



# BIOS POST Code Introduction

## ■ Outline

- What is POST Code
- The Meaning of POST Code
- Using POST Code to Debug
- Conclusions

# What is POST Code

- POST : Power On Self Test
  - The tag thrown out by BIOS
    - Usually, BIOS would out some number through 80ports. Using I/O access card (debug card), user could read those number.
    - The POST codes used by Award, Phoenix, and AMI are different.
    - These numbers mean something was executing in the system.



# What is POST Code

- POST Code as BIOS executing process
  - Standard POST Code
    - These numbers were used as standard process.
  - BIOS Debug Code
    - These numbers depend on various project.



# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - C0 –
    - CPU initialization
    - Chipsets initialization
    - Super I/O initialization
    - Asus ASIC initialization
    - OEM components initialization
    - Jumperless Setting

# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - C1 –
    - Memory sizing and initialization
    - Onboard VGA configuration
  - 0C –
    - Decompress BIOS codes
  - C3 –
    - BIOS checksum

# The Meaning of POST Code

- Award Standard POST Code (ASUS)

- After C3

- If checksum errors was found, then jump into boot block. Post code would be 05, 0D, 41, 0FF to boot system into DOS mode.

- C5 –

- Decompress ACPI related codes



# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 05 –
    - Keyboard initialization
  - 07 –
    - Check RTC power status
  - 09 –
    - Chipsets registers setting
    - CPU MSR setting
    - APIC initialization

# The Meaning of POST Code

## ■ Award Standard POST Code (ASUS)

### ■ 0A –

- BIOS interrupt routines initialization

### ■ 0B –

- CPU information collection
- Power management initialization
- CMOS contents into memory
- PnP early initialization and PCI enumeration
- Hardware monitoring initialization



# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 0C –
    - CPU Microcode update
  - 0D –
    - CPU MTRR setting
    - VGA initialization
  - 0E –
    - Showing POST screen



# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 18 –
    - 8259 Timer initialization and test
  - 30 –
    - Memory scanning



# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 31 –
    - Chassis intrusion detect
    - Memory rolling test
    - USB legacy support initialization
  - 32 –
    - PNP device configuration
    - Super I/O configuration



# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 3D –
    - Setup ACPI data
    - PNP Device initialization
    - Keyboard and Mouse installation
  - 3E –
    - Hardware monitoring status report

# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 41 –
    - Setup menu entering check
    - Floppy initialization
  - 42 –
    - Chipaway Virus initialization
    - HDD initialization

# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 45 –
    - Co-processor initialization
  - 4E –
    - POST error report
    - Final check with Setup menu entering
  - 4F –
    - APM initialization





# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 50 –
    - Saving all setup menu item's settings into CMOS
  - 52 –
    - PCI devices ROM initialization
    - Revise interrupt routines' hooks
  - 60 –
    - Mouse RAM reservation

# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 61 –
    - Onboard components final initialization
    - Showing system configuration
  - 62 –
    - Keyboard related setting
    - RTC final check

# The Meaning of POST Code

- Award Standard POST Code (ASUS)
  - 63 –
    - PNP final initialization
      - ESCD, Boot devices, etc.
    - Boot menu
    - Jumping into final boot sequence
  - FF –
    - Booting into OS



# Using POST Code to Debug

- 80Port Checking
- BIOS Engineers' Insertion
- Simple Debug Tool



# Conclusions

- POST Codes are useful for first step debug.
- RMA and TSD could evaluate system error conditions.