What is System Administration?

> System administrators - also known Sysadmin - are Information technology (IT) Professionals who make sure an Organization's Computer Systems are functioning and meet the needs of the organization

> Sysadmin Support, troubleshoot, and maintain Computer Servers and networks.

> Professional resposible for managing, maintaing, and ensuring the Smooth operation of computer systems and networks within organization.

> Responsible for the Smooth functioning of computer Systems where multiple Servers are involved.

> The Sysadmin Seeks to ensure that the uptime, Performance, resources, and Security of Computers they manage meet the need of the users, without exceeding a Set budget when doing so.

> Server Policies, maintain, user create & implement and user Policies and all Server within Company.

System Administrator- Role and Responsibilities

> Monitor System and Performance:-

Regularly check System logs, CPU usage, memory usage, and Network Performance to ensure optimal functioning.

> Perform Daily Security Backups and Restores:-

· Schedule and manage regular backups to Prevent data loss.

· Ensure data integrity by Periodically testing restore Processes.

> Security Monitoring & Management:-

· use monitoring tools to detect and respond to Security breaches & threats.

· Access Control: Manage user Accounts, Permissions and Access rights.

· Patch Management:- Ensure all systems are up-to-date with latest Security patches and update.

> Techical Support:-

· Troubleshoot and Resolve system Problems to minimize downtime.

· Provide technical assistance to end user for hardware, Software, and network related issue.

· Automation and Scripting:-

· Develop and maintain Scripts to Automate Routine tasks and improve efficiency.

> **Operating Systems:-**
  - Install, update, maintain operating systems across all devices.
  - Optimize operating system performance and ensure compatibility with application.

> **Create New Users:-**
  - Onboard new employees by creating user accounts and assigning necessary permissions
  - Ensure new users have access to the tools and required for their roles.

> **Monitoring System:-**
  - Continiously monitor system health and performance using automated tool

> **Networking:-**
  - Maintain network infrastructure to ensure reliable and Seure connectivity.
  - Troubleshoot and resolve network issues to maintain uptime.

Documentation:-
  - Maintain comprehensive documentation of system configurations, procedures, and changes.
  - Use documentation to ensure continuity and facilitate troubleshooting.

➤ Maintaining System:-
- Perform regular maintenance tasks to keep systems running smoothly
- Update hardware and software as needed to prevent obsolescence.

➤ Resetting user Password:-
- Assist users with password resets to maintain access Security.
- implement password policies to enhance Security.

➤ Upgrading Systems
- Plan and execute system upgrades to improve performance and functionality
- Ensure compatibility and stability during and after upgrades.

➤ Collaborations & Communication:-

- Team collaboration: work closely with other IT professionals including Network Engineers, developers, and support staff.
- vendor Management:-

Coordinate with hardware and software vendor for support and procurement.

➤ Physical Security
➤ Active Directory

Challenges of the System Administration

> **Security Threats:-**

- One of the biggest challenges that you face as a System administrator is Protecting your network and system from Cyberattacks.

- You have to constantly monitor and update your security policies, tools and patches to prevent unauthorized Access. You have to prepared to respond quickly and effectively to any security incidents that may occur and minimize the damage.

> **User Support:—**

Another challenge that you face as a System administrator is providing user support. You have to handle various requests, complaints, and issues from your user. You also have to communicate clearly and politely with your users, explain the Sloutions, and documents the cases.

> **System Performance:-**

A Third challenge that you face as a System administrator is ensuring the optimal performance of your systems. You have to monitor and Analyze the status, capacity, and utilization of your Sewers, storage, network, applications. You have to Identify and fix any performance issue.

> Internet issue:-
  - Hardware Failure, Configuration error, Network Congestion? wrong DNS, Software updates.

> Storage issue:-
  - Insufficient diskspace, Disk failures, Raid failure, File System Corrupted.

> Outdated Software:-
  - Reduced System performance, efficiency in System operation.

> Manage Downtime:-
  - Disaster Recovery Plans, Backup.

> Connectivity issue:-
  - Router/Switch checking, misconfiguration, Firewall setting, ISP outage, Backup ISP.

> User Complains:-
  - Slow Performance, Software errors, Account Access issue.

> Budget issue:-
  - upgrade and expensions, Balence Cost effectiveness, Multiple Genuine Vendors.

> Error & log checking:-
  - Troubleshooting by system logs, Error Messages warning, third party analysis tools.

> **Hardware Compatiblity :-**
  - CPU, GPU, Motherboard, Storage devices are compatible with another Software and operating system.

> **Update on time :-**
  - Fix Security Patches, Every thing is up-to-date for good Enviroment.

> **Printing issue :-**
  - Related Printing Device, Drivers, Print Job failure, Queue Management.

> **IP Address Conflicts :-**
  - Same IP Address, Conflicting Devices, make Uniqueness, stati IP carefully manage.

> **DNS failures :-**
  - DNS Server Availiblity, Misconfigure DNS DNS cache Poisoning, DNS Zone Transfer failures, varify DNS Records.

> **User Awareness :-**
  - Training user about new behaviors, Policies, Protocols, user interface.

Difference b/w System Admin & Network Admin [8]

Network

1) • Install, Configure, maintaince of Server & other IT Systems.

2) • Configure Network Protocol Such as TCP, IP, DHCP, DNS.

3) • Monitoring Network Performance and optimize network traffic.

4) • Troubleshoot Network issue and ensure network Security.

5) • Manage network Access Control and Permission.

6) • Routing Protocol, OSI, TCP/IP VPN, VLANs.

7) • Focus on networking Devices

8) • Use Router, HUB, Switch, Wireless Devices, Gateway, Modem, Bridge, VLAN, VPN.

System

• Design & implement network infrastructure include (Router, Switch, Firewall and other network Devices).

• Manage user account, Permission and Access Controls.

• System Security by ensuring Firewall, Antivirus, other Security measures.

• Perform Backups and Disaster Recovery.

• Monitor system performance and trouble shoot issues.

• Operating System, Scripts Automation, networking.

• Focus on Operating System.

• Use Server, Window, DISK.

Network	System
9) LAN, WAN	• Software and application
10) Install Network Equipment	• Installing Computer Server
11) Configure network and enable devices.	• Update driver and Software
12) Monitor Network Activity	• Diagnosing Server issue.
13) Backup of Network Devices	• Responding tickets of the users.
14) Setting-up firewall for network Security	• Backup window data
15) Response to outage	• Determine Recovery Process
16) Troubleshoot of the network Activity.	• Identify compatibilities of application.
	• Setting and manage user Accounts.
	•

	Network	System
17)	• Maintain the network of the Company.	• Connectivity end users & Hardware, Software.
18)	• Connectivity of the intermediate devices.	• Manage Active Directory
19)	• Focus on Computer working together.	• Configure and install Server (2012, 2016, 2019).
20)	• Manage Configuration (cisco, Huawei, extream, Juniper)	• Responsible of the Domains, Software installation, updates and troubleshooting.
21)	• Responsibility is main Network of cabling, Switches, Router DHCP, DNS, etc	• Deals with Server and application on those Servers. Application update to test and install for or find correct an issue with compatibility Conflicts b/w Sysadmin System and application
22)	• Primary Job is to ensure that the network is secure, efficient available.	• Ensure that all systems are up-to-date, secure, and Performing optimally.
23)	• Typically work with varity of Technologies (Router, Switch, firewall etc).	• Typically work with variety of operating System, Such as window, linux, Mac OS as well as software application and databases.