# A+ Core 1 and Core 2 CertMaster Perform 15.0

## 4.2.9 Troubleshoot Drive Availability

A hard disk drive (HDD) is more prone to mechanical failure either within the first few months or after several years of use (wear and tear). Solid-state drives (SSDs) are generally more reliable but have a limited lifespan due to the wear on memory cells from repeated writes. Power loss during write operations can cause data corruption or hardware damage for both types of drives.

When a drive is failing, it may exhibit these common symptoms:

- **Unusual noise (HDD)**: A healthy HDD emits a low-level noise when accessing data. Loud grinding, clicking, or scraping sounds often indicate mechanical failure.
- **No light-emitting diode (LED) status/activity**: If disk activity lights are off, the system or the drive may not be powered. If the individual drive is faulty, check connections or power supply. For drives in RAID arrays, this could indicate a missing or failed array.
- **Constant LED activity (Disk Thrashing)**: Continuous disk activity could indicate insufficient system RAM, causing excessive paging to the disk. It could also be a result of a faulty software process, malware, or a failing disk.
- **Bootable device not found**: If a system fails to boot, it might point to file corruption or a faulty drive. This may also occur if a RAID controller fails to detect one or more drives in the array, leading to the array going "missing."
- **Missing drives in OS**: If the drive doesn't appear in tools like File Explorer or command-line interfaces, check if it has been initialized, partitioned, and formatted. If not detected by tools like Windows Disk Management, suspect hardware or cable/connector faults.
- **Read/Write failure**: Errors like "Cannot read from the source disk" are signs of bad sectors on HDDs or bad blocks on SSDs. Running diagnostic tools like chkdsk can identify if bad sectors or blocks are increasing, indicating imminent failure.
- **Audible alarms**: Many enterprise-level drives and RAID controllers include audible alarms to alert users of drive or array failure. These alarms may indicate hardware issues or missing drives in an array, requiring immediate attention.
- **Blue screen of death (BSOD)**: Severe drive issues can cause system crashes, particularly due to file corruption or read/write errors. This could result in a system stop error (BSOD).

If you encounter any of these symptoms, it's important to back up data immediately and replace the drive to prevent data loss.