# Towards a Multi-vendor SD-WAN: LSO-enabled Solution with Open Source Orchestrator and Container-based uCPEs

Amartus teamed up with Sparkle in Proof of Concept demonstrating a cost-efficient, standardized SD-WAN service that escapes vendor lock-in

The challenge: Enterprises are moving to SD-WAN as they look to reduce OpEx and create new revenue opportunities by increasing network speed and agility. However, as the popularity of SD-WAN is on the rise, first challenges arise. One of them is the growing concern with falling into the vendor lock-in trap again.

The solution: To resolve this issue, Sparkle, one of the leading global operators, and Amartus, designed a **cost-effective, multi-vendor SD-WAN service** based on **MEF LSO Presto interface**, **containerized uCPE**, and **open source TOSCA-based orchestration** platform (Cloudify).
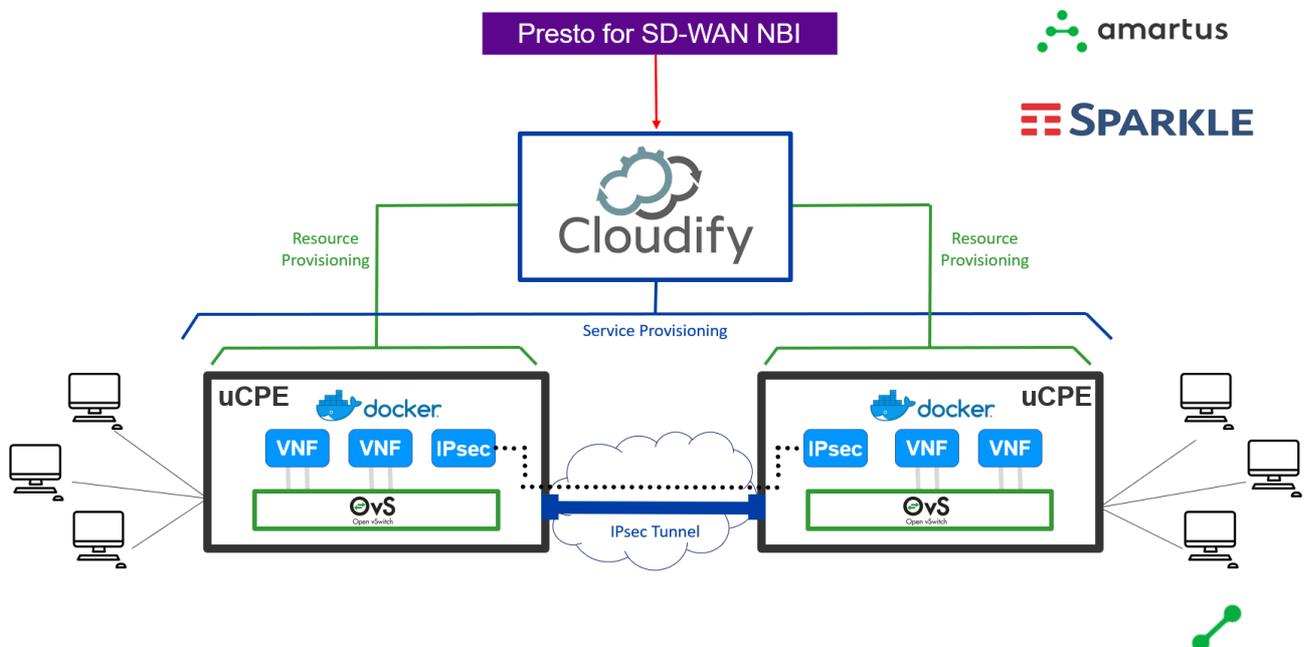
In the PoC scenario, the SD-WAN solution is deployed from the open source orchestrator. An operator sends a request to the MEF LSO Presto API for SD-WAN API (northbound). Presto API then triggers an SD-WAN service provisioning using TOSCA templates to one or many containerized Universal Customer Premises Equipment units (uCPEs). The template describes the required Virtual Network Functions (VNFs) and specifies the data flow between them (the VNF chain). The functions implemented for this specific PoC are *IPsec daemon*, *statistics, and firewall*, while the VNF chaining is realized using OpenFlow protocol rules on Open vSwitch, which is part of the uCPEs.

The result: The PoC lays the foundation for the next generation, technology and vendor-agnostic SD-WAN services, providing business customers with a solution that's compliant with standards specifications. It provides a cost-effective and flexible foundation for standardized SD-WAN with a high level of interoperability and at reasonable cost.