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Data Sheet

General Availability

vCPE-OS

Open Carrier-Class Operating System for Network Edge Virtualization

- Linux-based, carrier-class operating system for disaggregated edge devices
- Integration of NFV Infrastructure and advanced routing
- Open-standard Northbound Interfaces for management and orchestration
- Optimized for high-performance and low resource consumption

The cornerstone of RAD's vCPE Toolbox, vCPE-OS is designed for disaggregation between hardware, operating system and network functions. While running on any COTS white box server, it combines powerful networking capabilities with virtualization, for hosting value-added virtual network functions (VNFs) from multiple vendors.

vCPE-OS enables a single box to serve as a networking edge, as well as a host for virtual networking, security and IT applications, while offering the following benefits:

- **Avoiding VNF vendor lock-in:** vCPE-OS is suited to host value added services of any type per customer choice.
- **Avoiding Orchestration Lock-in:** vCPE-OS integrates with any orchestration system based on NETCONF/YANG or CLI interface
- **High Performance, Resource Efficiency:** vCPE-OS is a thin operating system, occupying a single x86 Core and less than 2 GB RAM memory. With ultimate resource efficiency, it provides top notch networking performance for its embedded routing functionality, as well as for hosted VNFs
- **Advanced Embedded Router Functionality:** Includes routing protocols, security and tunneling for control and data plane services
- **Zero Touch Provisioning:** Automatic installation and service provisioning without technicians on site
- **Secure Operating System:** Offers hardening of Linux and KVM, data protection at rest, in transit and in processing, blocking of penetration and hacking attempts

MARKET SEGMENTS AND APPLICATIONS

With vCPE-OS, service providers can deploy a single common network OS on all hardware white boxes in use, each one suited to the requirements of the specific customer sites. The service provider gets to choose the preferred HW within the X.86 family. vCPE-OS is deployed in branch and enterprise headquarter sites, on an array of white boxes differing interfaces, processing power and capacity for storing applications. Hosted applications vary between sites, where branches often deploy SD-WAN and SD-Branch, and headquarters also add on voice applications, such as IP-PBX.

INTEROPERABILITY

vCPE-OS has an open management platform and can be easily integrated with standards-based SDN controllers, orchestrators, and Operations/Business Support Systems (OSS/BSS) from major providers using NETCONF/YANG interface modeling, standard OpenStack-compatible REST API or SNMP.

ARCHITECTURE

vCPE-OS features KVM hypervisor to host third-party VNFs. Accelerated NFVI infrastructure for efficient service chaining.

vCPE-OS embedded routing functionality enables superior performance edge connectivity with value-add service chains.

MANAGEMENT

vCPE-OS management suite includes NETCONF/YANG, OpenStack-compatible REST API, CLI, SNMP, Syslog, and alarms.

RADview Domain Orchestrator manages the VNF resources and network capabilities. It models and deploys VNF instances via service function chains.

RADview also provides NMS tools and a Performance Monitoring portal.

RAD

Your Network's Edge®

vCPE-OS

Open Carrier-Class Operating System for Network Edge

Data Sheet

SECURITY

vCPE-OS security features include:

- Constant security updates for all OS layers
- Integration with external user management servers like LDAP, TACACS+ and RADIUS
- Protection for local user management
- Secured interfaces with ACLs, SSL authentication, RSA and pre-shared keys
- Data protection with multiple secured protocols, such as SSH, SFTP, SCP, HTTPS, IPsec

Specifications

HARDWARE REQUIREMENTS

CPU	64-bit Intel x86 processor 4 – 32 cores VT-x (virtualization technology)
Ports	At least one Ethernet port
	At least one USB port
	Optional LTE modems
	Optional WiFi modem
RAM	Minimum 4 GB memory for vCPE-OS and acceleration (DPDK)
Hard Drive	120 GB or higher

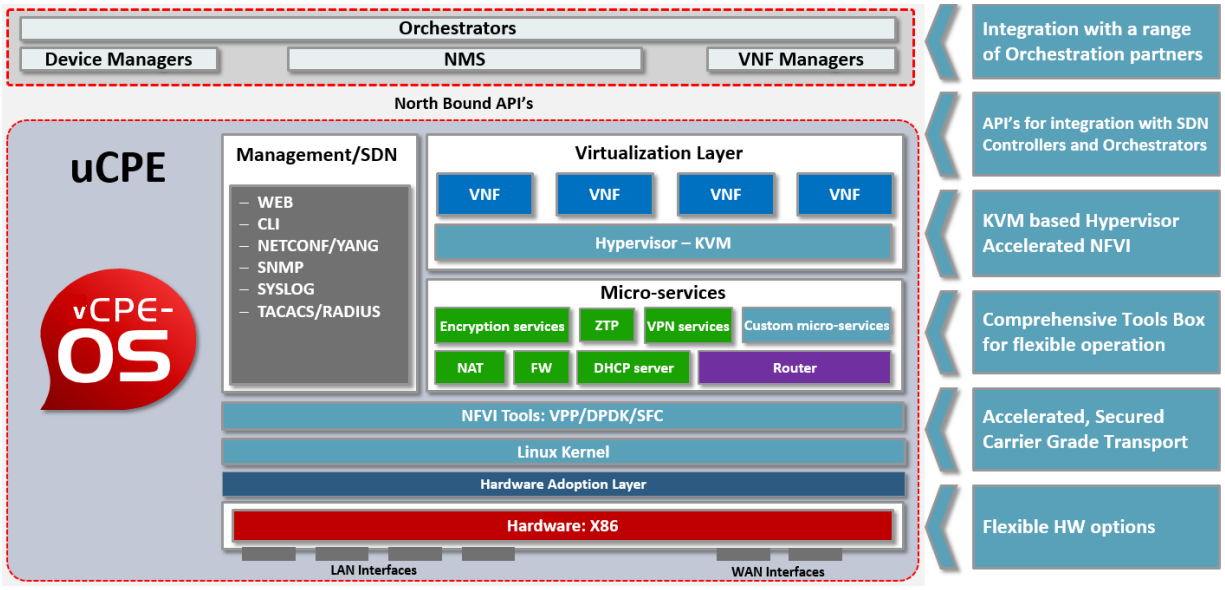
Note: *For certification of vCPE-OS over a third-party white box, please contact your local RAD partner.*

MANAGEMENT

Configuration	Web-based interface using HTTPS or HTTP
	CLI with password-protected access
Protocols	NETCONF server (v1.0/v1.1)/ YANG
	SNMP v2/v3
	Telnet, SSH v2, HTTPS server, TFTP/SFTP
Users	User roles and privileges
Monitoring and Diagnostics	Syslog
	Traceroute, ping
	Alarm and event logs
	PM collection
DHCP Server	IPv4, IP subnet pools support 256 addresses

IP ADDRESSING AND ROUTING

Addressing	IPv4 and IPv6
Routing Protocols	OSPF v2, BGP v4
Routing Technologies	Static
	VRF (10), RIF (32)
NAT	Static/dynamic
	NAPT/NAT
DHCP	Client, server, relay
	IP helper addresses
DNS	Server (Up to 32 DNS servers)



vCPE-OS Architechture

vCPE-OS

Open Carrier-Class Operating System for Network Edge

TIMING

Date and Time	Local time setting
Protocol	SNTPv4

SECURITY

Access Lists	Standard and extended
Session	Monitoring and limiting
Authentication	Locally, RADIUS, TACACS+ (also for authorization and accounting), LDAP
Public Keys	Public Key Infrastructure with X.509 certification for Zero Touch
	Certificates with SCEP CA server
Features	Login lockout

SERVICE CHAINING AND ACCELERATION

Method	VPP
	DPDK

IP VPNS

Protocols	Policy- and route-based IPsec, GRE
	IKEv1 (main and aggressive mode), IKEv2, SHA2
	L3 IPsec VPN
	PPPoE supporting Broadband access
IKE Algorithms	AES CBC 128 and 256, SHA-1, SHA-2 256 and 512
IKE Hashing Algorithms	SHA1-96-HMAC, SHA2-256-128-HMAC, SHA2-512-256-HMAC
ESP Algorithms	AES CBC 128 and 256, AES GCM 128 and 256, AES GMAC 128 and 256, null encryption, SHA-1, SHA-2 256 and 512
DH Groups	1 (768-bit modulus) 2 (1024-bit modulus) 5 (1536-bit modulus) 14 (2048-bit modulus) 19 (256-bit elliptic curve) 20 (384-bit elliptic curve)
Technologies	NAT traversal
	Interoperability with SCEP server 2012 and higher

BRIDGING

Operation Mode	VLAN aware VLAN un-aware
	Static or Dynamic MAC addresses
Max number of bridges	4
Max number of bridge ports	32
Max MAC addresses per bridge	512

WI-FI

Radio mode	802.11a/b/g/n/ac
Throughput	Up to 300 Mb
Security	WPA2-AES
	MAC filter
Users	8 concurrent
SSID	6
Bands	2.5Ghz and 5Ghz

CELLULAR AND GPS

LTE	Single SIM
Operation Modes	PPP*, Eth/DHCP

OAM

SLA Monitoring	ICMP echo, UDP echo

VIRTUALIZATION

Hypervisor	KVM

ZERO TOUCH

ZTP	On-net
	Off-net (over unsecured network) performs secure “call home” using Public Key Infrastructure (X.509)

** This feature will be released in a future version.*

vCPE-OS

Open Carrier-Class Operating System for Network Edge

Data Sheet

Ordering

Legend

VCPE-OS-LIC/@/#/$

@	CPE type	
	U	Universal CPE
#	License type	
	AN	Annual license for 1 year
	PR	Perpetual license
$	CPU type, number of cores	
	D2C	Denverton, 2 cores
	D4C	Denverton, 4 cores
	D8C	Denverton, 8 cores
	D12C	Denverton, 12 cores
	D16C	Denverton, 16 cores
	X4C	Xeon D, 4 cores
	X6C	Xeon D, 6 cores
	X8C	Xeon D, 8 cores
	X12C	Xeon D, 12 cores
	X16C	Xeon D, 16 cores

RECOMMENDED CONFIGURATIONS

VCPE-OS-LIC/U/AN/X8C

VCPE-OS-LIC/U/AN/D8C

VCPE-OS-LIC/U/PR/X8C

VCPE-OS-LIC/U/PR/D8C

VCPE-OS-LIC/P/AN/D2C

VCPE-OS-LIC/P/PR/X2C

RADCARE SERVICE COVERAGE

vCPE-OS annual license includes RADCARE-VCPEOS-PREMIUM, while vCPE-OS perpetual license requires RADcare license to be ordered separately.

RADCARE-VCPEOS-PREMIUM

24x7 SW support coverage plus maintenance, new feature releases and security patches

Note: ***RADCARE-VCPEOS-PREMIUM*** *is offered for a 12-month period and must be renewed every 12 months period. For longer periods, please contact RADcare Services.*

RADCARE-VCPEOS/P-PREMIUM

24x7 SW support coverage plus maintenance, new feature releases and security patches with perpetual license

PROFESSIONAL SERVICES

Remote installation and activation of vCPE-OS on ETX-2v

Onsite or remote vCPE-OS SW upgrade and activation

Onsite initial implementation (20 installations of vCPE-OS on ETX-2v, installation documentation and training session)

Full list of RAD services

SPECIAL CONFIGURATIONS

Please contact your local RAD partner for additional configuration options.

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