



## 4.0 Hardware and Network Troubleshooting

### 4.1 Given a scenario, troubleshoot common problems related to motherboards, RAM, CPU and power with appropriate tools.

- **Common symptoms**
  - Unexpected shutdowns
  - System lockups
  - POST code beeps
  - Blank screen on bootup
  - BIOS time and settings resets
  - Attempts to boot to incorrect device
  - Continuous reboots
- No power
- Overheating
- Loud noise
- Intermittent device failure
- Fans spin – no power to other devices
- Indicator lights
- Smoke
- Burning smell
- Proprietary crash screens (BSOD/pin wheel)
- Distended capacitors
- **Tools**
  - Multimeter
  - Power supply tester
  - Loopback plugs
  - POST card/USB

### 4.2 Given a scenario, troubleshoot hard drives and RAID arrays with appropriate tools.

- **Common symptoms**
  - Read/write failure
  - Slow performance
  - Loud clicking noise
  - Failure to boot
  - Drive not recognized
  - OS not found
  - RAID not found
- RAID stops working
- Proprietary crash screens (BSOD/pin wheel)
- S.M.A.R.T. errors
- **Tools**
  - Screwdriver
  - External enclosures
  - CHKDSK
- FORMAT
- File recovery software
- Bootrec
- Diskpart
- Defragmentation tool

### 4.3 Given a scenario, troubleshoot common video, projector and display issues.

- **Common symptoms**
  - VGA mode
  - No image on screen
  - Overheat shutdown
  - Dead pixels
- Artifacts
- Color patterns incorrect
- Dim image
- Flickering image
- Distorted image
- Distorted geometry
- Burn-in
- Oversized images and icons

#### 4.4 Given a scenario, troubleshoot wired and wireless networks with appropriate tools.

**• Common symptoms**

- No connectivity
- APIPA/link local address
- Limited connectivity
- Local connectivity
- Intermittent connectivity
- IP conflict
- Slow transfer speeds
- Low RF signal
- SSID not found

**• Hardware tools**

- Cable tester
- Loopback plug
- Punchdown tools
- Tone generator and probe
- Wire strippers
- Crimper
- Wireless locator

**• Command line tools**

- PING
  - IPCONFIG/IFCONFIG
  - TRACERT
  - NETSTAT
  - NBTSTAT
  - NET
  - NETDOM
  - NSLOOKUP
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#### 4.5 Given a scenario, troubleshoot and repair common mobile device issues while adhering to the appropriate procedures.

**• Common symptoms**

- No display
- Dim display
- Flickering display
- Sticking keys
- Intermittent wireless
- Battery not charging
- Ghost cursor/pointer drift
- No power
- Num lock indicator lights

- No wireless connectivity
- No Bluetooth connectivity
- Cannot display to external monitor
- Touchscreen non-responsive
- Apps not loading
- Slow performance
- Unable to decrypt email
- Extremely short battery life
- Overheating
- Frozen system

- No sound from speakers
- GPS not functioning
- Swollen battery

**• Disassembling processes for proper re-assembly**

- Document and label cable and screw locations
  - Organize parts
  - Refer to manufacturer resources
  - Use appropriate hand tools
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#### 4.6 Given a scenario, troubleshoot printers with appropriate tools.

**• Common symptoms**

- Streaks
- Faded prints
- Ghost images
- Toner not fused to the paper
- Creased paper
- Paper not feeding
- Paper jam
- No connectivity

- Garbled characters on paper
- Vertical lines on page
- Backed up print queue
- Low memory errors
- Access denied
- Printer will not print
- Color prints in wrong print color
- Unable to install printer
- Error codes

- Printing blank pages
- No image on printer display

**• Tools**

- Maintenance kit
- Toner vacuum
- Compressed air
- Printer spooler