

DHCP Cheat Sheet for Cisco Beginners

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This is a generic cheat sheet and not for a specific use case.

What is DHCP?

Dynamic Host Configuration Protocol (DHCP) automatically assigns IP addresses, subnet masks, default gateways, and DNS servers to network devices.

DHCP Client Configuration

Enable DHCP on Interface

```
Router(config)# interface gigabit0/0
Router(config-if)# ip address dhcp
Router(config-if)# no shutdown
```

Example

```
Router(config)# interface gigabit0/1
Router(config-if)# ip address dhcp
Router(config-if)# no shutdown
```

DHCP Server Configuration

Create DHCP Pool

```
Router(config)# ip dhcp pool [pool-name]
Router(dhcp-config)# network [network] [subnet-mask]
Router(dhcp-config)# default-router [gateway-ip]
Router(dhcp-config)# dns-server [dns-ip]
```

Exclude IP Addresses

```
Router(config)# ip dhcp excluded-address [start-ip] [end-ip]
```

Complete DHCP Server Example

! Exclude router and server IPs

```
Router(config)# ip dhcp excluded-address 192.168.1.1 192.168.1.10
```

! Create DHCP pool

```
Router(config)# ip dhcp pool LAN1
```

```
Router(dhcp-config)# network 192.168.1.0 255.255.255.0
```

```
Router(dhcp-config)# default-router 192.168.1.1
```

```
Router(dhcp-config)# dns-server 8.8.8.8
```

```
Router(dhcp-config)# exit
```

! Enable DHCP service

```
Router(config)# service dhcp
```

DHCP Relay Configuration

Configure DHCP Relay (IP Helper)

```
Router(config)# interface [interface]
```

```
Router(config-if)# ip helper-address [dhcp-server-ip]
```

Example

```
Router(config)# interface gigabit0/0
```

```
Router(config-if)# ip helper-address 10.1.1.100
```

Multiple DHCP Servers

```
Router(config-if)# ip helper-address 10.1.1.100
```

```
Router(config-if)# ip helper-address 10.1.1.101
```

Essential Show Commands

View DHCP Bindings

```
Router# show ip dhcp binding
```

View DHCP Pool

```
Router# show ip dhcp pool
```

View DHCP Statistics

```
Router# show ip dhcp statistics
```

View DHCP Conflicts

```
Router# show ip dhcp conflict
```

Basic DHCP Troubleshooting

Enable DHCP Service

```
Router(config)# service dhcp
```

Disable DHCP Service

```
Router(config)# no service dhcp
```

Clear DHCP Bindings

```
Router# clear ip dhcp binding *  
Router# clear ip dhcp binding [ip-address]
```

Release and Renew (On PC)

```
PC> ipconfig /release  
PC> ipconfig /renew
```

Complete Network Example

DHCP Server Router

```
! Configure DHCP server
ip dhcp excluded-address 192.168.1.1 192.168.1.10
ip dhcp pool OFFICE
network 192.168.1.0 255.255.255.0
default-router 192.168.1.1
dns-server 8.8.8.8
service dhcp
```

```
! Interface configuration
interface gigabit0/0
ip address 192.168.1.1 255.255.255.0
no shutdown
```

DHCP Relay Router

```
! Interface facing clients
interface gigabit0/0
ip address 192.168.2.1 255.255.255.0
ip helper-address 192.168.1.1
no shutdown
```

```
! Interface facing DHCP server
interface gigabit0/1
ip address 192.168.1.2 255.255.255.0
no shutdown
```

Key Points

- **DHCP Client:** Uses `ip address dhcp` on interface
- **DHCP Server:** Requires pool creation and excluded addresses
- **DHCP Relay:** Uses `ip helper-address` to forward requests
- **Service DHCP:** Must be enabled for server functionality
- **Excluded Addresses:** Reserve IPs for static devices

Default DHCP Options

- **Lease Time:** 24 hours (default)
- **DNS Server:** Must be manually configured
- **Domain Name:** Optional
- **WINS Server:** Optional

Remember: Always exclude static IP addresses before creating DHCP pools!

