EXTREME ACADEMY
LEARN WITH US

Technical Taster: Installing and Configuring Fabric with ATP Piotr from VERSIM

Installing and Configuring Fabric with ATP Piotr from VERSIM

Join the first ever Technical Taster session featuring Piotr from VERSIM Are you interested in diving into the world of technical training? Look no further! We invite you to be part of our Technical Taster session where you will have the opportunity to meet Piotr, an experienced professional from VERSIM, one of our Authorized Training Partners.

In this exclusive online event, Piotr will share his expertise during a FREE short training session on Extreme Fabric - Installation and Configuration. Get ready to immerse yourself in the intricacies of this cutting-edge technology as Piotr walks you through the fundamentals. This webinar is the perfect opportunity to get a taste of our comprehensive technical training tracks. Whether you are a budding IT professional or an experienced enthusiast, this session will provide valuable insights and knowledge. Save the date and join us for the first ever Technical Taster session with Piotr from VERSIM.

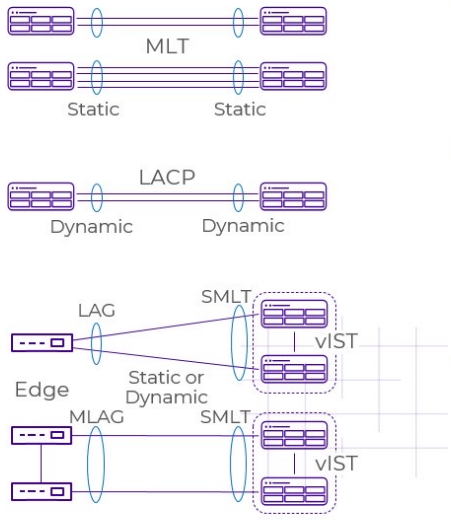
HOST

CLAIRE JONES
Senior Project Manager

Trainer

PIOTR OWCZAREK
Authorized Training Partner
VERSIM

Link Aggregation types

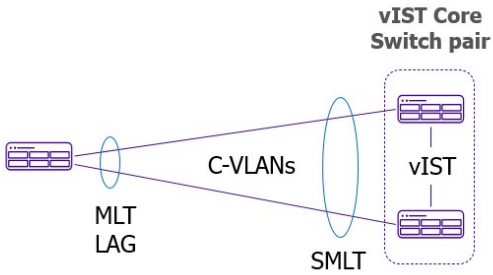


- MultiLink Trunking (MLT) is a statically configured link bundling method that is not standards based, but it will interoperate with static link methods of other vendors. Ports are static members of the MLT.
- IEEE 802.3ad based link aggregation, using Link Aggregation Control Protocol (LACP), dynamically aggregates links as they become available in a trunk group. LACP dynamically detects whether links can be aggregated into a link aggregation group (LAG) and does so after links become available.
- Split MultiLink Trunking (SMLT) improves Layer 2 (bridged) resiliency by providing redundant switches supporting subsecond failover when a switch fails. The MLT's links are split between two switches in an active-active mode. These SMLT switches work together to form a Virtual Inter-Switch Trunk (vIST) Core Switch pair.

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

Configuration of Split Multi-Link Trunk



Configuration Elements

1. vIST
2. SMLT ports
3. C-VLANs configuration

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

Virtual Inter-Switch Trunk (vIST) Core Switch pair

Introduction

- Active-Active solution protecting against link and switch failures
  - Ensures no single point of failure at the network edge, thus preventing edge devices from being isolated from the network.
- Sub-second failover for most Link and Switch DOWN/UP events:
  - Faster failover times than MSTP/RSTP offer for Layer-2 traffic
  - Increased resiliency
- Split MultiLink Trunking (SMLT) is used for the link configuration
  - All SMLT links pass traffic.
  - Does not utilize spanning tree on SMLT links.
- vIST is established between the Core Switch pair as a communication path to manage SMLT operation
- Switch Cluster is a legacy term for this technology

 104

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

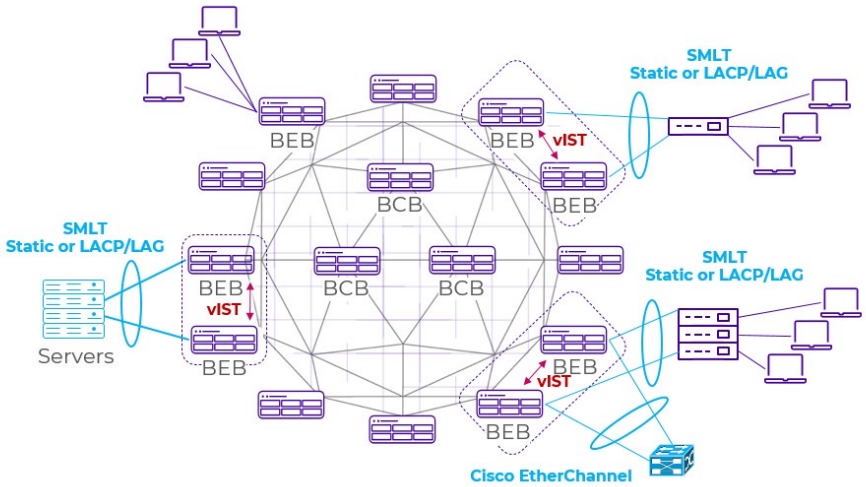
Fabric Connect vIST Core Switch pair

SMLT with SPBM

Enhancing 802.1aq by providing dual-homed active-active connectivity on the edge of the fabric for switches, appliances, servers, etc.

SMLT is used at the edge of the fabric on the UNI ports

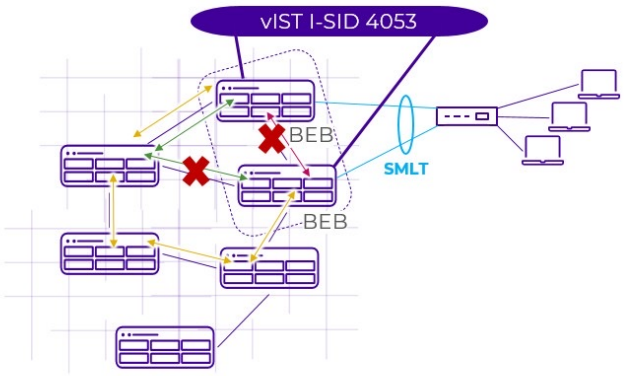
The fabric NNI ports do not use SMLT for switch redundancy because IS-IS performs that function



Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

vIST Resilience



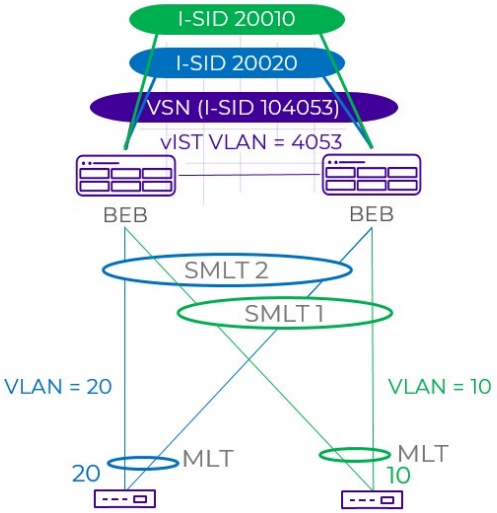
- If there is a path, then Virtual IST is UP
  - Recovers instantly through multiple link failures
- vIST Core Switches (BEBs) do not have to be co-located
  - Does not require a point-to-point connection
  - Other Nodes may exist in-between

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

VLAN configuration for SMLT

- VLAN 4053 is the vIST VLAN
- VLAN 10 and VLAN 20 have SMLT port members
- All VLANs that span SMLT connections must extend their broadcast domain to the peer switch using an L2VSN I-SID
  - If a Layer 2 VSN is created on one vIST Peer, it must also be created on the other vIST peer.



 107

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

vIST Operation

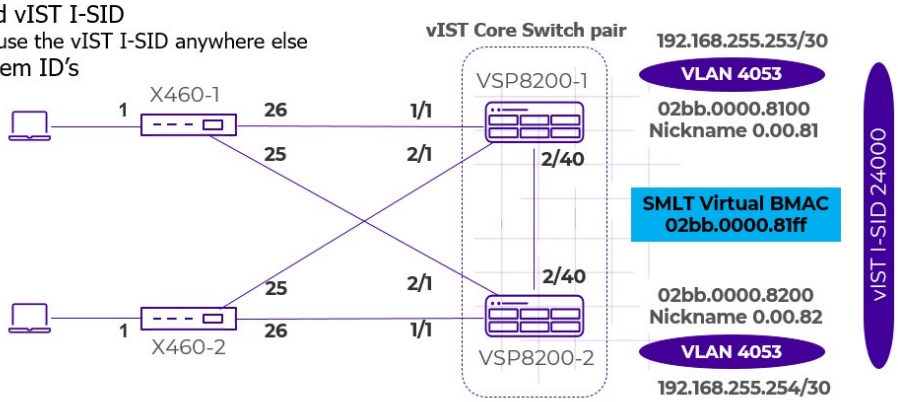
- The pair of switches communicate across a dedicated I-SID/L2VSN
  - Requires nodes are active in the fabric
  - A switch supports only one vIST (i.e. one Core Switch pair)
- The Core Switch pair use the vIST to
  - Confirm that they are reachable (alive)
  - Exchange MAC address forwarding tables for VLANs with SMLT members
  - Favors local SMLT ports over its peer's
  - Exchange port status of local SMLT ports for the peer
- Operates between any two VOSS devices that support vIST
  - Devices do not have to be of the same model
- Automatic assignment of primary and secondary roles to the vIST peers
  - Switch with the lower system ID is primary
  - Switch with the higher system ID is secondary

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

vIST Configuration Parameters

- Virtual SMLT Virtual BMAC for the cluster (unique for this pair)
- When using the default hardware assigned system-id values this BMAC assignment is 1 plus the lower of the two system-id values
- Dedicated vIST VLAN with IP addresses
  - May be reused elsewhere
- Dedicated vIST I-SID
  - Do not use the vIST I-SID anywhere else
- Peer System ID's

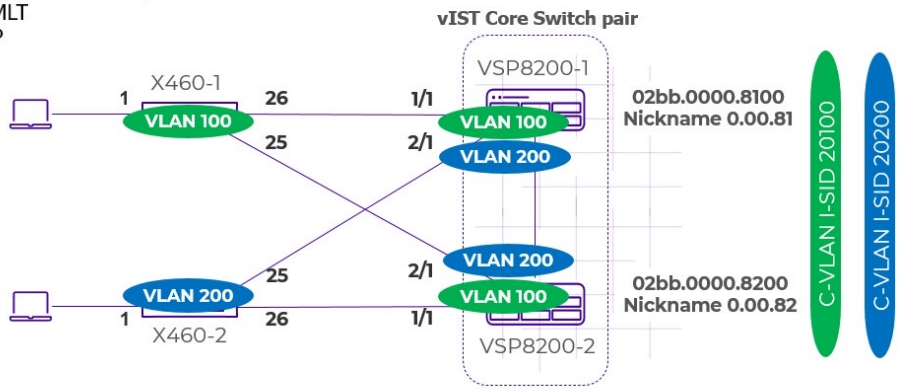


Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

vIST CVLAN Configuration Parameters

- All CVLAN's must be mapped to an I-SID
  - Fabric Attach will create the VLANs and I-SID automatically on the vIST Core Switch pair
  - One-legged C-VLAN must be mapped to an I-SID
- CVLAN's must not be mapped to the vIST I-SID
- For Layer 3 redundancy add IP addresses to C-VLANs
  - use RSMLT
  - or VRRP



 110

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

vIST Best Practices

- Use a private address space with 30 bit mask for vIST VLAN IP's
- Do NOT use the vIST IP addresses as the next hop address for any static routes
- Disable Spanning Tree – Uplinks and vIST Ports and NNI interfaces
- Disable Spanning tree – Uplink ports on Edge
- Enable FastStart (or MSTP) on all other ports on the Edge Switch
- Use Loop prevention features SLPP and SLPP Guard
- Use Link Health monitoring feature like VLACP
  - Can help detect GBIC errors

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

Virtual IST Configuration – vIST

```
router isis
       spbm 1 smlt-virtual-bmac 02:bb:00:00:81:ff
       spbm 1 smlt-peer-system-id 02bb.0000.8200

vlan create <vlan-id> name VIST type port-mstprstp 0
vlan i-sid <vlan-id> <i-sid>


virtual-ist peer-ip <ip-address> vlan <vlan-id>

no/default virtual-ist peer-ip

show virtual-ist

show virtual-ist statistics

clear virtual-ist statistics
```

Identifies this Core Switch Pair

Core Pair Peer System ID

vIST VLAN

Map vIST VLAN to unique I-SID value

vSIT requires Peer's IP address

If required delete the Peer IP

Check status using show commands

Note

The `smlt-virtual-bmac` must be the same value on both Core Switches and unique within the IS-IS area.

 112

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

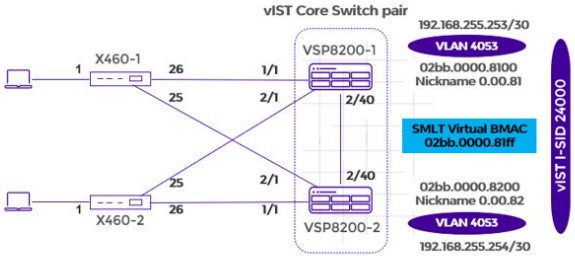
SMLT – vIST Configuration: VSP 8200-1

```
config terminal
prompt "VSP8200-1"
spbm
router isis
  spbm 1
  spbm 1 system-id 02bb.0000.8100
  spbm 1 manual-area 49.0000
  spbm 1 nick-name 0.00.81
  spbm 1 b-vid 4051,4052 primary 4051
  spbm 1 smlt-virtual-bmac 02:bb:00:00:81:ff
  spbm 1 smlt-peer-system-id 02bb.0000.8200
exit
vlan create 4051 name "B-VLAN-1" type spbm-bvlan
vlan create 4052 name "B-VLAN-2" type spbm-bvlan
interface GigabitEthernet 2/40
  isis
  isis spbm 1
  isis enable
  no spanning-tree mstp force-port-state enable
exit
vlan create 4053 name VIST type port-mstprstp 0
vlan i-sid 4053 24000
```

```
interface vlan 4053
  ip address 192.168.255.253/30
exit
virtual-ist peer-ip 192.168.255.254 vlan 4053
router isis enable
```

```
mlt 1
mlt 1 name SMLT1
mlt 1 mem 1/1
mlt 1 encap dot1q
interface mlt 1
smlt
exit
```

```
mlt 2
mlt 2 name SMLT2
mlt 2 mem 2/1
mlt 2 encap dot1q
interface mlt 2
smlt
exit
```



 113

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

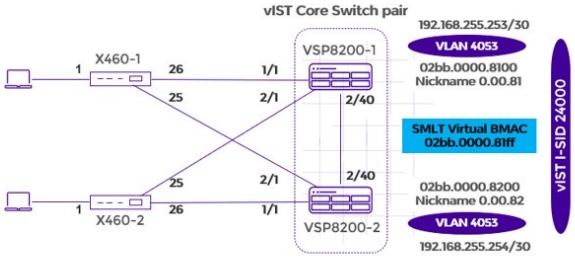
SMLT – vIST Configuration: VSP 8200-2

```
config terminal
prompt "VSP8200-2"
spbm
router isis
  spbm 1
  spbm 1 system-id 02bb.0000.8200
  spbm 1 manual-area 49.0000
  spbm 1 nick-name 0.00.82
  spbm 1 b-vid 4051,4052 primary 4051
  spbm 1 smlt-virtual-bmac 02:bb:00:00:81:ff
  spbm 1 smlt-peer-system-id 02bb.0000.8100
exit
vlan create 4051 name "B-VLAN-1" type spbm-bvlan
vlan create 4052 name "B-VLAN-2" type spbm-bvlan
interface GigabitEthernet 2/40
  isis
  isis spbm 1
  isis enable
  no spanning-tree mstp force-port-state enable
exit
vlan create 4053 name VIST type port-mstprstp 0
vlan i-sid 4053 24000
```

```
interface vlan 4053
  ip address 192.168.255.254/30
exit
virtual-ist peer-ip 192.168.255.253 vlan 4053
router isis enable
```

```
mlt 1
mlt 1 name SMLT1
mlt 1 mem 2/1
mlt 1 encap dot1q
interface mlt 1
smlt
exit
```

```
mlt 2
mlt 2 name SMLT2
mlt 2 mem 1/1
mlt 2 encap dot1q
interface mlt 2
smlt
exit
```



 114

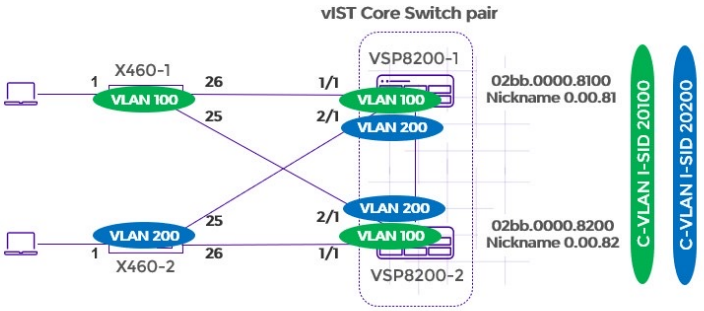
Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

vIST – C-VLAN Configuration

- You cannot assign edge VLANs to IST link as there is no physical ports
- You have to assign an I-SID to edge VLAN.

```
vlan create 100 name "User-100" type port 1
vlan i-sid 100 20100
vlan create 200 name "User-200" type port 1
vlan i-sid 200 20200
vlan member remove 1 1/1,2/1
vlan member add 100 1/1
vlan member add 200 2/1
exit
interface GigabitEthernet 1/1,2/1
  no shutdown
exit
```



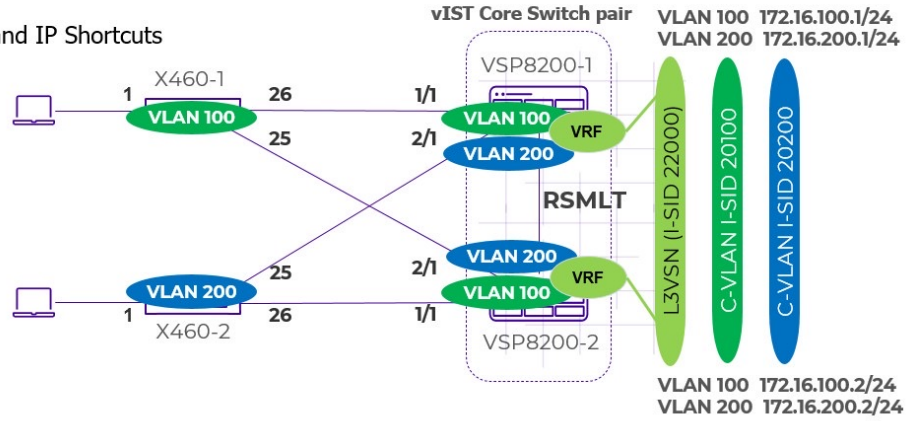
 115

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

L3 Redundant Gateways Configuration

- VRF added to both switches with redundant interfaces
- RSMLT routes traffic at the first switch regardless of path
  - A switch forwards routed traffic directed to its own MAC and also that of it's peer
- Alternatives:
  - VRRP
  - RSMLT with GRT and IP Shortcuts



 116

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

Routed Split MultiLink Trunking

- RSMLT provides active/active redundant gateway for SPB Fabric.
  - The "edge-support" causes the peer MAC (for the IP on the VLAN) to be committed to the config.cfg file when using the `save config` command
  - Set the hold-up timer for RSMLT on the edge VLANs equals infinity (9999) to keep a remaining switch active
- RSMLT is a better alternative to VRRP
  - Scales beyond the instance imitations of 255
  - No Hello packets required
- Uses each router's IP Interface as gateways with no third IP address needed
  - Both vIST Core Switch pair router interfaces will respond to its own IP address/MAC and that of the peer for active/active redundancy.
  - Configuration is stored in the config file, thus maintaining the configuration even after restart.
- Use these commands both switches and on each VLAN where you desire RSMLT

```
(config)#ip rsmlt edge-support
(config)#interface vlan 100
(config-if)#ip rsmlt
#show ip rsmlt [local|peer]
#show ip rsmlt edge-support
```

Enables RSMLT on the VLAN

Note

VRRP and RSMLT use gratuitous ARP to update the MAC address tables on switches.

 117

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

vIST – Redistribution Policy

Suppressing the vIST IP address

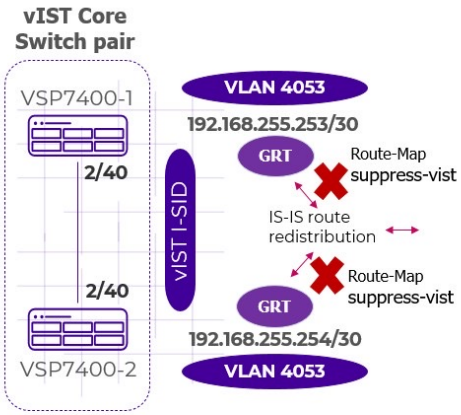
- The vIST interfaces are associated with the GRT
- An IS-IS route redistribution policy will include this network unless it is intentionally suppressed
- A Policy-Map provides the mechanism

```
ip prefix-list "vist" 192.168.255.252/30

route-map "suppress-vist" 1
   no permit
   enable
   match network "vist"
   exit
route-map "suppress-vist" 2
   permit
   enable
exit

router isis
redistribute direct
redistribute direct route-map suppress-vist
redistribute direct enable
exit

isis apply redistribute direct
```

Create the IP Prefix list (IP network)

Index value specifies the order

Specify the Route-map policy for IS-IS redistribution



Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

vIST Core Switch Pair Best Practices

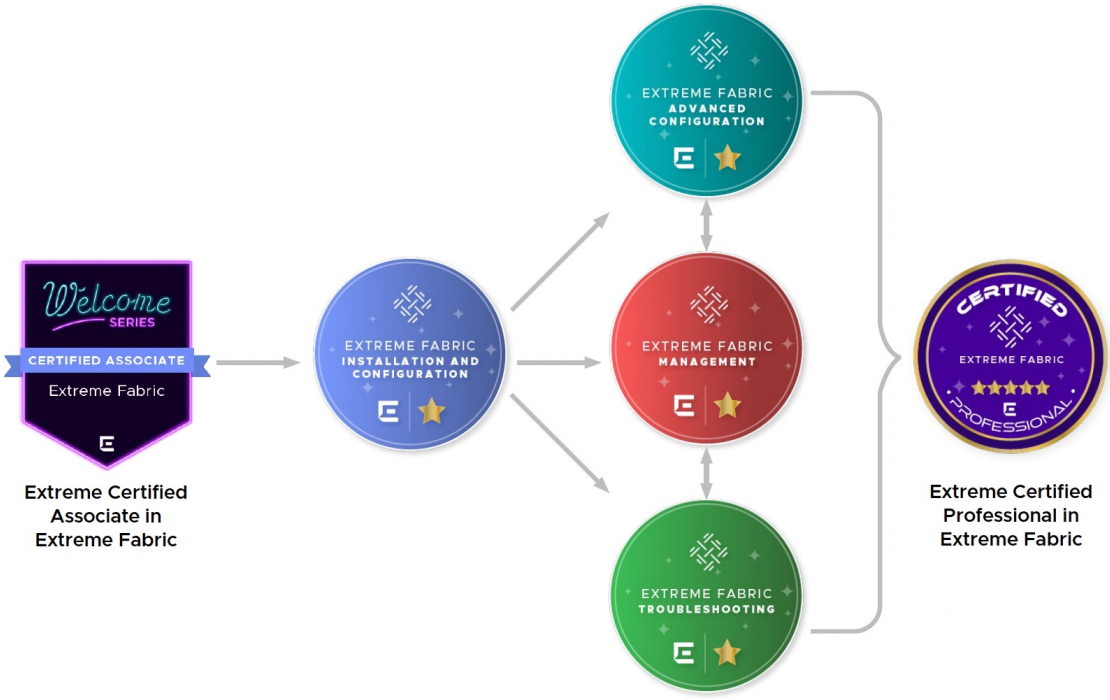
- Default Gateway Redundancy:
  - Routed Split Multi-Link Trunking (RSMLT-Edge)
  - Virtual Router Redundancy (VRRP)
    - Backup Master enhancement (active/active)
- Simple Loop Prevention Protocol (SLPP):
  - Prevents loops in vIST Core Switch pair network
  - Disables uplink port where loop is detected
  - Enabled on Access SMLT/SLT ports – disabled on IST
- Virtual LACP (VLACP):
  - Lightweight protocol for end-to-end health check
  - Detect end-to-end failure by propagating link status between ports that are either:
    - Physically connected point-to-point
    - Logically connected point-to-point across an intermediate network
  - Does not perform link aggregation functions

 119

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com

Extreme Fabric Certification Track



Please sign in to Extreme Academy to access the course overviews and book your training. If you do not have an Extreme Academy account, please register here.

Notes

To Learn More Contact:
extremeacademy@extremenetworks.com