

Ensemble provides best of breed products and tools to power the telco cloud transformation. With industry leading features for virtual networking, operations and vendor choice, our Ensemble product suite provides an open and pure-play platform that brings virtualized services to life.

Course Objective

- Training is instructor led and is hosted at a Customer or ADVA location to allow for hand on exercises. The session will include a combination of presentation content and reference documentation. The course facilitates an in depth understanding of NFV basics along with key Ensemble software features and capabilities.
- The training course will provide sufficient background on NFV technology and best practices as well as an in depth understanding of each of the Ensemble software components.
- Hands-on training provides students with an opportunity to practice deploying, configuring and operating the Ensemble solution in a representative real-world environment.
- Students will gain experience on installation, zero touch provisioning, VNF on-boarding, service chain deployment and maintenance of the Ensemble solution.
- Configuration and basic troubleshooting exercises are essential elements of the training to assure that the attendants gain a comprehensive understanding of the operation of the software.
- Students will have access to the latest product and support documentation for future reference.

Classroom size limit

- Maximum number of students is 8, unless approved by ADVA training.

Agenda Summary

Day 1

- Technology overview
- Solution overview

Day 2

- Connector deep dive
- Connector installation (hands-on)

Day 3

- MANO deep dive
- MANO installation (hands-on)

Day 4

- ZTP preparation
- ZTP deployment (hands-on)

Course Topics

- Solution overview
- Component (Connector and MANO) overview
- Component architectures
- Zero touch provisioning
- VNF on-boarding and service chains
- Solution maintenance
- Golden Images

PRACTICE

- Installation and commissioning of Connector
- Initial configuration of MANO
- Using the native ADVA GUI
- Setting up your own service chain
- Database Backup & Restore, software upgrades
- Solution Monitoring
- Troubleshooting

Pre-requisites

Customer responsibilities:

- Customer to have representation from all the various teams interacting with the solution, each with specific responsibilities for defining, delivering or managing end-to-end virtualized services.
- Provide access to required VNF QCOW images and associated licenses to support VNF on-boarding and VNF instantiation during the hands-on activities

Lab requirements (for Customer hosted training Customer is responsible for these items):

- Adequate computing infrastructure to host ADVA MANO components as well as 1 uCPE instance per every two (2) students (at a minimum).
- uCPE devices should be provided from the list of pre-qualified hardware platforms.
- Provide early access to their lab networking configuration along with necessary IP addresses to support the MANO and Connector installations.
- Provide necessary meeting space and power to host the number of students, ADVA instructor(s) and associated hardware devices.

Contact

Training: training@adva.com

Day 1 (9 am-4:30 pm)

Ensemble Technology and Solution Overview

Technology Overview Key content

- NFV overview
- Role of MANO
- What is uCPE (including drivers & key use cases)

Solution Overview Key content

- Solution architecture overview
- Functional overview of each component (Connector, Director & Controller, Orchestrator)
- Ensemble use cases
- ZTP Overview
- Connector key features
- MANO key features
- Security overview

Target customer roles

- Admin
- Designer
- Operator
- Developer

Day 2 (8 am-4:30 pm)

Connector deep dive

Connector deep dive key content

- Golden Images, hardware profiles & day-0 configuration
- Software installation options
- OpenStack options
- Solution sizing/resource utilization
- Datapath overview (L2, BGP, VRF, multi-VRF, etc.) and performance
- Local router (NAT/DHCP) & IP Pass-through
- LTE support
- ZTP Flow
- Upgrade capabilities
- Admin operations (CLI, audit trail, history, etc.)
- License management
- User management

	<ul style="list-style-type: none"> • Security <p>Target customer roles</p> <ul style="list-style-type: none"> • Admin • Designer • Operator <p>Connector Installation (hands on exercises)</p> <ul style="list-style-type: none"> • Installation from USB stick • Custom install utility • Port query • Basic CLI configuration and verification • Basic management tools: showtech, tcpdump, debug commands, stats, notifications, etc. <p>Target customer roles</p> <ul style="list-style-type: none"> • Admin • Operator
<p>Day 3 (8 am-4:30 pm)</p>	<p>MANO (Director & Orchestrator) deep dive</p>
	<p>Ensemble MANO deep dive key content</p> <ul style="list-style-type: none"> • MANO deployment on VMWare, AWS, or OpenStack (focus will be on one target option) • MANO resiliency and availability options • Solution sizing/resource utilization • Tenant and user management • ZTP design phase overview (including role of Orchestrator – VNF on-boarding, NST creation) • ZTP deployment phase flow • Post-deployment operations (Dashboard, Inventory, Topology, FM, PM, Troubleshooting) • MANO upgrade capabilities • Connector upgrade management/backup & restore • Admin operations (CPE device status, MANO status, resource allocation/utilization, Audit trail, history) • Security <p>Target customer roles</p> <ul style="list-style-type: none"> • Admin • Designer • Operator <p>Ensemble MANO installation hand-on</p> <ul style="list-style-type: none"> • Deploy Director and Orchestrator in target cloud environment • Configure peer systems • Create tenant(s) • Director and Orchestrator GUI walk-through <p>Target customer roles</p> <ul style="list-style-type: none"> • Admin • Operator
<p>Day 4 (8 am-4:30 pm)</p>	<p>ZTP</p>

	<p>ZTP Preparation hands-on exercises</p> <ul style="list-style-type: none">• Designing NFV services in Orchestrator, NST (SD WAN + FW example)• VNF on-boarding, automated license management & VNFM scripts• VNF variables• Provider templates and networking details• Creating Connector ZT Templates – Flat-file & provider network templates• Importing Cloud Templates• Creating ZT Applications• Connector Pre-Configuration <p>Target customer roles</p> <ul style="list-style-type: none">• Admin• Designer• Operator <p>ZTP deployment of Connector hands-on exercises</p> <ul style="list-style-type: none">• Create new uCPE site<ul style="list-style-type: none">○ Configure Connector settings○ Configure network variables○ Configure cloud/VNF settings○ Networking and security settings• Deploy Connector site – splash screen walkthrough <p>Target customer roles</p> <ul style="list-style-type: none">○ Admin○ Designer○ Operator
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Additional Exercises throughout the course.

- Using built-in tools & documentation for maintenance and troubleshooting
- Managing alarm profiles and system logs
- Software troubleshooting cases
- Hardware troubleshooting cases (as applicable for ADVA provided hardware)

Target Audience / Customer Typical Roles & Responsibilities

Administrator - owns the solution production deployment and will be responsible for:

- Managing the deployment of Ensemble components
- Managing access to the Ensemble components
- Operating the Ensemble MANO infrastructure

- Configuration of the Ensemble components
- Security of the Ensemble deployment

Background skills:

- Strong IT and / or Operations experience
- Basic knowledge of NFV fundamentals and OpenStack
- Strong Linux background

Designer - responsible for working with product teams to take customer requirements and implement services in the Ensemble solution including:

- On-boarding of 3rd party VNFs
- Creating network service templates and managing the service catalogue

Background skills:

- Strong background in NFV and OpenStack (especially Nova and Neutron services)
- Strong networking background

Operations - responsible for ensuring that Connector (uCPE devices) are successfully deployed

- Post deployment management and monitoring of the uCPE devices and service chains
- Troubleshooting, fault remediation and service restoration

Background skills

- Typical resource will have strong OSS and network management experience
- Strong troubleshooting background (especially via CLI, logs, SNMP, etc.)
- Strong knowledge of NFV fundamentals and OpenStack
- Strong Linux background

Developer - responsible for developing integration into the Ensemble infrastructure using existing northbound and southbound APIs

- Typically responsible for integration of the Ensemble solution into CSP back-office infrastructure (OSS, BSS, Analytics, Reporting, etc.)
- Responsible for doing multi-vendor integration and interop

Background skills

- Ability to work with RESTful APIs
- Strong background in Java, Perl, Ansible, along with other scripting and automation tools