

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

Main Advanced IntelRCSetup Security Boot Save & Exit

BIOS Information

BIOS Vendor	American Megatrends
Core Version	5.11
Compliance	UEFI 2.4; PI 1.3
BIOS Version	HUANANZHI X99-4MF
Access Level	Administrator

Memory Information

Total Memory	16384 MB
--------------	----------

System Language

[English]

System Date

[Wed 05/24/2023]

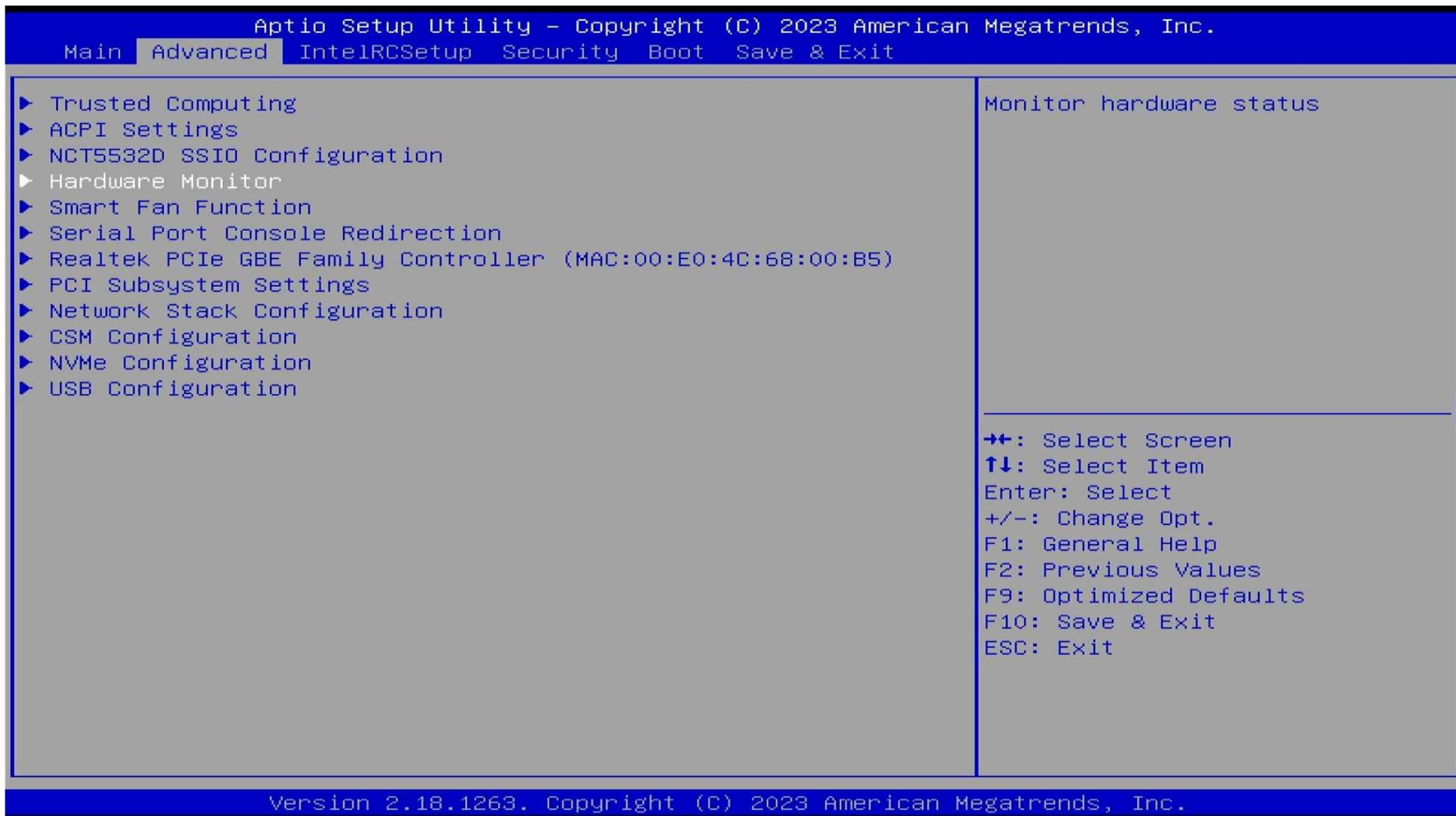
System Time

[11:06:44]

Choose the system default language

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Fan speed detection



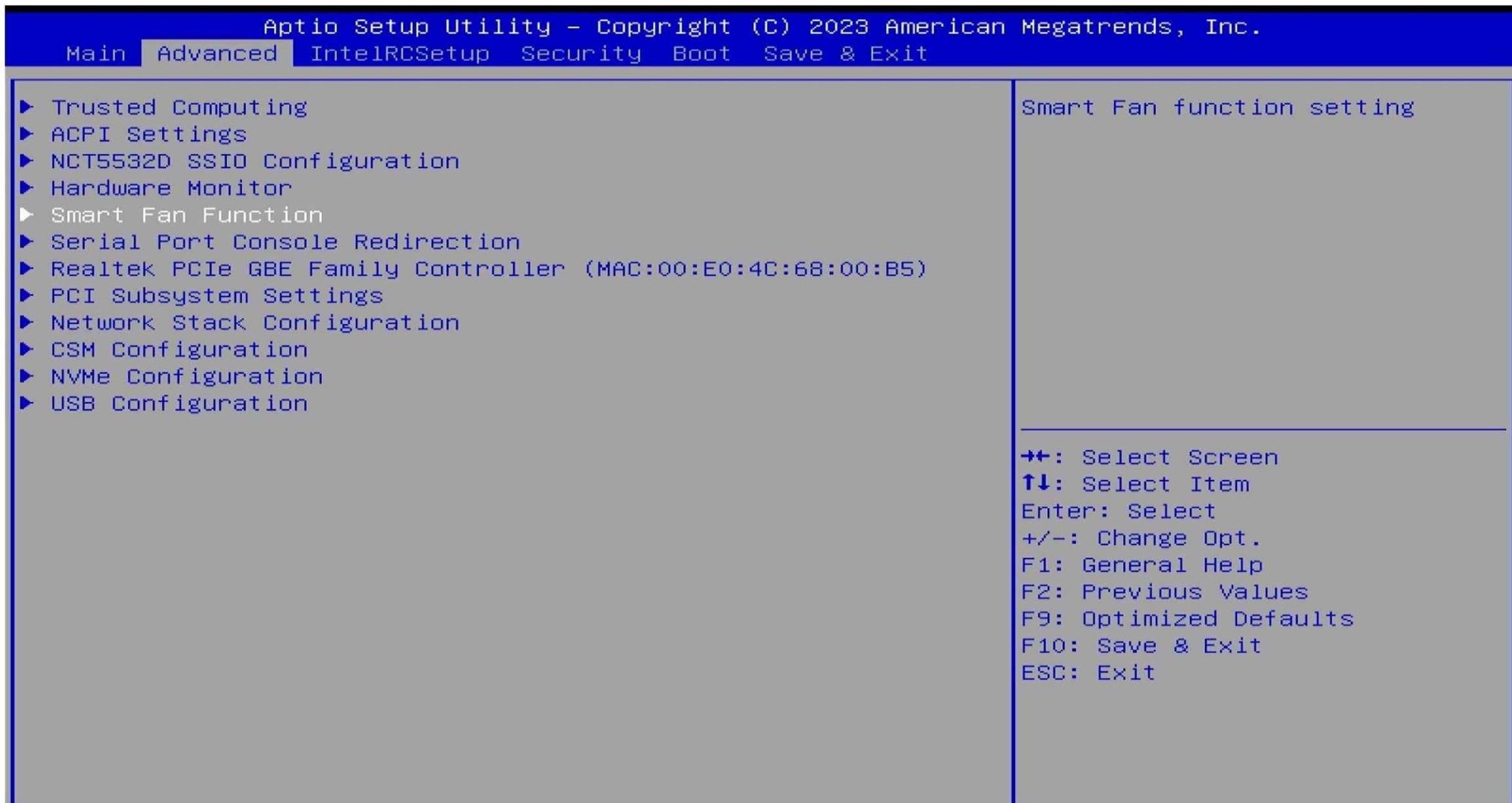
Advanced

Pc Health Status

CPU 1 temperature : +46 °C
CPU Fan 1 Speed : 1537 RPM
SYS Fan 3 Speed : N/A

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Temperature control



Advanced

Smart Fan function setting	
Smart Fan 1 Mode	[Automatic Mode]
Smart Fan Temperature 1	30
Smart Fan Temperature 2	40
Smart Fan Temperature 3	50
Smart Fan Temperature 4	60
Smart Fan Critical Temperature	60
Smart Fan PWM 1	150
Smart Fan PWM 2	170
Smart Fan PWM 3	200
Smart Fan PWM 4	255
Fan work mode with critical Temperature Tolerance	[Full Mode] 0

Smart Fan 1 Mode Select

←→: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F9: Optimized Defaults

F10: Save & Exit

ESC: Exit

4G Decoding SR-IOV

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

Main Advanced IntelRCSetup Security Boot Save & Exit

- ▶ Trusted Computing
- ▶ ACPI Settings
- ▶ NCT5532D SSIO Configuration
- ▶ Hardware Monitor
- ▶ Smart Fan Function
- ▶ Serial Port Console Redirection
- ▶ Realtek PCIe GBE Family Controller (MAC:00:E0:4C:68:00:B5)
- ▶ PCI Subsystem Settings
- ▶ Network Stack Configuration
- ▶ CSM Configuration
- ▶ NVMe Configuration
- ▶ USB Configuration

PCI, PCI-X and PCI Express Settings.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Version 2.18.1263. Copyright (C) 2023 American Megatrends, Inc.

Advanced

PCI Bus Driver Version A5.01.05

PCI Devices Common Settings:

PCI Latency Timer [32 PCI Bus Clocks]
PCI-X Latency Timer [64 PCI Bus Clocks]
VGA Palette Snoop [Disabled]
PERR# Generation [Disabled]
SERR# Generation [Disabled]
Above 4G Decoding [Disabled]
SR-IOV Support [Disabled]
BME DMA Mitigation [Disabled]

▶ PCI Express Settings

▶ PCI Express GEN 2 Settings

Value to be programmed into
PCI Latency Timer Register.

←→: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

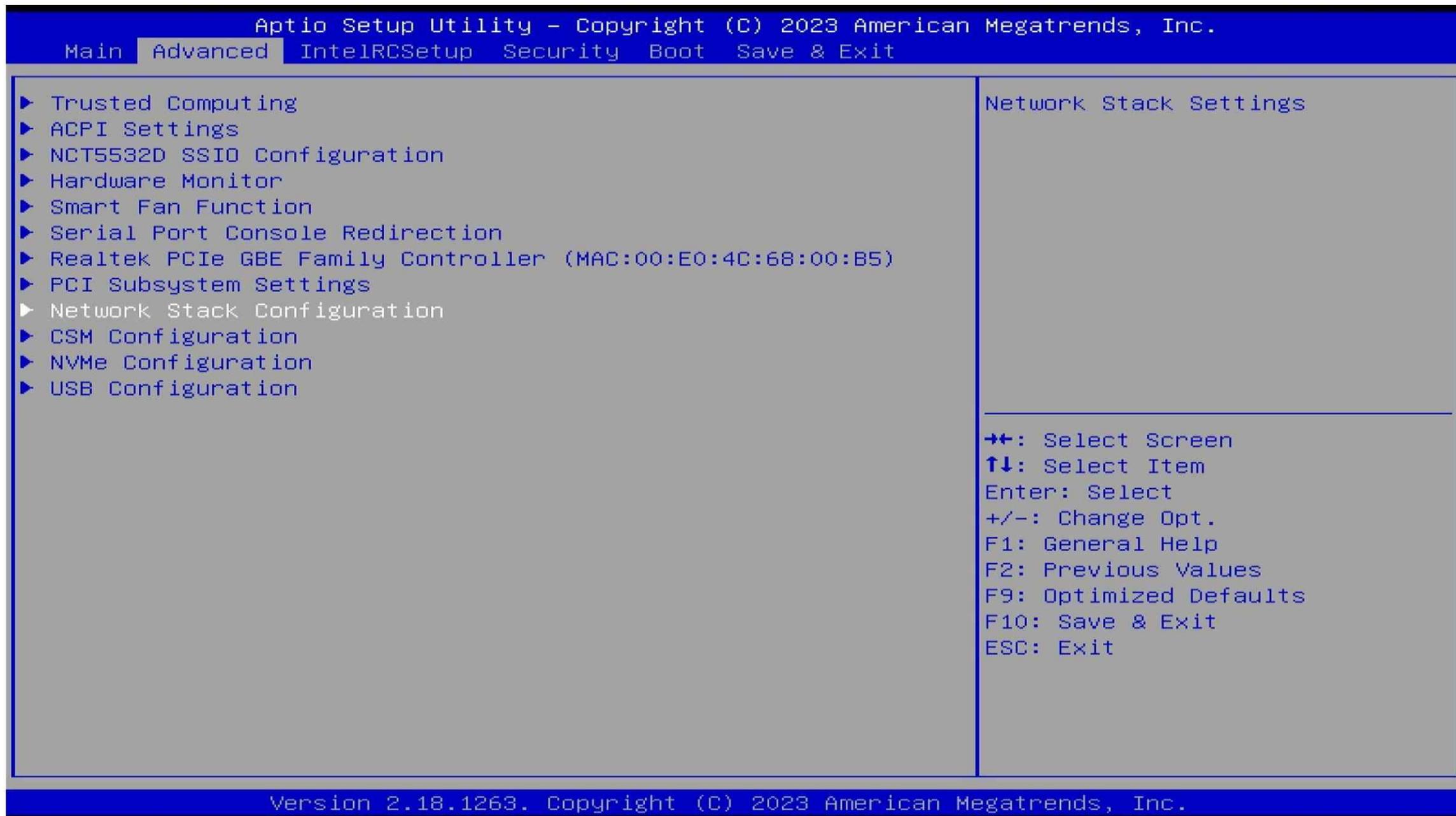
F2: Previous Values

F9: Optimized Defaults

F10: Save & Exit

ESC: Exit

UEFI network card starts network wake-up



Advanced

Network Stack **Network card** [Disabled]
Lan Wake up Control **Starts Wake-on-LAN** [Enabled]

Enable/Disable UEFI Network Stack

Network Stack
Disabled
Enabled

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

Main Advanced IntelRCSetup Security Boot Save & Exit

- ▶ Trusted Computing
- ▶ ACPI Settings
- ▶ NCT5532D SSI0 Configuration
- ▶ Hardware Monitor
- ▶ Smart Fan Function
- ▶ Serial Port Console Redirection
- ▶ Realtek PCIe GBE Family Controller (MAC:00:E0:4C:68:00:B5)
- ▶ PCI Subsystem Settings
- ▶ Network Stack Configuration
- ▶ CSM Configuration
- ▶ NVMe Configuration
- ▶ USB Configuration

CSM configuration:
Enable/Disable, Option ROM
execution settings, etc.

→→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Advanced

Compatibility Support Module Configuration

Enable/Disable CSM Support.

CSM Support	[Enabled]
CSM16 Module Version	07.79
GateA20 Active	[Upon Request]
Option ROM Messages	[Force BIOS]
Boot option filter	[UEFI and Legacy]
Option ROM execution	
Network	[Do not launch]
Storage	[Legacy]
Video	[Legacy]
Other PCI devices	[UEFI]

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

CPU Settings

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

Main Advanced IntelRCSetup Security Boot Save & Exit

▶ Processor Configuration
▶ Advanced Power Management Configuration
▶ Common RefCode Configuration
▶ QPI Configuration
▶ Memory Configuration
▶ IIO Configuration
▶ PCH Configuration
▶ Miscellaneous Configuration
▶ Server ME Debug Configuration
▶ Reserve Memory

Setup Warning:
Setting items on this Screen to incorrect values
may cause system to malfunction!

Displays and provides option
to change the Processor
Settings

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

Processor Configuration

▶ Per-Socket Configuration Enable core count

Processor Socket	Socket 0
Processor ID	000406F1*
Processor Frequency	2.200GHz
Processor Max Ratio	16H
Processor Min Ratio	0CH
Microcode Revision	0B000038
L1 Cache RAM	1408KB
L2 Cache RAM	5632KB
L3 Cache RAM	56320KB
Processor 0 Version	Intel(R) Xeon(R) CPU E5 -2696 v4 @ 2.20GHz

Hyper-Threading [ALL] Hyperthreading	[Enable]
Check CPU BIST Result	[Disabled]
Monitor/Mwait	[Enable]
Execute Disable Bit	[Enable]
Enable Intel TXT Support	[Disable]
VMX VT-X	[Enable]
Enable SMX	[Disable]
Lock Chipset	[Enable]
MSR Lock Control	[Enable]
PPIN Control	[Unlock/Enable]

▲ Change Per-Socket Settings

←←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

▶ CPU Socket 0 Configuration

→+: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

CPU Socket 0 Configuration

Cores Enabled **Enable core count**
IOT Cfg Cbo Bitmap(Hex) 0

Number of Cores to Enable. 0 means all cores. 22 Cores available.

0 means all cores are enabled by default.
The number you enter manually is the number you want to enable.

→→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Turbo

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

Main Advanced IntelRCSetup Security Boot Save & Exit

- ▶ Processor Configuration
- ▶ Advanced Power Management Configuration
- ▶ Common RefCode Configuration
- ▶ QPI Configuration
- ▶ Memory Configuration
- ▶ IIO Configuration
- ▶ PCH Configuration
- ▶ Miscellaneous Configuration
- ▶ Server ME Debug Configuration
- ▶ Reserve Memory

Setup Warning:
Setting items on this Screen to incorrect values
may cause system to malfunction!

Displays and provides option
to change the Power Management
Settings

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

Advanced Power Management Configuration

Power Technology [Custom]
Config TDP [Disable]
IOTG Setting [Disable]
Uncore CLR Freq OVRD [Auto]

- ▶ CPU P State Control
- ▶ CPU HWPM State Control
- ▶ CPU C State Control
- ▶ CPU T State Control
- ▶ CPU - Advanced PM Tuning
- ▶ SOCKET RAPL Config
- ▶ DRAM RAPL Configuration

Controls CPU frequency.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

CPU P State Control

EIST (P-states)	[Enable]
Turbo Mode	[Enable]
P-state coordination	[HW_ALL]
SPD	[Disable]
PL2_SAFETY_NET_ENABLE	[Enable]
Boot performance mode	[Max Performance]

Turbo Mode

Disable
Enable

Turbo mode allows a CPU logical processor to execute a higher frequency when enough power is available not exceed CPU defined limits.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Memory settings

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

Main Advanced IntelRCSetup Security Boot Save & Exit

- ▶ Processor Configuration
- ▶ Advanced Power Management Configuration
- ▶ Common RefCode Configuration
- ▶ QPI Configuration
- ▶ Memory Configuration
- ▶ IIO Configuration
- ▶ PCH Configuration
- ▶ Miscellaneous Configuration
- ▶ Server ME Debug Configuration
- ▶ Reserve Memory

Setup Warning:
Setting items on this Screen to incorrect values
may cause system to malfunction!

Displays and provides option
to change the Memory Settings

→→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

Integrated Memory Controller (iMC)

Enforce POR	[Disabled]
PPR Type	[PPR Disabled]
PPR Error Injection test	[Disabled]
Memory Frequency frequency	[Auto]
MRC Promote Warnings	[Enabled]
Promote Warnings	[Enable]
Halt on mem Training Error	[Enabled]
Multi-Threaded MRC	[Auto]
ECC Support Memory ECC	[Auto]
Enforce Timeout	[Auto]
Enhanced Log Parsing	[Disable]
BSSA Module Loader	[Auto]
Backside RMT	[Auto]
Rank Multiplication	[Auto]
LRDIMM Module Delay	[Auto]
MemTest	[Auto]
MemTestLoops	1
Dram Maintenance Test	[Auto]
Dram Maintenance Test Direction	[UP Direction]
Dram Maintenance Test Inversion	[Disabled]
Dram Maintenance Test Repetitions	3

▲ Maximum Memory Frequency
Selections in Mhz. Do not
select Reserved

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

VT-D PCIE split

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

Main Advanced IntelRCSetup Security Boot Save & Exit

- ▶ Processor Configuration
- ▶ Advanced Power Management Configuration
- ▶ Common RefCode Configuration
- ▶ QPI Configuration
- ▶ Memory Configuration
- ▶ IIO Configuration
- ▶ PCH Configuration
- ▶ Miscellaneous Configuration
- ▶ Server ME Debug Configuration
- ▶ Reserve Memory

Setup Warning:
Setting items on this Screen to incorrect values
may cause system to malfunction!

Displays and provides option
to change the IIO Settings

→→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

IIO Configuration

IIO PCIe Link on phase [Post chipset init]
PCIe Train by BIOS [yes]
PCIe Hot Plug [Disable]
PCIe ACPI Hot Plug [Disable]
EV DFX Features [Disable]

- ▶ IIO0 Configuration **Split**
- ▶ IOAT Configuration
- ▶ IIO General Configuration
- ▶ Intel VT for Directed I/O (VT-d) **VT-D**

PCI Express Global Options

=====
TX EQ WA [Enable]
DMI Vc1 Control [Disable]
DMI Vcp Control [Disable]
DMI Vcm Control [Enable]
VCO No-Snoop Configuration [Disable]
Gen3 Phase3 Loop Count [16]
Skip Halt On DMI Degradation [Disable]
Power down unused ports [yes]
SLD WA Revision [Auto]
Rx Clock WA [Disable]
PCI-E ASPM (Global) [Disable]

←→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

IOU2 (IIO PCIe Port 1) [x4x4]
IOU0 (IIO PCIe Port 2) [Auto]
IOU1 (IIO PCIe Port 3) [Auto]
No PCIe port active ECO [PCU Squelch exit ig...]
▶ Socket 0 PcieD00F0 - Port 0/DMI
▶ Socket 0 PcieD01F0 - Port 1A
▶ Socket 0 PcieD01F1 - Port 1B M.2
▶ Socket 0 PcieD02F0 - Port 2A
▶ Socket 0 PcieD03F0 - Port 3A Graphics card slot
IOU0 Non-Posted Prefetch [Disable]
IOU1 Non-Posted Prefetch [Disable]
IOU2 Non-Posted Prefetch [Disable]

Selects PCIe port Bifurcation
for selected slot(s)

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

```
Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
Main  Advanced  IntelRCSetup  Security  Boot  Save & Exit

▶ Processor Configuration
▶ Advanced Power Management Configuration
▶ Common RefCode Configuration
▶ QPI Configuration
▶ Memory Configuration
▶ IIO Configuration
▶ PCH Configuration
▶ Miscellaneous Configuration
▶ Server ME Debug Configuration
▶ Reserve Memory

-----
Setup Warning:
Setting items on this Screen to incorrect values
may cause system to malfunction!

Displays and provides option
to change the PCH Settings

-----
←→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
```

IntelRCSetup

PCH Configuration

Onboard Lan Network [Enabled]
Onboard Azalia card [Auto]

- ▶ PCH Devices sound card call start
- ▶ PCI Express Configuration
- ▶ PCH SATA Configuration
- ▶ USB Configuration
- ▶ Security Configuration
- ▶ Azalia Configuration
- ▶ Platform Thermal Configuration

Disable or Enable Onboard Lan

←→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

Board Capability	[DeepSx]
DeepSx Power Policies	[Disabled]
GP27 Wake From DeepSx	[Disabled]
SMBUS Device	[Enabled]
PCH Server Error Reporting Mode (S	[Disabled]
PCH Display	[Enabled]
Serial IRQ Mode	[Quiet]
External SSC Enable - CK420	[Disabled]
Restore AC after Power Loss	[Power Off]
PCH CRID	[Disabled]

Select power status for ACPI
state after a G3

— Restore AC after Power Loss —

Power On
Power Off
Last State

Select Screen

Select Item

r: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F9: Optimized Defaults

F10: Save & Exit

ESC: Exit

SATA

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

IntelRCSetup

PCH Configuration

Onboard Lan [Enabled]

Onboard Azalia [Auto]

- ▶ PCH Devices
- ▶ PCI Express Configuration
- ▶ PCH SATA Configuration
- ▶ USB Configuration
- ▶ Security Configuration
- ▶ Azalia Configuration
- ▶ Platform Thermal Configuration

SATA devices and settings

→←: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F9: Optimized Defaults

F10: Save & Exit

ESC: Exit

IntelRCSetup

PCH SATA Configuration

```

-----
SATA Controller                [Enabled]
Configure SATA as              [AHCI]
SATA test mode                 [Disabled]
▶ SATA Mode options
SATA AHCI LPM                  [Enabled]
SATA AHCI ALPM                 [Enabled]

SATA Port 0                    [Not Installed]
Software Preserve              Unknown
  Port 0                       [Enabled]
  Hot Plug Hot Swap            [Disabled]
  Configure as eSATA           [Disabled]
  Configured as eSATA          Hot Plug supported
  Spin Up Device               [Disabled]
  SATA Device Type             [Hard Disk Drive]

SATA Port 1                    [Not Installed]
Software Preserve              Unknown
  Port 1                       [Enabled]
  Hot Plug                     [Disabled]
  Configure as eSATA           [Disabled]
  Configured as eSATA          Hot Plug supported
  Spin Up Device               [Disabled]
  SATA Device Type             [Hard Disk Drive]

```

▲ Designates this port as Hot Pluggable.

→←: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F9: Optimized Defaults
 F10: Save & Exit
 ESC: Exit

USB

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

IntelRCSetup

PCH Configuration

Onboard Lan [Enabled]

Onboard Azalia [Auto]

- ▶ PCH Devices
- ▶ PCI Express Configuration
- ▶ PCH SATA Configuration
- ▶ USB Configuration
- ▶ Security Configuration
- ▶ Azalia Configuration
- ▶ Platform Thermal Configuration

USB Configuration Settings

→←: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F9: Optimized Defaults

F10: Save & Exit

ESC: Exit

IntelRCSetup

USB Precondition	[Disabled]
xHCI Mode	[Auto]
Trunk Clock Gating (BTCG)	[Enabled]
USB Ports Per-Port Disable Control	[Disabled]
XHCI Idle L1	[Enabled]
USB XHCI s755 WA	[Enabled]

Mode of operation of xHCI controller.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Scheduled startup

Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.

Main Advanced **IntelRCSetup** Security Boot Save & Exit

- ▶ Processor Configuration
- ▶ Advanced Power Management Configuration
- ▶ Common RefCode Configuration
- ▶ QPI Configuration
- ▶ Memory Configuration
- ▶ IIO Configuration
- ▶ PCH Configuration
- ▶ Miscellaneous Configuration
- ▶ Server ME Debug Configuration
- ▶ Reserve Memory

Setup Warning:
Setting items on this Screen to incorrect values
may cause system to malfunction!

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

IntelRCSetup

Miscellaneous Configuration

```

-----
Fan PWM Offset                0
PCIe Max Read Request Size   [4096B]
PCIe Latency Tolerance Reporting [Enable]
PCI Minimum Secondary Bus Number 1
PCIe Extended Tag Enable     [Enable]
PCIe AtomicOp Request Support [Disable]
Breakpoint Type              [None]
BIOS Guard                   [Disabled]
Bios Guard Anti-Flash Wearout [Disabled]
Serial Debug Message Level   [Maximum]
Trace Messages               [Disabled]
Training Messages            [Disabled]
RC Promote Warnings          [Enabled]
RC Promote MRC Warnings      [Enabled]
Active Video                  [Offboard Device]
TargetVGA from CPU or from PCH [From PCH]
RTC Wake system from S5     [Enable]
  Wake up hour Hours,        0
  Wake up minute Minutes,   0
  Wake up second Seconds     0

```

Enable or disable System wake on alarm event. When enabled, System will wake on the day::hr::min::sec specified

```

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

```

Main Advanced IntelRCSetup Security **Boot** Save & Exit

Boot Configuration

Setup Prompt Timeout	LOGO time	2
Bootup NumLock State		[On]
Fast Boot		[Disabled]
Quiet Boot	Boot LOGO	[Enabled]
Build in Shell		[Disabled]

Boot Option Priorities

Number of seconds to wait for setup activation key.
65535(0xFFFF) means indefinite waiting.

←→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit