

CUMULUS PROFESSIONAL WORKSHOP

TRAINING DELIVERY METHOD

Instructor-led remote or onsite training sessions via NVIDIA Academy WebEx platform, including access to hands-on environment.

TARGET AUDIENCE

This course is designed for network administrators and engineers who wish to learn how to install, configure, manage, monitor and troubleshoot Cumulus Linux based switches.

TRAINING DURATION

Remote: 4 sessions of 5 hours or 5 sessions Of 4 hours.

Onsite: 4-days

TRAINING OUTLINE

Session 1

Cumulus Linux Overview

- What is Cumulus Linux
- Cumulus Linux Architecture
- Linux shell (bash)
- Functional Units, e.g. interface manager
- Link Layer Discovery and verification (LLDP and PTM)

Cumulus Linux Initial Setup

- Binary install (ONIE)
- Packet-Manager update (APT)
- New CLI (NVUE)
- Zero Touch Provisioning (ZTP)

Session 2

Layer 2

- Linux Bridging (VLAN Aware Bridge)
- Trunk and Access Port configuration
- Spanning Tree (STP)
- Link Aggregation (LAG - LACP)
- Multi-Chassis Link Aggregation (MLAG)

Session 3

Layer 3

- Switch Virtual Interfaces (SVI)
- Virtual Router Redundancy (VRR)
- Virtual Routing and Forwarding (VRF)
- Routing Suite (FRR)
- Border Gateway Protocol for DC (MP-BGP)
- BGP unnumbered

Session 4

- Virtualization
 - Tunnel (VXLAN)
 - Controller-less VXLAN (EVPN)
- EVPN-L2 (L2VNI)
- EVPN-L3 symmetric routing (L3VNI)

Session 5

Monitoring and Troubleshooting

- Layer 2 troubleshooting
- Layer 3 troubleshooting
- EVPN VXLAN troubleshooting

CUMULUS EXPERT WORKSHOP

TRAINING DELIVERY METHOD

Instructor-led remote or onsite training sessions via NVIDIA Academy WebEx platform, including access to hands-on environment.

TARGET AUDIENCE AND PRE-REQUISITE

Experienced Cumulus administrators. Successfully completed the professional level workshop or an equivalent real world hands-on experience.

TRAINING DURATION

Remotely delivered - recommended up to 5 sessions of up to 4-hours.
Onsite delivered – recommended up to 4 days

The final duration will be determined according to the units' selection from the below modules list

TRAINING CUSTOMIZATION

Each session accommodates 4 Modules. For a 5-session offering up to 20 Modules can be selected

TRAINING MODULES (each 45-60 minutes)

- Module-01: Introduction and Overview - Cumulus Linux Architecture, Linux Networking
- Module-02: NVIDIA Hardware Architecture (optional BlueField/HBN) and Layer 1
- Module-03: Installation and Operation via OOB Network (ISC-DHCP, ZTP, Image-management, ONIE, grub-rescue)
 - Lab-03: ISC-DHCP
- Module-04: NVUE (CLI and API)
- Module-05: Interfaces, Bridges (VAB/MVAB) and STP
 - Lab-05: Configuring Overlapping VLAN IDs
- Module-06: LAG and MLAG
 - Lab-06: LAG (Server-Switch)
- Module-07: Interfaces, Layer 3 (SVI, VRR, VRF)
 - Lab-07: Tenant aware default gateways
- Module-08: Routing suite FRR
 - BGP (MP-BGP, unnumbered)
 - Lab-08: BGP underlay
- Module-09: OSPF (OSPFv2, OSPFv3)
 - Lab-09: OSPF
- Module-10: Filtering (route-maps)
 - Lab-10: route-maps
- Module-11: Virtualization via Tunnels (VXLAN, GRE (depending on GA))
 - Lab-11: Static VXLAN
- Module-12: EVPN L2 (focus on multi-homing)
 - Lab-12: EVPN-MH
- Module-13: EVPN L3 (Centralized, Decentralized Symmetrically, SVD)
 - Lab-13: EVPN decentralized symmetrical routing
- Module-14: Packet-filter (ACL)
 - Lab-14: Filtering (ebtables, iptables, and ip6tables)
- Module-15: QoS (RoCE)
- Module-16: Monitoring and actively testing (sFlow, SPAN, ERSPAN, tcpdump, mz)
 - Lab-16: Using tcpdump and mz
- Module-17: Layer 1 troubleshooting tools

Troubleshooting (Hands-On) options

- Module-31: Troubleshooting Layer 2, part 1
 - Lab-31 Troubleshooting Tickets and debriefing: MAC/FDB, LAG/LACP, LLDP/PTM
- Module-32: Troubleshooting Layer 2, part 2
 - Lab-32 Troubleshooting Tickets and debriefing: STP, EPVN-L2, EVPN-MH
- Module-33: Troubleshooting Layer 3, part 1
 - Lab-33 Trouble-Tickets and debriefing discussion IPv4, static routes and FHRP (VRR)
- Module-34: Troubleshooting Layer 3, part 2
 - Lab-34 Trouble-Tickets and debriefing discussion BGP, EVPN underlay/overlay

Automation options

- Module-51: Ansible refresh, host-/var- files, structure of playbooks
 - Lab-51 Preparing Ansible for the following Modulees
- Module-52: Ansible and NetBox
 - Lab-52 NetBox
- Module-53: Ansible roles and templates
 - Lab-53 using J2 template to render the interfaces file
- Module-54: Using standard Ansible Modulees to automate the interfaces and routing suite
 - Lab-54: Ansible copy and shell Modulee to automate switching and routing
- Module-55+56+57: Ansible step-by-step / Zero to EVPN rendering the interface and routing files
 - Lab-55+56+57 render the interfaces file
- Module-61+62+63: Ansible step-by-step / Zero to EVPN rendering the NVUE file
 - Lab-61+62+63 render the interfaces file

HOW TO SELECT YOUR COURSE OUTLINE?

Step-01: Select the number of sessions (usually 3,4, or 5)

Step-02: Select the modules per session

Session-01	Session-02	Session-03	Session-04	Session-05
Module:	Module:	Module:	Module:	Module:
Module:	Module:	Module:	Module:	Module:
Module:	Module:	Module:	Module:	Module:
Module:	Module:	Module:	Module:	Module:

Example-01, troubleshooting focused

Session-01	Session-02	Session-03	Session-04	Session-05
Module:1 Intro	Module:5 IF and Bridges	Module:12 EVPN-L2	Module: 16 Monitoring	Module:33 L3 a Troubleshooting
Module:2 HW	Module:7 IF L3	Module:13 EVPN-L3	Module: 17 Layer 1	Module:34 L3 b Troubleshooting
Module:3 OOB	Module:8 BGP	Module:14 ACL	Module:31 L2 a Troubleshooting	Module:51 Ansible intro
Module:4 NVUE	Module:10 Filtering	Module:15 QoS	Module: 32 L2 b Troubleshooting	Module:54 Using std func

Example-02, automation focused

Session-01	Session-02	Session-03	Session-04	Session-05
Module:1 Intro	Module:5 IF and Bridges	Module:12 EVPN-L2	Module: 16 Monitoring	Module:53 Roles and Templ
Module:2 HW	Module:7 IF L3	Module:13 EVPN-L3	Module: 17 Layer 1	Module:55 0 to EVPN, part 1
Module:3 OOB	Module:8 BGP	Module:14 ACL	Module:51 Ansible intro	Module:56 0 to EVPN, part 2
Module:4 NVUE	Module:10 Filtering	Module:15 QoS	Module: 52 NetBox	Module:57 0 to EVPN, part 3