

SD-WAN UNI IPv4 Connection Addressing Service Attribute

The SD-WAN UNI IPv4 Connection Addressing Service Attribute specifies how IPv4 addresses are allocated to the devices on the Subscriber side of the UNI. The Service Attribute has one of three possible values: None, DHCP, or Static. In the case of DHCP and Static there are some additional parameters.

If the IPv4 Connection Addressing is None, no IPv4 addresses are used and IPv4 is disabled on the link. Note that in this case IPv6 connection addresses are needed.

[R61] The SD-WAN UNI IPv4 Connection Addressing Service Attribute and the SD-WAN UNI IPv6 Connection Addressing Service Attribute (section 10.5) **MUST NOT** both have the value None.

If the value of the SD-WAN UNI IPv4 Connection Addressing is DHCP, then DHCP is used by devices in the Subscriber Network to request IPv4 addresses in a given subnet from the Service Provider as described in [RFC 2131](#) [7] and [RFC 2132](#) [8]. The Service Provider hosts the DHCP server and the Subscriber devices act as the DHCP clients.

[R62] When the IPv4 Connection Addressing is DHCP, the Service Provider **MUST** use DHCP to convey to the Subscriber, in addition to the IPv4 address, the subnet mask and the default router address.

If the value of the SD-WAN UNI IPv4 Connection Addressing is Static, then IPv4 addresses in a given IPv4 subnet are statically assigned to the Service Provider and the Subscriber. In this context, Static refers to manual configuration of the IPv4 Connection Addressing on the Subscriber devices. For DHCP and Static, a number of further parameters have to be agreed including:

- Primary Subnet:
 - IPv4 Prefix (IPv4 address prefix and mask length between 0 and 31, in bits)
 - Service Provider IPv4 Addresses (Non-empty list of IPv4 addresses)
- Secondary Subnet List; each entry containing:
 - IPv4 Prefix (IPv4 address prefix and mask length between 0 and 31, in bits)
 - Service Provider IPv4 Addresses (Non-empty list of IPv4 addresses)

The parameters consist of a primary subnet and zero or more secondary subnets. In each case, the IP Prefix is specified, along with the Service Provider's IPv4 addresses. In the case of the primary subnet, this IP Prefix is referred to as the Connection Primary IPv4 Prefix, and for a secondary subnet, the Connection Secondary IPv4 Prefix.

For DHCP the address of the Subscriber's default router is provided in the DHCP response. For Static addressing, the Service Provider's addresses are assumed to be the default router addresses.

Note that the IPv4 Prefix and Service Provider addresses need to be agreed even when DHCP is used, so that the Subscriber can ensure they do not conflict with any other addressing used within the Subscriber Network.

Any address within the IPv4 Connection Addressing subnet(s) can be used by the Subscriber for configuring Subscriber equipment, excluding the Service Provider IPv4 addresses and any addresses within prefixes listed in the value of the SWVC Reserved Prefixes Service Attribute (see section 8.4).

If DHCP is used, the IPv4 address range, from which Subscriber addresses are dynamically assigned, is taken from the prefixes listed in the value of the SWVC Reserved Prefixes Service Attribute that are subnets of the Primary Subnet IPv4 Prefix or a Secondary subnet IPv4 prefix.

[R63] If the SD-WAN UNI IPv4 Connection Addressing is DHCP, addresses that are dynamically assigned by DHCP within the Connection Primary IPv4 Prefix or a Connection Secondary IPv4 Prefix **MUST** be taken from within an IP Prefix listed in the SWVC Reserved Prefixes Service Attribute (section 8.4) that is a subnet of the Connection Primary IPv4 Prefix or Connection Secondary IPv4 Prefix.

For example, if the SWVC List of Reserved Prefixes includes:

- 192.168.1.0/26
- 192.168.2.0/26

and the Primary Subnet IPv4 Prefix is 192.168.1.0/24, DHCP can dynamically assign addresses 192.168.1.1 through 63 and the Subscriber can assign addresses 192.168.1.64 through 254 (note that **[R65]** prohibits the Subscriber from assigning the highest address in the prefix).

[R64] If the value of the SD-WAN UNI IPv4 Connection Addressing is Static or DHCP, for the Primary Subnet and for each Secondary Subnet, the Service Provider IPv4 Addresses **MUST** be within the specified IPv4 Prefix.

The Subscriber can statically assign any IPv4 address within the subnets identified by the Connection IPv4 Prefixes, other than the Service Provider address itself, the lowest and highest possible addresses, which are generally reserved, and any addresses within IP Prefixes listed in the value of the SWVC Reserved Prefixes Service Attribute (see section 8.4).

Status

PUBLISHED

Study Requirement

MEF-SDCP Exam Study Reference

Source(s) and Reference(s)

[MEF 70 - SD-WAN Service Attributes and Services Definition](#)
[RFC 2131](#)
[RFC 2132](#)

[R65] If the value of the SD-WAN UNI IPv4 Connection Addressing is DHCP or Static, the Subscriber MUST NOT statically assign any of the following for use by Subscriber devices connected to the UNI:

Any IPv4 address that is neither within the Connection Primary IPv4 Prefix nor within the Connection Secondary IPv4 Prefix for an entry in the Secondary Subnet List.

Any of the Primary Subnet Service Provider IPv4 Addresses.

Any of the Service Provider IPv4 Addresses specified an entry in the Secondary Subnet List.

The lowest and highest IPv4 addresses in the Connection Primary IPv4 Prefix, if the prefix length is less than or equal to 30.

The lowest and highest IPv4 addresses in the Connection Secondary IPv4 Prefix for an entry in the Secondary Subnet List, if the prefix length is less than or equal to 30.

Any IPv4 address within IP Prefixes listed in the value of the SWVC Reserved Prefixes Service Attribute (see section 8.4).

Related and Further Reading

- [SWVC End Point Policy Map](#)
- [SD-WAN Virtual Connection \(SWVC\) Service Attributes](#)
- [SD-WAN UNI L2 Interface Service Attribute](#)
- [SD-WAN Virtual Connection \(SWVC\) Identifier Service Attribute](#)
- [SD-WAN Virtual Connection \(SWVC\) End Point List Service Attribute](#)
- [SD-WAN Virtual Connection \(SWVC\) Reserved Prefixes Service Attribute](#)
- [SD-WAN Virtual Connection \(SWVC\) Service Uptime Objective Service Attribute](#)
- [SD-WAN Virtual Connection \(SWVC\) List of Policies Service Attribute](#)
- [SD-WAN Virtual Connection \(SWVC\) List of Application Flows Service Attribute](#)
- [SD-WAN Virtual Connection \(SWVC\) End Point Service Attributes](#)
- [Defined: SD-WAN Service Attributes](#)
- [SD-WAN PUBLIC-PRIVATE Policy Criterion](#)
- [SD-WAN Service Attributes](#)
- [SD-WAN Virtual Connection \(SWVC\) Service Attributes](#)
- [SD-WAN Policy Criteria specification and interaction](#)
- [SD-WAN BILLING-METHOD Policy Criterion](#)
- [SD-WAN INTERNET-BREAKOUT Policy Criterion](#)
- [SD-WAN BACKUP Policy Criterion](#)
- [SWVC End Point Identifier Service Attribute](#)
- [Defined: SD-WAN UNI](#)

Project Lead

[Kirby Russell](#)

| Reviewers/Contributors |
|---------------------------------|
| MEF-SMEs |
| Basil Najem |
| Sholy Augustine |
| Ryan Hoffman |
| MEF Staff |
| Daniel Bar-Lev |