

ETX-2v

Open uCPE White Box Platforms



- Versatile suite of carrier-grade white boxes, supporting wide range of business customers and scenarios with different VNF based applications, suitable for uCPE, pCPE or “bare-metal” deployments
- Flexible connectivity options: SFP, SFP+, RJ-45 Ethernet, WiFi, LTE, VDSL, and pluggable PNFs
- Flexible design allows matching configuration to any network needs

ETX-2v is an x86-based open platform, which can host virtual functions (VFs) and applications. It is optimized for use with RAD's vCPE-OS or pCPE-OS (a carrier-grade operating system for network edge virtualization with optimized data plane), or any other third-party operating system.

RAD's vCPE-OS includes a standard KVM hypervisor to host third-party applications (VFs) or integrate opposite third-party service orchestrators (see separate documentation on vCPE-OS).

ARCHITECTURE

ETX-2v family is very flexible in HW options in terms of CPU types, memory size and networking connectivity, which include SFP, SFP+, RJ-45, 10/100/1000BaseTx, PoE, WiFi, LTE, VDSL, and pluggable RAD Smart SFPs.

ETX-2v family addresses different site requirements in terms of hosted applications, network connectivity and needed performance by using appropriate CPU and memory size. The basic differentiation is by defining platform type matching site size, like “Small”, Medium” and “Large”.

For “Small” site the most appropriate platform option is ETX-2V-CA/AC/**2CMB**/4U/**DY**, where “D” defines the CPU type which is ATOM C3000 series (Denverton) with Y=2 or 4, defining the number of cores. The number of cores is important to understand how many VNFs (if needed) it is possible to run on this platform. This platform uplinks are 1G with 2 COMBO ports (“2CMB”). The unit is desktop form factor with external AC-DC adapter.

For “Medium” site the most appropriate platform option is ETX-2V-CA/AC/**2SP**/6U/**DY**, where “D” defines the CPU type which is ATOM C3000 series (Denverton) with Y=4 to 16, defining number of cores. This platform uplinks are 1G/10G with 2 SFP+ ports (“2SP”). A single integrated VDSL2 port is also available as an option. In some cases, especially with the 16 cores option, this platform can also support relatively “Large” sites with multiple VNFs (distributed scheme). The unit is desktop form format with external AC-DC adapter. Dual redundant power supplies are also available as ordering option.

Both the “Small” and “Medium” site platforms have options for integrated Wi-Fi and LTE.

For “Large” site the most appropriate platform option is ETX-2V-AX/AC/**2SP**/8U/**XY** where “X” defines the CPU type which is Xeon D series with Y=4 to 16, defining number of cores. This platform uplinks are 10G with 2 SFP+ ports (“2SP”). This platform has fixed 8 10/100/1000BaseT ports and two expansion slots for more network ports. Expansion options are: 4/8 x RJ-45 GE ports or 2 x SFP+ ports, so that the platform can provide up to 24 GE ports in addition to 2 x SFP+ ports. The power supply is internal AC, but there is an ordering option for dual redundant AC PSs.

MARKET SEGMENTS AND APPLICATIONS

For business service applications, ETX-2v fits centralized, decentralized, or a mix of both implementation modes.

In centralized deployments, ETX-2v acts as a “pCPE” by decoupling the operating system networking and NFVI capabilities.



ETX-2v

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In decentralized deployments, ETX-2v functions as a “uCPE” (universal CPE), hosting an array of VNFs for supporting the following applications:

- **Router:** Enterprise router for hosted public clouds and branch CPE deployments
- **SD-WAN:** Software-defined control of WAN connections with secure overlay tunnels for business services
- **Cryptography:** Standard AES 256-bit cipher encryption/decryption of L2-L4 traffic
- **Next-Generation Firewall:** Unified threat management for provider-managed SMB services
- **Session Border Controller (SBC):** Management of VoIP signaling and media flows
- **Packet Analyzer:** Troubleshooting on demand from the customer edge using a packet sniffer VF
- **WAN Optimization:** Eliminating content duplication, handling compression and optimizing latency

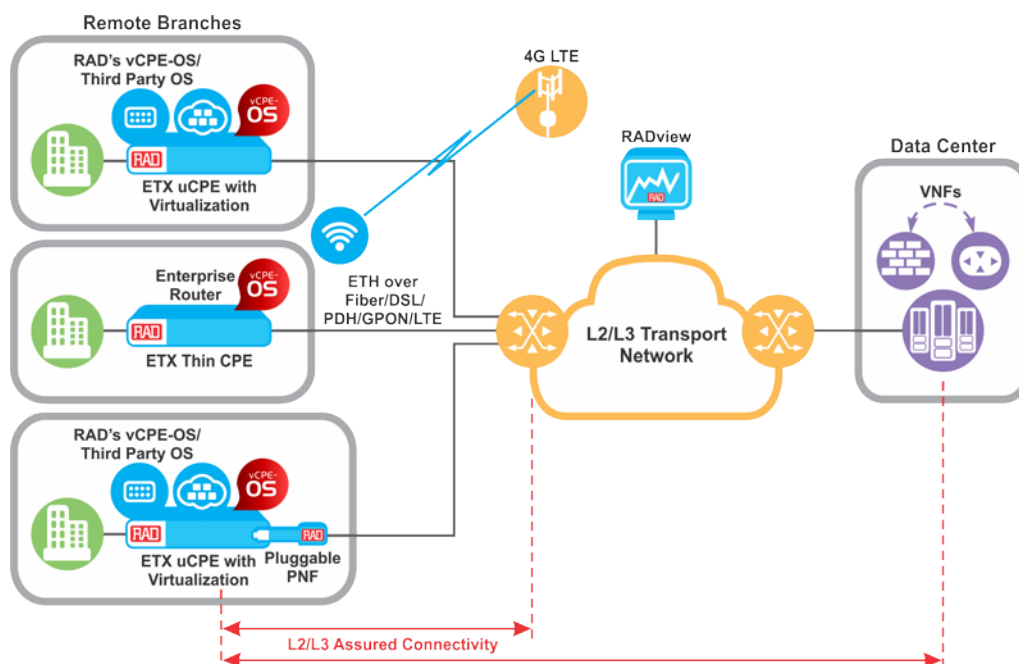


Figure 1. vCPE Business Services

Specifications

Main Characteristics are listed in Table 2 (according to Ordering Options)

VDSL PORT

Compliance	G.inp, G.vector and PhyR
	ITU-TG.992.5, ITU-T G.992.3, ITU-T G.992.1.
	ANSI T1.413 issue 2. AnnexM
	G.992.5(ADSL2+), G.992.3(ADSL2), G.DMT (mainly France)
	G.993.2 (supporting profile 8a, 8b, 8d, 12a, 12b, 17a)
Data Rate	G.Fast 212a, vDSL.2, 35b
	G.992.5(ADSL2+): Downstream: 24Mbps, Upstream: 1.3 Mbps
	G.992.3(ADSL2): Downstream: 12Mbps, Upstream 1.3Mbps
	G.DMT: Downstream: 8Mbps, Upstream: 832Kbps
Impulse overvoltage protection	6 kV with K.21 enhanced

LTE MODULE

Any ETX-2v-CA device can be ordered with /LE or /LA LTE option

RF bands	See Table 1. F=FDD; T= TDD
Data rates downlink (Cat 6)	FDD: 300 Mbps TDD: 222 Mbps
Data rates uplink (Cat 6)	FDD: 50 Mbps TDD: 26 Mbps

WIFI MODULE

Output power (per chain)	Dual band
	2.4GHz: max 21dBm
	5GHz max 20dBm
Compliance	IEEE 802.11ac
	Backward compatible with 802.11a/b/g/n
	Supports IEEE 802.11d, e, h, i, k, r, v time stamp, and w standards
2x2 MIMO	Up to 867Mbps
DFS	Supports Dynamic Frequency Selection

Ordering

ETX-2v-CA/!/+/2+/+1/+3/CPU/HD/RAM/C

White box platform

ETX-2v-AX/!/+/2+/+1/+3/CPU/HD/RAM/C

Modular white box platform




Legend

!	Power Supply	
	AC	AC-DC External adaptor for ETX-2V-CA or AC internal PS for ETX-2V-AX
	ACR	AC redundant power supply for ETX-2V-AX
	ACEXR	AC-DC External dual adaptors for ETX-2V-CA

Table 1. Supported RF Bands

	1	2	3	4	5	7	8	12	13	18	19	20	21	25	26	28	29	30	38	39	40	41
APAC Bands (LA)	F	F			F	F	F			F	F		F			F			T	T	T	T
EU/USA Bands (LE)	F	F	F	F	F	F	F	F	F			F		F	F		F	F				T

Table 2. ETX-2v Ordering Options

Specification	Small site 	Medium site 	Large site 
Ordering	ETX-2V-CA/AC/2CMB/4U/D	ETX-2V-CA/AC/2SP/6U/D	ETX-2V-AX/AC/2SP/8U/X
CPU	Intel – ATOM SoC 2 Core – C3338; 4 Core – C3558	Intel ATOM SoC 8 Core – C3758; 4 Core – C3558 16 Core – C3958	Intel® Xeon® SOC 4 Core – D-1527 8 Core – D-1548 12 Core – D-1557 16 Core – D-1577
Memory	DDR4 SO-DIMM support ECC Max. capacity: 16 GB (single slot)	2x DDR4 SO-DIMM support ECC Max. capacity: 32 GB (2 slots)	4 x DDR4-2400 R-DIMM/U-DIMM, non-ECC memory Max. Capacity: 128 GB (4 slots)
Networking (Ethernet)	2 x 1 GbE Copper/SFP Combo WAN ports 4 x RJ-45 10/100/1000 Mbps Ethernet ports (4x LAN chip Intel i211)	2x 10 GbE SFP+ WAN ports 2x RJ-45 10/100/1000 Mbps ports 4x RJ-45 10/100/1000 Mbps ports via Intel i350	2 x 10 GbE SFP+ WAN ports 8 x 10/100/1000 Mbps Ethernet ports via Intel® i350 2 x 10/100/1000 Mbps LAN modules (optional), up to 24 LAN ports
VDSL	No	Yes	No
SRI-OV	No	Yes	Yes
PoE+ (Optional)	No	Yes	Yes
Wifi/LTE	Yes	Yes	No
System Health Monitoring (IPMI 2.0)	No	Optional	Optional
Trust Platform Module (TPM)	Yes	Yes	Yes
Peripheral I/O	2x USB 3.0 , 1x RJ-45 Console	2x USB 2.0, 1x RJ-45 and 1x micro USB Console	2 x USB 3.0, 1 x RJ-45 Console
Storage	MLC SSD From 64GB to 1TB size	MLC SSD From 64GB to 1TB size	MLC SSD From 64GB to 2TB size
Power Supply	External AC power adapter: 100~240V, 1.5A, 50-60Hz, to 12V	External AC power adapter: 100~240V, 1.5A, 50-60Hz, to 12V	Built-in 270W ATX power supply 280W redundant power supply (optional)
Dimensions	Height: 44 mm (1.73 in) Width: 231.6 mm (9.12 in) Depth: 174.6 mm (6.87 in)	Height: 44 mm (1.73 in) Width: 248.4 mm (9.8 in) Depth: 251.5 mm (9.9 in)	Height: 44 mm (1.73 in) Width: 430 mm (16.93 in) Depth: 391 mm (15.39 in)
Operating Environment	0°C to 40°C (32 to 104°F) 10 to 90% RH	0 to 40°C (32 to 104°F), 20 to 90% RH	0°C to 45°C (32°F to 113°F) 10 to 95% RH
Storage Environment	-20°C to 70°C (-4 to 158°F), 5 to 95% RH@55°C	-10 to 70°C (14 to 158°F), 5 to 95% RH @ 55°C	-20°C to 70°C (-4 to 158°F), 5 to 95% RH@55°C
Weight	2.5 kg (4.5 lb)	3.2 kg (5.8 lb)	8.5 kg (18.7 lb)

Legend (cont.)

+2	VDSL Port for ETX-2V-CA medium size platform	
	VD	VDSL WAN interface
+1	WAN Port	
	2CMB	2 GE Combo ports
	2S	2 SFP Ethernet ports
	2SP	2 SFP+ Ethernet ports
	4S	4 SFP Ethernet ports
	4SP	4 SFP+ Ethernet ports
+3	LAN Port	
	2P	2 10/100/1000BaseT PoE ports
	4P	4 10/100/1000BaseT PoE ports
	2U	2 Ethernet UTP ports
	4U	4 Ethernet UTP ports
	6U	6 Ethernet UTP ports
	8U	8 Ethernet UTP ports
	10U	10 Ethernet UTP ports
	12U	12 Ethernet UTP ports
+4	Expansion	
	M2	2 Expansion slots
CPU		
	D4C	4 Cores DNV CPU
	D8C	8 Cores DNV CPU
	D16C	16 Cores DNV CPU
	X4C	8 Cores Xeon D CPU
	X6C	6 Cores Xeon D CPU
	X8C	8 Cores Xeon D CPU
	X12C	12 Cores Xeon D CPU
	X16C	16 Cores Xeon D CPU
HD	Hard Drive	
	64S	64 GB MLC SSD
	128S	128 GB MLC SSD
	256S	256 GB MLC SSD
	512S	512 GB MLC SSD
	1000S	1000 GB MLC SSD
	2000S	2000 GB MLC SSD
RAM	RAM	
	4R	4 GB RAM
	8R	8 GB RAM
	16R	16 GB RAM
	32R	32 GB RAM
	64R	64 GB RAM
C	Interface type	
	LA	LTE with APAC (Asia) bands
	LE	LTE with EU/USA bands
~	Wifi	
	W	Wifi module

International Headquarters

24 Raoul Wallenberg St., Tel Aviv 6971923, Israel
 Tel 972-3-6458181 | Fax 972-3-7604732
 Email market@rad.com

RECOMMENDED CONFIGURATIONS

ETX-2V-CA/AC/VD/2SP/6U/D4C/64S/8R/LE

ETX-2V-CA/AC/2SP/6U/D8C/128S/8R/LA

ETX-2V-CA/AC/2SP/6U/D16C/256S/32R

ETX-2V-CA/ACEXR/2SP/6U/D16C/256S/32R

ETX-2V-CA/AC/2CMB/4U/D4C/128S/8R

ETX-2V-AX/AC/2SP/8U/X4C/512S/32R

ETX-2V-AX/AC/2SP/8U/M2/X12C/512S/64R

EXPANSION MODULES FOR ETX-2V-AX**ETX-2V-AX-EXP/4U**

4 x UTP ports expansion module for ETX-2V-AX

ETX-2V-AX-EXP/8U

8 x UTP ports expansion module for ETX-2V-AX

ETX-2V-AX-EXP/2SP

2 x SFP+ 10GbE ports expansion module for ETX-2V-AX

ETX-2V-AX-EXP/4SP

4 x SFP+ 10GbE ports expansion module for ETX-2V-AX

SPECIAL CONFIGURATIONS

Please contact your local RAD partner for additional configuration options (note that only restricted combinations of ports and features are possible).

SUPPLIED ACCESSORIES

AC/DC power adaptor

OPTIONAL ACCESSORIES**VCPE-OS**

Carrier-grade operating system for virtualization

Mounting Kits**RM-ETX-2V-CA/AC/2CMB/4U**

19" Rack mount Kit for ETX-2V-CA/AC/2CMB/4U

RM-ETX-2V-CA/AC/2SP/6U

19" Rack mount Kit for ETX-2V-CA/AC/2SP/6U

RM-ETX-2V-AX

19" Rack Mount Kit for ETX-2V-AX

North American Headquarters

900 Corporate Drive, Mahwah, NJ 07430, USA
 Tel 201-529-1100 | Toll Free: 800-444-7234 | Fax: 201-529-5777
 Email market@radusa.com



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www.rad.com

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