

# vCPE-OS

## Open Carrier-Class Operating System for Network Edge Virtualization

- Linux-based, carrier-class operating system for vCPE applications with open management interfaces
- Consolidation of advanced transport/networking and NFV infrastructure
- Integrated networking capabilities, secure tunneling/VPN
- Service assurance for virtual and physical functionality
- Inherent support of pluggable PNFs



Part of RAD's vCPE solutions, vCPE-OS runs on any white box server and can be preloaded in RAD's virtual CPE (vCPE) platforms. It combines powerful networking capabilities with virtualization for hosting SD-WAN and any other value-added virtual network function (VNF) applications from multiple vendors.

### MARKET SEGMENTS AND APPLICATIONS

vCPE-OS includes standard KVM hypervisor and OpenStack compute node to support third-party applications.

Supported applications include:

- SD-WAN – Software-defined control of WAN connections with secure overlay tunnels for business services
- Router – Virtual router for hosted public clouds and branch CPE deployments

- Cryptography – Standard AES 256-bit cipher encryption/decryption of L2-L4 traffic
- Firewall – Unified threat management for provider-managed SMB services
- Session Border Controller (SBC) – Manages VoIP signaling and media flows
- Packet Analyzer – Troubleshooting-on-demand from the customer edge using a packet sniffer VF
- WAN Optimization – Eliminates content duplication, handles compression, and optimizes latency

Additional applications are available via RAD's D-NFV Alliance, an ecosystem of network orchestrator and VNF vendors, as well as international system integrators specializing in new precertified NFV/vCPE applications.

### INTEROPERABILITY

vCPE-OS has an open management platform, and easily integrates with standards-based SDN controllers, orchestrators, and operations/business support systems (OSS/BSS) from major providers.

### CARRIER CLASS

The vCPE-OS carrier class virtualization and networking experience is achieved by:

- A comprehensive management and security suite
- Zero Touch Provisioning (ZTP)
- Rich service assurance capabilities
- Scalable and mass-deployment operational services



### MANAGEMENT AND SECURITY

Comprehensive management suite includes NETCONF/YANG, CLI, Syslog, and alarms.

Security features include SNMPv3, SSH, SFTP, Access Control, RADIUS (client authentication), and TACACS+.

vCPE-OS can be managed by RADview. This provides NMS tools, Performance Monitoring portal, and D-NFV Orchestrator.

D-NFV Orchestrator provides the function of Controller located on the cloud. Controller manages the edge device's VNF resources, such as compute, storage, and network capabilities. Controller is also responsible for controlling the deployment of VNF instances.

### Applications

vCPE-OS is suitable for a wide range of single- and multitenant applications, including pCPE, uCPE, and private and public data centers. It allows for remote and agile deployment of value-added services with D-NFV Orchestrator. Open NFV/SDN architecture facilitates integration with network-wide orchestrators/controllers.

### Specifications

#### HARDWARE REQUIREMENTS

- 64-bit Intel x86 processor with VT-x (virtualization technology)
- Minimum 2 GB memory for pCPE, or 4 GB for uCPE VNF provisioning
- At least 120 GB hard drive
- At least one Ethernet port
- At least one USB port

**Note:** For certification of vCPE-OS over a third-party white box, please contact your local RAD partner.

#### NETWORKING

Layer-3 Forwarding – Static, BGP, VRF

Layer 3 Quality of Service

IPSec

GRE

VLAN tagging

Flexible binding of physical/logical ports to virtualization layer entities

#### CELLULAR DRIVERS

LTE modem with PPP connection to hub

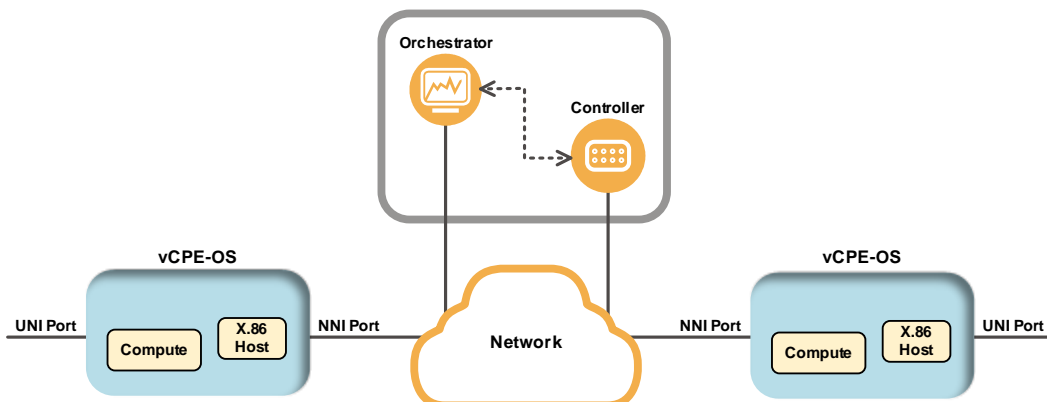


Figure 1. uCPE Application Architecture

# vCPE-OS

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### DIAGNOSTICS

Performance Monitoring: TWAMP, ICMP echo, UDP echo

### MANAGEMENT

#### Console Port

Mini USB or serial (RS-232 or similar) port for management via CLI

USB port for installation from disk-on-key

#### Management Capabilities

CLI, SNMPv3, NETCONF

Remote management by SSH

5-level user authentication with TACACS+, RADIUS

Access Lists for management traffic

TFTP/SFTP Client

Zero Touch

NTPv4

Syslog

Performance Management

DHCP client

DHCPv6 server

## Ordering

### RECOMMENDED CONFIGURATIONS

#### VCPE-OS-LIC

License for a vCPE-OS instance

### SPECIAL CONFIGURATIONS

Please contact your local RAD partner for additional configuration options.

### OPTIONAL ACCESSORIES

#### ETX-2V

Open vCPE White Box Platform

#### MICLK

1588 Grandmaster on an SFP with Built-in GNSS

#### MINID

Miniature Programmable Network Interface Device

#### MIRICI-E1/T1, MIRICI-E3/T3

Smart SFP Ethernet to E3/T3 or E1/T1 Remote Bridges

#### MITOP-E1/T1, MITOP-E3/T3

Smart SFP-Format TDM Pseudowire Gateways

#### SFP-VDSL-2W

VDSL2 SFP for Any-PHY Platform

#### SFP-GPON-1DH

GPON Optical Network Terminal

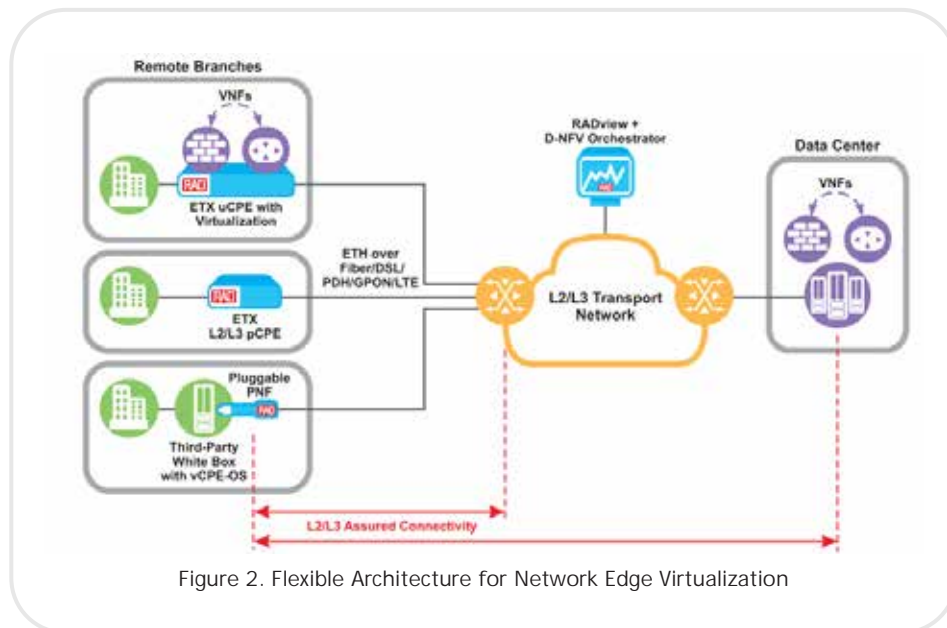


Figure 2. Flexible Architecture for Network Edge Virtualization

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