

# NFV MANO in an Hour

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## CONTENTS

This course uses as a starting point the main ETSI NFV architecture with its building blocks, and then focuses its attention on the Management and Orchestration (MANO) functions. While still keeping the big picture and real-world use cases in view, it describes the three main sub-components of MANO (NFVO, VNFM and VIM) and explains how they are used to construct a Network Service (NS) comprising virtualized as well as physical network functions (VNFs and PNFs) connected with virtual network links (VLs).

This course exists in a shorter version, MANO in an Hour, and a full-length version covering all topics in much more detail.

## PREREQUISITES

Working knowledge of computer and telecommunications systems as well as understanding of the ETSI NFV architecture is beneficial.

NOTE: This course is not delivered with the FoldOut methodology.

## ETSI NFV

- NFV Architecture
- ETSI Reference Points
- Network Services
- PNFs and VNFs
- Virtual Links and Connection Points

## MANO Functions

- NFV Orchestrator (NFVO)
- VNF Manager (VNFM)
- Virtualized Infrastructure Manager (VIM)
- NFVO/VNFM/VIM
  - Responsibilities
  - Stored Data
- Reference Points vs Interfaces

## The NFV Network Service

- Virtual Links and Link Ports
- VNF Forwarding Graphs
- Example: Voice over 5G

## Network Service Instantiation

- The Role of Descriptors
- The Role of Deployment Flavours (DF)
- The Role of Instantiation Levels
- NS Instantiation Flow
- VNF Instantiation Flow

## **On-Boarding Network Services and Functions**

- VNF Packages
- VNFD/NSD/PNFD Files
- TOSCA, YAML and CSAR
- VNF Onboarding Flow
- NS Onboarding Flow

## **Scaling**

- NS Scaling
- VNF Scaling
- Who Decides Scaling
- Who Performs Scaling

## **MANO Extended Edition**

- Multiple NFVOs and VIMs
- WAN Infrastructure Manager (WIM)