### Complete System Admin Interview Guide (CCNA Focus & Related Skills)

This guide is designed for your friend to prepare comprehensively for a System Administrator interview with a CCNA background. It covers networking, Linux, Windows, cloud basics, troubleshooting, and scenario-based questions.

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# 1. Networking (CCNA Core Topics)

## Key Concepts

- **OSI Model**: Understand all 7 layers, their functions, and protocols associated.
- **TCP/IP Model**: Layers and protocols.
- **Subnetting**: Calculating subnets, hosts, and IP ranges.
- **Routing Protocols**:
- Static vs Dynamic
- OSPF, EIGRP, RIP
- **Switching**: VLANs, Trunking, STP
- **Network Devices**: Routers, switches, firewalls, access points
- **NAT & PAT**: Private vs public IP, translation types
- **ACLs**: Standard vs Extended, examples
- **WAN Technologies**: MPLS, VPN, Point-to-Point
- **Network Troubleshooting**: ping, tracert, ipconfig, nslookup

## Example Questions

1. Explain the difference between TCP and UDP.
2. How does OSPF work? What are its advantages over RIP?
3. Describe the process of subnetting a /24 network into 4 subnets.
4. What is the purpose of VLANs?
5. How do you configure a trunk port on a Cisco switch?

## Scenario-based Questions

1. Users in VLAN 10 cannot reach the internet. How do you troubleshoot?
2. A router interface goes down after configuration. What steps do you take?
3. You see high CPU usage on a switch. What could be the cause?

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# 2. Windows Administration

## Key Concepts

- Active Directory: Users, Groups, GPOs
- DHCP, DNS, WINS
- Windows Firewall & Security Policies
- Event Viewer & Logging
- PowerShell Basics
- File and Print Services
- Remote Desktop Services

- Backup & Recovery

### Example Questions

1. How do you reset a user password in AD?
2. Explain Group Policy Objects and their importance.
3. How do you troubleshoot DNS resolution issues?

### Scenario-based Questions

1. Users cannot log in; event logs show authentication failures.
2. A server is running out of disk space, what steps do you take?
3. You need to deploy a software update to all Windows servers. How?

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## 3. Linux Administration

### Key Concepts

- Basic Linux commands: ls, cd, cp, mv, rm, grep, find, tar, chmod, chown
- File system structure
- User and group management
- Network configuration: ifconfig, ip, netstat, ping
- Services management: systemctl, service
- Firewall: iptables, ufw
- SSH and SFTP
- Package management: apt, yum
- Cron jobs and scheduling
- Logs: /var/log/syslog, /var/log/messages

### Example Questions

1. How do you add a new user and assign permissions?
2. How do you check open ports on a Linux server?
3. Explain the difference between soft links and hard links.

### Scenario-based Questions

1. A service fails to start on boot, how do you troubleshoot?
2. Disk space is full on /var, how do you identify and clean up files?
3. You need to configure a static IP on Linux. How?

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## 4. Cloud Basics (AWS/Azure/GCP)

### Key Concepts

- IaaS, PaaS, SaaS
- Virtual Machines
- Storage: Block, Object, File
- Networking in Cloud: VPC, Subnets, Security Groups, NAT Gateway

- Identity and Access Management (IAM)
- Monitoring & Logging
- Backup & Snapshots
- Common Services: EC2, S3, RDS, Lambda (AWS example)

### Example Questions

1. What is the difference between public and private subnets?
2. Explain IAM roles and policies.
3. How do you take a snapshot of a VM in AWS?

### Scenario-based Questions

1. A VM in AWS cannot connect to the internet. How do you troubleshoot?
2. You need to implement role-based access to a storage bucket. How?
3. How would you migrate a local server to the cloud?

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## 5. Security Fundamentals

### Key Concepts

- Firewalls, IDS/IPS
- VPN Types: SSL, IPSec, L2TP
- User Authentication: MFA, SSO
- Patching and Updates
- Antivirus & Endpoint Security
- Basic Threat Awareness

### Example Questions

1. Difference between stateful and stateless firewall?
2. What is MFA and why is it important?
3. Explain VPN types and use cases.

### Scenario-based Questions

1. Unauthorized access detected in server logs. Steps to investigate?
2. Ransomware detected on a workstation. Immediate action?
3. Configure firewall rules to allow HTTP and block FTP.

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## 6. Troubleshooting Approach

1. Identify the problem
2. Gather information (logs, configuration, symptoms)
3. Develop a hypothesis
4. Test the hypothesis
5. Implement the solution
6. Document and report

### Scenario-based Questions

1. A user cannot access a shared folder. Steps?
2. Network latency is reported. How to diagnose?
3. A service is repeatedly crashing on Windows/Linux.

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## 7. Practical Tips

- Be ready to explain your past projects or labs.
- Practice subnetting and routing configuration on Packet Tracer.
- Know basic PowerShell/Linux commands.
- Read cloud provider documentation for key services.
- Prepare examples of troubleshooting scenarios you handled.

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This guide is structured for focused preparation, covering core CCNA topics, system admin responsibilities in Windows/Linux, cloud basics, security, and troubleshooting. Practicing scenario-based questions is key for confidence during interviews.