



5.0 Hardware and Network Troubleshooting

5.1 Given a scenario, apply the best practice methodology to resolve problems.

- **Always consider corporate policies, procedures, and impacts before implementing changes**

1. Identify the problem

- Gather information from the user, identify user changes, and, if applicable, perform backups before making changes
- Inquire regarding environmental or infrastructure changes

2. Establish a theory of probable cause (question the obvious)

- If necessary, conduct external or internal research based on symptoms

3. Test the theory to determine the cause

- Once the theory is confirmed, determine the next steps to resolve the problem
- If the theory is not confirmed, re-establish a new theory or escalate

4. Establish a plan of action to resolve the problem and implement the solution

- Refer to the vendor's instructions for guidance

5. Verify full system functionality and, if applicable, implement preventive measures

6. Document the findings, actions, and outcomes

5.2 Given a scenario, troubleshoot problems related to motherboards, RAM, CPU, and power.

- **Common symptoms**

- Power-on self-test (POST) beeps
- Proprietary crash screens (blue screen of death [BSOD]/pinwheel)

- Black screen
- No power
- Sluggish performance
- Overheating
- Burning smell

- Intermittent shutdown
- Application crashes
- Grinding noise
- Capacitor swelling
- Inaccurate system date/time



5.3 Given a scenario, troubleshoot and diagnose problems with storage drives and RAID arrays.

- **Common symptoms**
 - Light-emitting diode (LED) status indicators
 - Grinding noises
 - Clicking sounds
 - Bootable device not found
 - Data loss/corruption
 - RAID failure
 - Self-monitoring, Analysis, and Reporting Technology (S.M.A.R.T.) failure
 - Extended read/write times
 - Input/output operations per second (IOPS)
 - Missing drives in OS
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5.4 Given a scenario, troubleshoot video, projector, and display issues.

- **Common symptoms**
 - Incorrect data source
 - Physical cabling issues
 - Burned-out bulb
 - Fuzzy image
 - Display burn-in
 - Dead pixels
 - Flashing screen
 - Incorrect color display
 - Audio issues
 - Dim image
 - Intermittent projector shutdown
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5.5 Given a scenario, troubleshoot common issues with mobile devices.

- **Common symptoms**
 - Poor battery health
 - Swollen battery
 - Broken screen
 - Improper charging
 - Poor/no connectivity
 - Liquid damage
 - Overheating
 - Digitizer issues
 - Physically damaged ports
 - Malware
 - Cursor drift/touch calibration



5.6 Given a scenario, troubleshoot and resolve printer issues.

- **Common symptoms**
 - Lines down the printed pages
 - Garbled print
 - Toner not fusing to paper
 - Paper jams
 - Faded print
 - Incorrect paper size
 - Paper not feeding
 - Multipage misfeed
 - Multiple prints pending in queue
 - Speckling on printed pages
 - Double/echo images on the print
 - Incorrect color settings
 - Grinding noise
 - Finishing issues
 - Staple jams
 - Hole punch
 - Incorrect page orientation
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5.7 Given a scenario, troubleshoot problems with wired and wireless networks.

- **Common symptoms**
 - Intermittent wireless connectivity
 - Slow network speeds
 - Limited connectivity
 - Jitter
 - Poor Voice over Internet Protocol (VoIP) quality
 - Port flapping
 - High latency
 - External interference