* + 1. L2VPN VPLS over BGP-LU baseline Lab / Hardware infrastructure

***Objective:***

Objective of this section is to provide baseline lab / hardware infrastructure topology that needs to be in place prior to testing this feature.

***Topology:***

Graphical user interface, application

Description automatically generated

Objective:

Objective of this section is to provide a breakdown of step by step configuration on each node that needs to be performed.

Prerequisite

* Forwarding domain, flow points configuration
* IP interfaces configuration
* IGP such as ISIS or OSPF configuration (we are using OSPF for our test purpose)
* targeted LDP & MPLS configuration
* iBGP neighborship with ipv4 **labeled-unicast**
* L2VPN service creation, associating it to attachment circuit & pseudowire
* Attachment circuit creation to transmit CE traffic over L2VPN infrastructure

***PE1: Interface config:***

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# NNI classifier

classifiers classifier intr1\_pe1Class filter-entry vtag-stack vtags 1 vlan-id 500

# FD

fds fd intr1\_pe1Fd mode vpls

# FD

fps fp intr1\_pe1Fp fd-name intr1\_pe1Fd logical-port 17 classifier-list intr1\_pe1Class

fps fp intr1\_pe1Fp fd-name intr1\_pe1Fd egress-l2-transform push-vid-500 vlan-stack 1 push-tpid tpid- 8100 push-vid 500

# IP interface and loopback configuration

oc-if:interfaces interface intf-108-110 config name intf-108-110 cn-if:type ip admin-status true mtu 1500 underlay-binding config fd intr1\_pe1Fd

oc-if:interfaces interface intf-108-110 ipv4 addresses address 10.10.10.1 config ip 10.10.10.1 prefix- length 24

oc-if:interfaces interface Loop-108 config name Loop-108 cn-if:type loopback

oc-if:interfaces interface Loop-108 ipv4 addresses address 1.1.1.1 config ip 1.1.1.1 prefix-length 32

***PE1* BGP-LU config:**

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Graphical user interface, website

Description automatically generated

bgp instance 100

router-id 1.1.1.1

address-family ipv4 unicast exit

exit exit

bgp instance 100 address-family ipv4 labeled-unicast exit

exit exit

bgp instance 100 peer 10.10.10.2 remote-as 100

bgp instance 100 peer 10.10.10.2 address-family ipv4 unicast activate true

bgp instance 100 peer 10.10.10.2 address-family ipv4 labeled-unicast activate true bgp instance 100 address-family ipv4 unicast allocate-label all true

bgp instance 100 address-family ipv4 unicast network 1.1.1.1/32 exit

exit

exit exit

*PE1* Enable MPLS on interfaces:

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mpls interfaces interface Loop-108 label-switching true mpls interfaces interface intf-108-110 label-switching true

***Targated LDP configuration for PW***

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ldp instance default lsr-id 1.1.1.1

ldp instance default target-ldp peers 3.3.3.3 exit

exit exit exit

AC config for PE1:

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classifiers classifier class\_101 filter-entry vtag-stack vtags 1 vlan-id 101

#FD

fds fd ac\_vc\_fd\_101 mode vpls

#FP

fps fp ac\_fp\_101 fd-name ac\_vc\_fd\_101 logical-port 9 classifier-list class\_101

fps fp ac\_fp\_101 fd-name ac\_vc\_fd\_101 egress-l2-transform push-vid-101 vlan-stack 1 push-tpid tpid-8100 push-vid 101

#VPlS Dynamic PW

pseudowires pseudowire pe1\_pe2\_pw1 cw-negotiation non-preferred cc-types cctype-4 mode mesh pw- loadbalance fat-pw fat-capability tx-rx configured-pw pw-id 101 transmit-label 1234 receive-label 4321 peer-ip 3.3.3.3

pseudowires pseudowire pe1\_pe2\_pw1 stats-collection on

L2 VPN config

**===================**

l2vpn-services l2vpn service-101 mtu 1500

service-type vlan

forwarding-domain ac\_vc\_fd\_101 pseudowire pe1\_pe2\_pw1

exit exit

P configuration

A picture containing text, device, meter, gauge

Description automatically generated

**P: Interface config**

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#Classifier configuration for NNI ports

classifiers classifier intr1\_pe1Class filter-entry vtag-stack vtags 1 vlan-id 500

#FD

fds fd intr1\_pe1Fd mode vpls

#FP

fps fp intr1\_pe1Fp fd-name intr1\_pe1Fd logical-port 17 classifier-list intr1\_pe1Class

fps fp intr1\_pe1Fp fd-name intr1\_pe1Fd egress-l2-transform push-vid-300 vlan-stack 1 push-tpid tpid- 8100 push-vid 500

#IP interface and loopback config

oc-if:interfaces interface intf-110-108 config name intf-110-108 cn-if:type ip admin-status true mtu 1500 underlay-binding config fd intr1\_pe1Fd

oc-if:interfaces interface intf-110-108 ipv4 addresses address 10.10.10.2 config ip 10.10.10.2 prefix- length 24

oc-if:interfaces interface Loop-110 config name Loop-110 cn-if:type loopback

oc-if:interfaces interface Loop-110 ipv4 addresses address 2.2.2.2 config ip 2.2.2.2 prefix-length 32

#Classifier configuration for NNI ports

classifiers classifier intr1\_pe2Class filter-entry vtag-stack vtags 1 vlan-id 600

#FD

fds fd intr1\_pe2Fd mode vpls

#FP

fps fp intel\_pe2Fp fd-name intr1\_pe2Fd logical-port 6 classifier-list intr1\_pe2Class

fps fp intel\_pe2Fp fd-name intr1\_pe2Fd egress-l2-transform push-vid-600 vlan-stack 1 push-tpid tpid- 8100 push-vid 600

#IP interface config

oc-if:interfaces interface intf-110-115 config name intf-110-115 cn-if:type ip admin-status true mtu 1500 underlay-binding config fd intr1\_pe2Fd

oc-if:interfaces interface intf-110-115 ipv4 addresses address 20.20.20.1 config ip 20.20.20.1 prefix- length 24

***P node* BGP-LU config :**

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bgp instance 100 exit

exit

bgp instance 100 router-id 2.2.2.2

bgp instance 100 address-family ipv4 unicast exit

exit exit

bgp instance 100 address-family ipv4 labeled-unicast exit

exit exit

bgp instance 100 peer 10.10.10.1 remote-as 100

bgp instance 100 peer 10.10.10.1 address-family ipv4 unicast activate true

bgp instance 100 peer 10.10.10.1 address-family ipv4 labeled-unicast activate true bgp instance 100 address-family ipv4 unicast allocate-label all true

bgp instance 100 peer 20.20.20.2 remote-as 100

bgp instance 100 peer 20.20.20.2 address-family ipv4 unicast activate true

bgp instance 100 peer 20.20.20.2 address-family ipv4 labeled-unicast activate true bgp instance 100 address-family ipv4 unicast allocate-label all true

bgp instance 100 peer 10.10.10.1 address-family ipv4 unicast route-reflector-client true

bgp instance 100 peer 10.10.10.1 address-family ipv4 labeled-unicast route-reflector-client true bgp instance 100 peer 10.10.10.1 address-family ipv4 labeled-unicast next-hop-self true

bgp instance 100 peer 20.20.20.2 address-family ipv4 unicast route-reflector-client true

bgp instance 100 peer 20.20.20.2 address-family ipv4 labeled-unicast route-reflector-client true bgp instance 100 peer 20.20.20.2 address-family ipv4 labeled-unicast next-hop-self true

bgp instance 100 address-family ipv4 unicast redistribute connected

***Enable MPLS on interfaces***

***=========================***

mpls interfaces interface Loop-110 label-switching true

mpls interfaces interface intf-110-115 label-switching true mpls interfaces interface intf-110-108 label-switching true

***PE2: Interface config***

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Graphical user interface, diagram, application

Description automatically generated

#Classifier configuration for NNI ports

classifiers classifier intr1\_pClass filter-entry vtag-stack vtags 1 vlan-id 600

#FD

fds fd intr1\_pFd mode vpls

#FP

fps fp intr1\_pFp fd-name intr1\_pFd logical-port 8 classifier-list intr1\_pClass

fps fp intr1\_pFp fd-name intr1\_pFd egress-l2-transform push-vid-600 vlan-stack 1 push-tpid tpid-8100 push-vid 600

#IP interface and loopback configuration

oc-if:interfaces interface intf-115-110 config name intf-115-110 cn-if:type ip admin-status true mtu 1500 underlay-binding config fd intr1\_pFd

oc-if:interfaces interface intf-115-110 ipv4 addresses address 20.20.20.2 config ip 20.20.20.2 prefix- length 24

oc-if:interfaces interface Loop-115 config name Loop-115 cn-if:type loopback

oc-if:interfaces interface Loop-115 ipv4 addresses address 3.3.3.3 config ip 3.3.3.3 prefix-length 32

#PE2 BGP-LU config

bgp instance 100

router-id 3.3.3.3

address-family ipv4 unicast exit

exit exit

bgp instance 100 address-family ipv4 labeled-unicast exit

exit exit

bgp instance 100 peer 20.20.20.1 remote-as 100

bgp instance 100 peer 20.20.20.1 address-family ipv4 unicast activate true

bgp instance 100 peer 20.20.20.1 address-family ipv4 labeled-unicast activate true bgp instance 100 address-family ipv4 unicast allocate-label all true

bgp instance 100 address-family ipv4 unicast network 3.3.3.3/32 exit

exit exit exit

Enable MPLS on interface

mpls interfaces interface Loop-115 label-switching true

mpls interfaces interface intf-115-110 label-switching true

***Targated LDP configuration for PW***

=========================

ldp instance default lsr-id 1.1.1.1

ldp instance default target-ldp peers 3.3.3.3 exit

exit exit exit

AC config for PE2:

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#Classifier for UNI port

classifiers classifier class\_101 filter-entry vtag-stack vtags 1 vlan-id 101

#FD

fds fd ac\_vc\_fd\_101 mode vpls

#FP

fps fp ac\_fp\_101 fd-name ac\_vc\_fd\_101 logical-port 9 classifier-list class\_101

fps fp ac\_fp\_101 fd-name ac\_vc\_fd\_101 egress-l2-transform push-vid-101 vlan-stack 1 push-tpid tpid-8100 push-vid 101

#PE2 PW configuration

pseudowires pseudowire pe2\_pe1\_pw1 cw-negotiation non-preferred cc-types cctype-4 mode mesh pw- loadbalance fat-pw fat-capability tx-rx configured-pw pw-id 101 transmit-label 4321 receive-label 1234 peer-ip 1.1.1.1

pseudowires pseudowire pe2\_pe1\_pw1 stats-collection on

L2VPN config for PE2: Step 4

l2vpn-services l2vpn service-101 mtu 1500

service-type vlan

forwarding-domain ac\_vc\_fd\_101 pseudowire pe2\_pe1\_pw1

exit exit exit