**CNSOE 1.0**

# Cisco Network Services Orchestrator Essentials

## Design Lab - Requirements

**Version 1.0, December 2022**

*You already should know how to create a simple Cisco NSO service from scratch. Now it's your time: you should rebuild your simple Cisco NSO service by incrementally adding features and modifying it to create a fully working MPLS service. You're on your own!*

## The business technical goals

The Cisco NSO service you are about to create should build a fully blown MPLS ecosystem providing emulated MPLS L3 VPN service for customers. It shall use up to four lab pod devices, two Cisco IOS XR and two Cisco IOS devices.

In the system there should be a possibility to define a customer. Each customer should have:

- A name (alphanumeric characters only)
- An ID (with range of 1000 through 1999

You should be able to define a number of L3VPN services, where each service can be based on a globally pre-defined group of PE routers in the pod (PE router set). Each service should have:

- A name (alphanumeric characters,  minus and underscore)
- A customer assigned
- A globally unique VPN ID (01 through 99)
- A globally unique VRF name, RD and RT
- Two loopback interfaces in each VRF on each router in the service, using IPv4 addressing
- Loopback prefix redistribution to VPNv4 BGP

With the first customer service defined, the system should also provision the common underlay network infrastructure on all required devices, where each device should have:

- WAN interfaces IPv4 addresses (there are two WAN interfaces).
- A Loopback0 IPv4 address
- Underlying OSPF routing between all routers using WAN and Loopback interfaces
- iBGP VPNv4 full mesh connectivity between all routers

When done, there should be IPv4 connectivity within each customer VPN using any customer Loopback IP address.

The Cisco NSO service should work on any configured lab pod, so underlay configuration should include the pod number.

A service should be called **MPLS**.

Any questions so far? 😉

 