

NSO Orchestration for 4G CUPS on CNDP

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Feature description

The Cisco NSO Orchestration for 4G CUPS on Cisco Network Deployment Platform (CNDP) solution feature leverages the Subscriber Microservices Infrastructure Automation Function Pack (SMI AFP) for complete life-cycle management and configuration management of CUPS devices.

Table 1: Feature History

Feature Name	Release	Feature Description
Cisco NSO Orchestration for 4G CUPS on CNDP solution	2025.02.0	This feature automates the life-cycle management and configuration of CUPS components such as Control Plane (CP), User Plane (UP) and Redundancy and Configuration Management (RCM) on CNDP. This feature is helpful for the new operators who wants to deploy CUPS on CNDP and the existing operators who want to migrate from CUPS deployed on OpenStack to 5G on CNDP. Default setting: Disabled–Configuration Required

Cisco NSO Orchestration for 4G CUPS on CNDP solution provides the following functions:

- Instantiation of VNF devices such as VPC-DI through NSO CLI, NETCONF, Web-Interface, or NSO RESTCONF API.
- Onboarding of VNF devices such as VPC-DI based CP upon successful instantiation.
- Decommission of the VNF devices such as VPC-DI.

Use cases

Cisco NSO Orchestration for 4G CUPS on CNDP solution caters to the following use cases:

- Instantiation of new VPC-DI based CP
- Termination of a previously installed VPC-DI based CP
- Software upgrade of a previously installed VPC-DI instance

How the life-cycle management of VPC-DI on AFP works

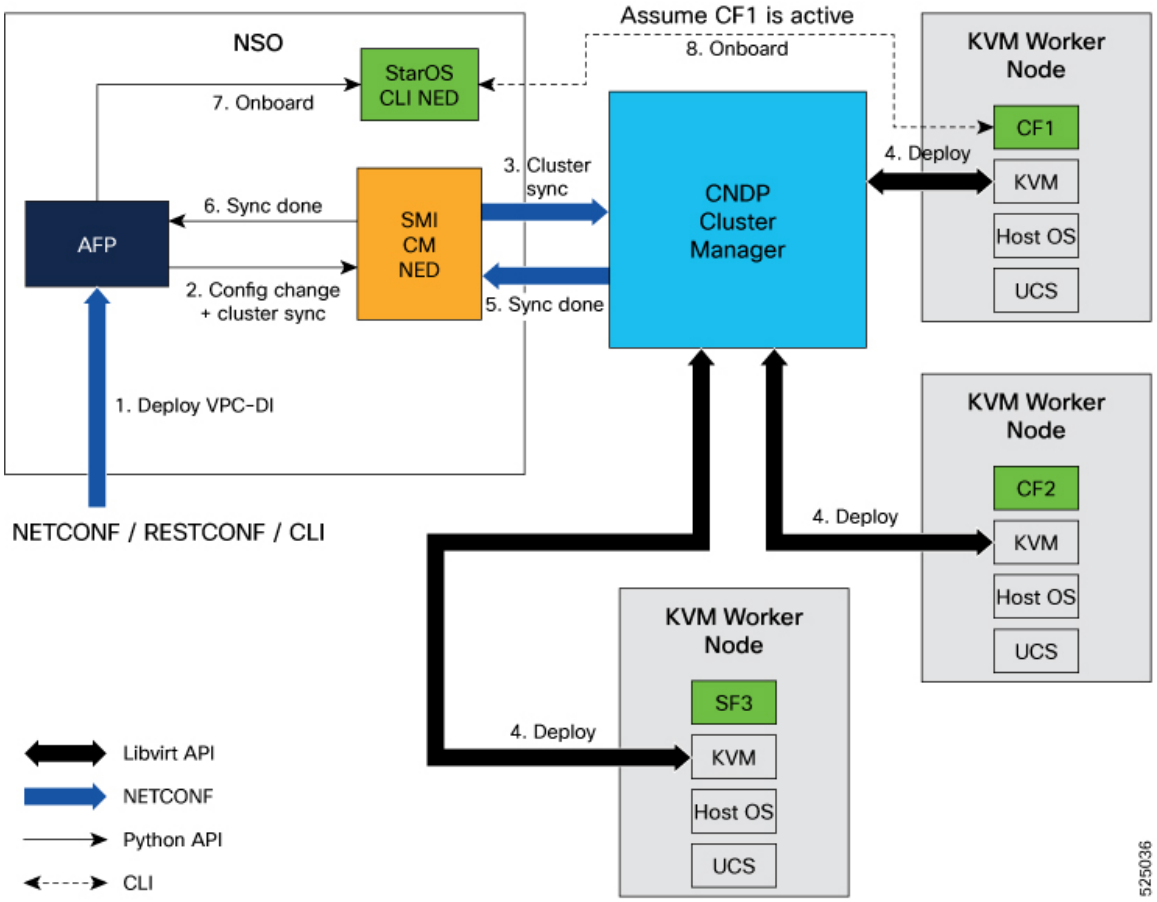
Summary

The following are some of the important components involved in the VPC-DI deployment on AFP:

- Automation Function Pack (AFP): NSO package that implements VPC-DI life-cycle management and configuration management for CUPS CP. Specifically the cisco-smi-deployer component of the AFP handles the VPC-DI life-cycle management.
- SMI CM NED (Subscriber Management Infrastructure Cluster Manager Network Element Driver): NSO package that communicates with CNDP cluster manager to configure clusters and network functions.
- StarOS CLI NED: NSO package that communicates with the VPC-DI management port using StarOS CLI to configure CUPS CP functionality on that instance.
- CNDP Cluster Manager: Part of the SMI CNDP platform which is used to deploy k8s or KVM clusters and cloud-native or VM based NFs.
- KVM Worker Nodes: Servers that constitute a CNDP KVM cluster. These nodes deploy the VMs that constitute the VPC-DI instance.

Workflow

Figure 1: Life-cycle management of VPC-DI on AFP



These stages describe the life-cycle management workflow of VPC-DI on AFP:

1. Life-cycle management workflow of VPC-DI on AFP starts when a northbound entity such as an operator or software wants to configure the appropriate objects on the AFP via NETCONF or CLI or RESTCONF.
2. AFP coordinates with the CNDP Cluster Manager via the SMI CM NED to perform the various life-cycle management operations.
3. AFP initiates the cluster synchronization step automatically to implement the configuration changes. If auto sync is not enabled, perform the synchronization manually. For more information on manual cluster synchronization, refer to *NSO Subscriber Microservices Automation Function Pack Configuration Guide*.
4. CNDP Cluster Manager deploys the VPC-DI as a set of virtual machines (VMs) on a KVM cluster in the CNDP platform.
5. In a fresh deployment, onboard the management interface of the newly deployed VPC-DI instance as a device on the NSO using the StarOS CLI NED as the interface layer. This setup enables the NSO to perform day 1 and subsequent configurations on the VPC-DI instance.

For more information on how to use the AFP for life-cycle management of VPC-DI based CUPS CP, refer to the *NSO Subscriber Microservices Automation Function Pack Configuration Guide*.

Minimum platform and software requirements

The following are the minimum platform and software requirements to support NSO Orchestration of CUPS on CNDP:

Table 2: Software versions

Software	Minimum version
NSO	6.4
AFP	2025.02.0
SMI CM NED	1.1.2025.02.1
StarOS CLI NED	5.55
SMI	2025.02.1