**SDWAN Implementation Plan**

**Carmore Tier II Site**

**vedge to cedge migration**

**City, State**

This document outlines the steps required to upgrade Caremore vedge routers at City, State.

Prerequisites

* + Identify new loopback addresses for both cedge’s
  + Add hostrecord using sdw-03 and sdw-04 as the hostnames – please note that this impl plan will still reference sdw-01 and sdw-02.
  + Verify cedge serial #’s are in vmanage and certificates are valid

Note\* Use the existing vedge connections for vlan 1101/1103 and vlan 1193 (vpn0 and vpn1) on the core. These will be moved off the vedge over to the cedge.

|  |  |
| --- | --- |
| **Site Info** | **Hints** |
| city |  |
| state |  |
| site-code | <https://collaborate.wellpoint.com/sites/csns/Lists/Sites%20List/ActiveSitesByState.aspx?viewpath=%2Fsites%2Fcsns%2FLists%2FSites%20List%2FActiveSitesByState%2Easpx> |
| snmp-location | full site address |
| latitude | <https://www.latlong.net/convert-address-to-lat-long.html> |
| longitude | <https://www.latlong.net/convert-address-to-lat-long.html> |
| cedge-asn | [AS Numbers Documentation 20230801.xlsx](https://collaborate.wellpoint.com/:x:/r/sites/DCNSupp/Shared%20Documents/AS%20Numbers%20Documentation%2020230801.xlsx?d=w14e6a4f1830d41e989d995810c1e93aa&csf=1&web=1&e=R998VI) |
| switch-asn | [AS Numbers Documentation 20230801.xlsx](https://collaborate.wellpoint.com/:x:/r/sites/DCNSupp/Shared%20Documents/AS%20Numbers%20Documentation%2020230801.xlsx?d=w14e6a4f1830d41e989d995810c1e93aa&csf=1&web=1&e=R998VI) |
| site-no |  |
| **Circuit Info** |  |
| bb1-carrier | Primary DIA/Broadband circuit on sdw-02 |
| bb1-circuitid |  |
| bb1-up-speed | kbps |
| bb1-down-speed | kbps |
| mpls-circuitid |  |
| mpls-lec-circuitid | if applicable |
| mpls-speed | in kbps. Ex. 100MB would be 100000 |
| mpls-pe-ip | IP address of Lumen PE |
|  |  |
| **SDWAN Info** |  |
|  | **all interface/port names need full nomenclature. ex TenGigabitEthernet0/0/5** |
| cedge1-host | sdw-01 will now be sdw-03 |
| cedge1-serial-no |  |
| cedge1-loop | sdw-01 loopback ip address (do NOT use the existing) |
| cedge1-lan-net | VPN1 (/30 link between sdw-01 and core switch network address) |
| cedge1-rtr-ip | ip address for gi0/0/0 on sdw-01 |
| cedge1-sw-ip | ip address for VPN1 core interface |
| cedge1-tloc3-ip | connection between sdw-01 and sdw-02 on gi0/0/3 |
| mpls-ce1-ip | MPLS circuit usable ip address for SDW-01 |
|  |  |
| cedge2-host | sdw-02 will now be sdw-04 |
| cedge2-serial-no |  |
| cedge2-loop | sdw-02 loopback ip address (do NOT use the existing) |
| cedge2-lan-net | VPN1 (/30 link between sdw-02 and core switch network address) |
| cedge2-rtr-ip | ip address for gi0/0/0 on sdw-01 |
| cedge2-sw-ip | ip address for VPN1 core interface |
| mpls-ce2-ip | MPLS circuit usable ip address for SDW-02 |
| cedge2-tloc3-ext-ip | ip address of gi0/0/3 on sdw-02 |
| cedge2-tloc3-ip | bb1 circuit usable ip address |
| cedge2-tloc3-mask | bb1 circuit mask - ex. 255.255.255.252 |
| cedge2-tloc3-cidr | bb1 circuit cidr - ex. /30 |
| cedge2-tloc3-gate | bb1 circuit gateway ip address |
| cedge2-tloc3-port | bb1 circuit connects here (te0/0/5 or gi0/0/1) see *New Devices and Device Module* section |
| **Switch Info** |  |
| sw-host | core hostname |
| sw-loop | loopback0 ip address on core |
| sw-mgmt-vlan | most sites use vl1500 for mgmt |
| sw-mgmt-ip | vl1500 gateway ip address |
| sw-mgmt-cidr | vl1500 cidr |
| sw-cedge1-port | connection to sdw-01 gi0/0/0 in VPN 1 |
| sw-cedge1-vlan | 1101 if possible |
| sw-cedge2-port | connection to sdw-02 gi0/0/0 in VPN 1 |
| sw-cedge2-vlan | 1103 if possible |
| sw-mpls-port | Switch port connected to Lumen circuit |
| sw-cedge1-mpls-port | Switch port for cEdge1 gi0/0/2 connection to Lumen |
| sw-cedge2-mpls-port | Switch port for cEdge2 gi0/0/2 connection to Lumen |
| sw-remote-con-net1 | interface to opengear |
| sw-remote-con-net2 | interface to opengear |

**Devices that will be affected**

sw-host – core switch in City, State

**New Devices and Device Module Additions**

cedge1-host – cEdge 8300 router at City, State

cedge2-host – cEdge 8300 router at City, State

sw-host – core switch at City, State

**Circuits**

LUM – mpls-circuitid – MPLS circuit to City, State

bb1-carrier – bb1-circuitid – Broadband/DIA circuit to City, State

**Diagrams**

[SDWAN](https://collaborate.wellpoint.com/sites/Enterprise-Netw/Shared%20Documents/Forms/AllItems.aspx?id=%2Fsites%2FEnterprise%2DNetw%2FShared%20Documents%2FEnterprise%20Network%20Documentation%2FData%20Enterprise%20Support%2FSDWAN%20Information%2FAnthem%5FElevance%20%2D%20SDWAN%2FDiagrams&viewid=9c05c5e2%2Da5b7%2D4d1e%2D9f1e%2D99896d3755e3) Information > Elevance – SDWAN > Diagrams

**Assumptions**

1. The new broadband or DIA circuit has been installed, extended if necessary, and is operational.
2. The MPLS circuit has been installed, extended if necessary, and are operational.
3. Power and rack space is available for equipment.
4. A base configuration has been applied to the cEdge routers prior to shipment to the site.
5. cEdge routers have been delivered to the site for installation.
6. The SM fiber SFP for the core switch has been delivered to the site for installation.
7. cEdge routers will be connected to core switch in Phase I and Layer 1 connectivity tested.

**Pre-Implementation**

1. Prepare the cedge 8300-1N1S-4T2X devices for shipping.
2. Apply base configuration to cedge1-host.

|  |
| --- |
| # request platform software sdwan config reset |
| # reload |
| # pnpa service discovery stop |
| config-transaction |
| system |
| system-ip cedge1-loop |
| site-id site-no |
| organization-name "CareMore-SD-WAN - 538202" |
| vbond caremore-vbond.sdwan.cisco.com |
| exit |
| ! |
| hostname cedge1-host |
| !  no ip http server  no ip http secure-server  ! |
| ip host caremore-vbond.sdwan.cisco.com 34.235.238.241 52.89.66.2 |
| ! |
| ! |
| interface GigabitEthernet0/0/2 |
| description sw-host - sw-cedge1-mpls-port - LUM - mpls-circuitid |
| ip address mpls-ce1-ip 255.255.255.248 |
| no shut |
| exit |
| interface GigabitEthernet0/0/3 |
| description cedge2-host - TLOC3 - gi0/0/3 |
| ip address cedge1-tloc3-ip 255.255.255.252 |
| no shut |
| exit |
| interface Tunnel2 |
| ip unnumbered GigabitEthernet0/0/2 |
| tunnel source GigabitEthernet0/0/2 |
| tunnel mode sdwan |
| exit |
| interface Tunnel3 |
| ip unnumbered GigabitEthernet0/0/3 |
| tunnel source GigabitEthernet0/0/3 |
| tunnel mode sdwan |
| exit |
| ! |
| sdwan |
| interface GigabitEthernet0/0/2 |
| tunnel-interface |
| encapsulation ipsec |
| color private5 |
| exit |
| interface GigabitEthernet0/0/3 |
| tunnel-interface |
| encapsulation ipsec |
| color biz-internet |
| exit |
| exit |
| exit |
| ! |
| ip route 0.0.0.0 0.0.0.0 mpls-pe-ip |
| ip route 0.0.0.0 0.0.0.0 cedge2-tloc3-ext-ip |
| !  cdp run  ! |
| commit |

1. Apply base configuration to cedge2-host.

|  |
| --- |
| # request platform software sdwan config reset |
| # reload |
| # pnpa service discovery stop |
| config-transaction |
| system |
| system-ip cedge2-loop |
| site-id site-no |
| organization-name "CareMore-SD-WAN - 538202" |
| vbond caremore-vbond.sdwan.cisco.com |
| exit |
| ! |
| hostname cedge2-host |
| !  no ip http server  no ip http secure-server  ! |
| ip host caremore-vbond.sdwan.cisco.com 34.235.238.241 52.89.66.2 |
|  |
| ! |
| ! |
| interface GigabitEthernet0/0/2 |
| description sw-host - sw-cedge2-mpls-port - LUM - mpls-circuitid |
| ip address mpls-ce2-ip 255.255.255.248 |
| no shutdown |
| exit |
| ! |
| interface GigabitEthernet0/0/3 |
| description cedge1-host - GigabitEthernet0/0/3 - TLOC3\_Ext |
| ip address cedge2-tloc3-ext-ip 255.255.255.252 |
| no shutdown |
| exit |
| ! |
| interface cedge2-tloc3-port |
| description bb1-carrier - bb1-circuitid |
| ip address cedge2-tloc3-ip cedge2-tloc3-mask |
| no shutdown |
| exit |
| ! |
| interface Tunnel2 |
| ip unnumbered GigabitEthernet0/0/2 |
| tunnel source GigabitEthernet0/0/2 |
| tunnel mode sdwan |
| exit |
| ! |
| ! |
| interface Tunnel1 |
| ip unnumbered cedge2-tloc3-port |
| tunnel source cedge2-tloc3-port |
| tunnel mode sdwan |
| exit |
| ! |
| sdwan |
| interface GigabitEthernet0/0/2 |
| tunnel-interface |
| encapsulation ipsec |
| color private5 |
| ! |
| sdwan |
| interface GigabitEthernet0/0/3 |
| tloc-extension cedge2-tloc3-port |
| exit |
| ! |
| sdwan |
| interface cedge2-tloc3-port |
| tunnel-interface |
| encapsulation ipsec |
| color biz-internet |
| exit |
| exit |
| exit |
| ! |
| ! |
| ip route 0.0.0.0 0.0.0.0 mpls-pe-ip |
| ip route 0.0.0.0 0.0.0.0 cedge2-tloc3-gate |
| !  cdp run  ! |
| commit |

* + Label the equipment with the hostname.

cedge1-host

cedge2-host

1. Attach the c8300 devices to the appropriate templates. You will need the serial numbers of the c8300 devices. These steps need to be done for each c8300.
   * On vManage, go to Configuration>Templates.
2. Go to Configuration>Templates
3. Select the appropriate template.

tier-2-c8300-sdw-01-single-core-gold

tier-2-c8300-sdw-02-single-core-gold-DIA

1. Click the 3 dots to the right of the template
2. In the menu select Attach Device.
3. In the left column locate the device and highlight it.
4. Move it to the right column.
5. Click Attach.
6. Now you have the option to import the CSV file below. Or you can skip this step and fill out the form for the device manually.

cedge1-host – CSV file for import

|  |  |
| --- | --- |
| csv-deviceId | cedge1-serial-no |
| csv-deviceIP | cedge1-loop |
| csv-host-name | cedge1-host |
| //snmp/location | snmp-location |
| /1/vpn1\_int\_1\_name/interface/if-name | GigabitEthernet0/0/0 |
| /1/vpn1\_int\_1\_name/interface/description | sw-host - sw-cedge1-port |
| /1/vpn1\_int\_1\_name/interface/ip/address | cedge1-rtr-ip/30 |
| /1/vpn1\_int\_1\_name/interface/shutdown | FALSE |
| /1/vpn1\_int\_1\_name/interface/bandwidth-upstream | 1000000 |
| /1/vpn1\_int\_1\_name/interface/bandwidth-downstream | 1000000 |
| /1/loopback0/interface/ip/address | cedge1-loop/32 |
| /1//router/bgp/as-num | cEdge-asn |
| /1//router/bgp/router-id | cedge1-loop |
| /1//router/bgp/address-family/ipv4-unicast/network/bgp\_network\_loopback0\_prefix/prefix | cedge1-loop/32 |
| /1//router/bgp/neighbor/bgp\_neighbor1\_address/address | cedge1-sw-ip |
| /1//router/bgp/neighbor/bgp\_neighbor1\_address/description | sw-host sw-cedge1-port |
| /1//router/bgp/neighbor/bgp\_neighbor1\_address/remote-as | switch-asn |
| /1//router/pim/interface/pim\_int\_1\_name/name | GigabitEthernet0/0/0 |
| /512/vpn-instance/ip/route/0.0.0.0/0/next-hop/vpn\_512-next\_hop\_ip\_address\_0/address | sw-mgmt-ip |
| /0/vpn-instance/ip/route/0.0.0.0/0/next-hop/vpn0\_next\_hop\_ip\_addr\_1/address | mpls-pe-ip |
| /0/vpn-instance/ip/route/0.0.0.0/0/next-hop/vpn0\_next\_hop\_ip\_addr\_2/address | cedge2-tloc3-ext-ip |
| /0/vpn0\_tloc3\_int\_name/interface/if-name | GigabitEthernet0/0/3 |
| /0/vpn0\_tloc3\_int\_name/interface/description | cedge2-host - gi0/0/3 - TLOC3 |
| /0/vpn0\_tloc3\_int\_name/interface/ip/address | cedge1-tloc3-ip/30 |
| /0/vpn0\_tloc3\_int\_name/interface/shutdown | FALSE |
| /0/vpn0\_tloc3\_int\_name/interface/bandwidth-upstream | 1000000 |
| /0/vpn0\_tloc3\_int\_name/interface/bandwidth-downstream | 1000000 |
| /0/vpn0\_tloc1\_int\_name/interface/if-name | GigabitEthernet0/0/2 |
| /0/vpn0\_tloc1\_int\_name/interface/description | sw-host - sw-cedge1-mpls-port - LUM - mpls-circuitid |
| /0/vpn0\_tloc1\_int\_name/interface/ip/address | mpls-ce1-ip/29 |
| /0/vpn0\_tloc1\_int\_name/interface/shutdown | FALSE |
| /0/vpn0\_tloc1\_int\_name/interface/shaping-rate | mpls-speed |
| /0/vpn0\_tloc1\_int\_name/interface/bandwidth-upstream | mpls-speed |
| /0/vpn0\_tloc1\_int\_name/interface/bandwidth-downstream | mpls-speed |
| //system/host-name | cedge1-host |
| //system/gps-location/latitude | latitude |
| //system/gps-location/longitude | longitude |
| //system/system-ip | cedge1-loop |
| //system/site-id | site-no |

cedge2-host – CSV file for import

|  |  |
| --- | --- |
| csv-deviceId | cedge2-serial-no |
| csv-deviceIP | cedge2-loop |
| csv-host-name | cedge2-host |
| internet\_circuit\_if\_name | cedge2-tloc3-port |
| internet\_bandwidth\_kbps | bb1-down-speed |
| //snmp/location | snmp-location |
| /1/vpn1\_int\_1\_name/interface/if-name | GigabitEthernet0/0/0 |
| /1/vpn1\_int\_1\_name/interface/description | sw-host - sw-cedge2-port |
| /1/vpn1\_int\_1\_name/interface/ip/address | cedge2-rtr-ip/30 |
| /1/vpn1\_int\_1\_name/interface/shutdown | FALSE |
| /1/vpn1\_int\_1\_name/interface/bandwidth-upstream | 1000000 |
| /1/vpn1\_int\_1\_name/interface/bandwidth-downstream | 1000000 |
| /1/loopback0/interface/ip/address | cedge2-loop/32 |
| /1//router/bgp/as-num | cEdge-asn |
| /1//router/bgp/router-id | cedge2-loop |
| /1//router/bgp/address-family/ipv4-unicast/network/bgp\_network\_loopback0\_prefix/prefix | cedge2-loop/32 |
| /1//router/bgp/neighbor/bgp\_neighbor1\_address/address | cedge2-sw-ip |
| /1//router/bgp/neighbor/bgp\_neighbor1\_address/description | sw-host sw-cedge2-port |
| /1//router/bgp/neighbor/bgp\_neighbor1\_address/remote-as | switch-asn |
| /1//router/pim/interface/pim\_int\_1\_name/name | GigabitEthernet0/0/0 |
| /512/vpn-instance/ip/route/0.0.0.0/0/next-hop/vpn\_512-next\_hop\_ip\_address\_0/address | sw-mgmt-ip |
| /0/vpn-instance/ip/route/0.0.0.0/0/next-hop/vpn0\_next\_hop\_ip\_addr\_1/address | cedge2-tloc3-gate |
| /0/vpn-instance/ip/route/0.0.0.0/0/next-hop/vpn0\_next\_hop\_ip\_addr\_2/address | mpls-pe-ip |
| /0/vpn0\_tloc\_ext3\_int\_name/interface/if-name | GigabitEthernet0/0/3 |
| /0/vpn0\_tloc\_ext3\_int\_name/interface/description | cedge1-host TLOC3 gi0/0/3 |
| /0/vpn0\_tloc\_ext3\_int\_name/interface/ip/address | cedge2-tloc3-ext-ip/30 |
| /0/vpn0\_tloc\_ext3\_int\_name/interface/tloc-extension | cedge2-tloc3-port |
| /0/vpn0\_tloc\_ext3\_int\_name/interface/shutdown | FALSE |
| /0/vpn0\_tloc3\_int\_name/interface/if-name | cedge2-tloc3-port |
| /0/vpn0\_tloc3\_int\_name/interface/description | bb1-carrier - bb1-circuitid |
| /0/vpn0\_tloc3\_int\_name/interface/ip/address | cedge2-tloc3-ip/cedge2-tloc3-cidr |
| /0/vpn0\_tloc3\_int\_name/interface/shutdown | FALSE |
| /0/vpn0\_tloc3\_int\_name/interface/autonegotiate | FALSE |
| /0/vpn0\_tloc3\_int\_name/interface/shaping-rate | bb1-up-speed |
| /0/vpn0\_tloc3\_int\_name/interface/bandwidth-upstream | bb1-up-speed |
| /0/vpn0\_tloc3\_int\_name/interface/bandwidth-downstream | bb1-down-speed |
| /0/vpn0\_tloc1\_int\_name/interface/if-name | GigabitEthernet0/0/2 |
| /0/vpn0\_tloc1\_int\_name/interface/description | sw-host - sw-cedge2-mpls-port - LUM - mpls-circuitid |
| /0/vpn0\_tloc1\_int\_name/interface/ip/address | mpls-ce2-ip/29 |
| /0/vpn0\_tloc1\_int\_name/interface/shutdown | FALSE |
| /0/vpn0\_tloc1\_int\_name/interface/shaping-rate | mpls-speed |
| /0/vpn0\_tloc1\_int\_name/interface/bandwidth-upstream | mpls-speed |
| /0/vpn0\_tloc1\_int\_name/interface/bandwidth-downstream | mpls-speed |
| //system/host-name | cedge2-host |
| //system/gps-location/latitude | latitude |
| //system/gps-location/longitude | longitude |
| //system/system-ip | cedge2-loop |
| //system/site-id | site-no |

1. Copy the table above to an Excel spreadsheet.
   1. Highlight the table below and select Ctrl-C
   2. Go to a new Excel spreadsheet
   3. Go to cell A1 and select Ctrl-V
   4. Highlight the table in the Excel spreadsheet.
   5. Click the + sign at the bottom of the tab in the Excel spreadsheet.
   6. Right click on cell A1.
   7. Select the Transpose paste option. This may be the 4th icon in the row of icons under Paste.
   8. Delete the Sheet1 tab from the spreadsheet
   9. Save that as a csv file.
   10. In vManage, click the up arrow above the table on the right.
   11. Under Choose file select the csv file that you saved above.
   12. Then click Upload.
2. Update the core switch at the site.
   1. On sw-host

vlan sw-cedge1-vlan

name cedge1-host

!

vlan sw-cedge2-vlan

name cedge2-host

!

!

!

interface sw-cedge1-port

description CEDGE1-HOST - gi0/0/0

no shut

!

interface Vlan sw-cedge1-vlan

description CEDGE1-HOST

!

!

interface sw-cedge2-port

description CEDGE2-HOST - gi0/0/0

!

interface Vlan sw-cedge2-vlan

description CEDGE2-HOST

!

!

!

!

interface sw-cedge1-mpls-port

description CEDGE1-HOST - gi0/0/2

!

!

interface sw-cedge2-mpls-port

description CEDGE2-HOST - gi0/0/2

!

!

router bgp switch-asn

neighbor cedge1-rtr-ip description CEDGE1-HOST

neighbor cedge2-rtr-ip description CEDGE2-HOST

**Phase I**

During this phase two cEdge 8300 routers will be mounted and powered up. The MPLS circuit will be attached to the core switch. The broadband circuit will be attached to the cedge2-host. The configuration will be pushed to the cEdge routers from vManage.

**Implementation**

1. Notify the NOC that the change is starting.
2. Place entire site in maintenance mode in Spectrum
3. Set up the cEdge devices in Infoblox.

cedge1-host.mgmt.internal.das – cedge1-loop

cedge2-host.mgmt.internal.das – cedge2-loop

site-code-lum-mpls-pe.net-interface.internal.das – mpls-pe-ip

cedge1-host-gi0-0-2.net-interface.internal.das – mpls-ce1-ip

cedge2-host-gi0-0-2.net-interface.internal.das – mpls-ce2-ip

cedge1-host-d0.net-interface.internal.das – cedge1-rtr-ip

sw-host-vlsw-cedge1-vlan.net.interface.internal.das – cedge1-sw-ip

cedge2-host-gi0-0-0.net-interface.internal.das – cedge2-rtr-ip

sw-host-vlsw-cedge2-vlan.net.interface.internal.das – cedge2-sw-ip

cedge1-host-gi0-0-3.net.interface.internal.das – cedge1-tloc3-ip

cedge2-host-gi0-0-3.net.interface.internal.das – cedge2-tloc3-ext-ip

1. Set up the cEdge devices in ACS. Send email to dl-WAN\_ACS\_Admin
2. Capture some information for later use.
   * On sw-host

term len 0

show ip int brief | ex una

show int status

show ip arp

show mac address

show ip pim neighbor

show ip mroute

show ip multicast interface

show ip ospf neigh

show ip route

show ip route ospf

show ip route bgp

show ip bgp summary

show ip bgp nei cedge1-rtr-ip

show ip bgp nei cedge1-rtr-ip adv

show ip bgp nei cedge1-rtr-ip route

show ip bgp nei cedge2-rtr-ip

show ip bgp nei cedge2-rtr-ip adv

show ip bgp nei cedge2-rtr-ip route

term len 24

* + On vedge-SDW01 and vedge-SDW02

show control connections

show bfd sessions

show interface | tab

show arp

show ip route

show bgp summary

1. **Detach template from vEdge-sdw-01 and sdw-02 in vmanage**
2. Install SFP modules in each of the cEdge devices if applicable. This is for the internet circuit. If handoff is copper then circuit going in gi0/0/1(On site tech)
3. On cedge2-host

cedge2-tloc3-port – fiber SFP if using te0/0/5

1. Connect the console port on cedge1-host to site-code-con-20 in an open port. (On site tech) Make sure to put a description on the port and settings should be 9600/8/none/1

See Appendix A for a picture of the Opengear device.

1. Connect the console port on cedge2-host to site-code-con-20 in an open port. (On site tech)

See Appendix A for a picture of the Opengear device.

1. Connect cedge2-host to sw-host by moving the existing connections on the sdw-02 vedge. (On site tech)
2. Connect GigabitEthernet0/0/0 on cedge2-host to sw-host port sw-cedge2-port.
3. Connect GigabitEthernet0/0/2 on cedge2-host to sw-host port sw-cedge2-mpls-port.
4. Connect cedge2-host to the bb1-carrier circuit equipment.
5. move circuit from sdw-02 vedge
6. If template is pre-attached, validate the certificate for cedge2-host
7. Attach template for cedge2-host. See step 2
8. Verify connectivity between sw-host and the cedge2-host cEdge router
   1. On sw-host

show int sw-cedge2-port

show int vlan sw-cedge2-vlan

ping cedge2-rtr-ip

Verify connectivity between Lumen PE and cedge2-host

show int sw-mpls-port

show int sw-cedge2-mpls-port

show span vlan 1193

1. Verify control connections are up on cedge2-host and push the template in vmanage.
   1. verify network is up
   2. on sw-host show ip bgp 0.0.0.0 (you should see the best route pointing to cedge2-host)
2. Connect the cEdge devices to each other with a straight-through cable. (On site tech)
3. Connect GigabitEthernet0/0/3 on cedge1-host to GigabitEthernet0/0/3 on cedge2-host.
4. Connect the cedge1-host to sw-host by moving the existing connections from the sdw-01 vedge.

See Appendix B for a picture of the various switches in use at Anthem.

1. Connect GigabitEthernet0/0/0 on cedge1-host to sw-host port sw-cedge1-port
2. Connect GigabitEthernet0/0/2 on cedge1-host to sw-host port sw-cedge1-mpls-port.
3. Verify that the cross connect interfaces are up.
4. On cedge1-host

show int GigabitEthernet0/0/3

ping cedge2-tloc3-ext-ip

1. On cedge2-host

show int GigabitEthernet0/0/3

ping cedge1-tloc3-ip

1. control connections should come up on the cedge1-host router.
2. If template is pre-attached, validate the certificate for cedge1-host
3. Attach template in vManage to the cedge1-host router. See step 2.
4. Verify connectivity between sw-host and the cEdge devices.
5. On sw-host

show int sw-cedge1-port

show int vlan sw-cedge1-vlan

ping cedge1-rtr-ip

show int sw-cedge2-port

show int vlan sw-cedge2-vlan

ping cedge2-rtr-ip

1. Verify connectivity between Lumen PE and the cEdge devices
2. On sw-host

show int sw-mpls-port

show int sw-cedge1-mpls-port

show int sw-cedge2-mpls-port

show span vlan 1193

1. On cedge1-host

show int GigabitEthernet0/0/2

ping vpn 0 mpls-pe-ip

1. On cedge2-host

show int GigabitEthernet0/0/2

ping vpn 0 mpls-pe-ip

1. Verify that control connections and bfd sessions are established with vManage and vSmart on both cedge’s. biz-internet and private5

show sdwan control connections

show sdwan bfd sessions

ping 8.8.8.8

show sdwan ipsec inbound-connections

show sdwan ipsec outbound-connections

show sdwan tunnel statistics – packet counters should be increasing

1. Verify that the BGP connection to the Anthem switch is up.
2. On cedge2-host

show bgp vpnv4 unicast vrf 1 summary

ping cedge1-host

ping cedge2-host

1. Verify connectivity to devices at remote site. From your workstations.
2. Ping a few network devices

ping sw-host.mgmt.internal.das

1. Ping some other devices at the site.

Note - Need to ping at least 1 or 2 devices on every VLAN. Use the information from the previous step.

1. Assuming the switch is running DHCP snooping, verify that the connection to the cEdge devices is trusted. Typically for a Tier 2 site the core switch isn’t running DHCP snooping. It would be on the IDF switches.
   1. Determine if the switch is running DHCP snooping

show ip dhcp snooping statistics

Sample output

nybro-kni-core-01>show ip dhcp snooping statistics

Packets Forwarded = 10758970

Packets Dropped = 41

Packets Dropped From untrusted ports = 0

If it is not running DHCP snooping the forwarded packets will be 0.

* 1. Check if the connection going to the cEdge devices is trusted.

show ip dhcp snooping | inc Trusted|yes

1. Perform a failover test between the 2 circuits. This will be done by the local tech by removing the MPLS circuit on the core and then another test by removing the internet circuit connected into cedge2-host
2. Wipe configuration for vEdge-sdw-01 and sdw-02.
   1. request reset configuration
3. Invalidate the certificates for vEdge-sdw-01 and sdw-02 and delete from vmanage.
4. Add the cEdge devices to Spectrum. They should not be put in maintenance mode.

cedge1-host

cedge2-host

1. Move the diagram from the SDWAN SharePoint site to the Communication Services SharePoint site.
2. SDWAN Equipment

|  |  |  |  |
| --- | --- | --- | --- |
| Hostname | Model Number | Serial Number | IP Address |
| cedge1-host sw-host | C8300-1N1S-4T2X | cedge1-serial-no | cedge1-loop |
| cedge2-host | C8300-1N1S-4T2X | cedge2-serial-no | cedge2-loop |

|  |  |  |
| --- | --- | --- |
| **SDWAN Tier 2 Site** | **Elements** | **Notes** |
| Action (New Site / Migration) | Migration | (PC/BNA/Spectrum) |
| Anthem Site ID | site-code | (PC/VNA/Spectrum) |
| Street Address | snmp-location | (PC/Spectrum) |
| City, State, Zip | city, state | (PC/Spectrum) |
| SDWAN Tier | 2 | (PC/BNA/Spectrum) |
| vManage Site ID | site-no | (PC/VNA) |
| cEdge #1 - Hostname | IP Address | cedge1-host | cedge1-loop | (PC/BNA/Spectrum) |
| cEdge #1 - Model | C8300-1N1S-4T2X | (PC/BNA/Spectrum) |
| cEdge #2 - Hostname | IP Address | cedge2-host | cedge2-loop | (PC/BNA/Spectrum) |
| cEdge #2 - Model | C8300-1N1S-4T2X | (PC/BNA/Spectrum) |
| Primary MPLS (Lumen) Switch/Router/Interface | sw-host - sw-cedge1-mpls-port | Speed In/Out (bps): 30K / 30K |
| Primary Broadband (bb1-carrier) Switch/Router/Interface | cedge2-host - cedge2-tloc3-port | Speed In/Out (bps): 50K / 50K |
| Primary MPLS (Lumen) Switch/Router/Interface | sw-host sw-mpls-port | core (cFlowd Enabled)(PC/NFA) |
| Primary Broadband (bb1-carrier)  Router/Interface | cedge2-host cedge2-tloc3-port | cedge sdw-04 (cFlowd Enabled)(PC/NFA) |
| cEdge SDW-03 - LAN-1 Interface | cedge1-host gi0/0/0 | sw-host sw-cedge1-port | cedge sdw-03 (cFlowd Enabled)(PC/NFA) |
| cEdge sdw-03 - LAN-2 Interface (If Used) | Not Used | IF USED - cEdge sdw-03 (cFlowd Enabled)(PC/NFA) |
| cEdge SDW-04 - LAN-1 Interface | cedge2-host gi0/0/0 | sw-host sw-cedge2-port | cedge sdw-04 (cFlowd Enabled)(PC/NFA) |
| cEdge sdw-04 - LAN-2 Interface (If Used) | cedge2-host gi0/0/1 | IF USED - cEdge sdw-04 (cFlowd Enabled)(PC/NFA) |
| cEdge SDW-03 - LUM Interface | cedge1-host gi0/0/2 | sw-host sw-cedge1-mpls-port | cedge sdw-03 (cFlowd Enabled)(PC/NFA) |
| cEdge sdw-03 - LAN-2 Interface Connects To (If Used) | Not Used | IF USED - Topology / Patching (Spectrum Topology) |
| cEdge SDW-04 - LUM Interface | cedge2-host gi0/0/2 | sw-host sw-cedge2-mpls-port | cedge sdw-04 (cFlowd Enabled)(PC/NFA) |
| cEdge sdw-04 - LAN-2 Interface Connects To (If Used) | Not Used | IF USED - Topology / Patching (Spectrum Topology) |
| cEdge sdw-03 TLOC -to- cEdge sdw-04 TLOC | Gi0/0/3 -to- Gi0/0/3 | Topology / Patching (Spectrum Topology) |

**Backout**

1. Notify the NOC that the change is being backed out.
2. Invalidate the cEdge devices in vManage
3. Notify the NOC that the back out is complete.

**Appendix B – Switch Models**

**Cisco 6824-X-LE-40G – front view**



**Cisco 6840-X-LE-40G – front view**



**Cisco 9300 24-port – front view**



**Cisco 9300 48-port – front view**



**Cisco 9500-24Y4C – front view**



**Cisco 9500-48Y4C – front view**



**Cisco 9500-40X – front view**

