

Cheat Sheet for comprehensive Cisco Certified Internetwork Expert (CCIE)

- Collaboration

Cisco Unified Communications Manager (CUCM)

Basic Configuration

- **CUCM Deployment Types:**

- **Single-Site:** Single CUCM cluster.
- **Multi-Site:** Multiple CUCM clusters with inter-cluster communication.
- **Virtualized:** CUCM deployed on VMware.

- **Initial Setup:**

- **Admin Access:** `https://<CUCM_IP>:8443`
- **Default Credentials:**
 - Username: `administrator`
 - Password: ``

- **Primary Components:**

- **CUCM Publisher:** Central repository for configuration data.
- **CUCM Subscriber:** Replicates data from the Publisher.
- **CUCM TFTP Server:** Used for phone configuration files.

User Management

- **Creating Users:**

- **CLI:** `utils user add <username> <password>`
- **GUI:** `System > User Management > Users > Add New`

- **User Profile Configuration:**

- **Phone Association:** `User > Telephony > Device Settings`
- **Call Forwarding:** `User > Telephony > Call Forwarding`

Device Configuration

- **Phone Models:**

- **79xx Series:** Basic IP Phones.
- **89xx Series:** Advanced IP Phones.
- **99xx Series:** Executive IP Phones.
- **Phone Provisioning:**
 - **CLI:** `utils provision phone <phone_name> <model>`
 - **GUI:** `Device > Phone > Add New`
- **Line Configuration:**
 - **CLI:** `utils add lines <phone_name> <line_number>`
 - **GUI:** `Device > Phone > Lines > Add New`

Cisco Unified Border Element (CUBE)

Basic Configuration

- **Deployment Types:**
 - **Single-Site:** Single CUBE instance.
 - **Multi-Site:** Multiple CUBE instances for redundancy.
- **Initial Setup:**
 - **CLI Access:** `ssh admin@<CUBE_IP>`
 - **Default Credentials:**
 - Username: `admin`
 - Password: `<Default_Password>`
- **Primary Components:**
 - **SIP Trunking:** Interconnects CUCM with external PSTN.
 - **Media Termination:** Handles RTP traffic.

SIP Trunk Configuration

- **CLI Configuration:**

```

sip-ua
sip-server <PSTN_IP>
exit

```

- **GUI Configuration:**

- `Voice > SIP Trunks > Add New`
- Configure `Destination IP`, `Port`, and `Transport Protocol`.

Media Configuration

- **RTP Configuration:**

- **CLI:** `media-session rtp-port-range <start_port> <end_port>`
- **GUI:** `Voice > Media > RTP Port Range`

- **Codec Configuration:**

- **CLI:** `media-session codec <codec_name>`
- **GUI:** `Voice > Media > Codecs`

Cisco Unified Contact Center Enterprise (UCCE)

Basic Configuration

- **Deployment Types:**

- **Single-Site:** Single UCCE instance.
- **Multi-Site:** Multiple UCCE instances for scalability.

- **Initial Setup:**

- **Admin Access:** `https://<UCCE_IP>:8443`

- **Default Credentials:**

- Username: `administrator`
- Password: ``

- **Primary Components:**

- **Interaction Center:** Handles customer interactions.
- **Reporting Server:** Generates reports on call activity.

Agent Configuration

- **Creating Agents:**

- **CLI:** `utils user add <agent_username> <password>`

- **GUI:** `System > User Management > Users > Add New`
- **Agent Profile Configuration:**
- **CLI:** `utils user modify <agent_username> agent-profile <profile_name>`
- **GUI:** `System > User Management > Users > Edit`

Queue Configuration

- **Creating Queues:**
- **CLI:** `utils queue add <queue_name> <service_name>`
- **GUI:** `System > Queues > Add New`
- **Queue Profile Configuration:**
- **CLI:** `utils queue modify <queue_name> max-calls <max_calls>`
- **GUI:** `System > Queues > Edit`

Cisco Unity Connection (CUC)

Basic Configuration

- **Deployment Types:**
- **Single-Site:** Single CUC instance.
- **Multi-Site:** Multiple CUC instances for redundancy.
- **Initial Setup:**
- **Admin Access:** `https://<CUC_IP>:8443`
- **Default Credentials:**
 - Username: `administrator`
 - Password: ``
- **Primary Components:**
- **Voicemail:** Handles voice messages.
- **Auto-Attendant:** Automated call routing.

User Configuration

- **Creating Users:**

- **CLI:** `utils user add <username> <password>`
- **GUI:** `System > User Management > Users > Add New`
- **Voicemail Configuration:**
 - **CLI:** `utils user modify <username> voicemail <mailbox_number>`
 - **GUI:** `System > User Management > Users > Edit`

Auto-Attendant Configuration

- **Creating Auto-Attendants:**
 - **CLI:** `utils auto-attendant add <aa_name> <greeting_file>`
 - **GUI:** `System > Auto-Attendants > Add New`
- **Auto-Attendant Profile Configuration:**
 - **CLI:** `utils auto-attendant modify <aa_name> max-calls <max_calls>`
 - **GUI:** `System > Auto-Attendants > Edit`

Cisco Emergency Responder (CER)

Basic Configuration

- **Deployment Types:**
 - **Single-Site:** Single CER instance.
 - **Multi-Site:** Multiple CER instances for redundancy.
- **Initial Setup:**
 - **Admin Access:** `https://<CER_IP>:8443`
 - **Default Credentials:**
 - Username: `administrator`
 - Password: `<Default_Password>`
- **Primary Components:**
 - **Location Profile:** Defines emergency locations.
 - **E911 Routing:** Routes emergency calls to the appropriate PSAP.

Location Profile Configuration

- **Creating Location Profiles:**

- **CLI:** `utils location add <location_name> <address>`
- **GUI:** `System > Location Profiles > Add New`

- **Location Profile Settings:**

- **CLI:** `utils location modify <location_name> max-calls <max_calls>`
- **GUI:** `System > Location Profiles > Edit`

E911 Routing Configuration

- **Creating E911 Routes:**

- **CLI:** `utils e911-route add <route_name> <psap_ip>`
- **GUI:** `System > E911 Routes > Add New`

- **E911 Route Settings:**

- **CLI:** `utils e911-route modify <route_name> max-calls <max_calls>`
- **GUI:** `System > E911 Routes > Edit`

Cisco Meeting Server (CMS)

Basic Configuration

- **Deployment Types:**

- **Single-Site:** Single CMS instance.
- **Multi-Site:** Multiple CMS instances for scalability.

- **Initial Setup:**

- **Admin Access:** `https://<CMS_IP>:8443`
- **Default Credentials:**
 - Username: `administrator`
 - Password: ``

- **Primary Components:**

- **Meeting Rooms:** Virtual meeting spaces.

- **Media Engine:** Handles media processing.

Meeting Room Configuration

- **Creating Meeting Rooms:**

- **CLI:** `utils meeting-room add <room_name> <capacity>`
- **GUI:** `System > Meeting Rooms > Add New`

- **Meeting Room Settings:**

- **CLI:** `utils meeting-room modify <room_name> max-participants <max_participants>`
- **GUI:** `System > Meeting Rooms > Edit`

Media Engine Configuration

- **Creating Media Engines:**

- **CLI:** `utils media-engine add <engine_name> <ip_address>`
- **GUI:** `System > Media Engines > Add New`

- **Media Engine Settings:**

- **CLI:** `utils media-engine modify <engine_name> max-calls <max_calls>`
- **GUI:** `System > Media Engines > Edit`

Cisco Expressway

Basic Configuration

- **Deployment Types:**

- **Single-Site:** Single Expressway instance.
- **Multi-Site:** Multiple Expressway instances for redundancy.

- **Initial Setup:**

- **Admin Access:** `https://<Expressway_IP>:8443`
- **Default Credentials:**
 - Username: `admin`
 - Password: `<Default_Password>`

- **Primary Components:**

- **SIP Proxy:** Handles SIP signaling.
- **Media Relay:** Handles media relaying.

SIP Proxy Configuration

- **CLI Configuration:**

```
sip-proxy
sip-server <CUCM_IP>
exit
```

- **GUI Configuration:**

- `Voice > SIP Proxies > Add New`
- Configure `Destination IP`, `Port`, and `Transport Protocol`.

Media Relay Configuration

- **CLI Configuration:**

```
media-relay
rtp-port-range <start_port> <end_port>
exit
```

- **GUI Configuration:**

- `Voice > Media Relays > Add New`
- Configure `RTP Port Range`.

Cisco Jabber

Basic Configuration

- **Deployment Types:**

- **Single-User:** Single Jabber client.
- **Multi-User:** Multiple Jabber clients in an organization.

- **Initial Setup:**

- **Client Installation:** Download from Cisco website.

- **Default Credentials:**

- Username: ``
- Password: ``

- **Primary Components:**

- **Instant Messaging:** Real-time text communication.
- **Voice and Video Calls:** Integrated calling features.

User Configuration

- **Creating Users:**

- **CLI:** `utils user add <username> <password>`
- **GUI:** ``System > User Management > Users > Add New``

- **Jabber Profile Configuration:**

- **CLI:** `utils user modify <username> jabber-profile <profile_name>`
- **GUI:** ``System > User Management > Users > Edit``

Call Configuration

- **CLI Configuration:**

```
utils call
call-forward <forward_number>
exit
```

- **GUI Configuration:**

- ``User > Telephony > Call Forwarding``
- Configure ``Forward Number``.

Cisco Webex

Basic Configuration

- **Deployment Types:**

- **Single-User:** Single Webex account.
- **Multi-User:** Multiple Webex accounts in an organization.

- **Initial Setup:**

- **Client Installation:** Download from Cisco website.
- **Default Credentials:**
 - Username: ``<User_Email>``

- Password: ``<User_Password>``

- **Primary Components:**

- **Meetings:** Virtual meeting spaces.
- **Teams:** Collaboration spaces.

Meeting Configuration

- **Creating Meetings:**

- **CLI:** `utils meeting add <meeting_name> <start_time> <end_time>`
- **GUI:** `Meetings > Schedule a Meeting`

- **Meeting Settings:**

- **CLI:** `utils meeting modify <meeting_name> max-participants <max_participants>`
- **GUI:** `Meetings > Edit Meeting`

Team Configuration

- **Creating Teams:**

- **CLI:** `utils team add <team_name>`
- **GUI:** `Teams > Create a Team`

- **Team Settings:**

- **CLI:** `utils team modify <team_name> max-members <max_members>`
- **GUI:** `Teams > Edit Team`

Cisco TelePresence Management Suite (TMS)

Basic Configuration

- **Deployment Types:**

- **Single-Site:** Single TMS instance.
- **Multi-Site:** Multiple TMS instances for scalability.

- **Initial Setup:**

- **Admin Access:** `https://<TMS_IP>:8443`
- **Default Credentials:**

- Username: `administrator`
- Password: ``
- **Primary Components:**
 - **Endpoint Management:** Manages video endpoints.
 - **Scheduling:** Manages meeting schedules.

Endpoint Configuration

- **Creating Endpoints:**
 - **CLI:** `utils endpoint add <endpoint_name> <ip_address>`
 - **GUI:** `System > Endpoints > Add New`
- **Endpoint Settings:**
 - **CLI:** `utils endpoint modify <endpoint_name> max-calls <max_calls>`
 - **GUI:** `System > Endpoints > Edit`

Scheduling Configuration

- **Creating Schedules:**
 - **CLI:** `utils schedule add <schedule_name> <start_time> <end_time>`
 - **GUI:** `System > Schedules > Add New`
- **Schedule Settings:**
 - **CLI:** `utils schedule modify <schedule_name> max-meetings <max_meetings>`
 - **GUI:** `System > Schedules > Edit`

Cisco Collaboration Endpoints

Basic Configuration

- **Deployment Types:**
 - **Single-Endpoint:** Single collaboration device.
 - **Multi-Endpoint:** Multiple collaboration devices in an organization.
- **Initial Setup:**
 - **Admin Access:** `https://<Endpoint_IP>:8443`

- **Default Credentials:**
 - Username: `admin`
 - Password: ``
- **Primary Components:**
 - **Video Conferencing:** Handles video calls.
 - **Audio Conferencing:** Handles audio calls.

Video Configuration

- **CLI Configuration:**

```
video
codec <codec_name>
exit
```

- **GUI Configuration:**

- `Video > Codecs`
- Configure `Codec Name`.

Audio Configuration

- **CLI Configuration:**

```
audio
codec <codec_name>
exit
```

- **GUI Configuration:**

- `Audio > Codecs`
- Configure `Codec Name`.

Cisco Collaboration Monitoring and Troubleshooting

Monitoring Tools

- **Cisco Unified Monitoring and Reporting (UMR):**

- **CLI:** `utils monitor start`
- **GUI:** `Monitoring > Start Monitoring`

- **Cisco Unified Serviceability:**

- **CLI:** `utils serviceability start`
- **GUI:** `Serviceability > Start Serviceability`

Troubleshooting Tools

- **Cisco Unified Troubleshooting Tool (UTT):**

- **CLI:** `utils troubleshoot start`
- **GUI:** `Troubleshooting > Start Troubleshooting`

- **Cisco Unified Diagnostics:**

- **CLI:** `utils diagnostics start`
- **GUI:** `Diagnostics > Start Diagnostics`

Cisco Collaboration Security

Security Features

- **Encryption:**

- **SIP TLS:** Encrypts SIP signaling.
- **SRTP:** Encrypts media traffic.

- **Authentication:**

- **SIP Digest:** Authenticates SIP requests.
- **LDAP Integration:** Integrates with LDAP for user authentication.

Configuration

- **SIP TLS Configuration:**

- **CLI:** `sip-ua tls`
- **GUI:** `Security > SIP TLS`

- **SRTP Configuration:**

- **CLI:** `media-session srtp`
- **GUI:** `Security > SRTP`

- **LDAP Integration:**

- **CLI:** `utils ldap add <ldap_server> <base_dn>`

- **GUI:** `Security > LDAP Integration`

Cisco Collaboration Best Practices

Deployment Best Practices

- **Scalability:**

- Deploy in a multi-site architecture for scalability.
- Use load balancers for high availability.

- **Redundancy:**

- Use redundant CUCM clusters.
- Deploy redundant CUBE instances.

Performance Best Practices

- **Optimize Codecs:**

- Use low-bandwidth codecs like G.729.
- Configure adaptive jitter buffers.

- **Network Optimization:**

- Use QoS to prioritize voice and video traffic.
- Implement link aggregation for higher throughput.

Security Best Practices

- **Regular Updates:**

- Keep all components updated with the latest

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