

Process Management

Linux Process Commands

<code>ps</code>	Display a snapshot of the current processes.
<code>top</code>	Display dynamic real-time view of running processes.
<code>htop</code>	Interactive process viewer (needs installation).
<code>kill PID</code>	Terminate a process by its PID (Process ID).
<code>killall process_name</code>	Kill all processes by name.
<code>pkill pattern</code>	Kill processes matching a pattern.
<code>nice -n priority command</code>	Run a command with modified scheduling priority. (priority range: -20 to 19)
<code>renice priority PID</code>	Change the priority of an already running process.

Windows Task Manager

Access by pressing <code>Ctrl + Shift + Esc</code> .
Provides a GUI for viewing and managing processes, performance metrics, and startup applications.
Key features include: <ul style="list-style-type: none"><li><b>Processes tab:</b> Shows running applications and background processes.</li><li><b>Performance tab:</b> Displays CPU, memory, disk, and network utilization.</li><li><b>Startup tab:</b> Manages applications that run at startup.</li></ul>
Command-line equivalent: <code>tasklist</code> (lists processes) and <code>taskkill</code> (terminates processes).

Process Monitoring

<code>vmstat</code>	Virtual memory statistics - reports memory, swap, IO, system, and CPU activity.
<code>iostat</code>	Input/output statistics for block devices.
<code>netstat -t -ss</code>	Network statistics.
<code>iotop</code>	Monitor disk I/O usage by process. (needs installation)
<code>iftop</code>	Display bandwidth usage by host. (needs installation)
<code>free -m</code>	Display the amount of free and used memory in the system (in MB).

Networking Tools

Basic Networking Commands

<code>ping hostname</code>	Test network connectivity.
<code>traceroute hostname</code>	Trace the route packets take to a host.
<code>netstat -tulnp</code>	Display listening ports and associated processes (Linux).
<code>ss -tulnp</code>	Another tool to display listening ports and associated processes (Linux).
<code>ip addr</code>	Show network interfaces and IP addresses (Linux).
<code>ifconfig</code>	Configure network interface parameters (deprecated, but still used).
<code>nslookup hostname</code>	Query DNS servers to find IP addresses or other DNS records.
<code>dig hostname</code>	More advanced DNS lookup utility.

Windows Networking Commands

<code>ipconfig</code>	Display network configuration information.
<code>ping hostname</code>	Test network connectivity.
<code>tracert hostname</code>	Trace the route packets take to a host.
<code>netstat -ano</code>	Display active network connections and listening ports.
<code>nslookup -p hostname</code>	Query DNS servers.
<code>pathping hostname</code>	Provides information about network latency and packet loss at intermediate hops.

Network Monitoring Tools

<b>Wireshark:</b> A powerful network protocol analyzer. Captures and analyzes network traffic in real-time.
<b>tcpdump:</b> A command-line packet analyzer. Captures network traffic and saves it to a file for later analysis.
<b>Nmap:</b> A network scanner. Discovers hosts and services on a computer network by sending packets and analyzing the responses.
<b>Nagios/Zabbix:</b> Comprehensive network monitoring solutions. Monitor network services, servers, and other network devices.

## Disk and File System Management

### Linux Disk Commands

<code>df -h</code>	Display disk space usage in a human-readable format.
<code>du -sh</code> <code>directory</code> <code>y</code>	Display the disk usage of a directory in a human-readable format.
<code>lsblk</code>	List block devices.
<code>fdisk</code> <code>/dev/sd</code> <code>a</code>	Partition table manipulator (replace <code>/dev/sda</code> with the appropriate device).
<code>mkfs.ex</code> <code>t4</code> <code>/dev/sda</code> <code>1</code>	Create an ext4 filesystem on a partition (replace <code>/dev/sda1</code> with the appropriate partition).
<code>mount</code> <code>/dev/sda</code> <code>1 /mnt</code>	Mount a filesystem (replace <code>/dev/sda</code> and <code>/mnt</code> with appropriate values).
<code>umount</code> <code>/mnt</code>	Unmount a filesystem.
<code>fsck</code> <code>/dev/sda</code> <code>1</code>	Check and repair a filesystem.

## User and Group Management

### Linux User Management

<code>useradd</code> <code>username</code>	Create a new user.
<code>passwd</code> <code>username</code>	Change a user's password.
<code>usermod -aG</code> <code>groupname</code> <code>username</code>	Add a user to a group.
<code>userdel</code> <code>username</code>	Delete a user.
<code>id</code> <code>username</code>	Show user's ID and group memberships.
<code>su</code> <code>username</code>	Switch to another user.
<code>sudo</code> <code>command</code>	Execute a command as the superuser.

### Windows Disk Management

Access via <code>diskmgmt.msc</code> or through the Control Panel.
Provides a GUI for managing disks, partitions, and volumes.
Key features include: <ul style="list-style-type: none"><li>• Creating and deleting partitions.</li><li>• Formatting volumes.</li><li>• Assigning drive letters.</li><li>• Converting disks between basic and dynamic.</li></ul>
Command-line equivalent: <code>diskpart</code> (powerful disk partitioning tool).

### Linux Group Management

<code>groupadd</code> <code>groupname</code>	Create a new group.
<code>groupmod -n</code> <code>new_groupname</code> <code>old_groupname</code>	Rename a group.
<code>groupdel</code> <code>groupname</code>	Delete a group.
<code>groups</code> <code>username</code>	Display the groups a user belongs to.
<code>getent</code> <code>group</code> <code>groupname</code>	Get group information.

### Windows User Management

<code>find /path -</code> <code>name filename</code>	Find files by name in a directory.
<code>grep</code> <code>pattern</code> <code>filename</code>	Search for a pattern in a file.
<code>tar -czvf</code> <code>archive.tar.gz</code> <code>directory</code>	Create a compressed tar archive.
<code>tar -xzvf</code> <code>archive.tar.g</code> <code>z</code>	Extract a compressed tar archive.
<code>rsync -av</code> <code>source</code> <code>destination</code>	Synchronize files and directories. Can be used for backups.
<code>chmod</code>	Change file permissions.
<code>chown</code>	Change file owner and group.

GUI: Use the 'Local Users and Groups' management console ( <code>lusrmgr.msc</code> ). Command line:  <code>net user</code> <code>username</code> <code>password</code> <code>/add</code> - Adds a new user. <code>net localgroup</code> <code>groupname</code> <code>username</code> <code>/add</code> - Adds a user to a local group. <code>net user</code> <code>username</code> <code>/delete</code> - Deletes a user.
PowerShell:  <code>New-LocalUser -Name "username" -Password "password"</code> - Creates a new local user. <code>Add-LocalGroupMember -Group "groupname" -Member "username"</code> - Adds a user to a local group. <code>Remove-LocalUser -Name "username"</code> - Removes a local user.