Cheat Sheet for comprehensive Cisco Certified Internetwork Expert (CCIE) - Enterprise Infrastructure

General Tips and Best Practices

- Documentation:

- Maintain detailed network diagrams and configuration backups.
- Regularly update documentation to reflect current network state.

- Troubleshooting:

- Use `show tech-support` for comprehensive device diagnostics.
- Leverage `debug` commands cautiously, as they can impact performance.

- Security:

- Enable AAA (Authentication, Authorization, Accounting) for secure access.
- Regularly update device firmware and apply security patches.

Configuration Management

- Initial Setup:

- `hostname <name>`: Set device hostname.
- `enable secret <password>`: Set enable password.
- `service password-encryption`: Encrypt passwords.

- Interfaces:

- `interface <type> <number>`: Enter interface configuration mode.
- `ip address <ip> <mask>`: Assign IP address.
- `no shutdown`: Enable interface.

- VLANs:

- `vlan <number>`: Create VLAN.
- `name <name>`: Assign name to VLAN.
- `interface range <type> <start>-<end>`: Configure multiple interfaces.
- `switchport mode access`: Set interface to access mode.
- `switchport access vlan <number>`: Assign VLAN to interface.

Routing Protocols

- Static Routing:

- `ip route <network> <mask> <next-hop>`: Add static route.

- `ip route <network> <mask> <exit-intf>`: Add static route with exit interface.

- **OSPF:**

- `router ospf <process-id>`: Enter OSPF configuration mode.
- `network <network> <wildcard-mask> area <area-id>`: Advertise network.
- `passive-interface <intf>`: Prevent OSPF updates on interface.

- **EIGRP:**

- `router eigrp <as-number>`: Enter EIGRP configuration mode.
- `network <network> <wildcard-mask>`: Advertise network.
- `no auto-summary`: Disable automatic summarization.

High Availability and Redundancy
- **HSRP:**

- `standby <group-id> ip <virtual-ip>`: Configure HSRP.
- `standby <group-id> priority <priority>`: Set priority.
- `standby <group-id> preempt`: Enable preemption.

- **VRRP:**

- `vrrp <group-id> ip <virtual-ip>`: Configure VRRP.
- `vrrp <group-id> priority <priority>`: Set priority.
- `vrrp <group-id> preempt`: Enable preemption.

Quality of Service (QoS)
- **Classification:**

- `class-map <name>`: Define class map.
- `match access-group <acl-number>`: Match traffic based on ACL.

- **Policing and Shaping:**

- `police <bps> <burst>`: Apply policing.
- `shape <bps> <burst>`: Apply shaping.

- **Queuing:**

- `priority <level>`: Set priority level.
- `bandwidth <percentage>`: Allocate bandwidth.

Security Features
- **ACLs:**

- `access-list <number> permit/deny <source> <destination>`: Create ACL.

- `ip access-group <number> in/out`: Apply ACL to interface.

- **NAT:**

- `ip nat inside source static <local-ip> <global-ip>`: Configure static NAT.
- `ip nat pool <name> <start-ip> <end-ip> netmask <mask>`: Define NAT pool.
- `ip nat inside source list <acl-number> pool <name>`: Configure dynamic NAT.

- **VPNs:**

- **IPsec:**

- `crypto isakmp policy <priority>`: Create ISAKMP policy.
- `crypto ipsec transform-set <name> <transforms>`: Define transform set.
- `crypto map <name> <seq-num> ipsec-isakmp`: Create crypto map.

Monitoring and Troubleshooting
- **Show Commands:**

- `show ip interface brief`: Display interface status and IP addresses.
- `show ip route`: Display routing table.
- `show running-config`: Display current configuration.
- `show version`: Display device version and uptime.

- **Debugging:**

- `debug ip packet`: Debug IP packet forwarding.
- `debug ip ospf events`: Debug OSPF events.
- `undebug all`: Disable all debugging.

Advanced Features
- **SDN and Automation:**

- **ACI:**

- Use APIC for centralized management of ACI fabric.
- Leverage Python scripts for automation.

- **NetFlow:**

- `ip flow-export version <version>`: Configure NetFlow export version.
- `ip flow-export destination <ip> <port>`: Set export destination.

- **SNMP:**

- `snmp-server community <string> <ro/rw>`: Configure SNMP community string.
- `snmp-server host <ip> <community>`: Configure SNMP host.

- **Static Route Example:**

```
ip route 192.168.2.0 255.255.255.0 192.168.1.1
```

- **OSPF Example:**

```
router ospf 1
network 192.168.1.0 0.0.0.255 area 0
```

- **EIGRP Example:**

```
router eigrp 100
network 192.168.1.0 0.0.0.255
no auto-summary
```

Shortcuts and Quick Commands

- **Save Configuration:**

- `write memory` or `copy running-config startup-config`

- **Reload Device:**

- `reload`

- **Clear ARP Cache:**

- `clear arp-cache`

- **Clear IP Route Cache:**

- `clear ip route *`

Additional Resources

- **Cisco Documentation:**

- [Cisco Documentation Portal](https://www.cisco.com/c/en/us/support/index.html)

- **Community Forums:**

- [Cisco Community](https://community.cisco.com/)

- **Training and Certification:**

- [Cisco Learning Network](https://learningnetwork.cisco.com/)

This cheat sheet provides a comprehensive overview of essential commands, configurations, and best practices for the Cisco Certified Internetwork Expert (CCIE) - Enterprise Infrastructure certification. Use it as a quick reference guide during your studies and practical work.

By Ahmed Baheeg Khorshid

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