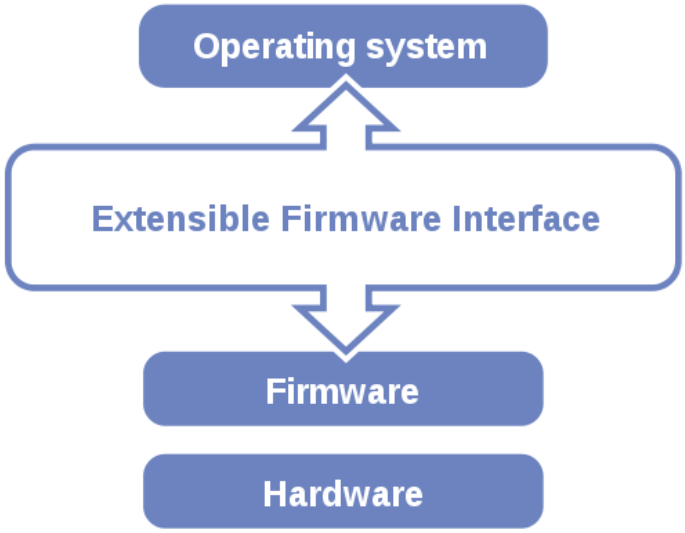
Chapter 4

Overview of AMI Aptio BIOS Features

4.1 Introduction

The board **BD-C028** uses an AMI Aptio BIOS that is stored in the Serial Peripheral Interface Flash Memory (SPI Flash) and can be updated. The SPI Flash contains the BIOS Setup program, Power-on Self-Test (POST), the PCI auto-configuration utility, LAN EEPROM information, and Plug and Play support.

Aptio is AMI's BIOS firmware based on the UEFI (Unified Extensible Firmware Interface) Specifications and the Intel Platform Innovation Framework for EFI. The UEFI specification defines an interface between an operating system and platform firmware. The interface consists of data tables that contain platform-related information, boot service calls, and runtime service calls that are available to the operating system and its loader. These provide standard environment for booting an operating system and running pre-boot applications. Following illustration shows Extensible Firmware Interface's position in the software stack.



EFI BIOS provides an user interface allow users the ability to modify hardware configuration, e.g. change system date and time, enable or disable a system component, decide bootable device priorities, setup personal password, etc., which is convenient for modifications and customization of the computer system and allows technicians another method for finding solutions if hardware has any problems.

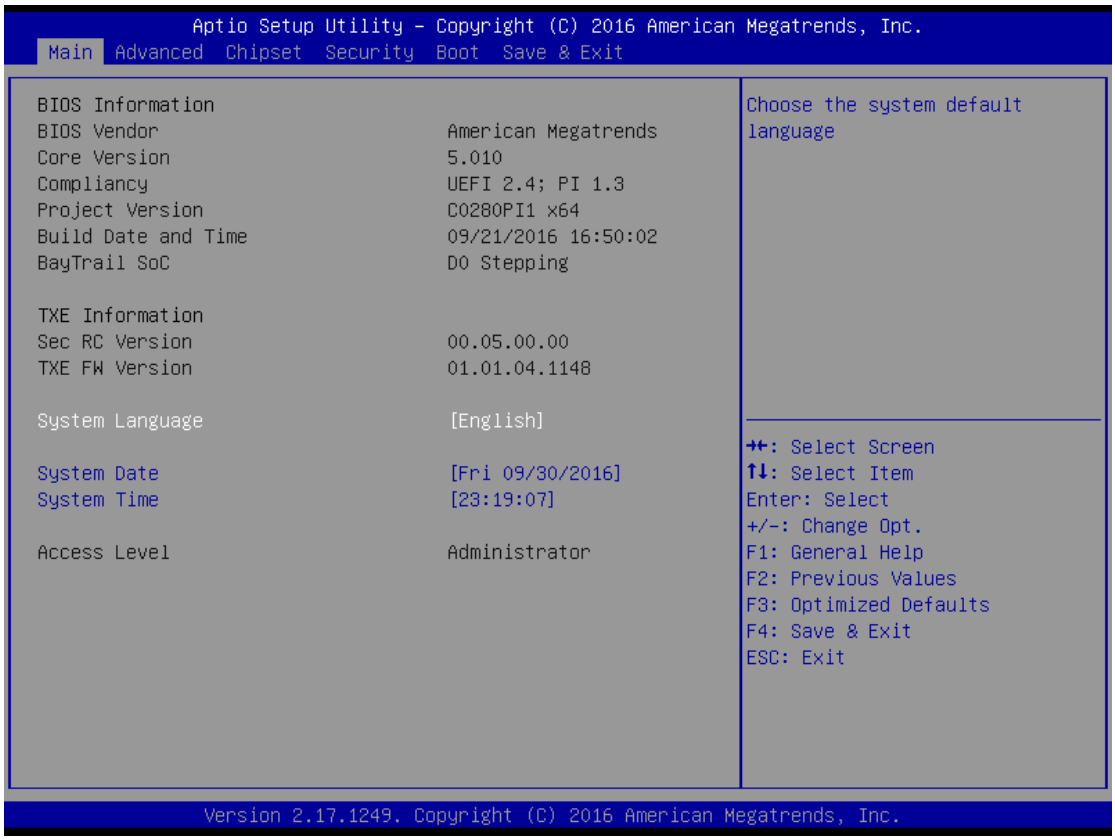
The BIOS Setup program can be used to view and change the BIOS settings for the computer. The BIOS Setup program is accessed by pressing the <Del> or <ESC> key after the POST memory test begins and before the operating system boot begins. The settings are shown below.

4.2 Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines and the following message will appear on the lower screen:

BIOS POST Screen

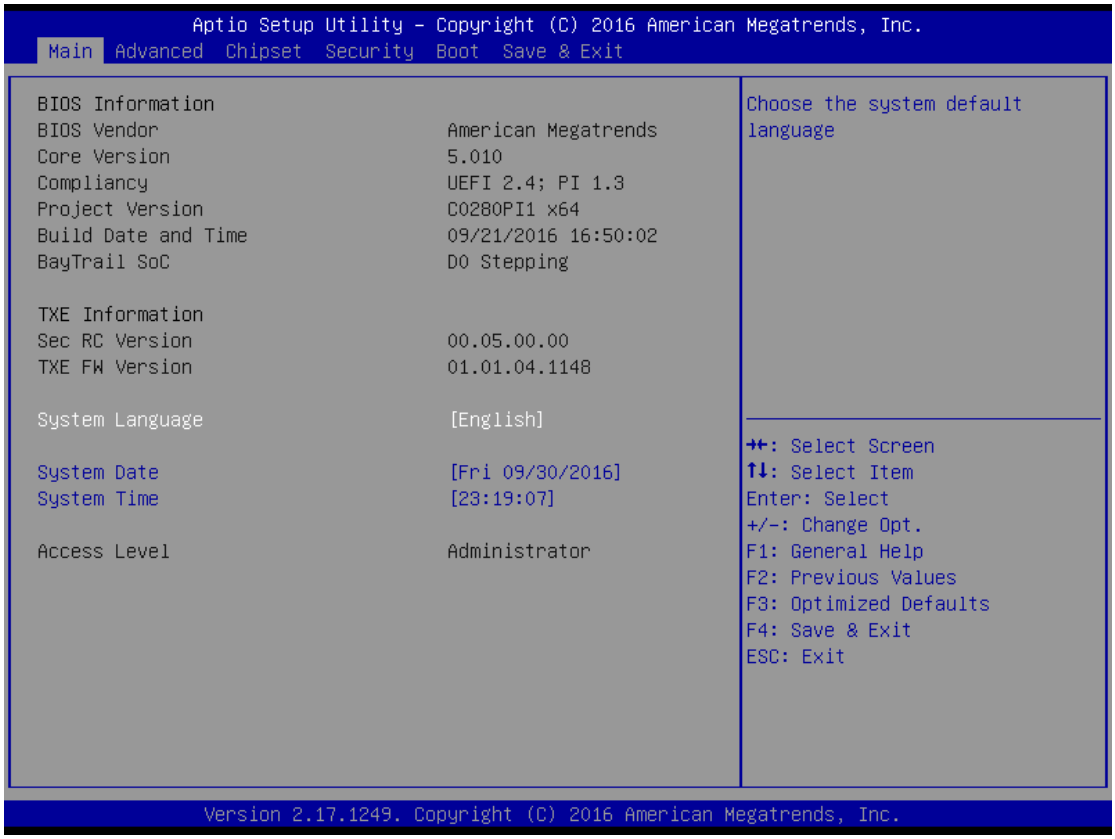
As long as this message is present on the screen you may press the <Del> or <ESC> key to access the Setup program. In a moment, the main menu of the Aptio Setup Utility will appear on the screen:



Setup program initial screen

You may move the cursor by up/down keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear at the bottom of the screen.

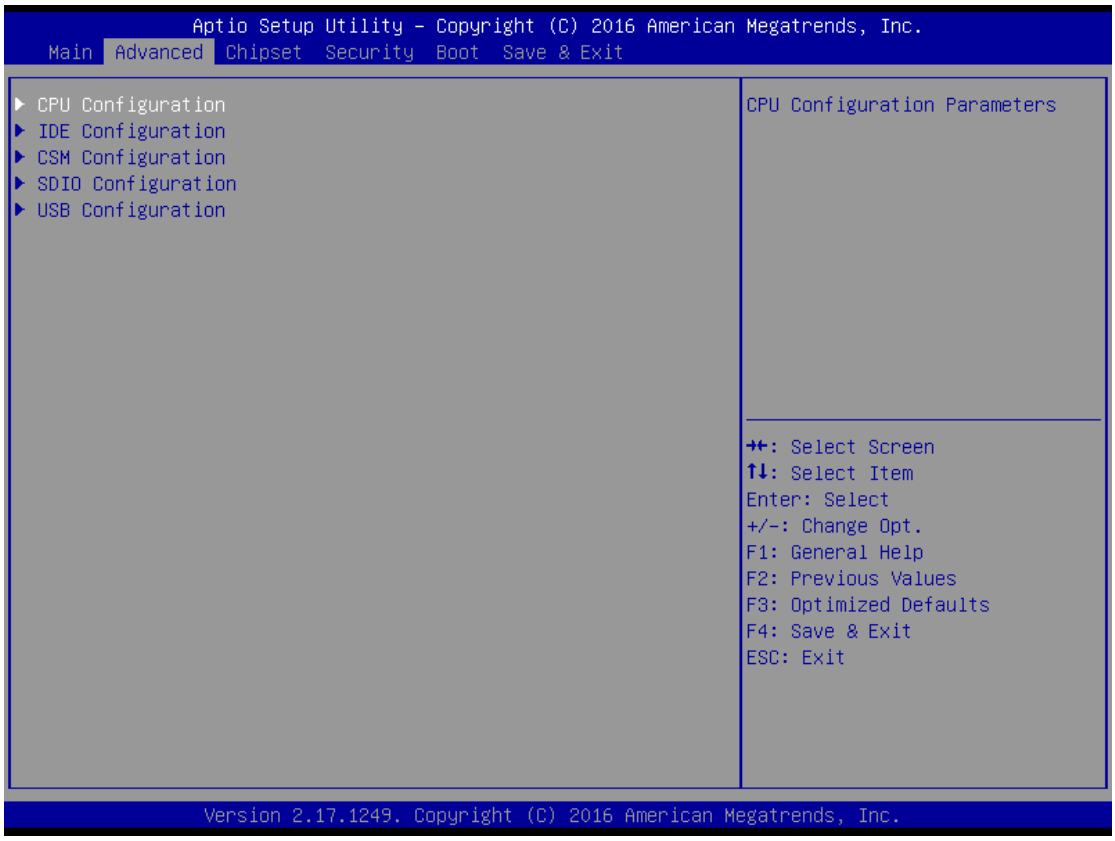
4.3 Main



Main Screen

BIOS Setting	**Options**	**Description/Purpose**
BIOS Vendor	No changeable options	Displays BIOS vendor name.
Core Version	No changeable options	Displays BIOS core version.
Compliancy	No changeable options	Displays UEFI version.
Project Version	No changeable options	Displays the version of the BIOS currently installed on the platform.
Build Date and Time	No changeable options	Displays the date of current BIOS version.
BayTrail SOC	No changeable options	Displays BayTrail SOC stepping on this main board.
Sec RC Version	No changeable options	Displays current RC version.
TXE FW Version	No changeable options	Displays current TXE version.
System Language	English	BIOS Setup language.
System Date	month, day, year	Specifies current date.
System Time	hour, minute, second	Specifies current time.
Access Level	No changeable options	Displays current user level.

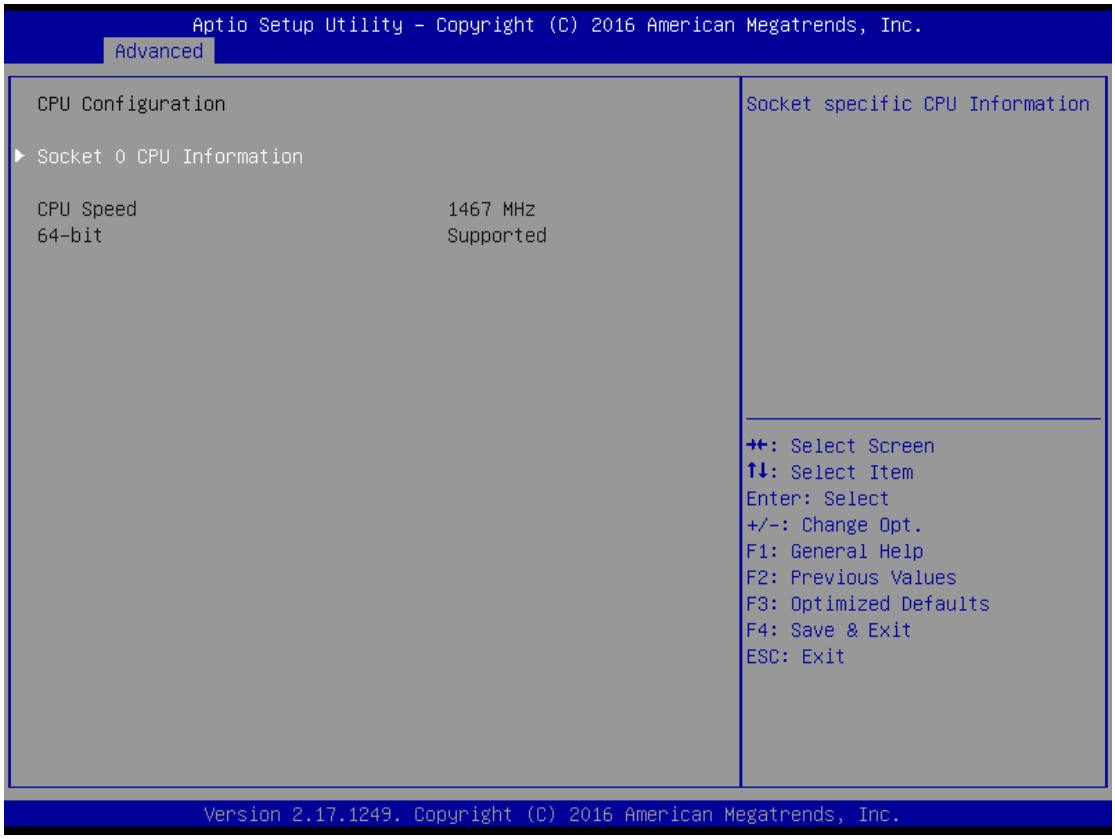
4.4 Advanced



Advanced Screen

BIOS Setting	**Options**	**Description/Purpose**
CPU Configuration	Sub-Menu	CPU configuration parameters.
IDE Configuration	Sub-Menu	IDE device options settings.
CSM Configuration	Sub-Menu	CSM configuration parameters.
SDIO Configuration	Sub-Menu	SDIO configuration parameters.
USB Configuration	Sub-Menu	USB configuration parameters.

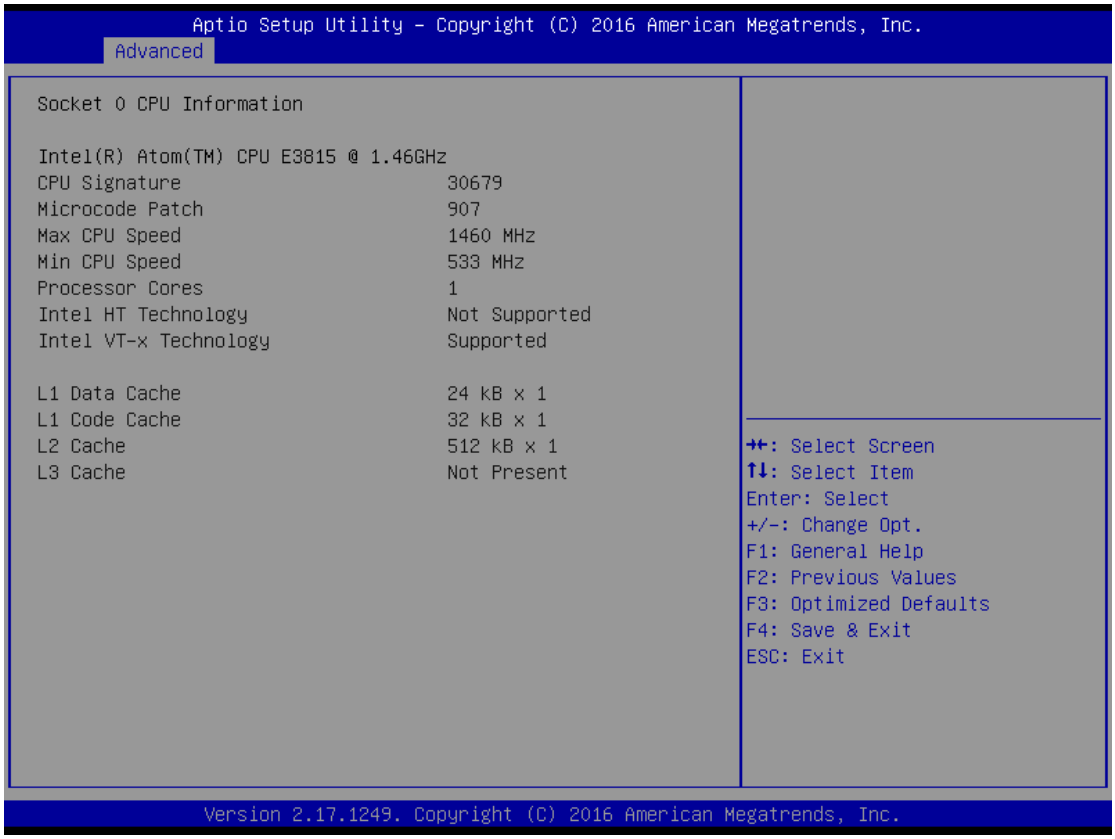
4.4.1 Advanced –CPU Configuration



CPU Configuration Screen

BIOS Setting	Options	Description/Purpose
Socket 0 CPU Information	Sub-Menu	Report CPU Information
CPU Speed	No changeable options	Reports current CPU Speed
64-bit	No changeable options	Reports if 64-bit is supported by processor.

4.4.1.1 Advanced –CPU Configuration- Socket 0 CPU Information

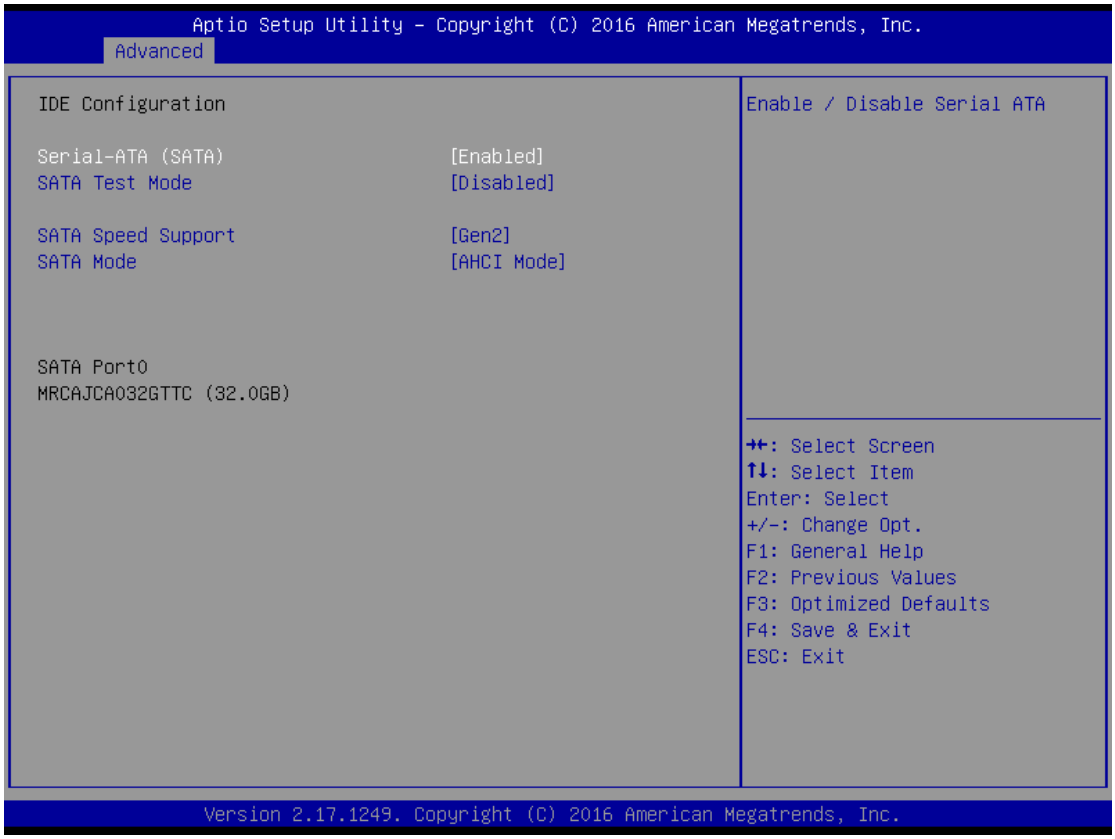


Socket 0 CPU Information Screen

BIOS Setting	Options	Description/Purpose
CPU Signature	No changeable options	Reports the CPU Signature
Microcode Patch	No changeable options	Reports the CPU Microcode Patch Version.
Max CPU Speed	No changeable options	Reports the maximum CPU Speed.
Min CPU Speed	No changeable options	Reports the minimum CPU Speed
Processor Cores	No changeable options	Displays number of physical cores in processor.
Intel HT Technology	No changeable options	Reports if Intel Hyper-Threading Technology is supported by processor

Intel VT-x Technology	No changeable options	Reports if Intel VT-x Technology is supported by processor.
L1 Data Cache	No changeable options	Displays size of L1 Data Cache
L1 Code Cache	No changeable options	Displays size of L1 Code Cache
L2 Cache	No changeable options	Displays size of L2 Cache.
L3 Cache	No changeable options	Displays size of L3 Cache.

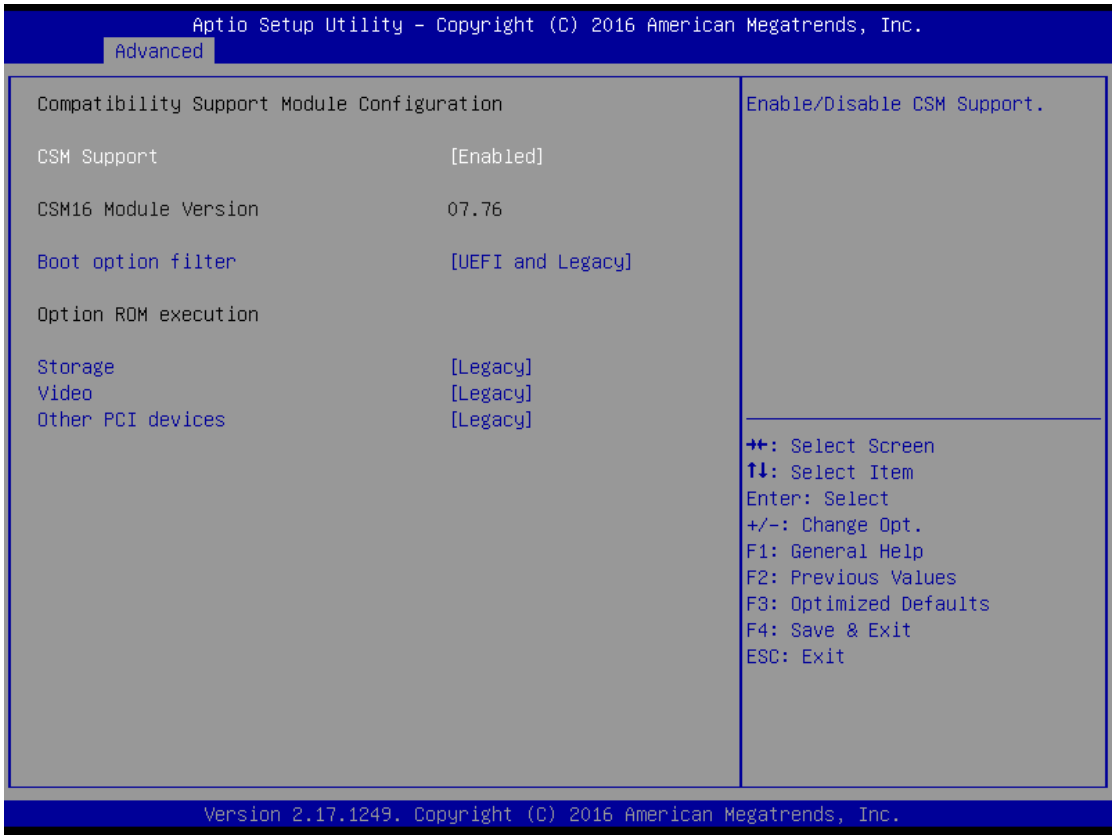
4.4.2 Advanced –IDE Configuration



IDE Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial-ATA Controller(s)	- Disabled - Enabled	Enable or disable SATA Device.
SATA Speed Support	- Gen1 - Gen2	▪ **Gen1** mode sets device to 1.5 Gbit/s speed. ▪ **Gen2** mode sets the device to 3 Gbit/s speed (in case it is compatible).
SATA Mode	- IDE mode - AHCI mode	Configures SATA as following: ▪ **IDE:** Set SATA operation mode to IDE. ▪ **AHCI:** SATA works as AHCI (Advanced Host Controller Interface) mode for getting better performance.
SATA Port 0	[drive]	Displays the drive installed on this SATA port 0. Shows [Empty] if no drive is installed.

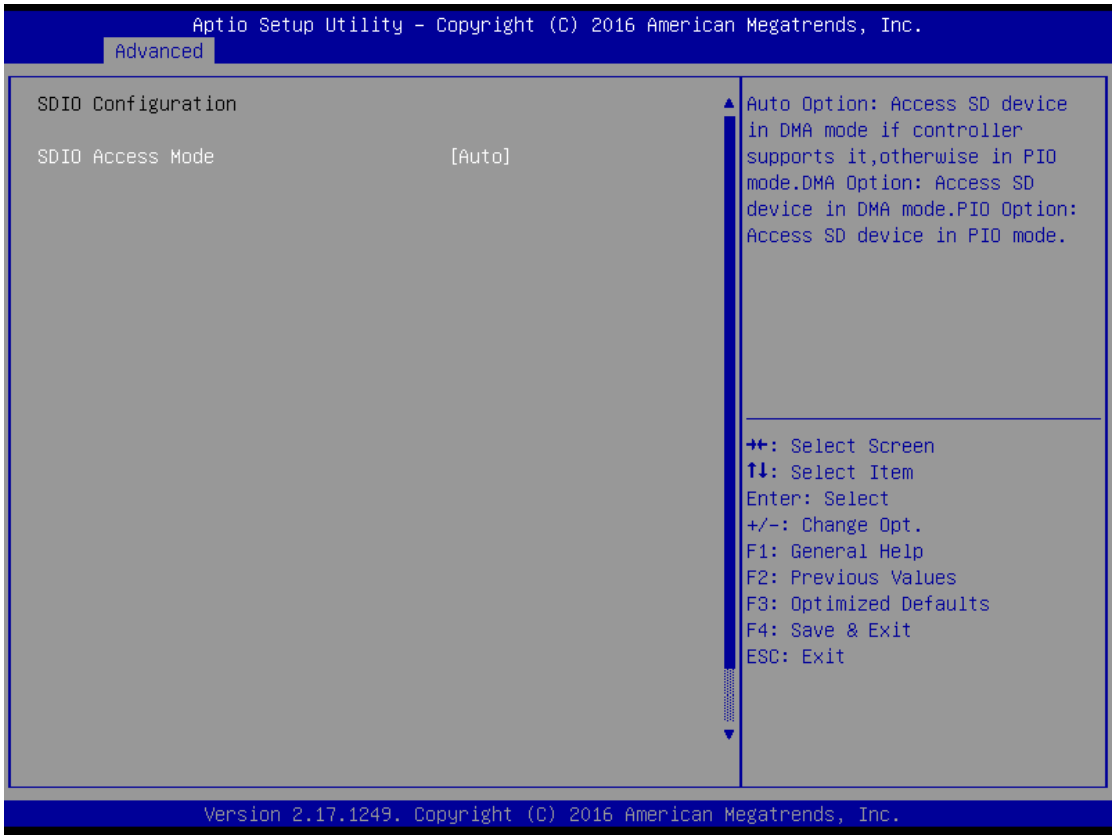
4.4.3 Advanced –CSM Configuration



CSM Configuration Screen

BIOS Setting	Options	Description/Purpose
CSM Support	- Disabled - Enabled	Disable or Enable CSM support
CSM16 Module Version	No changeable options	Displays the current CSM (Compatibility Support Module) version.
Boot option filter	- UEFI and Legacy - Legacy only - UEFI only	This option controls what kind of devices system can boot.
Storage	- Do not launch - UEFI - Legacy	Controls the execution of UEFI or Legacy Storage
Video	- Do not launch - UEFI - Legacy	Controls the execution of UEFI and Legacy Video.
Other PCI devices	- Do not launch - UEFI - Legacy	Select launch method for other PCI devices, such as NIC, mass storage or video card.

4.4.4 Advanced –SDIO Configuration



SDIO Configuration Screen

BIOS Setting	Options	Description/Purpose
SDIO Access Mode	- Auto - ADMA - SDMA - PIO	**Auto**: Access SD device in DMA mode if controller supports it, otherwise in PIO mode. **DMA**: Access SD device in DMA mode. **PIO**: Access SD device in PIO mode.

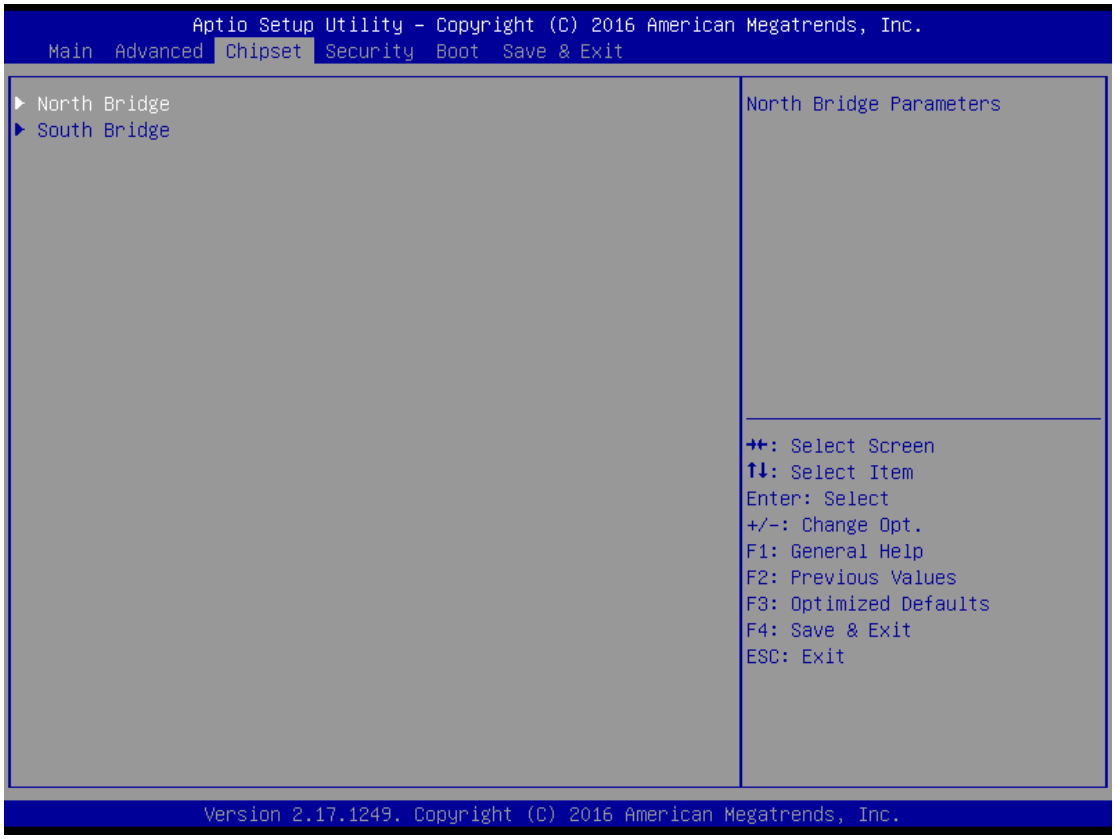
4.4.5 Advanced –USB Configuration

USB Configuration Screen

BIOS Setting	Options	Description/Purpose
USB Devices	No changeable options	Displays number of available USB devices.
Legacy USB Support	- Disabled - Enabled - Auto	Enables support for legacy USB.
EHCI Hand-of	- Disabled - Enabled	This is a workaround for OSes w/o EHCI hand-off support.
USB Mass Storage Driver Support.	- Disabled - Enabled	Enable/Disable USB mass storage driver support.
Port 60/64 Emulation	- Disabled - Enabled	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.

USB transfer time-out	1 / 5 / 10 /20 sec	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 / 20 / 30 / 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	- Auto - Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.
Mass Storage Devices:	- Auto - Floppy - Force FDD - Hard Disk - CD-ROM	Display the device name and choose the device emulation type.

4.5 Chipset



Chipset Screen

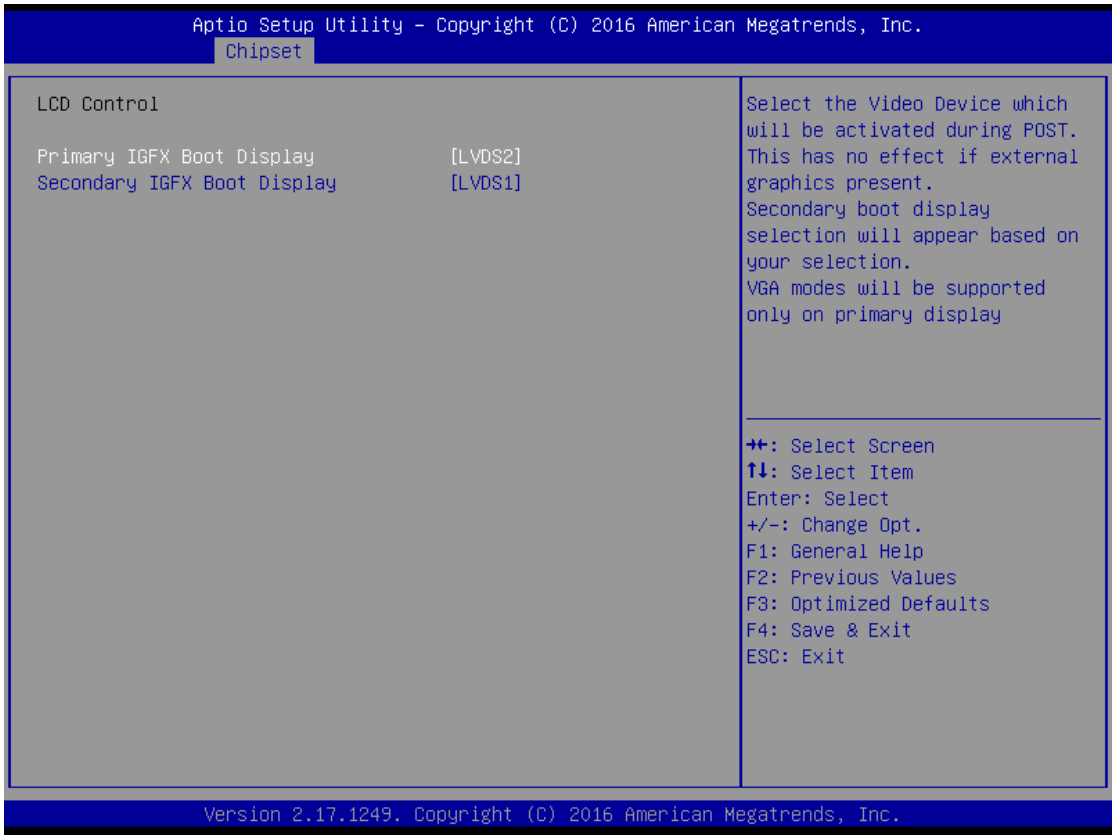
BIOS Setting	Options	Description/Purpose
North Bridge	Sub-menu	Sets Parameter for (North Bridge) configuration.
South Bridge	Sub-menu	Sets Parameter for (South Bridge) configuration.

4.5.1 Chipset - North Bridge

North Bridge Screen

BIOS Setting	**Options**	**Description/Purpose**
LCD Control	Sub-menu	Configure Graphic Settings.
Memory Information	No changeable options	Displays the DRAM information on platform.
Total Memory	No changeable options	Displays the DRAM size
Max TOLUD	- 2GB - 2.25GB - 2.5GB - 2.75GB - 3GB	Maximum Value of TOLUD (Top Of Low Usable DRAM)

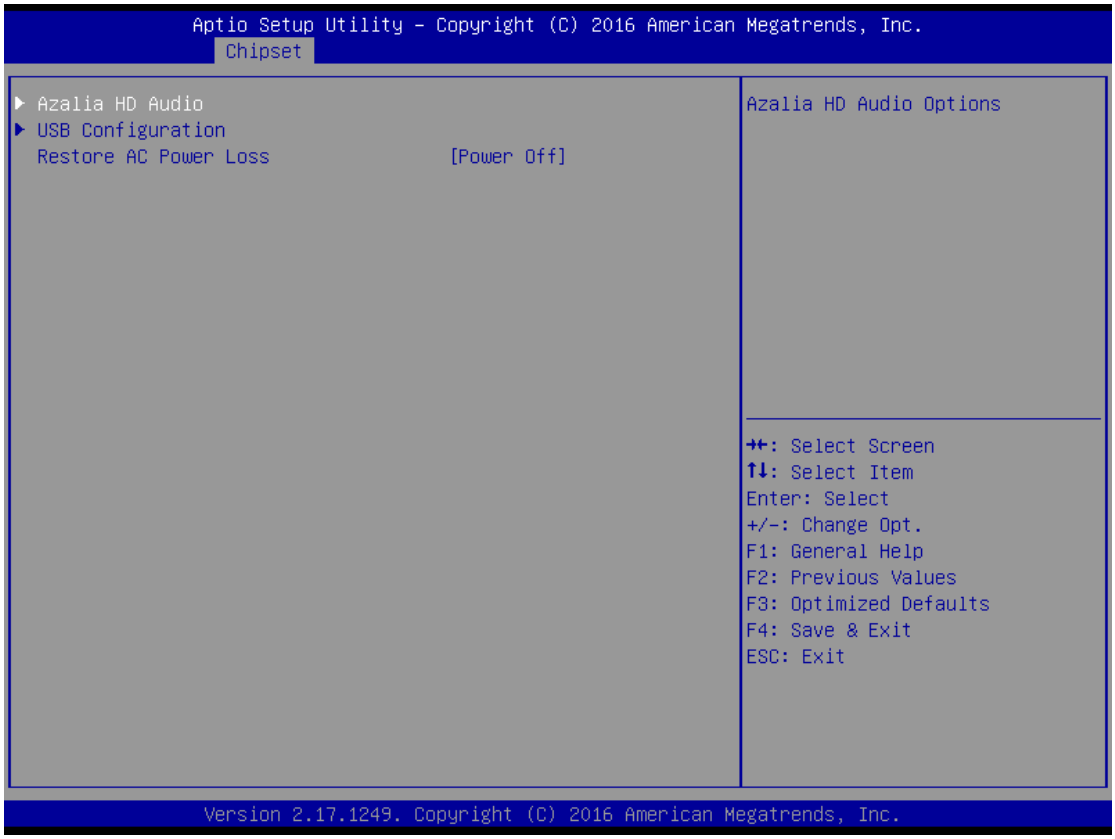
4.5.1.1 Chipset - North Bridge-LCD Control



LCD Control Screen

BIOS Setting	Options	Description/Purpose
Primary IGFX Boot Display	- LVDS1 - LVDS2	Primary Display Settings.
Secondary IGFX Boot Display	- LVDS1 - LVDS2	Secondary Display Settings.

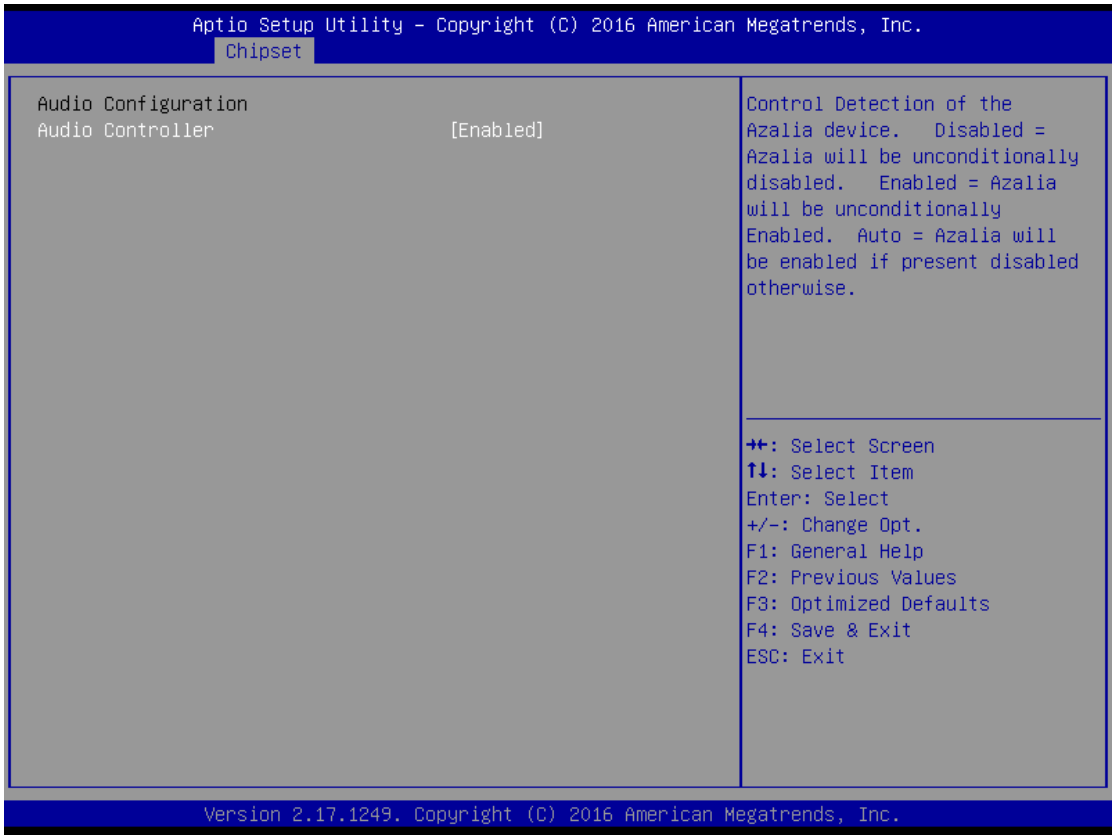
4.5.2 Chipset - South Bridge



South Bridge Screen

BIOS Setting	Options	Description/Purpose
Azalia HD Audio	Sub-menu	Azalia HD Audio Options.
USB Configuration	Sub-menu	USB Configuration Options.
Restore AC Power Loss	- Power Off - Power On - Last State	Select AC power state when power is re-applied after a power failure. ▪ **Power Off** keeps the power off till the power button is pressed. ▪ **Power On** makes system power on after restores AC power to the board. ▪ **Last State** brings system back to the last power state before AC remove.

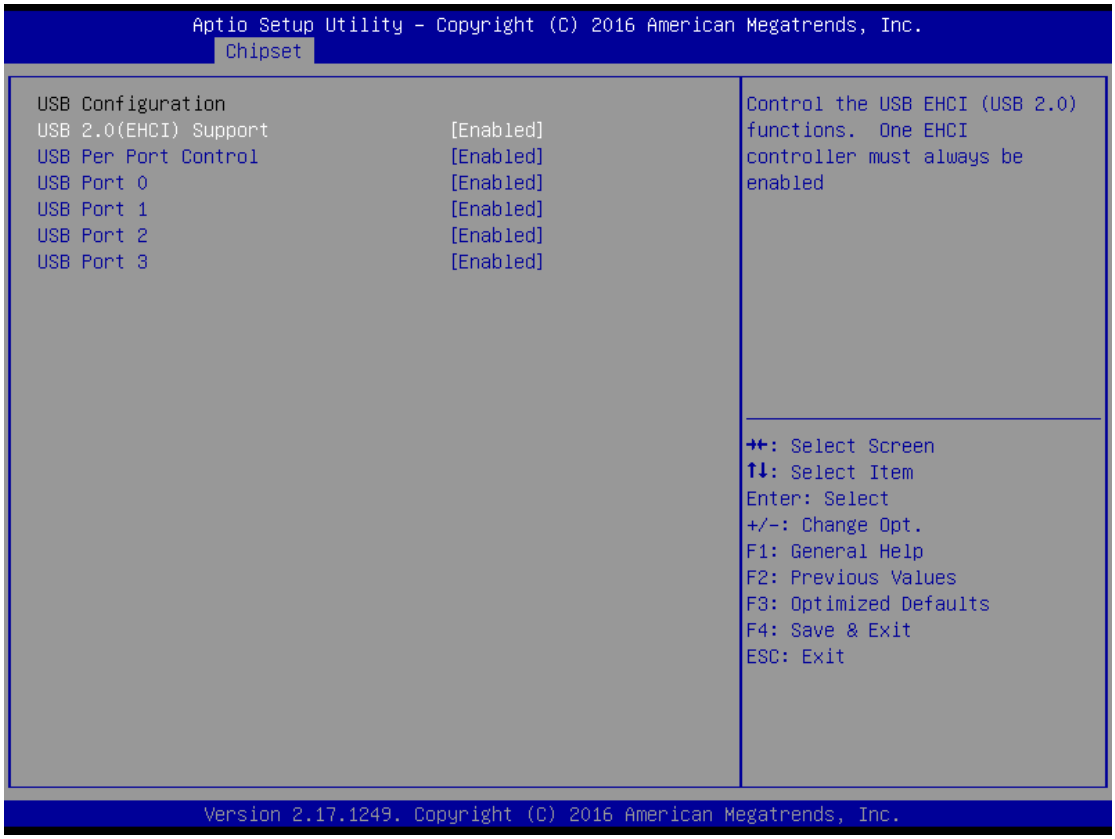
4.5.2.1 Chipset - South Bridge- Azalia HD Audio



Azalia HD Audio Screen

BIOS Setting	Options	Description/Purpose
Audio Controller	- Disabled - Enabled	Control 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

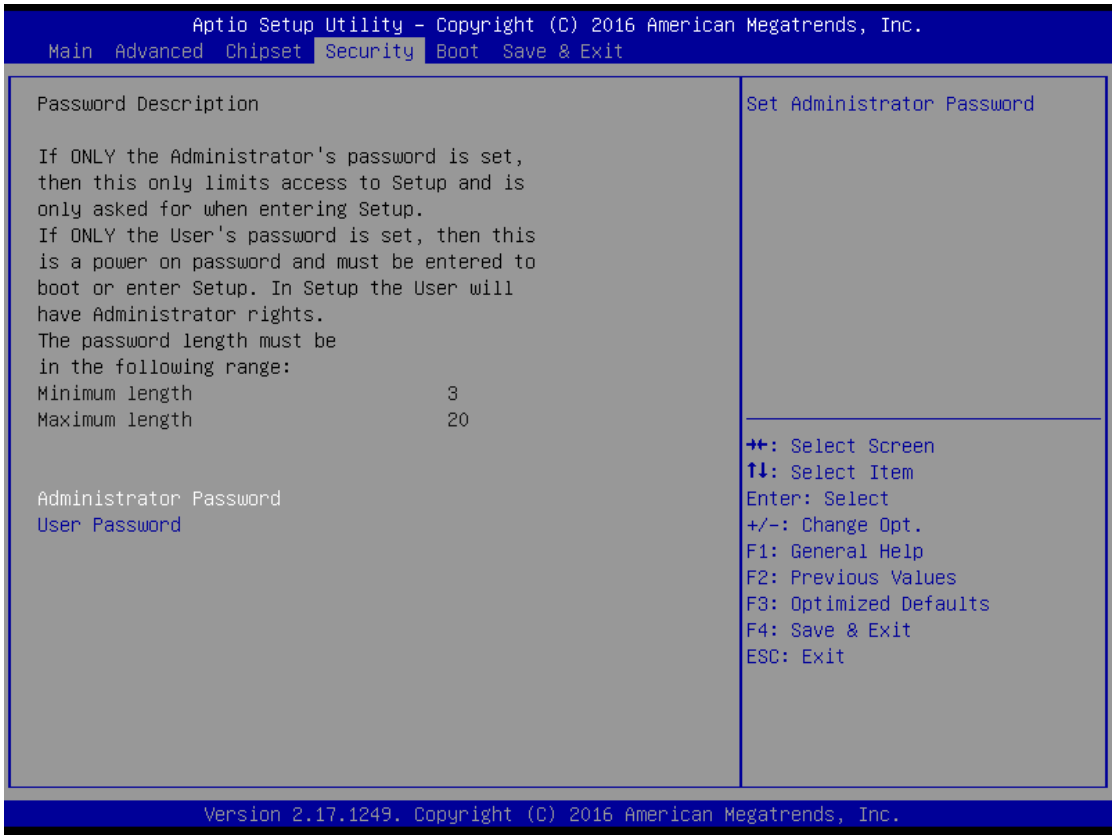
4.5.2.2 Chipset - South Bridge – USB Configuration



USB Configuration Screen

BIOS Setting	Options	Description/Purpose
USB 2.0(EHCI) Support	- Enabled - Disabled	Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled
USB Per Port Control	- Enabled - Disabled	Control each of the USB ports (0~3). **Enable**: Enable USB per port **Disable**: Use USB port X settings
USB Port 0	- Enabled - Disabled	Enable / Disable USB Port 0
USB Port 1	- Enabled - Disabled	Enable / Disable USB Port 1
USB Port 2	- Enabled - Disabled	Enable / Disable USB Port 2
USB Port 3	- Enabled - Disabled	Enable / Disable USB Port 3

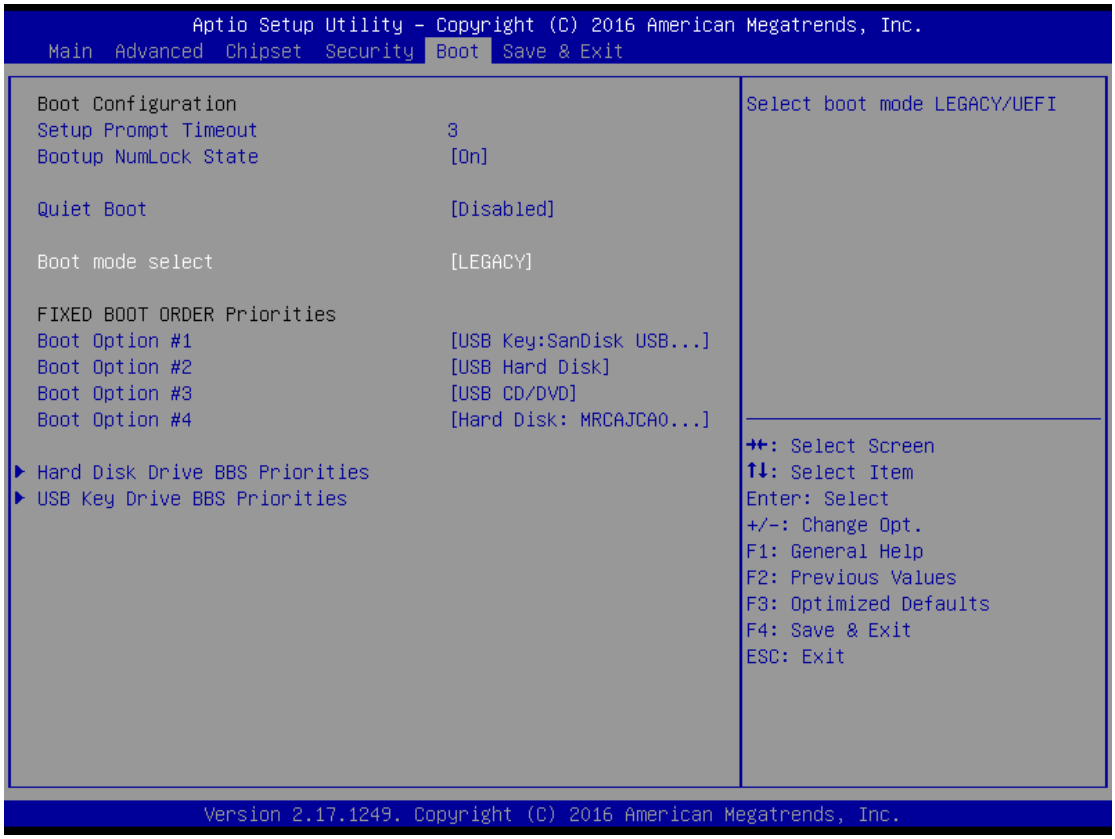
4.6 Security



Security Screen

BIOS Setting	Options	Description/Purpose
Administrator Password	Password can be 3-20 alphanumeric characters.	Specifies the administrator password.
User Password	Password can be 3-20 alphanumeric characters.	Specifies the user password.

4.7 Boot

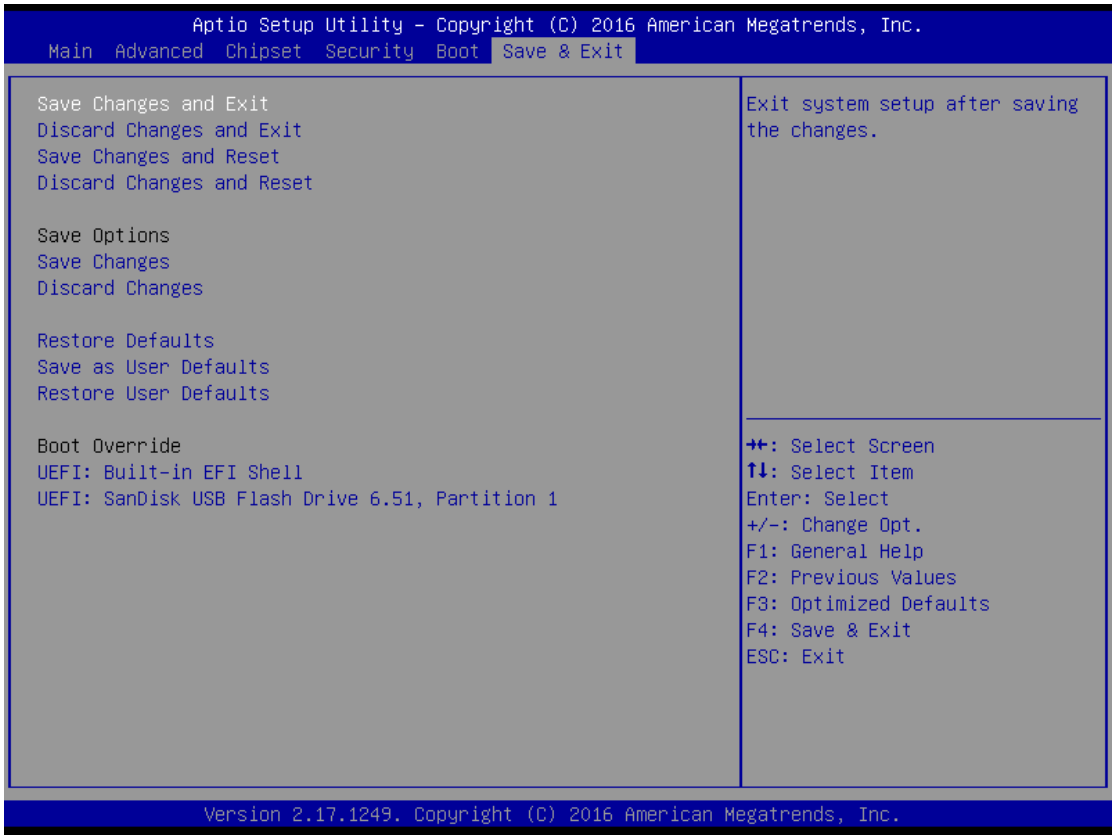


Boot Screen

BIOS Setting	Options	Description/Purpose
Setup Prompt Timeout	Numeric	Number of seconds to wait for setup activation key.
Bootup NumLock State	- On - Off	Specifies the power-on state of the NumLock Key.
Quiet Boot	- Disabled - Enabled	Enable/Disable Quiet Boot Options
Boot Mode Select	- Legacy - UEFI	Select boot mode LEGACY/UEFI
Boot Option #1	- [Drive(s)] - Disabled	Select 1st boot option from available Hard Disks
Boot Option #2	- [Drive(s)] - Disabled	Select 2nd boot option from available USB Hard Disks
Boot Option #3	- [Drive(s)] - Disabled	Select 3rd boot option from available USB CD/DVD
Boot Option #4	- [Drive(s)] - Disabled	Select 4th boot option from available USB Keys

Hard Drive BBS Priorities	Sub-Menu	Allow user to select boot order of available drive(s)
USB Key Drive BBS Priorities	Sub-Menu	Allow user to select boot order of available drive(s)

4.8 Save & Exit



Save & Exit Screen

Save & Exit		
BIOS Setting	**Options**	**Description/Purpose**
Save Changes and Exit	No changeable options	Exits and saves the changes in CMOS SRAM.
Discard Changes and Exit	No changeable options	Exits without saving any changes made in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in CMOS SRAM and resets.
Discard Changes and Reset	No changeable options	Resets without saving any changes made in BIOS settings.
Save Changes	No changeable options	Saves the changes done in BIOS settings so far.
Discard Changes	No changeable options	Discards the changes done in BIOS settings so far.
Restore Defaults	No changeable options	Loads the optimized defaults for BIOS settings.
Save as User Defaults	No changeable options	Saves the current values as user defaults.

Restore User Defaults	No changeable options	Loads the user defaults for BIOS settings.
Boot Override	-[drive(s)]	Forces to boot from selected [drive(s)].

Appendix

IO

Resource	Device
0x0000E070-0x0000E077	Standard AHCI 1.0 Serial ATA Controller
0x0000E060-0x0000E063	Standard AHCI 1.0 Serial ATA Controller
0x0000E050-0x0000E057	Standard AHCI 1.0 Serial ATA Controller
0x0000E040-0x0000E043	Standard AHCI 1.0 Serial ATA Controller
0x0000E020-0x0000E03F	Standard AHCI 1.0 Serial ATA Controller
0x0000E080-0x0000E087	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0x000003B0-0x000003BB	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0x000003C0-0x000003DF	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0x0000E000-0x0000E01F	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x0000D000-0x0000DFFF	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 3 - 0F4C
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer
0x00000000-0x0000006F	PCI bus
0x00000078-0x00000CF7	PCI bus
0x00000D00-0x0000FFFF	PCI bus
0x00000070-0x00000077	System CMOS/real time clock

0x00000070-0x00000077	Motherboard resources
0x0000002E-0x0000002F	Motherboard resources
0x0000004E-0x0000004F	Motherboard resources
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000400-0x0000047F	Motherboard resources
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources

IRQ

Note: These resource information were gathered using Windows 7 (the IRQ could be assigned differently depending on OS)

Resource	Device
IRQ 81	Microsoft ACPI-Compliant System
IRQ 82	Microsoft ACPI-Compliant System
IRQ 83	Microsoft ACPI-Compliant System
IRQ 84	Microsoft ACPI-Compliant System
IRQ 85	Microsoft ACPI-Compliant System
IRQ 86	Microsoft ACPI-Compliant System
IRQ 87	Microsoft ACPI-Compliant System
IRQ 88	Microsoft ACPI-Compliant System
IRQ 89	Microsoft ACPI-Compliant System
IRQ 90	Microsoft ACPI-Compliant System
IRQ 91	Microsoft ACPI-Compliant System
IRQ 92	Microsoft ACPI-Compliant System
IRQ 93	Microsoft ACPI-Compliant System
IRQ 94	Microsoft ACPI-Compliant System
IRQ 95	Microsoft ACPI-Compliant System
IRQ 96	Microsoft ACPI-Compliant System
IRQ 97	Microsoft ACPI-Compliant System
IRQ 98	Microsoft ACPI-Compliant System
IRQ 99	Microsoft ACPI-Compliant System

IRQ 100 Microsoft ACPI-Compliant System

IRQ 101 Microsoft ACPI-Compliant System

IRQ 102 Microsoft ACPI-Compliant System

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IRQ 104 Microsoft ACPI-Compliant System

IRQ 105 Microsoft ACPI-Compliant System

IRQ 106 Microsoft ACPI-Compliant System

IRQ 107 Microsoft ACPI-Compliant System

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IRQ 178	Microsoft ACPI-Compliant System
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IRQ 181	Microsoft ACPI-Compliant System
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IRQ 183	Microsoft ACPI-Compliant System
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IRQ 185	Microsoft ACPI-Compliant System
IRQ 186	Microsoft ACPI-Compliant System
IRQ 187	Microsoft ACPI-Compliant System
IRQ 188	Microsoft ACPI-Compliant System
IRQ 189	Microsoft ACPI-Compliant System
IRQ 190	Microsoft ACPI-Compliant System
IRQ 19	Standard AHCI 1.0 Serial ATA Controller
IRQ 19	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 4 - 0F4E
IRQ 22	High Definition Audio Controller
IRQ 23	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor EHCI USB - 0F34
IRQ 5	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
IRQ 16	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
IRQ 17	SDA Standard Compliant SD Host Controller
IRQ 17	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A
IRQ 18	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor SD Host Controller
IRQ 18	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 3 - 0F4C
IRQ 0	System timer
IRQ 8	High precision event timer
IRQ 4294967293	Intel(R) Trusted Execution Engine Interface
IRQ 4294967294	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
IRQ 4294967292	Intel(R) I210 Gigabit Network Connection
IRQ 4294967291	Intel(R) I210 Gigabit Network Connection
IRQ 4294967290	Intel(R) I210 Gigabit Network Connection
IRQ 4294967289	Intel(R) I210 Gigabit Network Connection
IRQ 4294967288	Intel(R) I210 Gigabit Network Connection
IRQ 4294967287	Intel(R) I210 Gigabit Network Connection

Memory

Resource	Device
0x90806000-0x908067FF	Standard AHCI 1.0 Serial ATA Controller
0x90000000-0x903FFFFF	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0x80000000-0x8FFFFFFF	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900

0x80000000-0x8FFFFFFF	PCI bus
0xA0000-0xBFFFF	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0xA0000-0xBFFFF	PCI bus
0x90800000-0x90803FFF	High Definition Audio Controller
0x90805000-0x908053FF	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor EHCI USB - 0F34.
0x90804000-0x9080401F	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12.

0xFF000000-0xFFFFFFFF	Intel(R) 82802 Firmware Hub Device
0x90809000-0x90809FFF	SDA Standard Compliant SD Host Controller
0xFF000-0xFFFFF	SDA Standard Compliant SD Host Controller
0xE00000D0-0xE00000DB	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor MBI Device - 33BD
0x90808000-0x90808FFF	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor SD Host Controller
0x90807000-0x90807FFF	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor SD Host Controller
0x90600000-0x907FFFFF	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 3 - 0F4C
0x90600000-0x907FFFFF	Intel(R) I210 Gigabit Network Connection
0xFED00000-0xFED003FF	High precision event timer
0xC0000-0xDFFFF	PCI bus
0xE0000-0xFFFFF	PCI bus
0x90500000-0x905FFFFF	Intel(R) Trusted Execution Engine Interface
0x90400000-0x904FFFFF	Intel(R) Trusted Execution Engine Interface
0xE0000000-0xEFFFFFFF	Motherboard resources
0xFED01000-0xFED01FFF	Motherboard resources
0xFED03000-0xFED03FFF	Motherboard resources
0xFED04000-0xFED04FFF	Motherboard resources
0xFED0C000-0xFED0FFFF	Motherboard resources
0xFED08000-0xFED08FFF	Motherboard resources
0xFED1C000-0xFED1CFFF	Motherboard resources
0xFEE00000-0xFEEFFFFF	Motherboard resources
0xFEF00000-0xFEFFFFFF	Motherboard resources
0x90700000-0x90703FFF	Intel(R) I210 Gigabit Network Connection

System BIOS Update Procedure

A. Before System BIOS update

1. Prepare a bootable media (ex. USB storage device) which can boot system to DOS prompt.
2. Download and save the BIOS file (ex. C0280PI1.bin) to the bootable device.
3. Copy AMI flash utility – AFUDOS.exe (v5.07.01) into bootable device.

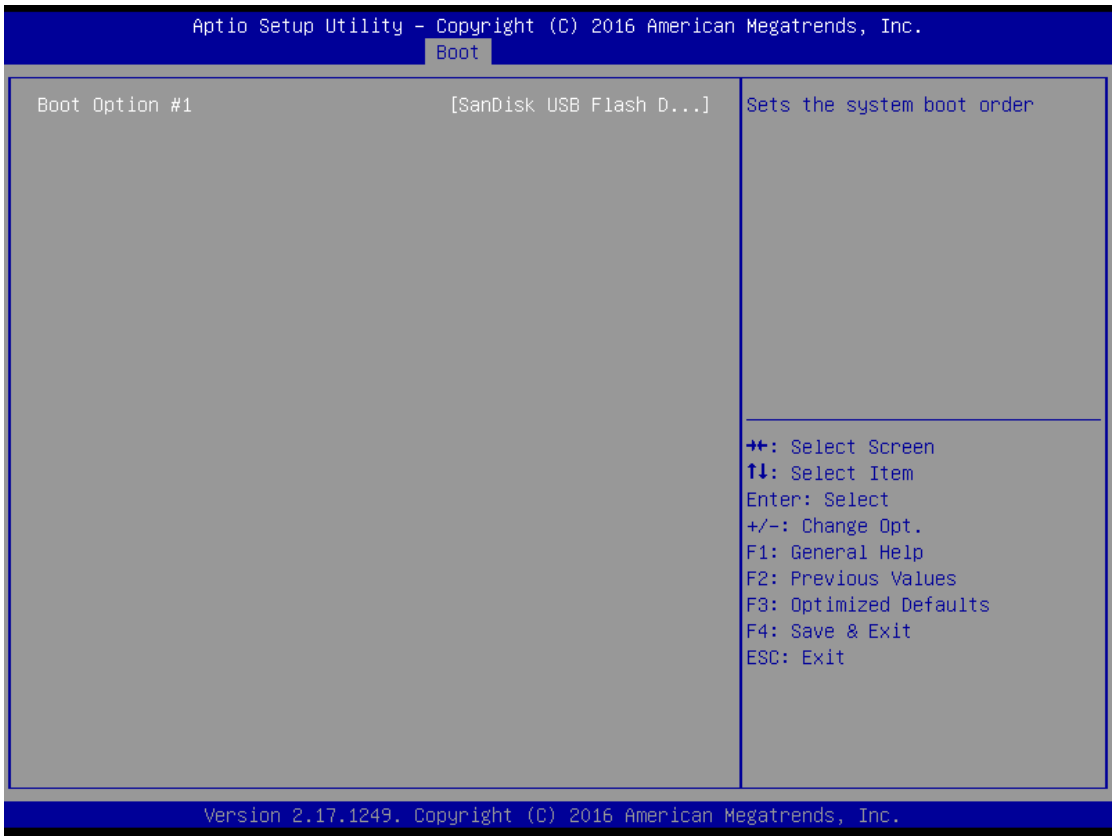
```
C:\AFUDOS>dir

 Volume in drive C has no label
 Volume serial Number is 0846-7844
 Directory of C:\AFUDOS

.              <DIR>         02-04-15 11:20a
..             <DIR>         02-04-15 11:20a
AFUDOS   EXE       169,120   02-02-15  2:43p
AFUDOS   TXT         5,686   02-02-15  2:17p
README   TXT         5,052   01-30-15  5:57p
AMI_AP~1 PDF     1,088,978   02-02-15  3:03p
C0280PI1 BIN     8,388,608   09-13-16  2:33p
         5 file(s)      9,657,444 bytes
         2 dir(s)        5,242.82 MB free

C:\AFUDOS>
```

4. Make sure the target system can first boot to the bootable device.
   (1) Connect the bootable USB device.
   (2) Turn on the computer and press <Esc> or <Del> key during boot to enter BIOS Setup.
   (3) System will go into the BIOS setup menu.
   (4) Select [Boot] menu.
   (5) Select Boot Option #1 from [Hark Disk] to [USB Key]
   (6) Select [USB Key Drive BBS Priorities], set the USB bootable device to be the 1st boot device.
   (7) Press <F4> key to save configuration and exit the BIOS setup menu.



B. Using AFUDOS.exe utility for system BIOS update

AFUDOS.exe is the AMI BIOS update utility; the command line is shown as below:

AFUDOS <BIN File Name> [option1] [option2]….

User can type "AFUDOS/ ?" to see all the definition of each control options. The recommended options for BIOS ROM update include following parameters:

/P: Program main BIOS image.

/B: Program Boot Block.

/N: Program NVRAM.

/X: Don't check ROM ID.

C. BIOS update procedure

1. Use the bootable USB storage to boot up system into the DOS command prompt.
2. Type "**AFUDOSC028xxxx.bin /p /b /n /x"** and press enter to start the flash procedure.
   (Note that xxxx means the BIOS revision part, ex. 0PI1…)
3. During the update procedure, you will see the BIOS update processing status and the percentage it has been done.
   - **Beware:** Do not turn off system power or reset your computer if the whole procedure are not complete yet, or it may crash the BIOS ROM and make system unable to boot up next time.

4. After BIOS update procedures is complete, the messages should be like the figure shown below.

```
C:\AFUDOS>AFUDOS C0280PI1.bin /P /B /N /X
+-------------------------------------------------------------------------------+
|                 AMI Fireware Update Utility  v5.07.01                         |
|      Copyright (C)2014 American Megatrends Inc. All Rights Reserved.          |
+-------------------------------------------------------------------------------+
 Reading flash ..............  done
 - ME Data Size checking . ok
 - FFS checksums ..........  ok
 Erasing Boot Block ..........  done
 Updating Boot Block .........  done
 Verifying Boot Block ........  done
 Erasing Main Block ..........  done
 Updating Main Block .........  done
 Verifying Main Block ........  done
 Erasing NVRAM Block .........  done
 Updating NVRAM Block ........  done
 Verifying NVRAM Block .......  done

C:\AFUDOS>
```

5. User can restart the system and boot up with new BIOS now.

6. Update is complete after restart.

7. The way to verify the BIOS version.

(1) After system restart user should able to see the new BIOS version when AMI logo pops up.

(2) User can also check the BIOS version by pressing <Del> or <ESC> key to access BIOS setup page during POST procedure. The current BIOS version will be shown at “Project Version” item of the BIOS main screen.