

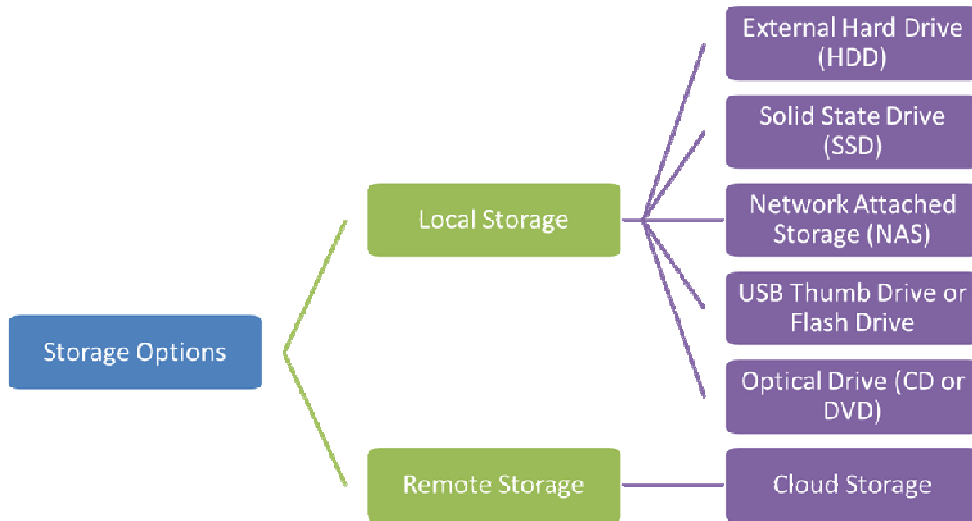


Ensure Availability of a Computer

## Session: Ensure Availability of a Computer

### Assess Storage Capacity of a Computer

A computer storage device is any type of hardware that stores data.




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### Data Storage Capacity Measurement

| Unit     | Shortened | Capacity           |
|----------|-----------|--------------------|
| Bit      | b         | 1 or 0 (on or off) |
| Byte     | B         | 8 bits             |
| Kilobyte | KB        | 1024 bytes         |
| Megabyte | MB        | 1024 kilobytes     |
| Gigabyte | GB        | 1024 megabytes     |
| Terabyte | TB        | 1024 gigabytes     |



|                          |   |  |                 |
|--------------------------|---|--|-----------------|
| <b>Speed perspective</b> | Fast especially in complex cases of movement of large files | Tends to be very slow sometimes even in the case of small operations | Faster than HDD |
| <b>Loading time</b>      | High, faster  | Slow as compared to SSD  | Fast            |

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**Assess Speed of a Computer**

Two important factors that determine the speed of a computer are the amount of data that the Central Processing Unit can process in a given period of time and the CPU's clock speed.

The speed at which a CPU executes instructions is called the clock rate. Clock speeds are expressed in megahertz MHz or gigahertz GHz.

Mega means million and hertz means times per second.

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**Finding the speed of your system:**

If you are running Microsoft Windows, you can determine the processor brand, model or type, and speed by pressing the **Windows key** and Pause at the same time. A system window will appear showing the details.

Suppose your computer speed has come down, you can check different settings, try to determine the cause of it and take appropriate action.

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**Checking the performance of your computer**

- Windows has a built-in diagnostics tool called Performance Monitor.
- It can review your computer's activity in real time or through your log file. You can use its reporting feature to determine what's causing your PC to slow down.
- To access Resource and Performance Monitor, open Run and type PERFMON.

**Disabling applications that run on startup to increase the speed**

- Right-click Start and select Task Manager.
- Go to the Startup tab.
- From the list of programs, you can disable applications you don't use frequently.
- Right-click on an unnecessary app and select Disable so it wouldn't run during startup.

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**Steps to Extend the Life of a Computer**

The proper maintenance and use of hardware devices helps to extend the life of a computer. By following a few tips, you can improve your computer's performance, as well as extend the life of the computer.

A few tips for proper maintenance and use of hardware devices.

**Clean the ventilation slots**

- Clean the vents to keep your computer cool.
- Avoid blocking the air vents.
- Keep the computer away from the wall.
- Use a compressed air blower or household vacuum cleaner to blow off the dirt.

**Clean the inside of the case**

A second way to extend the life of a computer is to clean the dirt inside the case. There are a lot of things to clean such as motherboard, CPU, RAM, expansion cards, cooling fans and the slots.

**Moisture-proof for computers:**

Like other electronic devices, moisture will damage the circuits inside the computer. Therefore, to ensure the safety of computer hardware:

- Do not put the computer under the air conditioner.
- Limit eating or drinking in front of laptop.

**Provisions for damage**

The most often used hardware or hard disk gets damaged quickly.

1. Choose to buy a new hard disk when the old one is out of warranty.
2. Copy the data to a new hard drive.
3. Choose to buy hard drives with new technology like SSDs to use if you have extremely important data.

**Observe unusual symptoms**

Look for computer slowdown resulting from other hardware parts.

If you replace them before they completely fail, you save time and effort.

There are always warning events to help you anticipate such damage.

**Regularly remove unwanted files and programs**

To improve battery life of the computer

1. Remove the programs from startup that are not used from time to time.
2. Regular removing cookies and browsing history can make your computer run faster.
3. Refresh or reinstall operating system in a timely manner.

**Equipping additional accessories for the machine**

1. Using accessories such as an external keyboard, mouse or monitor can help reduce the wear and tear of integrated components and hinges.
2. If you're constantly on the go, use a dock or hub for those peripherals. This will reduce wear and tear on the connection from continuous plugging and unplugging, and additional ports.

**Upgrade the machine**

1. Upgrading the system can make a big difference. Before performing the upgrade find an upgrade or maintenance guide for your system.
2. You might consider switching to a newer version of the operating system.

**Protect Against Power Surges**

1. Surges or spikes in power can put stress on your PC. They may damage the power supply and other parts.
2. Use surge protectors for safety and check these periodically for their protection efficiency.
3. Use UPS to maintain the power supply in case of sudden power loss leading to shut down of your computer.

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**Do's and don'ts to extend the life of your computer:**

- Keep the device away from animals and children.
- Wash or sanitize your hands before use to minimize dust and oil on skin being attached to the machine.
- If you only use the device occasionally, put it in the least dusty place.
- When turning on or leaving the device in sleep mode, do not cover it with cloth or allow it to be exposed to any airflow.
- You should also check the adapter cable periodically, especially if you have pets.
- Do not leave the device in strong sunlight.
- Do not place your device on the edge of the table or on a chair.
- Do not eat or drink when using the device.
- Do not charge 24/7

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**Steps to Take for Protection against Viruses:**

- Install more than one antivirus software, depending on the security aspects they cover.
- Ensure that updates are notified or set to download and install automatically.
- Keep a backup regularly to prevent data loss.
- A strong password will protect from any unauthorized access.
- We need to be careful about any unauthorized downloads.
- Install a reliable ad-blocker that stops us from online popup advertisements.
- Run an antivirus software on a regular basis.
- Avoid clicking on links from any unknown source

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The common issues that come up while installing OS are:

- Blue Screen of Death
- DLL File missing
- Unable to Install Application
- Applications are running slow
- abnormal behavior



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### Issues related to hardware:

Issues related to hardware are associated with various codes.

- Some of the issues can be resolved by updating the driver package, some by restarting the computer and some can be ignored.
- **List of Hardware problems**
- **Fixing Device Manager error codes reinstalling driver**
- *The following list includes the error codes along with their respective description that you can resolve by updating the driver package:*
- *Code 1: This device isn't configured correctly.*
- *Code 3: The driver for this device might be corrupted, or your system may be running low on memory or other resources.*
- *Code 10: This device cannot start. Try upgrading the device drivers for this device. (This message means that the hardware key doesn't contain a "FailReasonString" value.)*
- *Code 18: Reinstall the drivers for this device.*
- *Code 24: This device is not present, is not working correctly, or does not have all its drivers installed. (This message means that there's a hardware failure or problem with the driver.)*
- *Code 28: The drivers for this device are not installed.*
- *Code 31: This device is not working properly because Windows cannot load the drivers required for this device.*
- *Code 32: A driver (service) for this device has been disabled. An alternate driver may be providing this functionality. (This message means that the registry key to start the driver is configured as disabled.)*
- *Code 37: Windows cannot initialize the device driver for this hardware. (This message means that the driver returned a failure when it executed the DriverEntry routine.)*
- *Code 39: Windows cannot load the device driver for this hardware. The driver may be corrupted or missing.*
- *Code 40: Windows cannot access this hardware because its service key information in the registry is missing or recorded incorrectly.*
- *Code 41: Windows successfully loaded the device driver for this hardware but cannot find the hardware device. (This problem usually happens when you install a device that's not plug and play, and the system can't find it.)*
- *Code 43: Windows has stopped this device because it has reported problems.*
- *Code 48: The software for this device has been blocked from starting because it is known to have issues with Windows. Contact the hardware vendor for a new driver.*
- *Code 50: Windows cannot apply all of the properties for this device. Device properties may include information that describes the device's capabilities and settings (such as security settings, for example). To fix this problem, you can try reinstalling this device. However, we recommend that you contact the hardware manufacturer for a new driver.*
- *Code 52: Windows cannot verify the digital signature for the drivers required for this device. A recent hardware or software change might have installed a file that is signed incorrectly or damaged, or that might be malicious software from an unknown source.*

- **List of software problems**
- **Software Installation and Compatibility Problems**
  - Not all software installs automatically.
  - Vendor solution is installation software: a utility that aids in the installation of other software packages.
  - Examines hardware configuration to determine whether hardware and software are compatible.
  - Creates folders with correct path names.
  - Sets configuration options in software to match hardware.
  - Copies files to correct folders.
  - Updates Windows Registry and other startup files.
  - Common problem: application software incompatible with a new operating system version
  - Shareware
  - Evaluation or trial period of 10 to 45 days before purchase
  - May produce conflicts with other software.
- **Freeware**
  - Free for personal use (may charge for commercial version)
  - May not be exhaustively tested for compatibility and conflicts with other software.
  - Donationware: freeware for which a donation is requested by the author.
- **Open source software**
  - Free for personal or business use
  - Designed and developed collaboratively by a team of programmers.
  - May carry OSI design certification.
- **Software Configuration Problems**
  - Result when software options are not set correctly for specific operating environment or hardware.
- May occur when users:
  - Install or upgrade new hardware or software.
  - Attempt to use a software feature for the first time.
  - Attempt to modify configuration information in the system Windows Registry or other startup files.
  - Windows Registry: a database of configuration information on hardware and software installed.
- Common problem: installing a new application program changes the default file associations in the operating system.
- **Software Bugs Bug: a major error in a program due to:**
  - Programmers' coding mistake
  - Programmers' inability to anticipate every situation
- Occur more often in custom-written programs and programs written for a limited market segment.
- Occur most often in infrequently used features of a program.
- Reduced through extensive beta testing.
- Example: incorrect format of large dollar amounts in accounting program
- **How Vendors Fix Bugs and Upgrade Software**
  - **Patch:** a replacement for one or a few modules in a software package to fix known bugs
  - Usually designated by adding a digit or letter to a version number
  - **Update:** a bug fix software release
  - Repairs known bugs in a previous version
  - Some vendors offer automatic updates via the Internet to download and install updates and keep programs up to date
  - **Service pack (or service release):** contains both updates and patches to fix problems with a version of a program
  - **New release:** an updated version of a program
  - Contains new features the previous release did not have

- **New version:** contains significant new features
  - Usually the result of a substantially rewritten program
  - **Upgrade:** a new version of an existing program
  - Sold at a lower price to owners of a previous version of the program
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**Recap:**

- A computer storage device is any type of hardware that stores data. Storage can be local or external.
- Two important factors that determine the speed of a computer are the amount of data that the Central Processing Unit can process in a given period of time and the CPU's clock speed.
- Clock speeds are expressed in megahertz MHz or gigahertz GHz. Performance of the computer can be improved by changing some settings.
- The proper maintenance and use of hardware devices helps to extend the life of a computer.
- This can be done by proper cleaning, upgrading the machine, and protecting against power surges.
- You can protect your computer from viruses by installing an antivirus software, keeping your software up-to-date, running a virus scan regularly, being careful about downloads, using a strong password and avoiding suspicious links.
- The common issues faced while installing OS are Blue Screen of Death, DLL File missing, Unable to Install Application, Applications are running slow and abnormal behaviour.
- Hardware and software issues can be resolved using various strategies.