

# A+ Core 1 and Core 2 CertMaster Perform 15.0

## 4.3.4 Troubleshoot Performance Issues

Performance issues are challenging to diagnose due to their varied causes. Use a structured approach to identify the source of sluggish performance:

1. **Check for overheating**—High temperatures can cause the CPU and other components to throttle performance to avoid damage. Monitor temperature sensors and fan speeds. If they are high, consider cleaning the computer or upgrading the cooling system.
2. **Check for misconfigurations**—If sluggish performance occurs after a new build, upgrade, or maintenance, verify the compatibility of new components with the motherboard. For instance, a memory upgrade might disable dual-channel mode, reducing performance. Always ask, "What has changed?" when diagnosing issues.
3. **Verify the problem**—Performance issues can stem from compute, storage, or networking functions. Use diagnostic tests to compare the CPU, system memory, fixed disk, and network adapter performance against known baselines. Quantifying "sluggish" performance and isolating it to a specific subsystem helps identify the cause. If performance is insufficient, consider upgrading one or more subsystems.



A bottleneck occurs when an underperforming component slows down the entire system. For example, a PC with a fast CPU, dedicated graphics, and ample memory may still be sluggish if it's using an HDD, as SSDs provide much faster performance. While SSDs are now standard, modern bottlenecks can arise from improper NVMe drive configurations, latency issues, or bandwidth limitations, such as PCIe lanes not supporting optimal speeds (e.g., PCIe 3.0 vs. 4.0).

4. **Rule out software/configuration/networking issues**—Users might describe performance as sluggish due to configuration problems. For example, a computer might seem slow due to a faulty network login script, not a hardware issue. Rule out operating system and application issues before assuming hardware problems. Use built-in or third-party diagnostic tools to verify component performance. If diagnostics show no hardware issues, suspect a software or configuration problem.