

Nile-VeloCloud Integration Guide

This document describes the steps to integrate VeloCloud SD-WAN Edge appliances, in High Availability (HA) configuration, with the Nile Service Block (NSB). The desired result is a seamless integration between the Nile Access Service and the customer's extended network and thus with the Internet.

Overview

This document describes the steps to integrate VeloCloud SD-WAN Edge appliances, in High Availability (HA) configuration, with the Nile Service Block (NSB). The desired result is a seamless integration between the Nile Access Service and the customer's extended network, and thus with the Internet.

The VeloCloud appliances require manual configuration; no configuration of Nile NSB is necessary.

Prerequisites

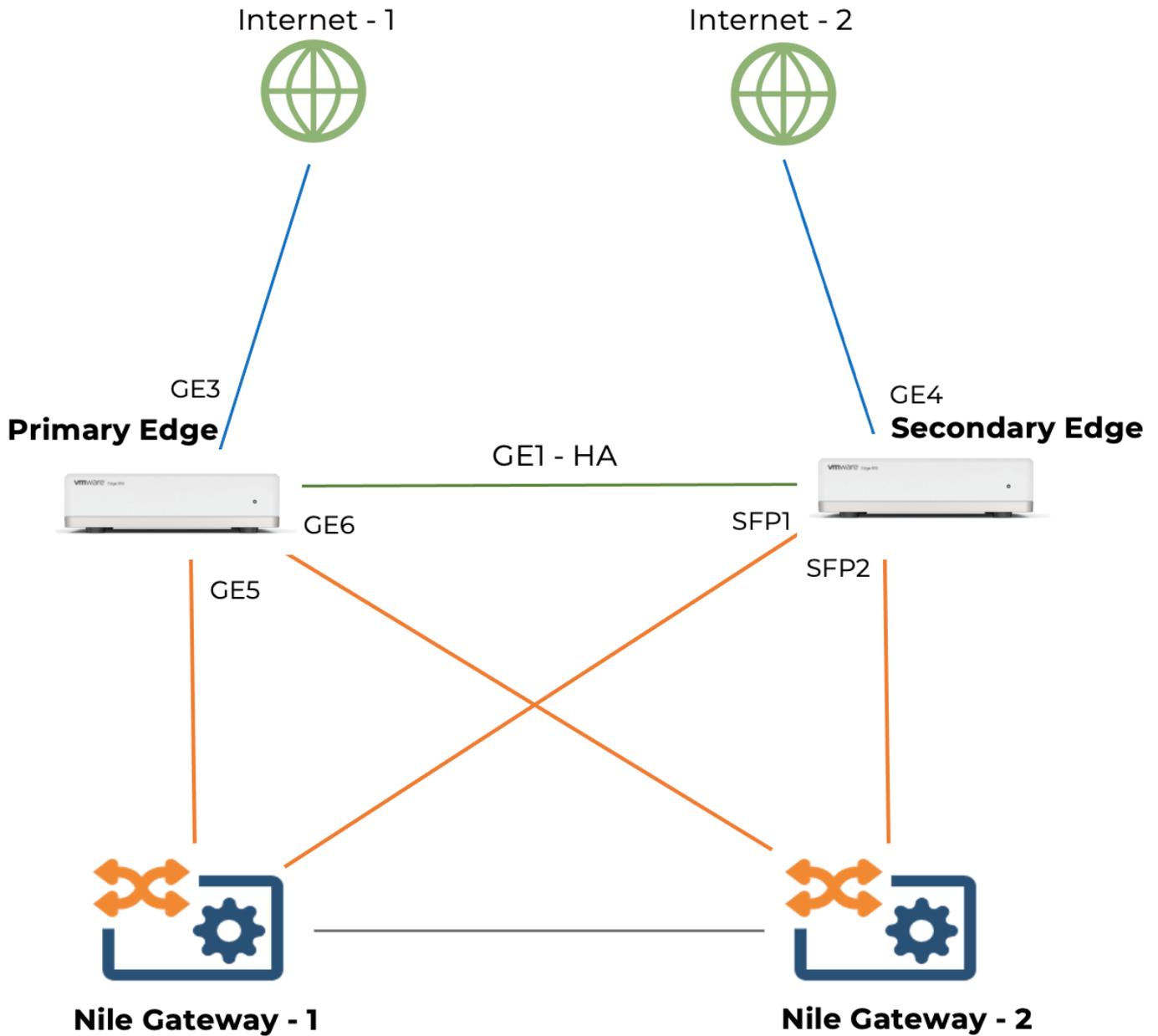
- Four unique /30 Subnets – To implement a High-Definition and an Always-On service, the setup uses Equal Cost Multi-Path (ECMP) routing to configure four point-to-point links, to provide Layer 3 transit between the NSB and the VeloCloud Edge appliances.
- Administrative access to the VeloCloud Edge appliances.

Limitations

- The VeloCloud edge appliance cannot do static route with ECMP routing, so this guide uses OSPF for the L3 routing between the Nile gateways and the VeloCloud Edge appliances.

Topology

Both Nile gateways are active-active devices. It takes four unique ports to connect to the upstream edges (two each). VeloCloud is in Active/Standby mode; it requires 2 unique ports on the active and 2 unique ports on the standby appliance.



VeloCloud Interface Assignment

GE1
 GE3, GE4
 GE5, GE6, SFP1, SFP2

VeloCloud HA Link
 WAN Interfaces
 LAN Interfaces

Configuration

Enable OSPF

- Log into you VeloCloud Orchestrator
- Navigate to Profiles
- Click on the Branch Profile which is assigned to the Branch Edge that we are going to configure in this setup.
- Navigate to OSPFv2 and enable it, as shown below.

OSPF ⓘ

OSPFv2 OSPFv3

OSPFv2

Redistribution Settings

Default Route OE1 ▼

Advertise ⓘ Always ▼

Overlay Prefixes

OSPFv2 Areas

+ ADD 🗑️ DELETE 📄 CLONE

<input type="checkbox"/>	Area ID *	Name	Type
<input checked="" type="checkbox"/>	0.0.0.0	Main	<u>Normal</u> ▼

1 item

Configure the WAN side Interface

- Log into you VeloCloud Orchestrator
- Navigate to **Edges**
- Select your site-specific Edge Device
- Click on **Configure**
- Navigate to **Interfaces**

Interfaces Segment Agnostic

Edge 6X0

+ ADD SUBINTERFACE + ADD SECONDARY IP + ADD WI-FI SSID DELETE

General					Switch Port Settings		Routed Interface Settings			Multicast	
Interface	Interface Override	Type	VNF Insertion	Segment	Mode	VLANs	Addressing	WAN Link	OSPF	IGMP	PIM
GE1	No	Switched		Global Segment	Access	1 - Corporate			N/A		
GE2	No	Switched		Global Segment	Access	1 - Corporate			N/A		
GE3	No	Routed	Off	All Segments			IPv4 - DHCP	Auto-Detect	OSPF: Not Enabled OSPFV3: Not Enabled		
GE4	No	Routed	Off	All Segments			IPv4 - DHCP	Auto-Detect	OSPF: Not Enabled OSPFV3: Not Enabled		
GE5	No	Routed	Off	All Segments			IPv4 - DHCP	Auto-Detect	OSPF: Not Enabled OSPFV3: Not Enabled		
GE6	No	Routed	Off	All Segments			IPv4 - DHCP	Auto-Detect	OSPF: Not Enabled OSPFV3: Not Enabled		
SFP1	No	Routed	Off	All Segments			IPv4 - DHCP	Auto-Detect	OSPF: Not Enabled OSPFV3: Not Enabled		
SFP2	No	Routed	Off	All Segments			IPv4 - DHCP	Auto-Detect	OSPF: Not Enabled OSPFV3: Not Enabled		
WLAN1		Switched									
WLAN2		Switched									

- Click on GE3

This example uses GE3 as the WAN Interfaces. It's assumed you have two WAN providers

- In the IPv4 Settings **Addressing Type** drop-down list, choose one of DHCP, Static, or PPPoE. If "static" is chosen, use either (1) a private IP address with a NAT device in front of the edge, or (2) a public IP address. This example shows a public point-to-point IP link.
- Scrolling down, set the **NAT Direct Traffic** checkbox if a public IP address is specified in the Addressing Type data. Otherwise (1) uncheck this checkbox for a private IP address, and (2) provide a firewall or router that can NAT traffic outbound to the Internet.

Edge 6X0



Interface GE3

Override

Description

AT&T Internet

Maximum 256 characters

Interface Enabled

Enabled

Capability

Routed

Segments

All Segments

Radius Authentication

WAN Link must be disabled to configure RADIUS Authentication.

ICMP Echo Response

Enabled

Underlay Accounting ⓘ

Enabled

Enable WAN Link

Enabled

DNS Proxy

Enabled

VLAN

EVDSL Modem Attached

Enabled

IPv4 Settings

Enabled

CANCEL

SAVE

Enable WAN Link Enabled

DNS Proxy Enabled

VLAN

EVDSL Modem Attached Enabled

IPv4 Settings

Enabled

Addressing Type Static ▾

IP Address * 108.245.46.197

CIDR Prefix * 30

Gateway 108.245.46.198

WAN Link Auto-Detect ▾

OSPF Enabled

Multicast Multicast is not enabled for the selected segment

VNF Insertion VNF insertion is disallowed when an interface is configured for WAN links

Advertise Enabled

NAT Direct Traffic Enabled

CANCEL

SAVE

- Click the **SAVE** button

If you have a second WAN (Internet) interface, repeat the same steps for that interface as well. Use GE4 for the second WAN Interface.

Configure the LAN side interface

- Navigate to **Interfaces** and click on the GE1. In this example, GE1 and GE2 are the LAN side Interfaces connecting to the Nile Gateways
- **Capability**: if the Interface is in switched mode, change it to a routed port via the drop-down list.

Edge 6X0



Interface GE1

Override

Interface Enabled Enabled

Capability Switched
 Routed

Mode Access Port

VLANs 1 - Corporate

L2 Settings

Autonegotiate Enabled

MTU 1500

CANCEL

SAVE

- Once you have selected the routed port, uncheck the checkboxes **Underlay Accounting** and **Enable WAN Link**

Description

LAN Interface connecting to the Nile Gateway

Maximum 256 characters

Interface Enabled

Enabled

Capability

Routed ▾

Segments

Global Segment ▾

Radius Authentication

Enabled ⚠ Intra-VLAN traffic will not be filtered on hardware switching platforms (Edge 500, 520, 540, and 610)

ICMP Echo Response

Enabled

Underlay Accounting ⓘ

Enabled

Enable WAN Link

Enabled

DNS Proxy

Enabled

VLAN

EVDSL Modem Attached

Enabled

CANCEL

SAVE

- **IP Address:** provide the IPv4 IP address to the interface. It is typically a /30 subnet.
- Click on the **OSPF** checkbox so that it's checked.
- Click the **Trusted Source** checkbox so it's checked.
- In the **Reverse Path Forwarding** drop-down, select "Not Enabled". These two settings enable asymmetric routing among all the LAN-side interfaces.

IPv4 Settings

Enabled

Addressing Type	Static
IP Address *	192.168.10.1
CIDR Prefix *	30
Gateway	192.168.10.2

OSPF Enabled

OSPF Area 0.0.0.0 - Main

> Advanced Settings

Multicast Multicast is not enabled for the selected segment

VNF Insertion

Advertise Enabled

NAT Direct Traffic Enabled

Trusted Source Enabled

Reverse Path Forwarding Not Enabled

IPv4 DHCP Server

Type

CANCEL SAVE

Configure OSPF settings

- On the same LAN interface configuration (GE3), click on **Advanced Settings** under OSPF.
- Keep the default settings as they are.

OSPF Enabled

OSPF Area 0.0.0.0 - Main ▾

▾ Advanced Settings

Custom Settings	Inbound Route Learning	Route Advertisement
Hello Timer ⓘ	10	
Dead Timer ⓘ	40	
Enable BFD	<input type="checkbox"/> Enabled	
Enable MD5 Authentication	<input type="checkbox"/> Enabled	
Interface Path Cost	1	
MTU	1380	
Mode ⓘ	Broadcast	▾
Passive	<input type="checkbox"/> Enabled	

Inbound Route Learning

- Click on **Inbound Route Learning** tab
- Configure the settings as shown below

OSPF

 Enabled

OSPF Area

0.0.0.0 - Main

Advanced Settings

Custom Settings **Inbound Route Learning** Route Advertisement

Default Action Learn

+ ADD DELETE

<input type="checkbox"/>	Route	Exact Match	Action
<input type="checkbox"/>	0.0.0.0/0	<input checked="" type="checkbox"/> Enabled	<u>Ignore</u>
<input type="checkbox"/>	0.0.0.0/0	<input type="checkbox"/> Enabled	<u>Learn</u>

2 items

This configuration blocks the appliances from learning a default route inbound, and allows everything else. The VeloCloud Edge appliances learn all the NSB and user subnets as they are advertised by the Nile Gateways.

Route Advertisement

- Click on **Inbound Route Learning**
- Configure the settings as shown below

OSPF Enabled

OSPF Area 0.0.0.0 - Main ▾

▾ Advanced Settings

Custom Settings Inbound Route Learning Route Advertisement

Default Action Advertise ▾

[+ ADD](#) [🗑️ DELETE](#)

<input type="checkbox"/>	Route	Exact Match	Action
<input type="checkbox"/>	0.0.0.0/0	<input checked="" type="checkbox"/> Enabled	<u>Adverti:</u> ▾

1 item

The VeloCloud Edge appliances advertise a default route to the Nile GW. This setting attracts all traffic towards itself.

- Repeat the above same steps for GE6, SFP1, and SFP2 LAN side interfaces. Make sure the /30 subnets are unique for each of these LAN side interfaces.