



uCPE Solutions

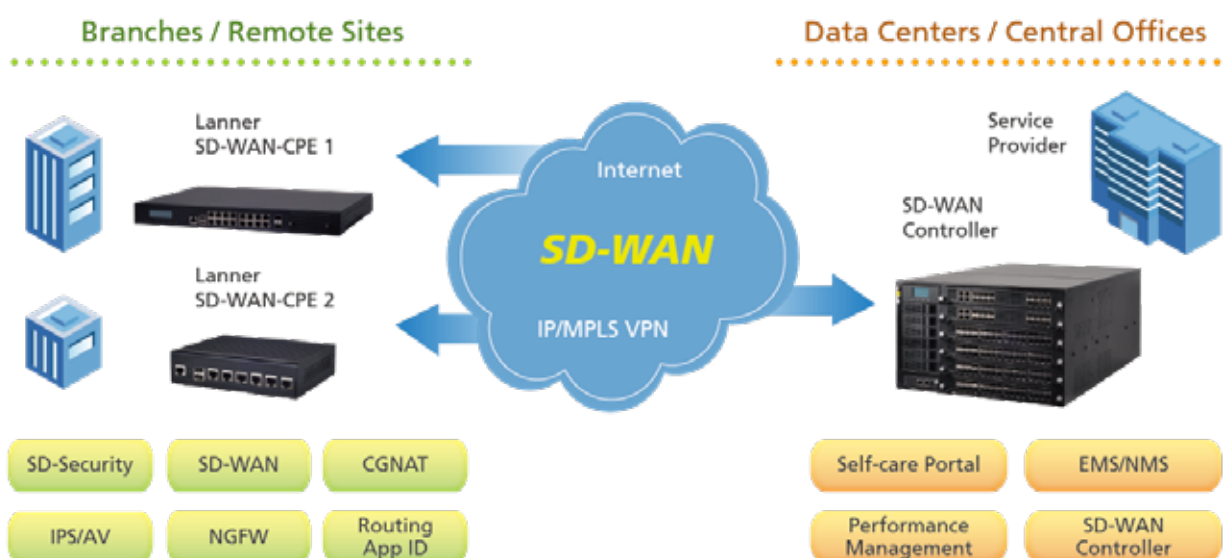
Accelerating your Time-to-Market for SD-WAN Deployment



SD-WAN

According to industrial forecasts by Gartner, there will be more than 50% of enterprise replacing their edge networks with SD-WAN infrastructures by 2020. The rapid rise of SD-WAN is driven by both economical and technological factors. Futuriom Research expects that the growth in SD-WAN technology devices and network service revenues will approach \$1 billion in 2019 and reach \$1.6 billion by 2021.

SD-WAN offers enterprises high degree of flexibility for WAN load-balancing, optimization and visibility. Due to the software-defined nature, zero-touch provisioning becomes available so that enterprise IT administrators can duplicate the deployments for multiple edges and branches through web interface and cloud infrastructures.



Complete uCPE Product Portfolio

To meet the mission-critical demand for SD-WAN networks, Lanner provides performance-enhanced, desktop/rackmount uCPE platforms powered by the latest generation of high core-count x86 processors. Boosted by the packet delivery and virtualization technologies, our uCPE platforms deliver significant throughput enhancement when running multiple compute-intensive VNFs in SDN/NFV infrastructure.

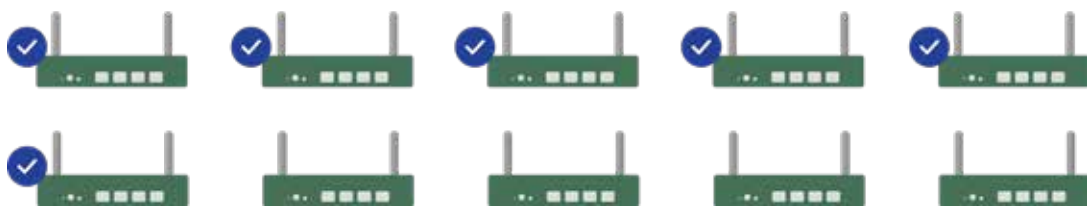
- High Core Count Intel Processor
- DPDK Packet Acceleration
- SR-IOV Improved Virtualized Performance
- Intel QAT Cryptographic Acceleration



Most Selected uCPE Platforms

Lanner is the leading uCPE hardware provider behind major SD-WAN solution providers. Among the 20 leading companies in the 2019 Gartner Magic Quadrants Report for WAN Edge Infrastructure*, 55% Choose Lanner vCPE and uCPE platform. Lanner uCPE platforms provide a truly open network platforms to work compatibly with client specifications, and even zero-touch provisioning for customer applications.

55% of top 20 WAN Edge Vendors
Selected Lanner uCPE Solution



Over 200,000 uCPE On-site Deployment

Since 2018, Lanner uCPE Platforms has been deployed in enterprises, retail chains, and distributed branches for more than 200,000 devices. With multiple successful deployment cases of our appliances in diversified client environments, Lanner vCPE/uCPE devices are highly customizable to meet customer demands in enterprise networking hardware and to build a better network platform for the businesses they serve, resulting in accelerated time-to-market and reduces time needed for validation.



SD-Branch for
Distributed Enterprises



High Availability
Retail SD-WAN



Secure Multi-site
SD-WAN

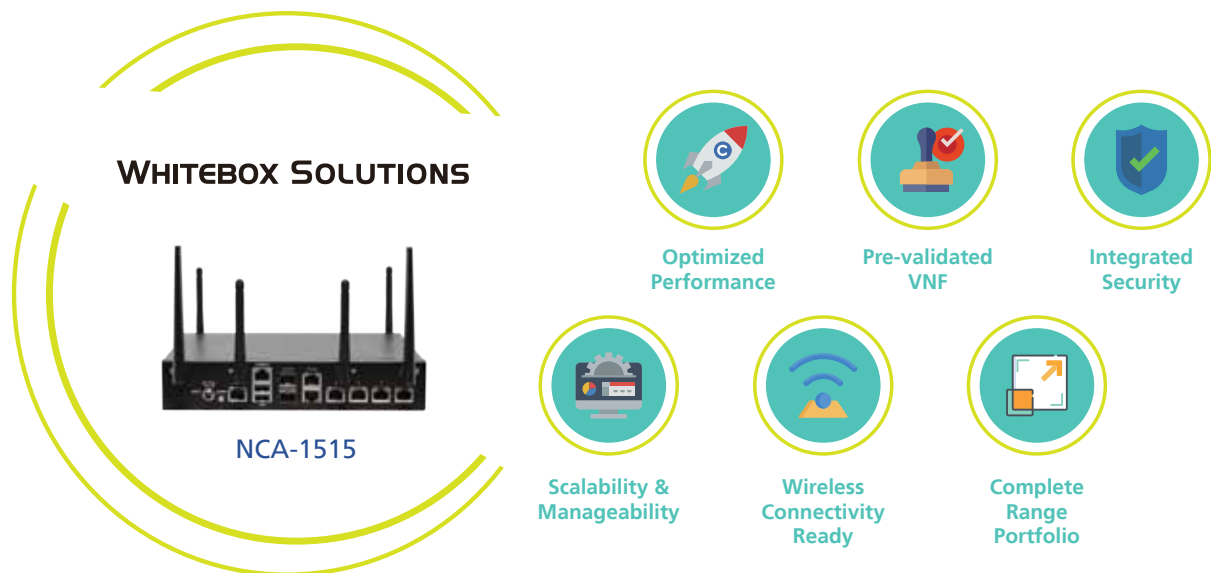


Industrial SD-WAN
for Remote Sites

Whitebox Solutions for uCPE

The global leader in White-box uCPE

Lanner uCPE Whitebox Solutions™ has won recognition from leading SD-WAN vendors. According to the IHS Markit report on “Data Center Network Equipment Market Tracker” released in October 2019, nine of the top sixteen SD-WAN players have adopted Lanner’s Whitebox Solutions™ for its high level of reliability and interoperability.



Homologation & WiFi/LTE Certification

To meet the demands for interoperability in different vertical markets, Lanner has taken a step forward to receive certificates of product design for government regulation (CE, FCC) and wireless communications (PTCRB for Verizon and AT&T), which prove interoperability and meet regulatory standards, safety and technical requirements.

NCA-1515, has received certifications from Verizon Wireless and AT&T as a LTE/WiFi Ready uCPE/vCPE for SD-WAN. Featuring up to six antennas for enhanced 4x4 LTE/WiFi connectivity, the NCA-1515 enables SD-WAN and VNF services at distributed enterprise, retail stores and branch offices



Built-in Security and Manageability

Security Inside-out

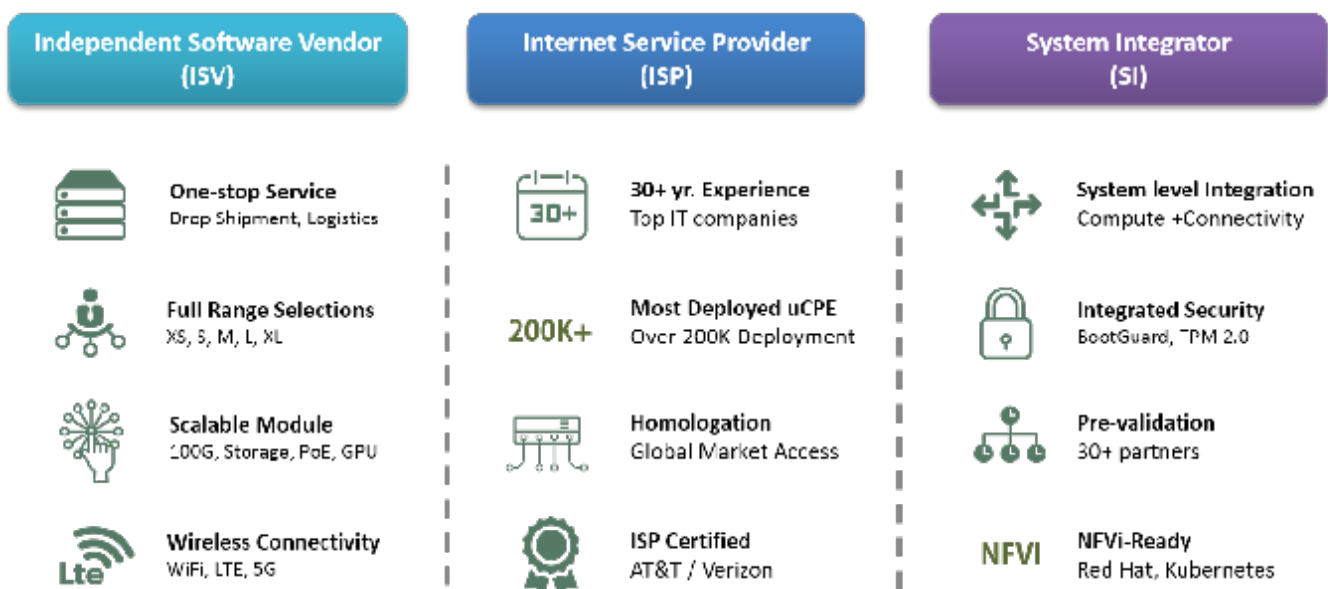
Lanner uCPE platforms are protected with firmware/BIOS-based security features, offering integrated crypto acceleration, BIOS authentication and IPMI remote management to enable WAN efficiency without compromising on security.



Flexible uCPE Deployment

Lanner has been involved in SD-WAN deployment methods; from designing dedicate network appliances for Internet Service Providers (ISP), to building NFV-based platform for hosting VNFs from Independent Software Vendor (ISV). These uCPE platforms have been adopt by world-leading SD-WAN solution vendors, from traditional WAN optimization companies, communication service provider, to software start-ups and cloud-based services.

Why Choose Lanner uCPE Solutions?



Pre-validated by Ecosystem Partners

Over 20+ Ecosystem Partners

Multi-vendor SD-WAN services help managed service providers benefit from the time-to-market flexibility and the agility while reducing TCO. The deployment of multi-vendor SD-WAN involves comprehensive validation and integration of uCPE platform with a variety of software service chaining. The deployment of multi-vendor SD-WAN involves comprehensive validation and integration of uCPE platform with a variety of software service chaining, including security, SDN switching, routing, NFV, vBNG/vCGNAT and service assurance.

NFV-I Validation Partners



VNF Validation Partners



Ecosystem Partners



Michael Heffner
VPPLM, Ensemble division

"While NFV enables the disaggregation of hardware and software, it is important to maintain coordination between hardware and software components to ensure that the solution is reliable, easy to deploy and end user requirements are met. By combining the market leading capabilities of ADVA and Lanner, we are enabling CSPs to transition to a new more efficient business model"



Beth Cohen
Cloud Product Technologist

"Lanner's flexibility as well as close collaboration with the eco-system is bringing the foundation for a long lasting working relationship in these challenging network transformation. Also, we've achieved 2.5x the performance running on the Lanner platform over our previous platform."



Nirav Modi Vice president

"We are excited to have Lanner join the Ciena Blue Orbit ecosystem. Lanner's participation offers yet another choice to our customers looking for performance-oriented virtualization hardware platforms,"



Rahul Chandra
VP, SDN/NFV Business
Development

"Together, NEC/Netcracker and Lanner are collaborating in the NaaS space and developing solutions that enable service providers to quickly launch new multivendor value-added services in the network edge, capitalizing on the incredible opportunity to better serve the enterprise market. "



Kaz Kuroda
Managing Director, APAC

"Our partnership with Lanner enables us to be a problem solver for today's network administrators who are navigating management and operational challenges when deploying universal CPEs. The collaboration showcases how a session-oriented, application-aware universal CPE platform with native load balancing and security is the foundation needed for all VNF deployments."



ADRIAN LEUFVÉN
Senior Vice president

"Operators and enterprises are looking for alternatives to traditional network appliances because they no longer want complex, inflexible, and costly solutions. We see a shift to solutions based on white box hardware and open virtualization software because that is the most flexible and cost-efficient combination. Together with Lanner, we now address this market with an optimized offering."



Dr. Weixiao Liu
CEO

"NFV software and white box servers are continuing to replace expensive and inflexible legacy network appliances. The combination of Lanner's true white box solutions and netElastic's industry-leading NFV software will help service providers disaggregate their networks for greater flexibility, scalability, and cost savings."



Philippe Moulin
COO

"For network virtualization to truly succeed, flexibility and openness are critical. Our partnership with Lanner illustrates how great hardware and software can combine to ease the pain of VNF management and service-chaining, empowering CSPs to realize simple, manageable NFV."



N. Mohan Rangan
CEO

"As enterprises continue the road to digital transformation, they increasingly are incorporating uCPE as a key component of that journey. Aricent's partnership with Lanner creates a next-generation framework that enables enterprises to increase capacity and improve resiliency by offloading hardware and supporting stackable systems, ultimately reducing costs by as much as 80 percent over traditional solutions."



Raanan Tzemach
VP of Product Management

"Lanner is clearly a leading provider of high performance white box appliance innovation and we are pleased to be working with the company to expand our uCPE solution portfolio,"



Patrick Ostiguy,
CEO

"Our partnership with Lanner will ensure that its many customers that are already building virtualized services, or those that are planning to do so, will have immediate access to the world's first fully-virtualized network performance assurance solution."

uCPE Appliances

2 Cores



2 Cores



2~8 Cores



2~8 Cores



Feature		LUNA-D125	NCA-1020	NCA-1510	NCA-1513
Form Factor		Desktop	Fanless Desktop	Fanless Desktop	Desktop
Platform	Processor Options	Intel® Atom™ C2316 (Rangeley)	Intel® Celeron® N3010 (Braswell)	Intel® Atom™ C3000 (Denverton)	Intel® Atom® C3000 (Denverton)
	CPU Socket	onboard	onboard	onboard	onboard
	Chipset	SoC	SoC	SoC	SoC
	Security Acceleration	Intel QuickAssist Technology	N/A	Intel QuickAssist Technology	Intel QuickAssist Technology
BIOS		AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS
System Memory	Technology	DDR3L 1333 MHz Non-ECC	DDR3L 1600 MHz UDIMM	DDR4 2400/2133/1866 MHz ECC/Non-ECC SODIMM (By SKU)	DDR4 2133/1866 MHz ECC/Non-ECC SODIMM (By SKU)
	Max. Capacity	8 GB, default capacity 2GB	8 GB	16 GB	16 GB
	Socket	1 x 204-pin SODIMM	1 x 204-pin SODIMM	1 x 260-pin SODIMM	1 x 260-pin SODIMM
Networking	Ethernet Ports	2 x GbE RJ45 Marvell 88E1514 2x GbE RJ-45 Intel i211-AT	3 x RJ45 GbE Intel® i211	4 x GbE RJ45 Intel® SoC Integrated MAC 2 x GbE RJ45 or SFP Intel® i210 (By SKU)	4 x GbE RJ45 Marvell 88E1543 2x GbE RJ-45 Intel i210-AT or 2x GbE SFP Intel i210-IS (By SKU)
	Bypass	N/A	1 pair Gen3	1 pair Gen3 (By SKU)	2 pairs Gen3 (By SKU)
	NIC Module Slot	N/A	N/A	N/A	N/A
LOM	I/O Interface	N/A	N/A	N/A	N/A
	OPMA Slot	N/A	N/A	N/A	N/A
I/O Interface	Reset Button	1	1	1	1
	LED	Power/Status/Storage	Power LED on power button	Power/Status/Storage	Power/Status/Storage
	Power Button	1	1	1	1
	Console	1 x RJ-45	1 x RJ45	1 x Mini USB	1 x RJ-45
	USB	2 x USB 2.0	1 x USB 2.0, 1 x USB 3.0	2 x USB 2.0	2 x USB 3.0
	LCD Module	N/A	N/A	N/A	N/A
	Display	N/A	1 x HDMI	N/A	N/A
Storage	Power Input	1 x DC Jack	1 x DC Jack	1 x DC Jack	1 x DC Jack
	HDD/SSD Support	N/A	1 x 2.5" Bay - SSD Only (By SKU)	1 x 2.5" Bay (Optional)	1 x 2.5" Internal (Optional)
	Onboard Storage	1x NAND Flash 8G onboard 1 x M.2 2242, B Key	1 x mSATA mini	1 x EMMC 8GB	1 x EMMC 8GB, 1 x M.2-2242/2280, B Key
Expansion	PCIe	N/A	N/A	N/A	N/A
	mini-PCIe	1 x Mini-PCIe (PCIe) 1 x M.2 3042 (PCIe/USB 2.0) 1 x Nano SIM	1 x Mini-PCIe (PCIe/USB2.0)	1 x Mini-PCIe (PCIe) 1 x M.2 (USB2.0/PCIe) 1 x Nano SIM	1 x Mini-PCIe (PCIe/USB2.0) 1 x M.2 3042 (USB3.0) 1 x Nano SIM
Miscellaneous	Watchdog	Yes	Yes	Yes	Yes
	Internal RTC with Li Battery	Yes	Yes	Yes	Yes
	TPM	Yes	Yes (Optional)	Yes	Yes
Cooling	Processor	Passive CPU heatsink	Passive CPU heatsink	Passive CPU heatsink	Passive CPU Heatsink
	System	Fanless	Fanless	Fanless	1 x Cooling Fan w/ Smart Fan
Environmental Parameters	Temperature	0~40°C Operating -20~70°C Non-Operating	0~40°C Operating -20~70°C Non-Operating	0~50°C Operating (SKU A/B/C) 0~40°C Operating (SKU D) -20~70°C Non-Operating	0~40°C Operating -20~70°C Non-Operating
	Humidity (RH)	5~90% Operating 5~95% Non-Operating	5~90% Operating 5~95% Non-Operating	5~90% Operating 5~95% Non-Operating	5~90% Operating 5~95% Non-Operating
System Dimensions	(WxHxD)	185 x 44 x 137 mm	137 x 36 x 120 mm	231 x 44 x 200 mm	231 x 44 x 200 mm
	Weight	1 kg	0.5 kg	1.2 kg	1.2 kg
Package Dimensions	(WxHxD)	312 x 280 x 140 mm	426 x 252 x 282 mm	325 x 305 x 120 mm	358 x 290 x 135 mm
	Weight	1.3 kg	8.5 kg (10 in 1)	2.2 kg	2.75 kg
Power	Type / Watts	12V 3A 36W Power Adapter	12V 3A 36W Power Adapter	36W or 60W Power Adapter (By SKU)	40W power adapter
	Input	AC 100~240V @50~60 Hz	AC 100~240V @50~60 Hz	AC 100~240V @50~60 Hz	AC 100~240V @50~60 Hz
Approvals and Compliance		RoHS, CE/FCC Class A, UL	RoHS, CE/FCC Class B	RoHS, CE/FCC Class B, UL	RoHS, CE/FCC Class B, UL

4~16 Cores



4~16 Cores



4~16 Cores



4~16 Cores



NCA-1515	NCA-1516	NCA-2510/NCA-2512	NCA-4010/NCA-4012
Desktop	Desktop	1U 19" Rackmount	1U 19" Rackmount
Intel® Atom® C3000 (Denverton)	Intel® Xeon® D-1500 (Broadwell-DE NS)	Intel® Atom™ C3000, 8~16 Cores (Denverton)	Intel® Xeon® D-1500 4~16 Cores (Broadwell-DE)
onboard	onboard	onboard	onboard
SoC	SoC	SoC	SoC
Intel QuickAssist Technology	Intel® QuickAssist Technology	Intel® QuickAssist Technology	N/A
AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS
DDR4 2400/2133/1866 MHz ECC/Non-ECC SODIMM (By SKU)	DDR4 2133MHz ECC/Non-ECC RDIMM	DDR4 2400MHz ECC or non-ECC UDIMM	DDR4 2400MHz REG, ECC or non-ECC UDIMM
32 GB	128 GB	32GB	32GB
2 x 260-pin SODIMM	4 x 288-pin DIMM	4 x 288pin DIMM	2 x 288pin DIMM
4 x GbE RJ45 Intel® SoC Integrated MAC 2 x GbE RJ45 Intel® i350 and (by SKU) 2 x GbE SFP Intel® i350 (by SKU)	6 x GbE RJ45 Intel® i350-AM4 2 x SFP Intel® i350-AM4 (By SKU) 2 x SFP+ SoC Integrated MAC (By SKU)	1 x GbE RJ45 Intel® i210 4 x GbE RJ-45 Intel® i350-AM4 4 SFP+ Intel® Denverton Integrated (By SKU)	8 x GbE RJ45 Intel® i210 8 x GbE RJ45 Intel® i350-AM4 (By SKU) 2 x 10G SFP+ Broadwell-DE SOC (By SKU)
1 pair Gen3 (By SKU)	1 pair Gen3 (By SKU)	2 pairs Gen3 (By SKU)	3 pairs Gen3 (By SKU)
N/A	N/A	1	1
1 x RJ45 (By SKU)	1 x RJ45	1 x RJ45 (By SKU)	1 x RJ45 (By Project) *Share with ETH0
Yes	IPMI Onboard (By SKU)	Yes (By SKU)	Yes (By SKU)
1	1	1	1
Power/Status/Storage	Power/Status/Storage	Power/Status/Storage	Power/Status/Storage
1	1	1 x ATX Power switch	1 x ATX Power switch
1 x RJ-45	1 x RJ45	1 x RJ45	1 x RJ45
2 x USB 2.0	2 x USB 3.0	2 x USB 3.0 / 2 x USB 2.0	2 x USB 2.0
N/A	N/A	2x20 character LCM 4 x keypads	2x20 character LCM 4 x keypads
N/A	N/A	From OPMA slot (Optional)	From OPMA slot (By Project)
1 x DC Jack	2 x DC Jack	AC power inlet on PSU	AC power inlet on PSU
1 x 2.5" Bay (Optional)	1 x 2.5" Bay (Optional)	2 x 2.5" bays	2 x 2.5" bays
1 x EMMC 8GB	1 x SATADOM (Optional)	1 x mSATA	1 x mSATA
N/A	N/A	1 x PCI-E*8 HH/HL (Optional)	1 x PCI-E*8 FH/HL (Optional)
2 x Mini-PCIe (PCIe/USB2.0) 1 x M.2 2242 B Key (USB3.0) 2 x Nano SIM for M.2	2 x Mini-PCIe Half Size (PCIe/USB2.0) 1 x Nano SIM Slot	N/A	N/A
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
Yes	Yes	Yes (optional)	Yes (optional)
Passive CPU Heatsink	Passive CPU heatsink	Passive CPU heatsink	Passive CPU heatsink
1 x Cooling Fan w/ Smart Fan	3 x cooling fans	2 x cooling fans with smart fan	2 x cooling fans with smart fan
0~40°C Operating -20~70°C Non-Operating	0~50°C Operating -20~70°C Non-Operating	0~40°C Operating -20~70°C Non-Operating	0~40°C Operating -20~70°C Non-Operating
5~90% Operating 5~95% Non-Operating	5~90% Operating 5~95% Non-Operating	5~90% Operating 5~95% Non-Operating	5~90% Operating 5~95% Non-Operating
231 x 44 x 200 mm	275 x 44 x 310 mm	438 x 321 x 44 mm / 438 x 431 x 44 mm	438 x 321 x 44 mm / 438 x 431 x 44 mm
1.2 kg	3 kg	7 kg	7.5 kg
358 x 290 x 135 mm	478 x 359 x 163 mm	540 x 500 x 230 mm / 582 x 548 x 182 mm	540 x 500 x 230 mm / 582 x 548 x 182 mm
2.75 kg	5 kg	8 kg	8.5 kg
36W or 60W Power Adapter (By SKU)	90W Power Adapter (Optional 1+1)	220W ATX Single PSU/300W Redundant PSU	220W ATX Single PSU/300W Redundant PSU
AC 100~240V @50~60 Hz	AC 100~240V @50~60 Hz	AC 90~264V @47~63Hz	AC 90~264V @47~63Hz
RoHS, CE/FCC Class B, UL VCCI, CCC, PTCRB, ODI	RoHS, CE/FCC Class A, UL	RoHS, CE/FCC Class A, UL	RoHS, CE/FCC Class A, UL

uCPE Appliances

Wide Temperature



Wide Temperature



Feature		Description		NCR-1510	NEW	NCR-1567
Form Factor				Fanless Desktop		Fanless Desktop, IP67
Platform	Processor Options			Intel® Atom™ C3308/C3508/C3708 (Denverton)		Intel® Atom™ C3308/C3508/C3708 (Denverton)
	CPU Socket			onboard		onboard
	Chipset			SoC		SoC
	Security Acceleration			Intel® QuickAssist Technology		Intel® QuickAssist Technology
BIOS				AMI SPI Flash BIOS		AMI SPI Flash BIOS
System Memory	Technology			DDR4 2400MHz ECC/Non-ECC		DDR4 2400MHz ECC/Non-ECC
	Max. Capacity			16 GB		16 GB
	Socket			2 x 260-pin SODIMM (By SKU)		2 x 260-pin SODIMM (By SKU)
Networking	Ethernet Ports			6 x GbE RJ45 or 4 x RJ45 & 2 x GbE SFP (By SKU)		6 x GbE RJ45 or 4 x RJ45 & 2 x GbE SFP (By SKU)
	Bypass			1 pair Gen3		1 pair Gen3
	NIC Module Slot			N/A		N/A
LOM	I/O Interface			N/A		N/A
	OPMA Slot			N/A		N/A
I/O Interface	Reset Button			1		1
	LED			Power/Status/Storage		Power/Status/Storage
	Power Button			1		1
	Console			1 x Mini USB		1 x Mini USB
	USB			2 x USB 3.0 (By SKU)		2 x USB 3.0 (By SKU)
	LCD Module			N/A		N/A
	Display			N/A		N/A
	Power Input			1 x DC Jack		1 x DC Jack
Storage	HDD/SSD Support			1 x 2.5" Bay (Optional)		1 x 2.5" Bay (Optional)
	Onboard Storage			1 x M.2 2242, 1 x SATA III		1 x M.2 2242, 1 x SATA III
Expansion	PCIe			N/A		N/A
	mini-PCIe			1 x Mini-PCIe (PCIe/USB2.0)		4 x LTE expansion modules
Miscellaneous	Watchdog			Yes		Yes
	Internal RTC with Li Battery			Yes		Yes
	TPM			Yes		Yes
Cooling	Processor			Passive CPU heatsink		Passive CPU heatsink
	System			Fanless		Fanless
Environmental Parameters	Temperature			-40~70°C Operating (SKU A/B) -40~60°C Operating (SKU C) -40~85°C Non-Operating		-40~70°C Operating (SKU A/B) -40~60°C Operating (SKU C) -40~85°C Non-Operating
	Humidity (RH)			5~90% Operating 5~95%, Non-Operating		5~90% Operating 5~95%, Non-Operating
System Dimensions	(WxDxH)			310 x 44 x 240 mm		310 x 44 x 240 mm
	Weight			TBD		TBD
Package Dimensions	(WxDxH)			TBD		TBD
	Weight			TBD		TBD
Power	Type / Watts			60W Power Adapter		60W Power Adapter
	Input			9~54 VDC		9~54 VDC
Approvals and Compliance				RoHS, CE/FCC Class A		RoHS, CE/FCC Class A

8~16 Cores



8~28 Cores



16~56 Cores



NCA-4025	NCA-5520	NCA-5710
1U 19" Rackmount	1U 19" Rackmount	1U 19" Rackmount
Intel® Xeon® D2100 8~16 Cores (Skylake-D)	Intel® Xeon® Processor Scalable Family (Skylake/Cascade Lake-SP)	Intel® Xeon® Processor Scalable Family (Skylake/Cascade Lake-SP)
1 x FCPGA	1 x LGA3647	2 x LGA3647
N/A	Intel® C621/626	Intel® C621/627
Intel® QuickAssist Technology (By SKU)	Intel® QuickAssist Technology (By SKU)	Intel® QuickAssist Technology (By SKU)
AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS
DDR4 2133/2400/2666MHz REG DIMM	DDR4 2666MHz REG DIMM	DDR4 2666MHz REG DIMM
128GB	384GB	384GB
4 x 288-pin DIMM	12 x 288pin DIMM	12 x 288pin DIMM
4xSFP+ from INPHI PHY CS4223 8x1Gbe RJ-45 from 2x I350-AM4	4 x GbE RJ45 or 4 x 10G SFP+ Lewisburg Internal MAC	4 x 10G SFP+ Lewisburg Internal MAC
Default without bypass, reserved 2 pairs Bypass	Depends on NIC Module Specifications	Depends on NIC Module Specifications
2	4	4
1 x RJ45	1 x RJ45 (Optional)	1 x RJ45 (Optional) *Share with ETH0
N/A, IPMI Chip Onboard	N/A, IPMI Chip Onboard	IPMI Chip Onboard (SKU B & C)
1	1	1
Power/Status/Storage	Power/Status/Storage	Power/Status/Storage
1 x ATX Power switch	1 x ATX Power switch	1 x ATX Power switch
1 x RJ45	1 x RJ45, 1 x Mini USB	1 x RJ45, 1 x Mini USB
2 x USB 2.0	2 x USB 3.0	2 x USB 3.0
N/A	N/A (Optional)	N/A (Optional)
Internal Pin Header	Internal Pin Header	Internal Pin Header
AC Power Inlet on PSU	AC power inlet on PSU	AC power inlet on PSU
2 x 2.5" Internal	2 x 2.5" Internal	2 x 2.5" Internal
2 x SATA III connectors	1 x mSATA	1 x M.2
N/A	1 x PCI-E*16 FH/HL (Optional)	1 x PCI-E*16 FH/HL (Optional)
N/A	N/A	N/A
Yes	Yes	Yes
Yes	Yes	Yes
Yes (optional)	Yes (Optional)	Yes (Optional)
Passive CPU heatsink	Passive CPU heatsink	Passive CPU heatsink
4 x Individual Hot-swappable cooling fans	4 x Individual Hot-swappable cooling fans with smart fan	6 x Individual Hot-swappable cooling fans with smart fan
0~40°C Operating -40~70°C Non-Operating	0~40°C Operating -20~70°C Non-Operating	0~40°C Operating -20~70°C Non-Operating
5~90% Operating 5~95% Non-Operating	5~90% Operating 5~95% Non-Operating	5~90% Operating 5~95% Non-Operating
438 x 510 x 44 mm	438 x 650 x 43.5 mm	438 x 610 x 44 mm
TBD	16.5 kg	24 kg
TBD	790 x 600 x 220 mm	790 x 600 x 220 mm
TBD	18kg	18 kg
450W 1+1 AC to DC Redundant PSU	TBD	650W 1+1 ATX Redundant PSUs
AC 100~240V @47~63Hz	AC 100~240V @47~63Hz	AC 100~240V @47~63Hz
RoHS, CE/FCC Class A, UL	TBD	RoHS, CE/FCC Class A, UL

VERSA Certified uCPE Platforms

Lanner and Versa have tested and validated an integrated SD-WAN solution that combines Lanner's uCPE appliance and Versa Networks' highly-flexible VOS™ software. The joint solution enables service providers to centrally and cost-effectively manage a software-defined security at their network customers' sites, to delivers flexibility and cost advantages for creating agile and profitable managed services.

Versa VOS™

Versa VOS™ (formerly FlexVNF) is a multi-service, multi-tenant software platform built from ground up on cloud principles to deliver scale, segmentation, programmability and automation. It provides both networking and security functions in a single software along with service chaining capabilities.



uCPE Product Selection - FW-7551 Series

Lanner Model		FW-7551A-VS1	FW-7551E-VS1	FW-7551SED-VS1	FW-7551SEB-VS1	FW-7551SEC-VS1
Versa Model		Versa 100	Versa 110	Versa 110-NW	Versa 110-NW	Versa 120-NW
Form Factor		Tabletop	Tabletop	Tabletop	Tabletop	Tabletop
Processor System	Processor	Intel® Atom™ C2358	Intel® Atom™ C2558	Intel® Atom™ C2558	Intel® Atom™ C2558	Intel® Atom™ C2758
	Core Number	2 Cores	4 Cores	4 Cores	4 Cores	8 Cores
	Frequency	1.7 GHz	2.4 GHz	2.4 GHz	2.4 GHz	2.4 GHz
	Chipset	-	-	-	-	-
Memory		8G DDR3 ECC SO-DIMM	8G DDR3 ECC SO-DIMM	8G DDR3 ECC SO-DIMM	8G DDR3 ECC SO-DIMM	16G DDR3 ECC SO-DIMM
Storage		64G 2.5" SSD	64G 2.5" SSD	64G 2.5" SSD	64G 2.5" SSD	128G 2.5" SSD
Ethernet		6x GbE RJ45 LAN ports	6x GbE RJ45 LAN ports	6x GbE RJ45 LAN	4x GbE RJ45 LAN + 2x SFP	4x GbE RJ45 LAN + 2x SFP
WWAN(4G LTE)	Specification	-	-	-	-	-
	SIM Slot	-	-	-	-	-
	WLAN	-	-	-	-	-
Expansion	PCIe Expansion Slot	-	-	-	-	-
	NIC slot	-	-	-	-	-
TPM		TPM 1.2	TPM 1.2	TPM 1.2	TPM 1.2	TPM 1.2
Power Supply		External 60W adaptor	External 60W adaptor	External 60W adaptor	External 60W adaptor	External 60W adaptor
Power Supply Redundancy		-	-	-	-	-
Rack mount kit		Optional	Optional	Optional	Optional	Optional
Slide Rail		Optional	Optional	Optional	Optional	Optional
Power Cord		US / EU / India	US / EU / India	US / EU / India	US / EU / India	US / EU / India

uCPE Product Selection - NCA-1515 Series

Lanner Model		NCA-1515B-VS1	NCA-1515B-VS2	NCA-1515B-VS3	NCA-1515A-VS1	NCA-1515A-VS2	NCA-1515A-VS3
Versa Model		Versa 210	Versa 210	Versa 210	Versa 220	Versa 220	Versa 220
Form Factor		Tabletop	Tabletop	Tabletop	Tabletop	Tabletop	Tabletop
Processor System	Processor	Intel® Atom™ C3558	Intel® Atom™ C3558	Intel® Atom™ C3558	Intel® Atom™ C3758	Intel® Atom™ C3758	Intel® Atom™ C3758
	Core Number	4 Cores	4 Cores	4 Cores	8 Cores	8 Cores	8 Cores
	Frequency	2.2 GHz	2.2 GHz	2.2 GHz	2.2 GHz	2.2 GHz	2.2 GHz
	Chipset	-	-	-	-	-	-
Memory		8G DDR4 ECC SO-DIMM	8G DDR4 ECC SO-DIMM	8G DDR4 ECC SO-DIMM	16G DDR4 ECC SO-DIMM	16G DDR4 ECC SO-DIMM	16G DDR4 ECC SO-DIMM
Storage		64G M.2 SSD	64G M.2 SSD	64G M.2 SSD	128G M.2 SSD	128G M.2 SSD	128G M.2 SSD
Ethernet		6x GbE RJ45 LAN + 2x SFP	6x GbE RJ45 LAN + 2x SFP	6x GbE RJ45 LAN + 2x SFP	6x GbE RJ45 LAN + 2x SFP	6x GbE RJ45 LAN + 2x SFP	6x GbE RJ45 LAN + 2x SFP
WWAN (4G LTE)	Specification		Cat.6	Cat.6		Cat.6	Cat.6
	SIM Slot	-	2	2	-	2	2
	WLAN	-	-	IEEE 802.11 a/b/g/n/ac	-	-	IEEE 802.11 a/b/g/n/ac
Expansion	PCIe Expansion Slot	-	-	-	-	-	-
	NIC slot	-	-	-	-	-	-
TPM		TPM 1.2	TPM 1.2	TPM 1.2	TPM 1.2	TPM 1.2	TPM 1.2
Power Supply		External 60W adaptor	External 60W adaptor	External 60W adaptor	External 60W adaptor	External 60W adaptor	External 60W adaptor
Power Supply Redundancy		-	-	-	-	-	-
Rack mount kit		Optional	Optional	Optional	Optional	Optional	Optional
Slide Rail		Optional	Optional	Optional	Optional	Optional	Optional
Power Cord		US / EU / India	US / EU / India	US / EU / India	US / EU / India	US / EU / India	US / EU / India

uCPE Product Selection - NCA-4010/5510 Series

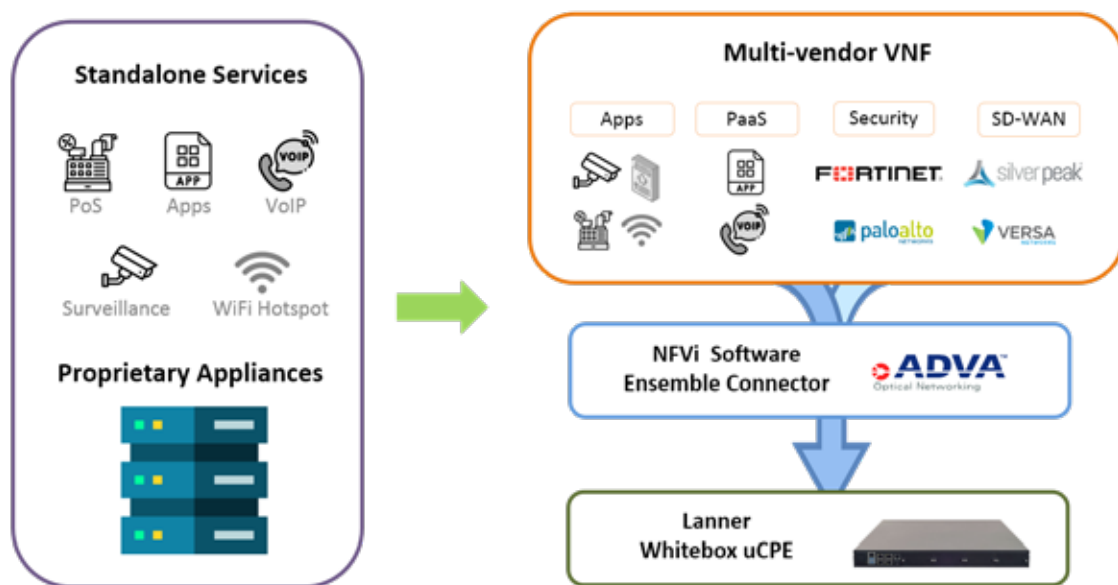
Lanner Model		NCA-4010X-VS2	NCA-4010D-VS1	NCA-4010Y-VS2	NCA-4010Y-VS3	NCA-5510A-VS1	NCA-5510A-VS4
Versa Model		Versa 800	Versa 810	Versa 810	Versa 810	Versa 1000	Versa 1000
Form Factor		Rackmount, 1XRU	Rackmount, 1XRU	Rackmount, 1XRU	Rackmount, 1XRU	Rackmount, 1XRU	Rackmount, 1XRU
Processor System	Processor	Intel® Xeon™ D-1528	Intel® Xeon™ D-1548	Intel® Xeon™ D-1548	Intel® Xeon™ D-1548	Intel® Xeon™ E5-2680	Intel® Xeon™ E5-2680
	Core Number	6 Cores	8 Cores	8 Cores	8 Cores	14 Cores	14 Cores
	Frequency	1.9 GHz	2.0 GHz	2.0 GHz	2.0 GHz	2.4 GHz	2.4 GHz
	Chipset	-	-	-	-	C612	C612
Memory		32G DDR4 ECC+REG DIMM	32G DDR4 ECC+REG DIMM	32G DDR4 ECC+REG DIMM	64G DDR4 ECC+REG DIMM	64G DDR4 ECC RDIMM	64G DDR4 ECC RDIMM
Storage		128G 2.5" SSD	256G 2.5" SSD	256G 2.5" SSD	256G 2.5" SSD	512G 2.5" SSD	512G 2.5" SSD
Ethernet		8x 1G RJ45 ports from i350 + 2x 10G SFP+	8x 1G RJ45 ports from i350 + 2x 10G SFP+	8x 1G RJ45 ports from i350 + 2x 10G SFP+	8x 1G RJ45 ports from i350 + 2x 10G SFP+	Slot1 NCS2-IGM428A for RJ45 port*4 Slot2 NCS2-IXM204A for SFP+ port*2SFP+	Slot1 NCS2-IGM806 for RJ45 port*8 Slot2/3 NCS2-IX-M407A for SFP+ port*4
Expansion	PCIe Expansion Slot	1	1	1	1	1	1
	NIC slot	1	1	1	1	1	1
TPM		TPM 1.2	TPM 1.2	TPM 1.2	TPM 1.2	TPM 1.2	TPM 1.2
Power Supply		Internal 220W PSU	Internal 220W PSU	Internal 220W PSU	Internal 220W PSU	Internal 300W PSU x2	Internal 300W PSU x2
Power Supply Redundancy		-	-	-	-	Yes	Yes
Rack mount kit		Optional	Optional	Optional	Optional	Optional	Optional
Slide Rail		Optional	Optional	Optional	Optional	Optional	Optional
Power Cord		US / EU / India	US	US / EU / India	US / EU / India	US / EU / India	US / EU / India

Consolidated uCPE for Multi-vendor Retail Networking

Retail chains all over the world have been investigating network transformation in order to improve customer experience and reduce overhead. Retail services today have evolved to be more and more diversified, including virtual fitting room in fast fashion trends, online demo video of suites in hotels and real estates, as well as real-time inventory checks for clerks and customers. All these newly innovated services need a better bandwidth, more cost-effective WAN architecture to meet customer satisfaction.

In addition, the software nature of SD-WAN allows prioritization of network resources and traffic, allowing retail owners to improve the bandwidth and performance for specific services or apps through the Internet or MPLS, wherever less traffic. Therefore, a white-box uCPE (universal customer premise equipment) with the following technological requirements would best fit the needs of retail SD-WAN deployments:

- High-Performance Processor
- High Availability – Redundant PSU
- Hardware-assisted Crypto Engine
- Highly Scalable Design
- Convergence



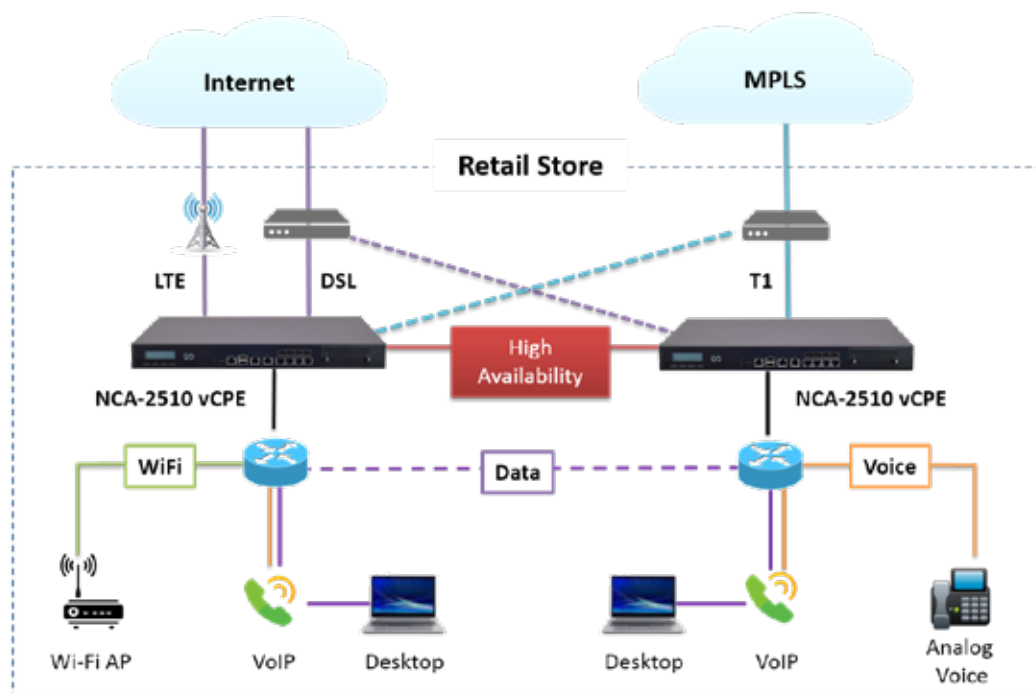
To accelerate deployments in retail environment, Lanner introduced its 1U rackmount white-box appliance NCA-5520, to converge multiple VNFs and enable ZTP (zero-touch provisioning). NCA-5520 possesses all the capabilities to enable pure-play virtualization and interoperability with multi-vendor software. In fact, this high-performance white-box appliance has been pre-validated as the NFVi hardware platform to run ADVA's consolidated network functions.

Lanner's NCA-5520 is powered by 2nd generation Intel Xeon Scalable Processor Family to offer high-performance, high-throughputs and crypto-acceleration. As a high-availability system, the white-box hardware platform is built with redundant power supply. Regarding scalability, NCA-5520 comes with 4 NIC module slots for connection with Lanner's F.A.S.T. (flexibility, adaptability, scalability and transformability) modules to expand functionality, connectivity or bandwidth, for instance, 100G Ethernet modules.

Retail uCPE for High Availability SD-WAN

Retail chains today have shown growing reliance on advanced IT technologies to manage their inventories, transaction records and customer database. In particular, the global-scale retail chains may generate high-volume of transactions and customer data on a daily basis, and they have to manage inventory records in their warehouses worldwide. However, retail chains face the challenges in their network architecture. Traditionally, retailers rely on vendor-specific, disparate networking equipment and software, and therefore, OPEX have obviously increased when they expand in locations.

An US-based carrier as a system integrator and installer came to Lanner for SD-WAN hardware, and Lanner cooperated with its SD-WAN software partner 128 Technology to develop an integrated solution to the targeted customer, an auto parts retail chain with around 5,000 branches. Prior to this joint development, the retailer adopted routers from Cisco as WAN interconnect equipment. Once they have deployed the integrated SD-WAN solution from Lanner and 128 Technology, they can easily converge existing infrastructures such as MPLS service, cable modem, Wi-Fi, and 4G LTE through software-defined WAN, while ensuring constant uptimes, unified load-balancing and Zero-Touch Provisioning.



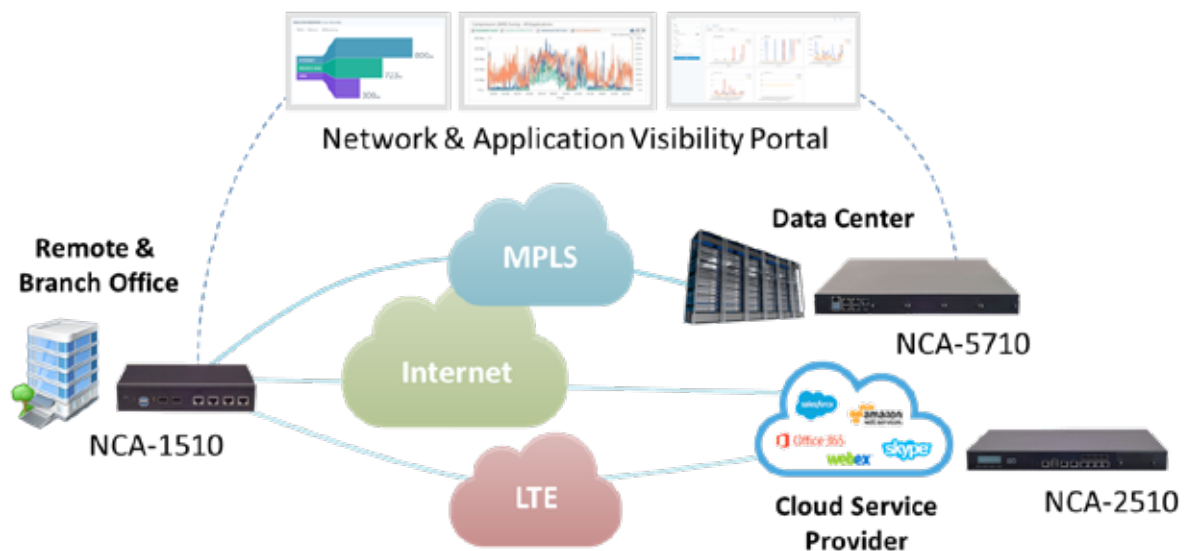
In this partnership, Lanner Electronics Inc. introduced its retail SD-WAN solution NCA-2510 to enable virtualized WAN architecture so that customer's IT management can leverage third-party software to run their instructions. Lanner's NCA-2510 is an open architecture, virtualization-optimized 1U rackmount white-box server for SD-WAN. NCA-2510 is powered by Intel® Atom™ C3958, C3758 or C3558 CPU (4 ~16 Cores) and 4x 288-pin DIMM DDR4 at 2,400MHz to efficiently execute load-balancing and network security. To optimize retail network connectivity, Lanner also offers NCS2-MINIPCIE02 module, a PTCRB-certified Wi-Fi/3G/4G/LTE NIC modular solution optimal for operators and device manufacturers located in regions where PTCRB interoperability/compatibility (cat-3 & cat-6) is a requirement.

Optimizing WAN Architecture with Application-Aware SD-WAN

As the business world has moved towards further digitalization, the competitiveness of enterprises heavily relies on application serviceability and network performance. In fact, it is the application awareness or even intelligence that drives SD-WAN to be more flexible than conventional WAN architecture in terms of visibility and control to set priority over the network. With application awareness, SD-WAN effectively reduces bandwidth burden and OPEX/CAPEX for IT management.

An industry leader in SD-WAN solutions cooperated with Lanner to jointly build up a revolutionized network platform. The collaboration aims to replace legacy WAN architecture with application-aware SD-WAN, that will simplify hybrid WAN and implement end-to-end security. The solution is integrated with both hardware and software factors:

- Application Prioritization
- Zero-Touch Provisioning
- Optimizing Existing Hybrid WAN
- Advanced LAN Bypass
- Redundant Power Supply & High Availability
- Onboard Intel® QuickAssist Technology



During the collaboration, Lanner supplied a wide range of SD-WAN hardware devices to meet various WAN optimization needs. For instance, Lanner's NCA-1510 is ideal for small branch office due to its compact form factor. For medium-sized WAN infrastructure, NCA-2510, an 1U rackmount white-box, offers virtualization optimization with needed hardware specifications for SD-WAN application awareness. For large-scale, multi-WAN architecture, NCA-5710, powered by dual Intel® Xeon® Processor Scalable Family, is the optimal solution for performance-demanding applications.

SD-WAN Mitigates Teleworking Challenge to Ensure Business Continuity

Since the outbreak of COVID-19 pandemic, many municipal and national governments have imposed lockdown policies, forcing their people to stay home. Companies with branches worldwide have already instructed their employees to work from home for a certain period of time. However, the cure of the pandemic is still under experiment without a definite release date, the challenges regarding working from in terms of connectivity, bandwidth and security to ensure business continuity will remain.

Indeed, the technological phenomenon of “work from home” (WFH) or “teleworking” presents a challenge for multi-site companies to ensure business continuity and productivity. Thus, they are investigating optimal and simplified solutions to mitigate the challenges with high QoS (quality of service) level in video conferencing, instant chat and other communication mediums. The answer is SD-WAN.

Lanner offers uCPE platforms that help service providers enable zero-touch SD-WAN solutions with pre-set security instructions. The solution covers the following technological features:

- SSL/IPSEC VPN pre-set for remote access
- Compatible with Integrated LTE
- Zero Touch Provisioning (ZTP)
- QoS in video/voice conferencing
- End-to-end Monitoring and Centralized Analytics



In this collaboration, Lanner presented its NCA-1510, a fanless SFF desktop security appliance designed for SME (small-and-medium enterprises) SD-WAN. NCA-1510 is powered by Intel® Atom® C3000 (codenamed Denverton) CPU, to deliver robustness and performance. For security, NCA-1510 is built in with Intel’s QuickAssist Technology, offering cryptographic acceleration and commercial-grade LAN functions in a 231mm x 200mm x 44mm form factor. Besides, NCA-1510 can function as an uCPE network appliance for zero-touch provisioning at remote sites to support business continuity and teleworking. NCA-1515, another feature-rich desktop appliance from Lanner, shares most features with NCA-1510 and is design-ready for 5G Sub-6 and WiFi 6 (802.11ax).

Corporate

Lanner Electronics Inc.
7F, No.173, Sec.2, Datong Rd.
Xizhi District,
New Taipei City 221, Taiwan
T: +886-2-8692-6060
F: +886-2-8692-6101
E: contact@lannerinc.com

USA

Lanner Electronics Inc.
47790 Westinghouse Drive
Fremont, CA 94539
T: +1-855-852-6637
F: +1-510-979-0689
E: sales_us@lannerinc.com

China

立华科技
北京市昌平区回龙观镇回南路9号院
28号楼果栋L0FT9层
T: +86 010-82795600
F: +86 010-62963250
E: service@ls-china.com.cn

Canada

LEI Technology Canada Ltd
3160A Orlando Drive
Mississauga, ON L4V 1R5
T: +1 877-813-2132
F: +1 905-362-2369
E: sales_ca@lannerinc.com

Taiwan

立端科技股份有限公司
221新北市汐止區
大同路二段173號7樓
T: +886-2-8692-6060
F: +886-2-8692-6101
E: contact@lannerinc.com

Lanner

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