

# Cheat Sheet for comprehensive Cisco Certified Network Professional (CCNP) - Data Center

## Data Center Infrastructure

### Physical Infrastructure

- **Racks and Enclosures:**
  - **Rack Units (U):** 1U = 1.75 inches
  - **Rack Types:** Open Frame, Enclosed, Wall-Mounted
  - **Cooling:** CRAC/CRAH units, In-Row Cooling
- **Power Distribution:**
  - **UPS:** Uninterruptible Power Supply
  - **PDU:** Power Distribution Unit
  - **ATS:** Automatic Transfer Switch

### Network Infrastructure

- **Topologies:**
  - **Spine-Leaf:** High-speed, low-latency
  - **Clos Network:** Multi-stage switching
  - **EOR/MOR:** End-of-Row vs. Middle-of-Row
- **Protocols:**
  - **FCoE:** Fibre Channel over Ethernet
  - **iSCSI:** Internet Small Computer Systems Interface
  - **FC:** Fibre Channel

## Cisco Data Center Solutions

### Cisco Nexus Switches

- **Models:**
  - **Nexus 9000:** High-performance, modular

- **Nexus 7000:** Modular, high-density
- **Nexus 5000:** Fixed-form, high-speed
- **Features:**
  - **ACI:** Application Centric Infrastructure
  - **VXLAN:** Virtual Extensible LAN
  - **MPLS:** Multiprotocol Label Switching

#### *Cisco UCS (Unified Computing System)*

- **Components:**
  - **UCS Manager:** Centralized management
  - **UCS Fabric Interconnect:** Network and storage connectivity
  - **UCS Chassis:** Blade servers
- **Features:**
  - **VN-Link:** Virtual Network Interface Card
  - **vNIC/vHBA:** Virtual NIC/HBA
  - **UCS Director:** Automation and orchestration

#### **Data Center Virtualization**

##### *VMware vSphere*

- **Components:**
  - **ESXi:** Hypervisor
  - **vCenter Server:** Centralized management
  - **vMotion:** Live migration
- **Features:**
  - **HA:** High Availability
  - **DRS:** Distributed Resource Scheduler
  - **Storage vMotion:** Storage migration

### *Cisco HyperFlex*

#### - **Components:**

- **HyperFlex Edge:** Small-footprint edge solution
- **HyperFlex HX Data Platform:** Unified storage and compute

#### - **Features:**

- **Intersight:** Cloud-based management
- **Data Platform:** Integrated storage and compute
- **FlexPod:** Pre-validated solution

### **Data Center Automation and Orchestration**

### *Cisco Intersight*

#### - **Features:**

- **Cloud-Based Management:** Centralized management
- **Lifecycle Management:** Firmware updates, compliance
- **Analytics:** Performance monitoring, predictive analytics

### *Cisco ACI (Application Centric Infrastructure)*

#### - **Components:**

- **APIC:** Application Policy Infrastructure Controller
- **Tenant:** Logical network partition
- **EPG:** Endpoint Group

#### - **Features:**

- **Policy-Driven:** Centralized policy management
- **Micro-Segmentation:** Fine-grained security
- **SDN:** Software-Defined Networking

### **Data Center Storage**

### *Storage Technologies*

- **SAN:** Storage Area Network

- **FC SAN:** Fibre Channel SAN
- **iSCSI SAN:** IP-based SAN
- **NAS:** Network Attached Storage
- **Protocols:** NFS, CIFS/SMB

#### *Cisco Storage Solutions*

- **MDS:** Multilayer Data Center Switch
- **Models:** MDS 9000 series
- **Features:** FC, FCoE, iSCSI
- **HyperFlex:** Unified storage and compute
- **Components:** HyperFlex Edge, HX Data Platform
- **Features:** Intersight, FlexPod

#### *Data Center Security*

##### *Network Security*

- **Firewalls:**
- **ASA:** Adaptive Security Appliance
- **Firepower:** Next-Gen Firewall
- **Encryption:**
- **IPsec:** VPN encryption
- **SSL/TLS:** Secure web traffic

##### *Access Control*

- **AAA:** Authentication, Authorization, Accounting
- **RADIUS:** Remote Authentication Dial-In User Service
- **TACACS+:** Terminal Access Controller Access-Control System Plus

#### *Troubleshooting and Maintenance*

##### *Common Issues*

- **Connectivity:**

- **Ping/Traceroute:** Basic connectivity checks
- **SNMP:** Network monitoring
- **Performance:**
  - **NetFlow:** Traffic analysis
  - **SPAN/RSPAN:** Port mirroring

#### *Maintenance*

- **Firmware Updates:**
  - **Intersight:** Cloud-based updates
  - **UCS Manager:** Firmware management
- **Backup and Restore:**
  - **NFS/CIFS:** Network storage for backups
  - **RMAN:** Oracle Recovery Manager

#### *Best Practices*

##### *Design Principles*

- **Scalability:** Modular, scalable design
- **Redundancy:** Dual power supplies, redundant paths
- **Automation:** Use automation tools for routine tasks

##### *Operational Efficiency*

- **Monitoring:** Use monitoring tools like Intersight
- **Documentation:** Maintain detailed documentation
- **Training:** Regular training for staff

#### *Examples*

##### *Example 1: Configuring a Nexus Switch*

```
# Enable VXLAN on Nexus 9000
feature nv overlay
nv overlay evpn

# Create VLAN
vlan 10
 name Web_VLAN
```

```
# Configure VXLAN
interface nve1
  no shutdown
  source-interface loopback0
  member vni 10
  mcast-group 239.1.1.1
```

### **Example 2: Configuring UCS Manager**

```
<!-- Create a new server profile -->
<configConfMos
  inHierarchical="false">
  <inConfigs>
    <pair key="org-root/ls-WebServer">
      <lsServer
        dn="org-root/ls-WebServer"
        name="WebServer"
        type="initial"
        usrLbl="Web Server">
        <vnic
          adaptorProfileName="Linux"
          dn="org-root/ls-WebServer/vnic-eth0"
          name="eth0"
          nwTemplName="LAN"
          order="1">
          <macPool
            dn="org-root/mac-pool-default"
            name="default"/>
          </vnic>
        </lsServer>
      </pair>
    </inConfigs>
  </configConfMos>
```

## **Shortcuts and Tips**

### **CLI Shortcuts**

- **Tab Completion:** Use `Tab` for command completion
- **History:** Use `Ctrl+P` or `Up Arrow` for command history
- **Clear Screen:** Use `Ctrl+L` to clear the screen

### **Troubleshooting Tips**

- **Show Commands:** Use `show` commands for status and troubleshooting

- **Debugging:** Use `debug` commands with caution, as they can impact performance
- **Logs:** Check system logs for error messages

### Conclusion

This cheat sheet provides a comprehensive overview of essential concepts, commands, and best practices for the Cisco Certified Network Professional (CCNP) - Data Center certification. Use this as a quick reference guide to navigate through the complexities of data center infrastructure, virtualization, automation, and security.

By Ahmed Baheeg Khorshid

ver 1.0