Ai Tweaker Advanced Server Mgmt Event Logs  Boot  Monitor  Security  Tool  Exit

                                                    Be used to update BIOS
     EZ Flash 2 Utility
```
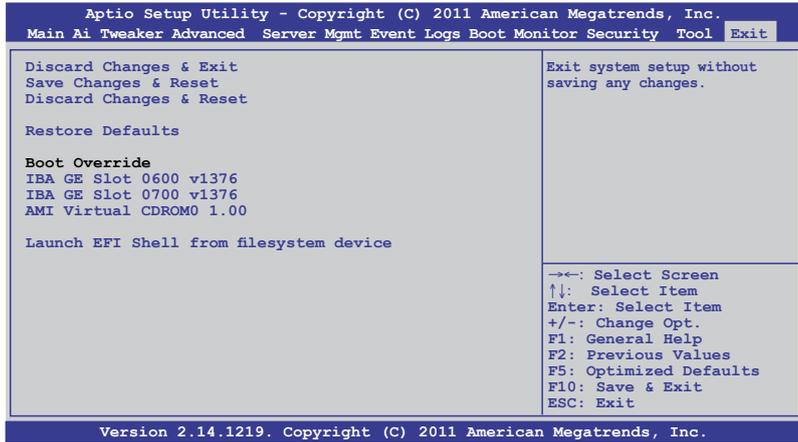
EZ Flash 2 Utility

This item allows you to run EZ Flash BIOS ROM Utility when you press <Enter>.

Exit menu

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

```
          Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Main Ai Tweaker Advanced  Server Mgmt Event Logs Boot Monitor Security  Tool  Exit

  Discard Changes & Exit                        Exit system setup without
  Save Changes & Reset                          saving any changes.
  Discard Changes & Reset

  Restore Defaults

  Boot Override
  IBA GE Slot 0600 v1376
  IBA GE Slot 0700 v1376
  AMI Virtual CDROM0 1.00

  Launch EFI Shell from filesystem device

                                                →←: Select Screen
                                                ↑↓:  Select Item
                                                Enter: Select Item
                                                +/-: Change Opt.
                                                F1: General Help
                                                F2: Previous Values
                                                F5: Optimized Defaults
                                                F10: Save & Exit
                                                ESC: Exit

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```

> 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 & Exit
This option allows you to exit the Setup program without saving your changes. When you select this option or if you press <Esc>, a confirmation window appears. Select **Yes** to discard changes and exit.

Save Changes & Reset
Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved. When you select this option or if you press <F10>, a confirmation window appears. Select **Yes** to save changes and exit.

Discard Changes & Reset
This option allows you to reset the Setup program without saving your changes. When you select this option, a confirmation window appears. Select **Yes** to discard changes and reset.

Restore Defaults
This option allows you to restore/load defaults values for all the setup options. When you select this option, a confirmation window appears. Select **Yes** to load optimized defaults.

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.