

Lab - Investigate BIOS or UEFI Settings

Introduction

In this lab, you will boot the computer, explore the firmware setup utility program, and change the boot order sequence.

Recommended Equipment

- Computer with or without operating system
- Motherboard manual

Instructions

Part 1: Enter BIOS or UEFI.

Step 1: Power on the computer.

- a. Plug the power supply cable into an AC wall outlet.
- b. If there is a power switch on the power supply, set the switch to “1” or “on”.
- c. Turn on the computer with the power button on the front panel.

Note: If the computer beeps more than once, or if the power does not come on, notify your instructor.

Step 2: Enter the firmware setup program.

During POST, press the firmware setup key or key combination. The firmware setup utility program screen will appear.

Questions:

What is the key or combination of keys used to enter the firmware setup utility program?

F10 (BIOS Setup)

Who manufactures the BIOS or UEFI system for your computer?

MSI, American Megatrends Inc.

What is the BIOS or UEFI version?

BIOS Ver: E7C95AMS.2G2

Part 2: Explore the Settings.

Step 1: List the main menu options.

Question:

List the main menu options and describe what is monitored in each menu?

EZ Mode - Toggleable. A more accessible version of the BIOS setup with the risky settings hidden in advanced mode.

Settings - General system settings i.e. boot order, security, advanced.

M - Flash - Tool to flash BIOS through USB.

OC Profile - Save/load BIOS and OC settings before OS boot or shutdown.

Hardware Monitor - System Monitoring and Fan control.

Board Explorer - Display motherboard information.

Step 2: Find the security settings.

Navigate through each screen to find the security settings.

Question:

What security settings and features are available?

Admin Password

U-Key: [Disabled]

Make U-Key

Trusted Computing

Chassis Intrusion Configuration

Step 3: Find the CPU settings.

Navigate through each screen to find the CPU settings.

Questions:

What is the CPU speed?

CPU speed is 3.90GHz.

What other information is listed for the CPU?

AMD Ryzen 5 5600G

CPU Frequency: 3.90GHz

CPU Ratio: 39.0

L1 Cache: 384K

L2 Cache: 3072K

L3 Cache: 16384K

Core VID: 1.16250V

Current Core VID: 1.200V

Core Number: 6

CPU Stepping: 0

Step 4: Find the RAM settings.

Navigate through each screen to find the RAM settings.

Questions:

What is the RAM speed?

DDR4-3200 (1600MHz)

What other information is listed for the RAM?

Memory Type DDR4 SDRAM

Max Bandwidth DDR4-3200 (1600MHz)

Manufacture Corsair

Serial Number 00000000

SDRAM Size 8192 MB

Step 5: Find the hard drive settings.

Navigate through each screen to find the hard drive settings.

Questions:

What information is listed for the hard drive?

Onboard Device Mode: AHCI

M2_1: MZ-V7E1T0BW (Samsung 970 EVO 1000.2MB)

Step 6: Find the boot order sequence.

Navigate through each screen to find the boot order sequence.

Questions:

What is the first boot device in the boot order sequence?

UEFI Hard Disk: Windows Boot Manager

How many additional devices can be assigned in the boot order sequence?

Up to 6 additional boot options are available.

Step 7: Set the device boot order settings.

- a. Ensure that the first boot order device is the optical drive.
- b. Ensure that the second boot order device is the hard disk drive.

Questions:

Why would you change the first boot device to the optical drive?

Changing it to the optical or flash drive makes using a recovery disk easier to boot in case an operating system failure occurs (e.g. bootloop, BSOD loop, blinking cursor, etc.). It also helps indicate that the optical drive or bootable media and port/drive are working properly.

What happens when the computer boots and the optical drive does not contain bootable media?

If there is no bootable media, the BIOS will then proceed to the next boot device until it detects the bootable data and loads. If there is still no bootable data, the BIOS will then display an error message stating an OS cannot be found, and wait for a bootable disk/drive, or proceed to the BIOS setup menu.

Step 8: Find the power management setup or ACPI screen.

Navigate through each screen to find the power management setup screen, or ACPI screen.

Question:

What power management settings are available?

Power LED: Blink

CPU Overheating Alert: Auto

S3/Modern Standby Support: Enable

Step 9: Find the PnP settings.

Navigate through each screen to find the PnP settings.

Question:

What PnP settings are available?

Integrated Peripherals

VGA Detection [Auto]

Onboard LAN Configuration

Onboard LAN Controller [Enabled]

LAN Option ROM [Disabled]

Network stack [Disabled]

Onboard Wi-Fi Module Control [Enabled]

SATA Configuration

SATA Mode [AHCI Mode]

SATA1 Hot Plug [Disabled]

SATA2 Hot Plug [Disabled]

SATA3 Hot Plug [Disabled]

Audio Configuration

HD Audio Controller [Enabled]

Step 10: Find the splash screen settings.

Navigate through each screen to find the splash screen settings.

Question:

What splash screen settings are available?

Startup

Full Screen Logo Display [Enabled]

Step 11: Save and exit the setup utility program.

Save the new BIOS/UEFI settings and exit the setup utility program. The computer should restart automatically.

Note: An error message stating that an OS cannot be found (or a similar error) will appear on the screen after the computer boots. An operating system must now be installed to prevent this error. It is safe to turn off the computer at this time.

This lab is complete. Please have the instructor verify your work.

