

# Configure Administrative Distance for DHCP Routes

## Contents

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### [Introduction](#)

### [Prerequisites](#)

[Requirements](#)

[Components Used](#)

### [Scenario](#)

### [Configure](#)

[Method 1: Change AD in the VPN](#)

[Configuration via Feature Template](#)

[Configuration via CLI](#)

[Method 2: Change AD in the Interface](#)

[Configuration via Feature Template](#)

[Configuration via CLI](#)

### [Verify](#)

### [Related documentation.](#)

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## Introduction

This document describes how to configure and verify Administrative Distance (AD) on default routes received via DHCP.

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Software-defined Wide Area Network (SD-WAN)
- Templates.

### Components Used

The information in this document is based on these software and hardware versions:

- SD-WAN Controllers (20.9.4.1)
- Cisco Edge Router (17.09.04)

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

## Scenario

In some setups, an SD-WAN edge might be connected to multiple transports where one is using DHCP to learn its IP address and default gateway and another is configured with a static IP using either a static route or a routing protocol to learn a default route.

This becomes a problem due to different administrative distances(AD). The default AD for a DHCP-learned default route is 254, versus 1 for a static route or 20 for an external BGP route. Because the other route has a better AD, the DHCP route is not installed in the routing table and control is not built across that path.

This can be mitigated by configuring the same AD for the DHCP-learned route.

## Configure

### Method 1: Change AD in the VPN

#### Configuration via Feature Template


Navigate to Feature template **Cisco VPN > IPv4 Route > New IPv4 Route > Prefix** . Add the prefix **0.0.0.0/0**

The screenshot shows the configuration page for a new IPv4 route. At the top, there is a dark header with a dropdown arrow and the text 'IPv4 ROUTE'. Below this is a light blue button labeled 'New IPv4 Route'. The main configuration area has a 'Prefix' field with a globe icon and a dropdown arrow, containing the text '0.0.0.0/0'. This field is highlighted with a red rectangular box. Below the 'Prefix' field are four radio buttons: 'Next Hop' (selected), 'Null 0', 'VPN', and 'DHCP'. Below these are two blue buttons with plus signs: 'Add Next Hop' and 'Add Next Hop With Tracker'. The labels 'Gateway', 'Next Hop', and 'Next Hop With Tracker' are positioned to the left of their respective controls.

Click **Add a Next Hop** > Under the address field specify **DHCP** . Change **Distance** field to the desired value.

# Next Hop

Address	Distance
<input type="text" value="DHCP"/>	<input type="text" value="20"/>



Enter the values and click **onsave**.

## Configuration via CLI

Configure default route in the device under configuration mode.

```
<#root>
```

```
cEdge#
```

```
config-transaction
```

```
cEdge(config)#
```

```
ip route 0.0.0.0 0.0.0.0 dhcp 20
```

```
cEdge(config)#
```

```
commit
```



**Note:** NOTE: To configure via CLI the routes must not have a template attached to it. To verify this run: show sdwan system status.

---

## Method 2: Change AD in the Interface


### Configuration via Feature Template

Navigate to **Feature templates > Add Template > Cisco VPN Interface Ethernet > Basic Configuration > IPv4** . Click in **Dynamic > DHCP Distance**

Change **DHCP Distance** to the desired value.

**Dynamic**     **Static**




DHCP Distance

 20

Click on **save** template.

Navigate to Feature template **Cisco VPN> IPv4 Route > New IPv4 Route > Prefix** . Add the prefix **0.0.0.0/0** . Modify the entry for **0.0.0.0/0 > Add a Next Hop** . Under the address field specify **DHCP**.

## Next Hop

Address	Distance
 DHCP	 1 

### Configuration via CLI

To change the default DHCP Administrative Distance, use the **ip dhcp client default-router distance** command in interface configuration:

```
<#root>
cEdge#
config-transaction

cEdge(config)#
interface GigabitEthernet1

cEdge(config-if)#
ip dhcp client default-router distance 20

cEdge(config-if)#
commit
```



**Note:** Using this method, it is not necessary to change the AD on the default route, since is configured on the VPN Interface Ethernet Feature Template.

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For the configuration to take effect, the device needs to make a new discovery or when Discover-Offer-Request-Ack (DORA) cycle happens again.

The process to acquire another IP via DHCP DORA can be forced via one of these methods.

1. When the interface is cleared the hardware logic resets on the specific interface.

```
<#root>
```

```
cEdge#
```

```
clear interface GigabitEthernet1
```

2. Release DHCP lease.

Command triggers the immediate termination of the DHCP lease on the designated interface. Once the IP address is removed and is no longer associated with the interface, execute the command **renew dhcp GigabitEthernet1** to facilitate a renewal of the DHCP lease.

```
<#root>
```

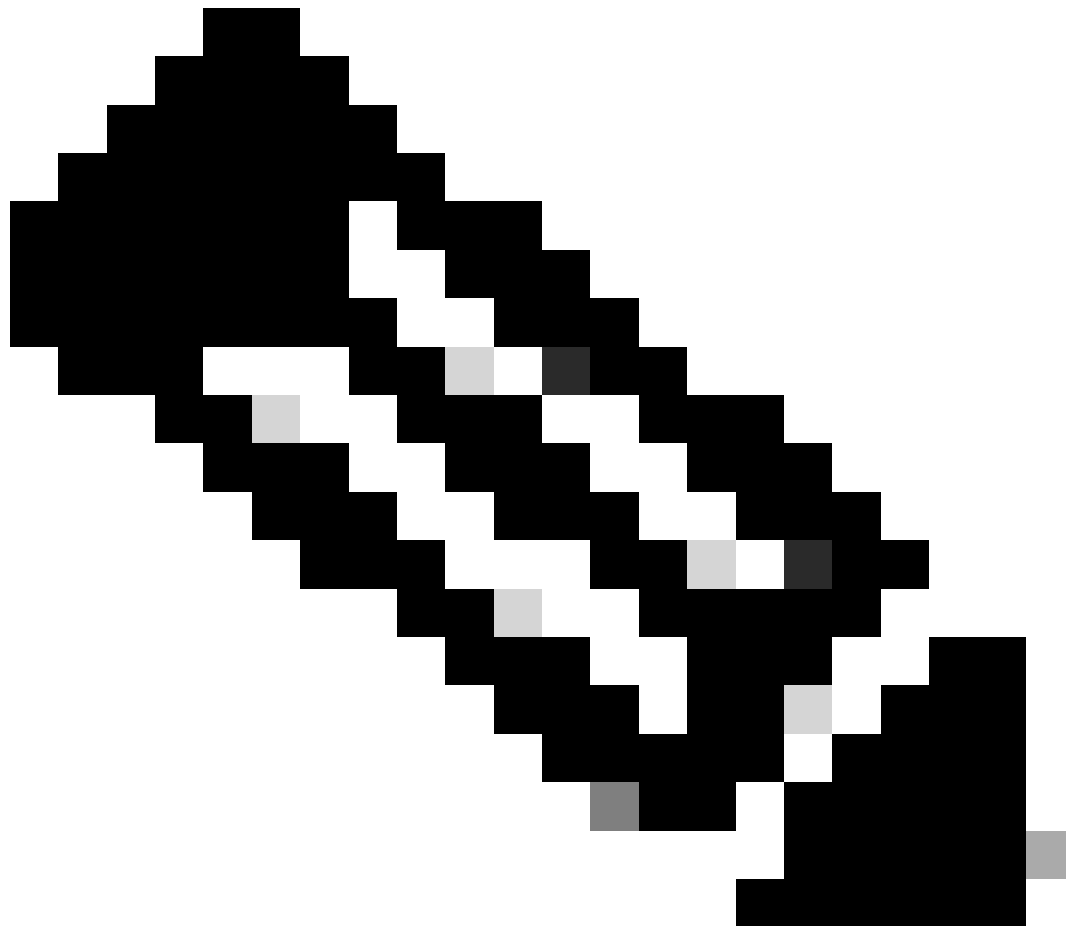
```
cEdge#
```

```
release dhcp GigabitEthernet1
```

```
cEdge#
```

```
renew dhcp GigabitEthernet1
```

---



**Note:** When both Cisco VPN Feature Template and the Cisco VPN Interface Ethernet Feature Template have the Administrative Distance set, the configured preference on the **Cisco VPN Feature Template** takes precedence.

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# Verify

To verify that the configured DHCP AD works correctly, execute the command provided and focus on the distance value for the IP route.

```
<#root>
```

```
cEdge#
```

```
show ip route 0.0.0.0
```

```
Routing entry for 0.0.0.0/0, supernet  
Known via "static", distance
```

```
20
```

```
, metric 0, candidate default path
```

```
Routing Descriptor Blocks:
```

```
* 192.168.32.1
```

```
Route metric is 0, traffic share count is 1
```

## Related documentation.

- [Configure Administrative Distance.](#)