



Network Computing

Hardware Platforms for Next Generation Networking Infrastructure







Lanner's Leadership in Network Appliance

Cloud computing and high-speed mobile communications networks are bringing significant increases to Internet traffic, which needs to be transported through network appliances. And with increasingly sophisticated malware, viruses, and other information security risks, the processing power of firewalls and other networking security hardware needs to increase. A lot of processing power is needed to perform deep packet inspection and virus scanning on all the data handled by modern networks.

Lanner has serviced the fast-growing information security industry for over two decades, and today is the leading hardware provider in this industry. There are 46 companies in the 2013 Gartner Magic Quadrants for Enterprise Network Firewalls, UTM, Wired and Wireless LAN, WAN optimization and Application Delivery. Out of these 46 companies, 39% use hardware made by Lanner. In 2011 we reached a significant milestone, shipping our first millionth networking device. The strong preference demonstrated for Lanner network appliance is a reward for committing ourselves to designing the highest quality platform in the industry.

In 2015 we earn two Taiwan Excellence Awards in network appliance platforms. As the industry requires higher quality, more advanced and more powerful network appliances, we will continue our expertise, and will support our clients and partners in full dedication so we can all grow together.

Terence Chou

Senior Director, Network Computing Product Division

Who is Lanner?

Lanner Electronics Inc. (TAIEX 6245) is a world-leading hardware provider in design, engineering, and manufacturing services for advanced network appliances and rugged industrial computers. With 28-year experiences, Lanner provides reliable and cost-effective computing platforms with high quality and performance. Today, Lanner has a large and dynamic manpower of over 800 well-experienced employees worldwide with the headquarter in Taipei, Taiwan and subsidiaries in the US, Canada, and China.

Global Manufacturing Capabilities

Taipei, Taiwan

- Area 30,000 m²
- 3 x SMT, DIP and assembly lines
- Production capacity: 30,000 system units/month

Beijing and Dongguang, China

- Area 8,500 m²
- Assembly lines
- Production capacity: 8,000 system units/month

Service Capabilities

- Custom design and production in board, chassis and system
- High mix low volume manufacturing
- Quality assurance services
- Global order fulfillment services

Certifications

- ISO 9001:2008
- ISO 14001:2004
- IECQ QC080000
- RoHS
- OHSAS 18001:2007

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Why Lanner?

Lanner creates customized solutions for client applications with managed manufacturing process thanks to our in-house design and manufacturing services, covering color of chassis, height, modular or fixed port, BIOS, IPMI, acceleration cards, special certification and additional I/O interface. Lanner's building block design concept can fulfill all your requirements.

Strong Allies

Lanner's membership in leading industry alliances enables us to provide the latest technology, and extend your product lifecycles.

Intel®



Lanner is an Associate Member of the Intel® Intelligent Systems Alliance, a community of communications developers, embedded developers and solution providers committed to the development of modular, standards-based solutions on Intel® technologies.

Freescall™ Semiconductor



Lanner is a member of the Freescall™ Alliance, taking advantage of Freescall™ network processors for better performance in IPS, DPI and cryptographic acceleration.

Tilera®



Tilera® Corporation is a fabless semiconductor company committed to delivering unparalleled computational performance with extremely low power consumption. Network Intelligence products by Tilera® include a family of full-featured multi-core processors that span a range of processing and power requirements, a complete set of standards-based software development tools, and a line of high-performance platforms.

Network Intelligence Alliance



Lanner is more than a dedicated hardware provider. We joined the Network Intelligence Alliance to facilitate the integration and deployment of network intelligence technology in new, innovative solutions for improving the performance, security and monetization of communications networks.

Netronome



Lanner is a platform partner with Netronome. We are benefited from Netronome's innovative solutions in software defined technologies. We work closely with Netronome to provide scalable solution in Lanner's network appliances.

Design and Manufacturing Services

Wide Customization Options

Lanner creates customized hardware solutions for client applications with managed manufacturing process thanks to our in-house design and manufacturing services.



Advanced Networking Features

- Support for up to 64 network ports
- 10/100/1000/10000/40000 Mbps Ethernet
- Copper and fiber at 10GbE, 40GbE
- Advanced bypass solutions
- Higher throughput due to wider PCIe lanes, DDR4 memory and Intel architecture improvements.

Best-In-Class Port Density

Lanner has engineered unprecedented port density for 2U network appliances. Utilizing our modular or blade technology, each platform can be configured to your optimum requirements.

Engineered for Reliable Operation

With redundant power sources, hot-swappable fans, and LAN ports with bypass, these network appliances can be designed to continue to support your network even when the unexpected occur.

The Latest and Fastest Processors

The latest Intel® Xeon®, Core™ and Atom™ processors are available to enable your appliance to manage large amounts of data at low power, while Tiler®, Cavium®, Freescale® and Marvell® processors are available to maximize throughput in networks.



Electronic Engineering

Choose from an array of board and platform level components to create the perfect appliance or solution based on your application requirements. Lanner's strategic partnerships allow us to incorporate the latest in industry technology to provide customers with a richer palette of options.



Mechanical Engineering

Lanner's engineers are well-versed in tackling the multitude of design issues faced on the board and mechanical level including ventilation, peripherals, and more. Rigorously tested, Lanner products operate within a broad range of environmental parameters to guarantee product robustness in an array of applications.

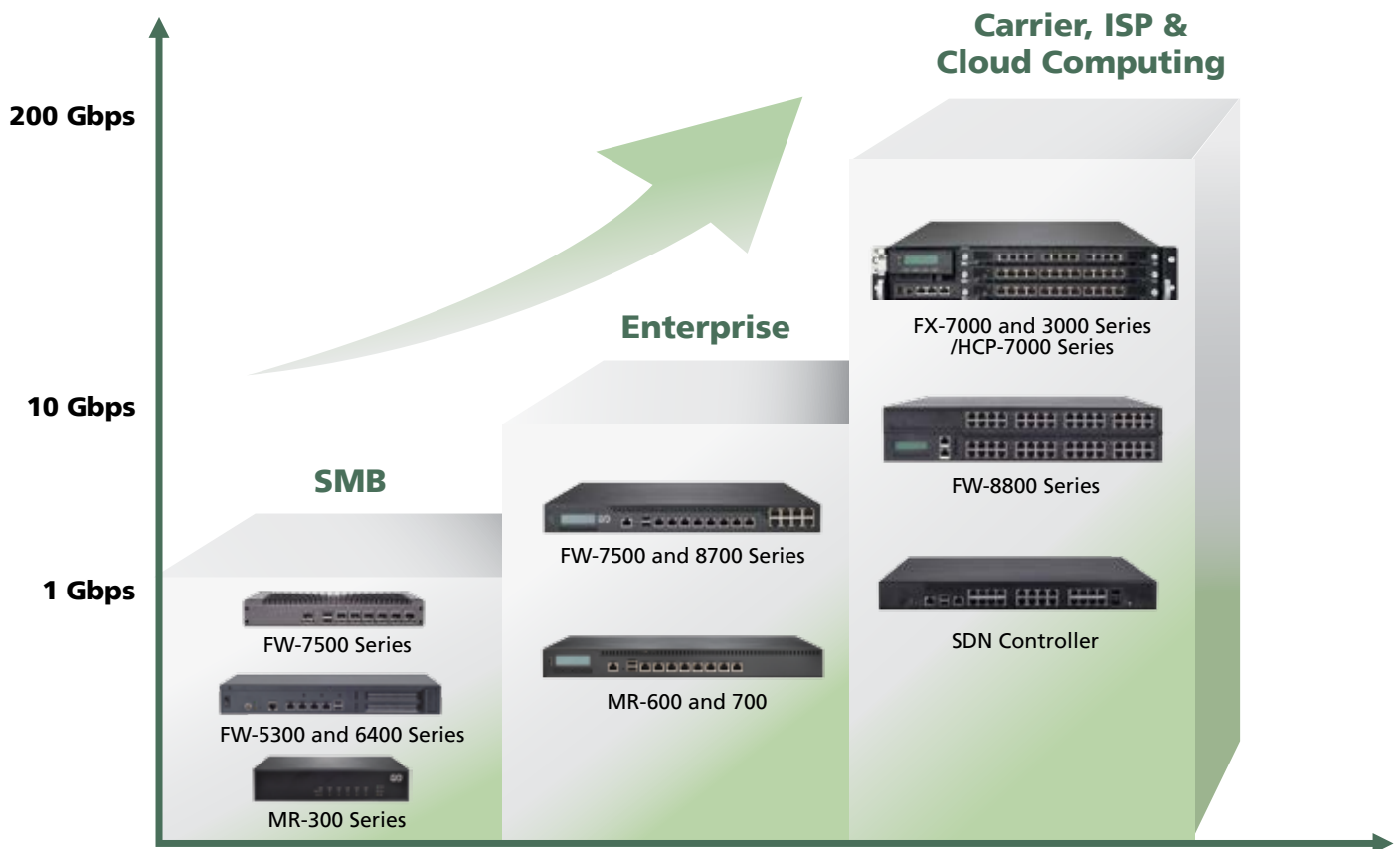


Software Engineering

Equip your platform with the necessary BIOS or firmware with the help of Lanner's software team. Our software development expertise extends from the circuit board up through the BIOS, firmware, drivers and API level, to ensure seamless communication between hardware and application software.

Lanner's Complete Range of Network Appliances

Lanner possesses a wide range of network appliances which ranges from basic budget firewalls with onboard processors, to advanced hybrid appliances with multiple processors, several expansion options, and reassuring redundancy features. Lanner offers both x86 and RISC appliances, that can come with a range of acceleration cards and expansion modules to form the perfect appliance.



Prototyping

During the prototype stage Lanner can help you with testing guidelines and BIOS tuning to maximize the performance of your appliance.

Lanner has a wide range of standard appliances that ship off the shelf within a few days of first inquiry. This speeds up your product development and brings your product to the market faster.



Product Identity Support

Take advantage of Lanner's product identity support when it comes to the final touches on your product. Lanner's services include everything from industrial design of 2D and 3D faceplates to custom packaging and labeling. This ensures that your product accurately promotes your brand and leaves a lasting impression with your customers.



Manufacturing

Lanner owns and operates its own in-house state-of-the-art SMT, DIP, assembly and testing facilities. By maintaining control of the entire manufacturing process, we ensure the integrity of your end product through our tight production procedures, integrated quality assurance programs and rigorous design quality.

Global Order Fulfillment and RMA

Global Offices

With our presence in various continents, we are able to serve our clients worldwide.



A Complete Service

After we have designed and manufactured your products, we install the required software and ship directly to your customers in your branded packages. Drop shipments can be arranged from our logistics centers worldwide.

Our service allows you to focus on your core competency of software development for the information security industry. We take care of the hardware design, manufacturing, logistics and service. That's our core competency.



Quality Control

Lanner's strict and ISO 9001-certified quality testing procedures have been fine-tuned over 25 years. Also, as part of our green management plan, initiated early 2006, all Lanner products currently meet RoHS certification requirements.



Logistics

Successful logistics translates into efficient execution. At Lanner, clients' projects can be tracked through the production process via a product number allowing for routine project updates. By making each product traceable, Lanner can guarantee consistency and quality.



Technical Support

Lanner provides full RMA service and technical support to round off its customer service package. And for Intel®-based systems using chipsets and CPUs from the embedded group at Intel® we offer up to 7 years lifecycle support. Longer lifecycle support can also be arranged by jointly planned inventories.

x86 Network Appliances (FW/NCA Series)



- 8 NIC Modules



- 8 NIC Modules + 2 Swappable Drive Bays

FW-8896



- Dual Intel Xeon CPUs



- 16 DDR4 DIMM



- Redundant Power



- 4 Modular Fans

Introduction to our FW and NCA Series

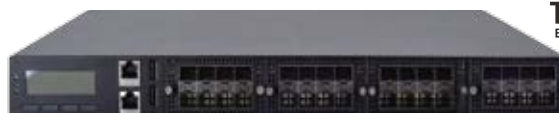
Lanner's FW Series of x86 network appliances are known worldwide for its reliability and flexibility. Industry leaders in enterprise firewalls, UTM, WAN optimization, application delivery, and other information security industries have used the FW series for their hardware requirements for over decades. The new NCA Series inherits our successful FW Series and is abbreviated with a new naming scheme "Network Communication Appliance". The new NCA adopts the latest CPU/Chipset platform for network computing.

FW-8800 Series

The FW-8800 Series consists of rackmounted 1U and 2U network appliances with very powerful processors such as the x86 Intel® Xeon® processors, for demanding network applications. There are also extra redundancy features like hot-swappable system fans and multiple Ethernet module bays for flexible port configuration.



The FW-8800 Series is ideal for DDoS, enterprise UTM, enterprise firewalls, intrusion prevention systems (IPS), application delivery and WAN optimization.



FW-8877



FW-8700 Series

The FW-8700 Series consists of rackmounted 1U network appliances with 1 or 2 NIC module slots and a mid-range x86 Intel® processor. This is a widely used platform for UTM, firewalls, VPN, IPS and WAN optimization.

FW-7500 Series

The FW-7500 Series consists of desktop and 1U rackmount network appliances with entry-level x86 Intel® processors. This is suitable for SMB UTM, firewalls, VPN, IPS and WAN optimization. The small form factor of the desktop models in the FW-7500 Series enables easy deployment where rack space is limited. There is enough processing power to run barebones network security and communication applications, and ultra-low electricity consumption means an environmentally-friendly appliance with a low thermal foot print.

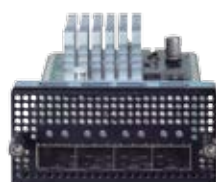
Intel® Xeon® CPU

The Intel® Xeon® processor series provides Intel® Virtualization Technology for flexible virtualization, as well as Intel® QuickPath Technology, Intel® Turbo Boost Technology and Intel® Hyper-Threading Technology.



Lanner Intel-based NIC Modules

Enhance the performance and bandwidth of your network appliance according to your needs with these front-facing and easily swapped modules. Choose from over 20 different Ethernet network modules, including RJ-45 copper, fiber, bypass and speeds from 1GbE to 10Gbps. For an overview of the NCM modules for the 8800 and 8700 Series, see page 17.



NCS2-IXM407A:
Slim type 4-port 10GbE Fiber Module

Bypass

Bypass ports allow uninterrupted network traffic even if a single in-line appliance is shut down or hangs. Lanner's engineers have improved on standard bypass functionality to provide higher reliability and greater control.

LAN Bypass Gen 1-3 Comparison	Gen 1	Gen 2	Gen 3
No Hardware Jumper required to enable Bypass	No	Yes	Yes
Remote Bypass Control	No	Yes	Yes
Multiple watchdogs dedicated for different bypass pairs	No	No	Yes
Bypass control in 3 distinct states: power-on, just-on and system off	No	No	Yes
No packet loss if bypass is enabled during system just-on state	No	No	Yes
Bypass implementation independent of Intel architecture platform of the host system	No	No	Yes

The product comparison tables in this guide highlighting which generation of bypass is supported by which models. For more information on Lanner's advanced bypass technology, please see our white paper "The Evolution of LAN Bypass Technology: Lanner's Generation One to Generation Three Bypass."

Intel QuickAssist Technology

As the complexity of networking and security applications continues to grow, systems need more and more computational resources for workloads, including cryptography, data compression, and pattern matching. Intel® QuickAssist Technology is designed to optimize the use and deployment of algorithm accelerators in these kinds of applications. Selected Intel® Rangeley Atom™ Processors and optional Intel® Communications Chipset 89xx Series support this feature.

Hot-Swappable System Fans

Hot-swappable technology is vitally important to the networking industry, where downtime is costly and tarnishes reputations. Fans are usually the first thing to fail in any computer or dedicated appliance due to their mechanical nature and constant use. Many Lanner appliances have a series of fans along the back face that cool the entire system. When one of these fans fails, network technicians can replace it easily with Lanner's hot-swappable fans.



Redundant Power Supplies

Many top-of-the-line network appliances utilize dual power supplies to ensure a constant flow of power. These appliances need to run 24 hours a day, 7 days a week, and every failure, no matter the length of time is equal to lost dollars. Therefore, smart network maintenance experts utilize dual power supplies, often attached to different sources of power to make sure these appliances never fail.



Trusted Platform Module (TPM)

Lanner Trusted Platform Module (TPM) provides the hardware security and secure boot with the cost effective solution to build up the best value system for mission critical application like finance, banking, healthcare, or military. Hackers will never get data through network. All operations will keep records for tracking.

In FW-7571 and FW-7573 we offer onboard TPM security option. In FW-8894, FW-8896 and NCA-5510 we provide pin header with LPC bus. When customer needs TPM solution, they can purchase from Lanner for optional kit IAC-TPM01 module.

Intel® DPDK

Intel® DPDK improves throughput by 3 to 4 times on the Intel® multi-core processor architecture. Lanner has developed Intel® DPDK-based hardware as well as software components that allow both software vendors and application developers to accelerate network packet processing performance. We provide driver support to entry level chips such as i211 and i210 that are not supported by Intel®'s poll mode driver, and we provide application examples for writing the software to acquire data from Intel®'s DPDK instead of the Linux kernel.

Support for Acceleration Cards

By using the PCI slot you can install one of the many Lanner acceleration cards with Intel®/Cavium®/Tilera® network processors. This provides high-performance tunneling and encryption for services like VPN. See page 18~19 for an overview.

Cavium® Nitrox Security Acceleration Processor



Depending on the SKU chosen, Lanner network appliances may come with the optional Cavium® Nitrox® security acceleration processor. The Cavium® Nitrox® making it the perfect solution for applications such as integrated VPN/Firewall appliances, load balancers, WAN optimization, application delivery controller, UTM gateway and server offload.

Remote Manageability

With Lanner's IPMI add-on card, network appliances can be managed at a central location remotely to configure, install, reboot and shut down through firewalls and NATs. The card features SSL encryption, and comes with an SDK so you can create a custom management console for your appliance.

IPMI Cards





Newly Announced x86 Network Appliances



Feature	Description	NCA-1010 NEW	FW-7525 NEW	UP-2010 NEW
Form Factor		Desktop	Desktop	1U Rackmount
Platform	Processor Options	Intel® Atom™ E3815 (Bay Trail)	2/4-core Intel® Atom™ C2358/C2518 (Rangeley)	Intel® Atom™ C2758 (Rangeley)
	Chipset	N/A	N/A	Marvell® Prestera® 98DX3035 switch solution
BIOS		AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS
System Memory	Technology	DDR3L 1067 MHz non-ECC	Single Channel DDR3 1333 MHz, 1.5 V, Non-ECC	DDR3 1333 MHz, ECC
	Max. Capacity	4 GB	8 GB	16 GB
	Socket	1 x 204-pin SODIMM	1 x 204-pin SODIMM	2 x 204-pin SODIMM
OS Support		Windows 7, Windows 8, WES 7, WES 8, Linux (Fedora 18/Yocto)	Linux Kernel 2.6 or above	Linux Kernel 2.6 or above
Storage	HDD Bays	N/A	1 x 2.5" SSD bay (SSD is not included), SSD kit is not included in C2358 SKU	1 x SATA 3.0 connector (Reserve only)
	Compact Flash	1 x mSATA	1 x CF card Type II	1 x CF Card Type II
Networking	Ethernet Ports	3 x RJ45 GbE ports	4 or 6 x RJ45 GbE ports	24 x GbE ports onboard (8 with PoE) + 2 x 10G SFP+
	Bypass	N/A	1 pair Gen.2 (FW-7525A)	N/A
	Controllers	3 x Intel i211	2 x Intel i210AT, 1 x Marvell 88E1543	10G: Intel® 82599EB, 1G: Marvell 88E1685
	NIC Modules	N/A	N/A	N/A
	Management Port	N/A	N/A	1
	Security Acceleration	N/A	Intel QuickAssist Technology	Intel QuickAssist Technology
I/O Interface	Reset button	1	1	1
	Console	1 x RJ45	1 x RJ45	1 x RJ45
	USB	1 x USB 2.0, 1 x USB 3.0	2 x USB 2.0	2 x USB 2.0
	OPMA slot	N/A	N/A	N/A
Expansion	PCIe	1 x Mini-PCIe	N/A	N/A
	PCI	N/A	N/A	N/A
Cooling	Processor	Passive CPU heatsink	Passive CPU heatsink	CPU heatsink
	System	Fanless	Fanless	2x cooling fan with smart fan feature
Environmental Parameters	Temperature, ambient operating / storage	0 ~ 40°C / -20 ~ 70°C	0 ~ 40°C / -20 ~ 70°C	0 ~ 40° C / -20~70° C
	Humidity (RH), ambient operating / ambient non-operating	0% ~ 90%, non-condensing	5~90%, non-condensing	10~85%, non-condensing
Miscellaneous	LCD Module	N/A	N/A	N/A
	Watchdog	Yes	Yes	Yes
	Internal RTC with Li Battery	Yes	Yes	Yes
Physical Dimensions	Dimensions (WxHxD)	124.26 x 19.4 x 119.66 mm	177 x 44 x 145.5 mm	431 x 44 x 366.2 mm
	Weight	0.5 kg	1.2 kg	8.2 kg
Power	Type / Watts	36W power adapter	SKU A/B: 36W power adapter, SKU C:60W	500W ATX power supply unit
	Input	AC 100~240V@50~60 Hz	100~240 V @50~60 Hz	100~240V, 50~60Hz, 7-3.5A
Approvals and Compliance		CE Class B, FCC Class B, RoHS	CE Class B, FCC Class B, RoHS, UL	CE Class A, FCC Class A, RoHS



NCA-5510 NEW	FW-8894 NEW	FW-8896 NEW
1U Rackmount	1U Rackmount	2U Rackmount
1 x Intel® Xeon® E5-2600 v3 Series on LGA2011-R3 (Haswell-EP)	2 x Intel® Xeon® E5-2600 v3 Series on LGA2011-R3 (Haswell-EP)	2 x Intel® Xeon® E5-2600 v3 Series on LGA2011-R3 (Haswell-EP)
Intel C612 Chipset	Intel C612 Chipset	Intel C612 Chipset
AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS
DDR4 2133 MHz, Registered ECC	DDR4 2133 MHz, Registered ECC	DDR4 2133 MHz, Registered ECC
256 GB	512 GB	512 GB
8 x 288-pin DIMM	16 x 288-pin DIMM	16 x 288-pin DIMM
Linux Kernel 2.6 or above, Windows 7, Windows 2008 Server	Linux Kernel 2.6 or above, Windows 7, Windows 2008 Server	Linux Kernel 2.6 or above, Windows 7, Windows 2008 Server
1 x 3.5" or 2 x 2.5" HDD drive bays (Harddrive is NOT included)	1 x 3.5" or 2 x 2.5" HDD drive bays (Harddrive is NOT included)	FW-8896A/B/C/D: 1 x 3.5" internal drive bays, optional 2 x 2.5", FW-8896E/F/G/H: 2 x 2.5" external drive bays
1 x CFast	1 x CFast	1 x CFast
1x RJ-45 with LED for management port (Optional LOM port)	1x RJ-45 with LED for management port (Optional LOM port)	1 x GbE RJ-45 65 GbE ports maximum
Depends on NIC module specifications	Depends on NIC module specifications	Depends on NIC module specifications
1 x Intel i210	1 x Intel i210	1 or 2 x Intel i210
4	4	8
1	1	1 or 2
N/A	Intel QuickAssist Technology (Depends on SKU)	Intel QuickAssist Technology (Depends on SKU)
1	1	1
1 x RJ45	1 x RJ45	1 x RJ-45
2 x USB 2.0	2 x USB 2.0	2 x USB 2.0
Yes	Yes	Yes
N/A	N/A	1 x PCI-E*8 expansion (optional)
N/A	N/A	N/A
CPU heatsink with fan duct	CPU heatsink with fan duct	CPU heatsink with fan duct
4x independent hot-swappable cooling fans with smart fan control	4x independent hot-swappable cooling fans with smart fan control	4 x independent hot-swappable cooling fans with smart fan control
0 ~ 40°C / -20 ~ 70°C	0 ~ 40°C / -20 ~ 70°C	0 ~ 40° C / -40~70° C
5% ~ 90%, non-condensing	5% ~ 90%, non-condensing	5 ~ 90% non condensing
Character LCM with keypad (Graphic optional)	Character LCM with keypad (Graphic optional)	2 x 20 characters (Graphic optional)
Yes	Yes	Yes
Yes	Yes	Yes
438 x 44 x 580 mm	438 x 44 x 630 mm	431 x 88 x 600 mm
16 kg	18 kg	25 kg
1+1 ATX 300W redundant power supply units	1+1 ATX 650W redundant power supply units	1+1 ATX 600W redundant power supply units
90~264 V@47~63Hz	90~264 V@47~63Hz	AC 90~264V @47~63 Hz
CE Class A, FCC Class A, RoHS	CE Class A, FCC Class A, RoHS	CE emission, FCC Class A, RoHS, UL

Entry to Mid-Range x86 Network Appliances



Feature		FW-5330	FW-7540	FW-7541	FW-7543	FW-7551
Form Factor		Desktop	Desktop / Half-rack	Desktop	Desktop	Desktop
Platform	Processor Options	AMD® T24L 1G onboard	Intel® Atom™ D425 or Dual Core D525 onboard	Intel® Dual Core D525 onboard	Intel® Atom™ E3815 or Celeron® J1900	Intel® Atom™ SoC-C2358(2-core)/C2518 (4-core)/C2758 (8-core)
	Chipset	AMD® A50M	Intel® ICH8M	Intel® ICH8M	N/A	N/A
BIOS		AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS
System Memory	Technology	DDR3 1066 MHz	DDR3 667/800 MHz, 1.5V	DDR3 667/800 MHz, 1.5V	J1900: DDR3L- 1333, E3815: DDR3L-1066 1.35V Only	DDR3 1333/1600 MHz ECC Only , 1.5V
	Max. Capacity	4 GB	4 GB	4 GB	8 GB	8 GB
	Socket	1 x 204P SO-DIMM	1 x 240P DIMM	1 x 204P SO-DIMM	1 x 204P SODIMM	1 x 204P SODIMM
OS Support		Linux Kernel 2.6 or above	Windows 2000, 2003, XP, 7. Linux kernel 2.6 or above, FreeBSD	Windows 2000, 2003, XP, 7. Linux kernel 2.6 or above, FreeBSD	Win 7, WES 7, Win 8, WES 8, WEC 7, Linux (Fedora 18/Yocto)	Linux kernel 2.6 or above
Storage	HDD Bays	1 x 2.5" HDD (Optional)	1 x 2.5" (optional)	1 x 2.5"	1 x 2.5" HDD/SSD kit (Optional)	1 x 2.5" (Optional)
	Compact Flash	1 x Type II CompactFlash / CF SATA support	1 x Type II CompactFlash	1 x Type II CompactFlash	1 x Type II CF (Optional)	1 x Type II CompactFlash
Networking	Ethernet Ports	4 x GbE RJ-45 (FW-5330A) 2 x GbE RJ-45 (FW-5330B)	4 x GbE RJ-45	6 x GbE RJ-45	4 x GbE RJ-45	SKU A:6 x GbE RJ45 SKU B:4 x GbE RJ45
	Bypass	N/A	2 pair Gen2 (SKU A, B)	1 pair Gen2	N/A	2 pairs Gen2 (Optional)
	Controllers	4 x Realtek RTL8111E or 2 x Realtek RTL8111E	4 x Intel 82583V (Optional 82574L)	1 x Intel 82574L 5 x Intel 82583V (Optional Intel 82574L)	4 x Intel i211	2 x Intel i210AT (Optional), 1 x Marvell 88E1543
	Ethernet Modules	N/A	N/A	N/A	N/A	N/A
	Management Port	N/A	N/A	N/A	N/A	N/A
	Security Acceleration	N/A	N/A	N/A	N/A	Intel QuickAssist Technology
I/O Interface	Reset button	1 x reset button Software reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default
	Console	1 x RJ-45	1 x RJ-45	1 x RJ-45	1 x RJ-45	1 x RJ-45
	USB	2 x USB 2.0	2 x USB 2.0	2 x USB 2.0	2 x USB 2.0	2 x USB 2.0
	OPMA slot	N/A	N/A	N/A	N/A	N/A
Expansion	PCIe	1 x Mini-PCIe (Reserved for ODM only)	1 x Mini-PCIe with PCI-E*1 and USB signal (optional)	1 x Mini-PCIe (with USB signal only)	N/A	1 x Mini-PCIe (By Project)
	PCI	N/A	N/A	N/A	N/A	N/A
Cooling	Processor	Passive CPU heatsink	CPU heatsink	Passive CPU heatsink	CPU heatsink	CPU heatsink
	System	1 x cooling fan	1 x cooling fan with fan duct	Fanless or 1 x cooling fan	1 x cooling fan	1 x cooling fan with smart fan
Environmental Parameters	Temperature, ambient operating / storage	0 ~ 40° C / -20~70° C	0 ~ 40° C / -20~70° C	0 ~ 40° C / -20~70° C	0 ~ 40° C / -20~70° C	0 ~ 40° C / -20~70° C
	Humidity (RH), ambient operating / ambient non-operating	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing
Miscellaneous	LCD Module	N/A	N/A	N/A	N/A	N/A
	Watchdog	Yes	Yes	Yes	Yes	Yes
	RTC Li Battery	Yes	Yes	Yes	Yes	Yes
Physical Dimensions	Dimensions (WxHxD)	240 x 44 x 166 mm	215.5 x 44 x 190mm	268 x 40 x 145 mm	231 x 44 x 176 mm	231 x 44 x 200 mm
	Weight	1.2kg	1.2 kg	1.2 kg	1.2 kg	1.2 kg
Power	Type / Watts	12V 3A 36W Power Adapter	12V 5A 60W Power Adapter	12V 5A 60W Power Adapter	12V 3A 36W Power Adapter	12V 3A 36W Power Adapter
	Input	AC 100~240V @50~60 Hz	AC 100-240V @ 50-60Hz	AC 100~240V @50~60 Hz	AC 100~240V @50~60 Hz	AC 100~240V @50~60 Hz
Approvals and Compliance		CE emission, FCC Class A, RoHS	CE emission, FCC Class A, RoHS, UL	CE emission, FCC Class A, RoHS, UL	CE emission, FCC Class A, RoHS	CE emission, FCC Class B, RoHS



FW-7568	FW-7571	FW-7573	FW-7575	FW-7582	FW-7584	FW-7585
1U Rackmount	1U Rackmount	1U Rackmount	1U Rackmount	1U Rackmount	1U Rackmount	
Intel® Atom™ Dual Core D525 on board	Intel® Atom™ C2358 2-core SoC	Intel® Atom™ C2758 8-core or C2518 4-core SoC	Intel® Xeon® E3-1125C or Core i3 2115C, onboard	Intel® i3-2120,i3-3220,i5-3550s, G850 and G540 on LGA1155	4th Generation Intel® Core™ processor i7/i5/i3 or Celeron series on LGA1150	
Intel® ICH8M	N/A	N/A	Intel® DH8910CC	Intel® H61	Intel® H81	Intel® C226
AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS	AMI SPI Flash BIOS	
DDR3 800 MHz, 1.5V	DDR3 1333/1600 MHz DIMM, ECC or non-ECC, 1.5V/1.35V	Dual Channel DDR3 1333/1600 MHz DIMM, ECC or non-ECC, 1.5V/1.35V	Dual-channel DDR3 1066/1333 MHz ECC, 1.5V	Dual-channel DDR3 1066/1333/1600 MHz Non-ECC, Unbuffered, 1.5V	Dual-channel DDR3/DDR3L 1066/1333/1600 MHz, un-buffered, non-ECC, 1.5V/1.35V	
4 GB	8 GB	16 GB	32 GB	16 GB	16 GB	
1x 204P SO-DIMM	2 x 240P DIMM	2 x 240P DIMM	4 x 240P DIMM	2 x 240P DIMM	2 x 240P DIMM	
Windows 2000, 2003, XP, 7. Linux Kernel 2.6 or above, FreeBSD	Linux kernel 2.6 or above	Linux kernel 2.6 or above	Linux Kernel 2.6 or above	Windows 2000, 2003, XP, 7. Linux kernel 2.6 or above, FreeBSD	Windows 7,8,2000, XP, Vista, Server 2008, 2012, Linux Kernel 2.6 or above	
2 x 2.5" or 1 x 3.5"	2 x 2.5" or 1 x 3.5"(Optional)	2 x 2.5"	1 x 2.5" or 1 x 3.5"	2 x 2.5" or 1 x 3.5"	2 x 2.5" (1 x 3.5" reserved)	
1 x Type II CompactFlash	1 x Type II CompactFlash	1 x Type II CompactFlash	1 x Type II CompactFlash	1 x Type II CompactFlash	1 x Type II CompactFlash	
6 x or 8 x GbE RJ-45	4 or 6 x GbE RJ-45	6 x GbE RJ-45 default 14 x GbE RJ45 maximum	6 x GbE RJ-45 by default, 14 x GbE RJ-45 maximum	6 x GbE RJ-45	6 x GbE RJ45	8 x GbE RJ45
2 pairs Gen3	2 pairs Gen3 (Optional)	3 pairs Gen3 (Optional)	2 pairs Gen3	3 pairs Gen3	3 pairs Gen3 (Optional)	
6 x Intel 82574L 2 x Intel 82541 PI (FW-7568A/B)	2 x Intel i210AT (Optional), 1 x Marvell 88E1543	2 x Intel i210AT, 1 x Marvell 88E1543	1 x Intel i347-ATZ, Intel 82580DB	6 x Intel 82583V (Optional 82574L)	6 x i210AT	1 x i217 + 7 x i210AT
N/A	N/A	1	1	N/A	N/A	
N/A	N/A	N/A	1	N/A	N/A	1
N/A	Intel QuickAssist Technology	Intel QuickAssist Technology	Intel Cave Creek QuickAssist Technology	N/A	N/A	
1 x reset button Software reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default	
1 x RJ-45	1 x RJ-45	1 x RJ-45	1 x RJ-45	1 x RJ-45	1 x RJ-45	
2 x USB 2.0	2 x USB 2.0	2 x USB 2.0	2 x USB 2.0	2 x USB 2.0	2 x USB 2.0	
N/A	N/A	N/A	N/A	N/A	N/A	
1 x Mini-PCIe	1 x PCI-E*8 expansion (optional)	1 x PCI-E*8 expansion module	1 x PCIe *8 for Ethernet module or Add-on card (optional)	1 x PCI-E*8 expansion	1 x PCI-E*8 expansion (optional)	
N/A	N/A	N/A	N/A	N/A	N/A	
Passive CPU heatsink	CPU heatsink	CPU heatsink	Passive CPU heatsink	CPU heatsink with fan duct	CPU heatsink with fan duct	
2 x cooling fans with smart fan	1 x cooling fan with smart fan	1 x cooling fan with smart fan	3 x cooling fans with smart fan	3 x cooling fans with smart fan	2 x cooling fans with smart fan	
0 ~ 40° C / -20~70° C	0 ~ 40° C / -20~70° C	0 ~ 40° C / -20 ~ 70° C	0 ~ 40° C / -20~70° C	0 ~ 40° C / -20~70° C	0 ~ 40° C / -20 ~ 70° C	
5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	
2 x 20 characters	N/A	2 x 20 character	2 x 20 characters	2 x 20 characters	2 x 20 characters	
Yes	Yes	Yes	Yes	Yes	Yes	
Yes	Yes	Yes	Yes	Yes	Yes	
431 x 44 x 276 mm	431 x 44 x 305 mm	431 x 44 x 305 mm	431 x 44 x 305.8 mm	431 x 44 x 305 mm	431 x 44 x 305 mm	
4 kg	4 kg	4 kg	5 kg	7 kg	7 kg	
1U ATX PSU 150W	1U ATX PSU 100 W	1U ATX PSU 150 W	1U ATX PSU 180W	1U ATX PSU / 220W	1U ATX PSU 220 / 150 W	
AC 100-240V @ 50-60Hz	AC 100~240V @50~60 Hz	AC 100~240 V @50~60Hz	AC 100-240V @ 50-60Hz	AC 100~240V @50~60 Hz	AC 90~264V @47~63 Hz	
CE emission, FCC Class A, RoHS, UL	CE emission, FCC Class A, RoHS, UL	CE emission, FCC Class A, RoHS, UL	CE emission, FCC Class A, RoHS	CE emission, FCC Class A, RoHS, UL	CE Class A, FCC Class A, RoHS	

Mid-range to High Performance x86 Network Appliances







Feature		FW-8758	FW-8759	FW-8771
Form Factor		1U Rackmount	1U Rackmount	1U Rackmount
Platform	Processor Options	Intel® Celeron® G540, Pentium® G850, G2120, Core™ i3-3220, i5-3550s, i7-3770 on LGA1155 (Sandy Bridge)	4th Generation Intel® Xeon® E3-1200 v3, Core™ processor i7/i5/i3 series on LGA1150 (Haswell)	4th Generation Intel® Xeon® processor E3-1275 v3, E3-1225 v3 and other LGA1150 processors (Haswell)
	Chipset	Intel® H61	Intel® C226	Intel C226 Chipset
BIOS		AMI BIOS 64Mbit SPI Flash ROM	AMI BIOS 64Mb SPI Flash ROM	AMI BIOS 64Mb
System Memory	Technology	Dual-channel DDR3 1066/1333/1600MHz, Unbuffered, Non-ECC, 1.5V	Dual-channel DDR3/DDR3L 1066/1333/1600 MHz, un-buffered, ECC or non-ECC, 1.5V/1.35V	Dual-channel DDR3 1066 / 1333 / 1600 MHz unbuffered, ECC or non-ECC 1.5V/1.35V
	Max. Capacity	16 GB	16 GB	32 GB
	Socket	2 x 240P DIMM	2 x 240P DIMM	4 x 240-pin DIMM
OS Support		Windows 2003, 2008 Server, Linux kernel 2.6 or above	Windows 7,8,2000, XP, Vista, Server 2008, 2012, Linux Kernel 2.6 or above	Windows 7,8,2000, XP, Vista, Server 2008, 2012, Linux Kernel 2.6 or above
Storage	HDD Bays	1 x 3.5" or 2 x 2.5"	2 x 2.5" (1 x 3.5" reserved)	2 x 2.5"
	Compact Flash	1 x Type II CompactFlash	1 x Type II CompactFlash	1 x CFast
Networking	Ethernet Ports	6 x GbE RJ-45 default 14 x GbE ports maximum	8 x GbE RJ-45 default 16 x GbE ports maximum	8 x GbE RJ-45 default
	Bypass	3 pairs G3	3 pairs G3 (Optional)	3 pairs G3
	Controllers	6 x Intel 82583V (Optional 82574L)	1 x Intel i217, 7 x Intel i210AT	8 x Intel i210
	Ethernet Modules	1	1	N/A or 2
	Management Port	N/A	1 x GbE RJ-45	1 x GbE RJ-45, share with IPMI port
	Security Acceleration	N/A	N/A	N/A
I/O Interface	Reset button	1 x reset button Software reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default
	Console	1 x RJ-45	1 x RJ-45	1 x RJ-45
	USB	2 x USB 2.0	2 x USB 2.0	2 x USB 3.0
	OPMA slot	N/A	By Project	Yes
Expansion	PCIe	1 x PCI-E*8 golden finger for Ethernet module or expansion slot (optional)	1 x PCI-E*8 expansion for NIC Module 1 x Low-profile PCI-E*8 (optional)	2 x PCI-E*8 golden finger for Ethernet module or expansion slot (optional)
	PCI	N/A	N/A	N/A
Cooling	Processor	CPU heatsink with fan duct	CPU heatsink with fan duct	CPU heatsink with fan duct
	System	4 x cooling fans with smart fan control	3 x cooling fans with smart fan control	3 x cooling fans with smart fan control
Environmental Parameters	Temperature, ambient operating / storage	0 ~ 40° C / -20~70° C	0 ~ 40° C / -40~70° C	0 ~ 40° C / -20~70° C
	Humidity (RH), ambient operating / ambient non-operating	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing
Miscellaneous	LCD Module	2 x 20 characters	2 x 20 characters	2 x 20 characters
	Watchdog	Yes	Yes	Yes
	Internal RTC with Li Battery	Yes	Yes	Yes
Physical Dimensions	Dimensions (WxHxD)	431 x 44 x 415 mm	431 x 44 x 415 mm	431 x 44 x 468 mm
	Weight	8.2 kg	10 kg	7 kg
Power	Type / Watts	1U ATX 220W single PSU or 1U ATX 275W redundant PSU	1+1 ATX redundant powers 300W/each	270 W single power supply or redundant 300 W PSUs
	Input	AC 100~240V @50~60 Hz	AC 90~264V @47~63 Hz	AC 110~240V @50~60 Hz
Approvals and Compliance		CE emission, FCC Class A, RoHS, UL	CE emission, FCC Class A, RoHS	CE emission, FCC Class A, RoHS



FW-8865	FW-8877	FW-8893A / FW-8893C	FW-8895
1U Rackmount	1U Rackmount	1U Rackmount	2U Rackmount
Intel® Xeon® E3, Intel Core™ i3, G850, G540 on LGA1155 (Sandy / Ivy Bridge)	Intel® Xeon® processor E5-2600 series on LGA2011 (Sandy / Ivy Bridge-EP)	2 x Intel® Xeon® E5-2600 Series up to 95W on LGA2011(Sandy / Ivy Bridge-EP)	2 x Intel® Xeon® E5-2600 series on LGA2011 (Sandy / Ivy Bridge-EP)
Intel® C206	Intel C604	Intel® DH8920CC / DH8950	Intel® C600 series
AMI BIOS 64Mbit SPI Flash ROM	AMI BIOS 64Mb	AMI BIOS 64Mbit SPI Flash ROM	AMI BIOS 64Mbit SPI Flash ROM
Dual-channel DDR3 1066 / 1333 /1600 MHz unbuffered, ECC or non-ECC, 1.5V	Quad-channel DDR3 800/1066/1333/1600 MHz (Registered ECC or unbuffered, ECC or non-ECC), 1.5V	Quad-channel DDR3 1066/1333/1600 MHz Registered or unbuffered, Support ECC, 1.5V	Quad-channel DDR3 1333/1600 MHz, Registered ECC or non-ECC, 1.5V
32 GB	64 GB	128 GB	128 GB
4 x 240P DIMM	8 x 240-pin DIMM	16 x 240P DIMM	16 x 240P DIMM
Windows 2000, 2003, XP, 7. Linux kernel 2.6 or above, FreeBSD	Windows 7,8, Server 2008, 2012, Linux Kernel 2.6 or above	Linux Kernel 2.6 or above	Windows 2003/2008 Server, Linux kernel 2.6 or above
1 x 3.5" or 2 x 2.5"	1 x 3.5" or 2 x 2.5"	1 x 2.5"	2 x 3.5" (SKU A/B) or 4 x 3.5" (SKU C/D)
1 x Type II CompactFlash	1 x Type II CompactFlash	1 x Type II CompactFlash	1 x Type II CompactFlash
4 x GbE RJ-45 default 20 x GbE RJ45 maximum	1 x GbE RJ-45 default	14 or 10 x GbE RJ-45 default 6 x GbE 10G SFP+ Cage	1 x GbE RJ-45 default 65 x GbE RJ45 maximum
2 pairs G3	Module Bypass support depends on it's specifications	4 or 2 pairs G3	Module Bypass support depends on it's specifications
4 x Intel 82574L or 2 x Intel i350	1 x Intel i210	1 x Intel I347 (SKU A only), 2 x Intel I350, 3 x 82599ES	1 x Intel 82574L
2	4	N/A	8 or 4
1 x GbE RJ-45	1 x GbE RJ-45	2 x GbE RJ-45	1 x GbE RJ-45
N/A	N/A	Intel Acceleration Technology	Cavium CN1620 (optional)
1 x reset button Hardware reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default	1 x reset button Software reset by default
1 x RJ-45	1 x RJ-45	1 x RJ-45	1 x RJ-45
2 x USB 2.0	2 x USB 2.0	2 x USB 2.0	2 x USB 2.0
Yes	Yes	Yes	Yes
1 x PCI-E*4 expansion	1 x PCI-E*8 expansion (Optional)	2x PCI-E*16 interface by ZD connector reserved for the custom model in 2U form factor	1 x PCI-E*8 expansion (optional)
1 x Mini PCI	N/A	N/A	N/A
CPU heatsink with fan duct	CPU heatsink with fan duct	CPU heatsink with fan duct	CPU heatsink with fan duct
4 x cooling fans with smart fan control	4 x independent hot-swappable cooling fans with smart fan control	4 x independent hot-swappable cooling fans with smart fan control	4 x independent hot-swappable cooling fans with smart fan control
0 ~ 40° C / -20 ~ 70° C	0 ~ 40° C / -20 ~ 70° C	0 ~ 40° C / -20 ~ 70° C	0 ~ 40° C / -40~70° C
5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing
2 x 20 characters	2 x 20 characters	128 x 64 Graphic LCM	2 x 20 characters (Graphic optional)
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
431 x 44 x 550 mm	438 x 44 x 580 mm	444 x 44 x 550 mm	444 x 88 x 600 mm
12 kg	18 kg	11 kg	25 kg
1U ATX PSU / 270W or 1U ATX redundant 275W each	1+1 ATX 400W redundant powers	1+1 ATX 650W redundant powers each	1+1 ATX 600W redundant powers each
AC 100~240 V @50~60Hz	AC 90~264V@47~63Hz	AC 90~264V@47~63Hz	AC 90~264V @47~63 Hz
CE emission, FCC Class A, RoHS	CE Class A, FCC Class A, RoHS, UL	CE emission, FCC Class A, RoHS	CE emission, FCC Class A, RoHS, UL

NIC Modules



Slim Module	Ports	Chipset	Bypass	FW-8771	FW-8877	FW-8894/8895/8896
GbE Copper Modules						
NCS2-IGM427A	4	Intel® Cave Creek	2 Pairs Gen3		V	V
NCS2-IGM427B	4	Intel® Cave Creek	N/A		V	V
NCS2-IGM806A	8	2 x Intel® i350-AM4	4 Pairs Gen3	V	V	V
NCS2-IGM806B	8	2 x Intel® i350-AM4	N/A	V	V	V
NCS2-IGM808A	8	Intel® i210AT	4 Pairs Gen3	V	V	V
NCS2-IGM808B	8	Intel® i210AT	N/A	V	V	V
GbE Fiber Modules						
NCS2-ISM405A	4	1 x Intel® i350-AM4	Yes	V	V	V
NCS2-ISM406A	4	1 x Intel® i350-AM4	N/A	V	V	V
NCS2-ISM802A	8	2 x Intel® i350-AM4	N/A	V	V	V
GbE Copper/Fiber Mixed Modules						
NCS2-IMM401 	4	1 x Intel® i350-AM4	N/A			V
NCS2-IMM802 	8	2 x Intel® i350-AM4	N/A			V
10GbE Copper Modules						
NCS2-ITM202A	2	Intel® X540	N/A	V	V	V
NCS2-ITM203A	2	Intel® X540	1 Pair	V	V	V
NCS2-ITM203B	2	Intel® X540	N/A	V	V	V
10GbE Fiber Modules						
NCS2-IXM204A	2	Intel® 82599ES	N/A	V	V	V
NCS2-IXM205A	2	Intel® 82599ES	1 Pair Gen3	V	V	V
NCS2-IXM405A	4	Intel® 82599ES	N/A	V	V	V
NCS2-IXM407 	4	Intel® XL710-AM1	N/A	V	V	V
40GbE Fiber Modules						
NCS2-IQM201 	2	Intel® XL710-AM2	N/A	V	V	V

Wide Module	Ports	Chipset	Bypass	FW-8865	FW-8758	FW-7575
GbE Copper Modules						
NCM-IGM201A/B	2	Intel® 82574L	1 Pair G2/N/A	V	V	
NCM-IGM401A/B	4	Intel® 82574L	2 Pairs G2/N/A	V	V	
NCM-IGM403A/B	4	Intel® 82576EB	2 Pairs G2/N/A	V	V	V
NCM-IGM801A/B	8	Intel® 82574L	2 Pairs G2/N/A	V	V	V
NCM-IGM802A/B	8	Intel® 82576EB	2 Pairs G2/N/A	V	V	V
NCM-IGM807A/B	8	2 x Intel® i350-AM4	4 Pairs G3/N/A	V	V	V
GbE Fiber Modules						
NCM-ISM202A	2	Intel® 82576EB	Yes		V	
NCM-ISM403A	4	Intel® 82580DB	N/A			
NCM-ISM406A	4	1 x Intel® i350-AM4	N/A	V	V	V
NCM-ISM801A	8	Intel® 82576EB	N/A	V	V	V
10GbE Copper Modules						
NCM-ITM202A	2	Intel® X540	N/A	V		V
10GbE Fiber Modules						
NCM-IXM202A	2	Intel® 82599ES	Yes	V		V
NCM-IXM203A	2	Intel® 82599ES	N/A	V	V	V

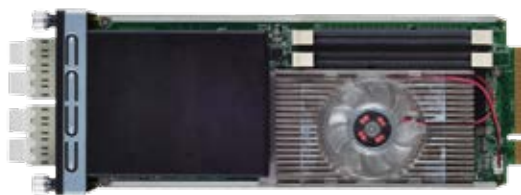
Network Processing Cards

Lanner offers a selection of add-on cards to offload the most demanding packet processing to processors that are specifically designed for this task. In addition to the standard cards listed here, we also produce custom designed cards and modules.

Packet Processing Cards

NCS-MTX401

Based on the Tiler® TILE-Gx36 processor, this module can be used with all Lanner appliances equipped with NIC module slots. While the x86 processor of the appliance takes care of the application, there is a powerful 36-core TILE-Gx processor in this module so packet processing for tasks such as DPI, IDS/IPS and cryptography can be offloaded. By using appliances with multiple NIC module slots, more packet processing cores can be added. With a system such as our FW-8895, you can add up to 8 modules for a total of 288 packet processing cores.



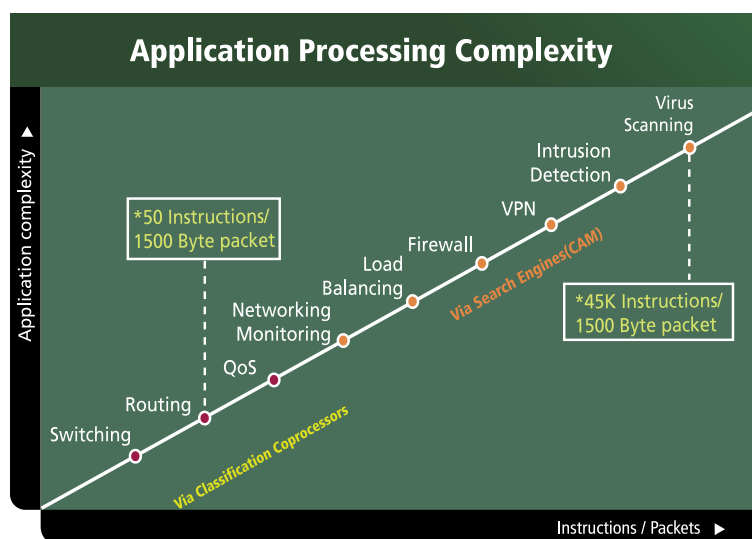
NCS-MTX401	
Processor / Cache	
Processor	Tilera Tile GX-36 1.2GHz CPU <ul style="list-style-type: none">• 36 cores• 9MB coherent cache
Network Engine	2 x MICA engines
Memory	
System Memory	Support 2 SODIMM DDR3 ECC 1333/1600MHz (vertical socket) Support ECC DIMMs 8 GB Maximum capacity
On Board Devices	
Flash	1 x Serial flash for boot loader 1 x SPI ROM
Network Controllers	1 x Broadcom BCM8747
I/O Connectors	
USB	1 x Internal USB pin header
Serial Port/Header	1 x Internal 1x3 pin header console pin header
LAN Port	4 x 10GbE LC Fiber port
LAN Bypass	Fiber Bypass (Optional)
PCB & Dimensions	
Physical Dimensions	PCB: 193 mm x 75 mm

Acceleration Cards

Our VPN accelerator cards provide high-performance tunneling and encryption services suitable for site-to-site and remote access applications. This hardware-based VPN acceleration is optimized to handle the repetitive but volume mathematical functions required for IPsec. Offloading encryption assists the card not only improves IPsec encryption processing, but also maintains high-end firewall performance.

As an integral component of many high-end VPN and UTM appliances, Lanner VPN cards can be integrated onto the motherboard.

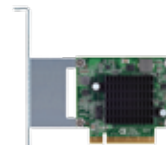
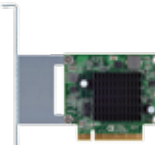
Dedicated VPN and L7 accelerator cards offload CPU resources and improve total application performance



Accelerator Card	NCS2-AVICE03 NEW	AV-ICE04 NEW	AV-ICE05 * NEW
VPN Engine	Intel® Cave Creek 8950CC	Intel® Cave Creek 8955CC x 2	Intel® Cave Creek 8955 x 4
Throughput	50 Gbps	55 Gbps	200 Gbps
Form Factor	PCI-E Gen.3 x8	PCI-E Gen.3 x8	PCI-E Gen.3 x16
Interface	PCI Express	PCI Express	PCI Express
Power consumption	20W	20W	80W
Driver Support	Linux, FreeBSD, VxWorks	Linux, FreeBSD, VxWorks, Windows	Linux, FreeBSD, VxWorks

Note: All these cards are specific to Lanner network appliances.

*(by Project)



Accelerator Card	AV-CVE2500	AV-CVE10000	AV-CVE20000	AV-CVE25000 *	AV-ICE01	AV-ICE02
VPN Engine	Cavium® CN1620	Cavium® CN1620 x 4	Cavium® CNN3550 /3510 x 1	Cavium® CNN3550/3510 x 4	Intel® Cave Creek 8910	Intel® Coletto Creek 8925
Throughput	2.5 Gbps	10 Gbps	20 Gbps	80 or 20 Gbps	Up tp 10 Gbps	Up tp 25 Gbps
Form Factor	PCI-E x4	PCI-E x4	PCI-E x8	PCI-E x8	PCI-E x8	PCI-E x8
Interface	PCI Express	PCI Express	PCI Express	PCI Express	PCI Express	PCI Express
Power consumption	Less than 5W	Max. 10W	Max. 20W	Max. 90W	11W	17W
Driver Support	Linux, FreeBSD, VxWorks	Linux, FreeBSD, VxWorks, Windows	Linux, FreeBSD, VxWorks	Linux	Linux	Linux





Note: All these cards are specific to Lanner network appliances.

*(by Project)

Common Accessories

Name	Part Number	Compatibility
IPMI Card	IAC-AST2300 	FW-8865, FW-8895, FW-8893, FW-8771, FW-8877, FW-8894, FW-8896, FX-7220, NCA-5510
1U Slide Rail	PN9NSFH42Z10D	FW-7575, FW-8760, FW-8756, FW-8865, FW-8758, FW-8875
	PN9NSFBM3Z100	FW-8877, FW-8894, FW-8896, NCA-5510
	098W000300001	FW-8893
2U Slide Rail	PN9NSFK33Z100	FW-8892
	PN9NSFAIOZ100	FW-8895
PSU module (1U/2U/AC/DC)	 2U PSU module  1U PSU module	
TPM module	IAC-TPM01 - Support TPM 1.2 or 2.0 - Optional kit for FW-8894, FW-8896 and NCA-5510	 
Wi-Fi/3G/4G/LTE module	NCS2-MINIPCE01A - Wi-Fi/4G module for Lanner network appliances with NIC module slot - 2 x Full-length Mini-PCIe slots - 1 x SIM card reader - 1 x PCIe x8 gold finger - 2 x antenna holes	 

Other Accessories

Name	Description
PCI-E Riser Cards	Each appliance has its own riser card, please contact Lanner sales for details.    

Note: Accessories change frequently. Please confirm part numbers before ordering to make sure you get the newest version.

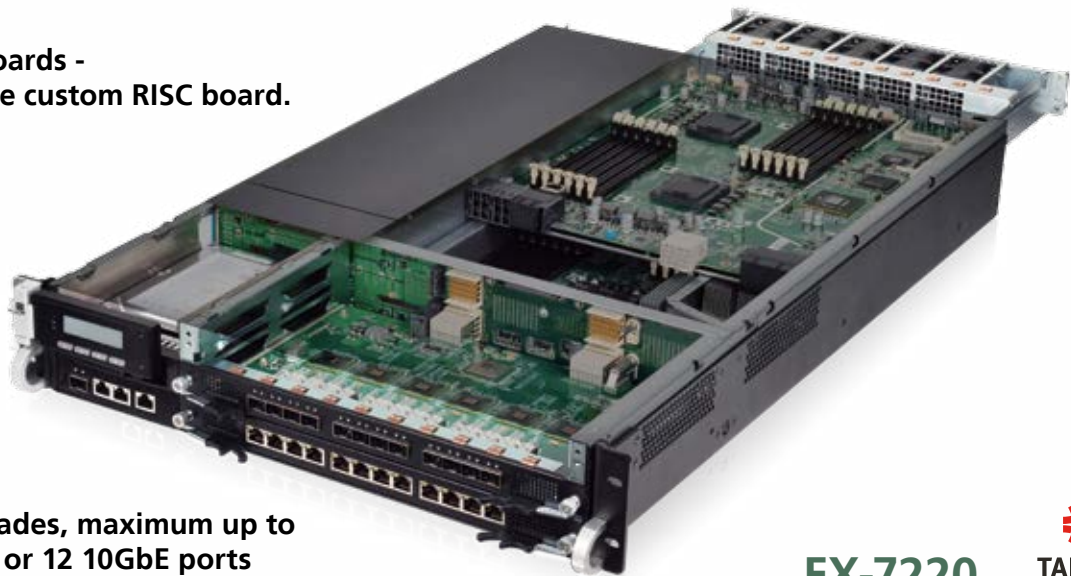
Telecom Datacenter Appliances (FX/HCP Series)

**Replace fans and power supplies
without removal from rack**

**Dual mainboards -
One x86, one custom RISC board.**

Hinged LCM

**3 network blades, maximum up to
36 GbE Ports or 12 10GbE ports**



FX-7220



Introduction Lanner HCP and FX Series

Cloud computing is becoming a critical function within the network core as operators strive to improve efficiency, deliver added value, and create new business opportunities. Telecom cloud services must blend data center and telecom capabilities, offering excellent performance, cost, energy, space, and manageability, along with carrier-grade reliability and security.

Both HCP and FX Series are carrier-class product lines that are designed to meet the challenging requirements of today's telecommunication and data center environments. Both of our HCP- and FX- lines offer extreme computing power with next-generation processors, custom I/O modular design, cutting-edge interconnect technologies, and solid reliability, availability and serviceability.

FX-3000 Series

Lanner FX-3000 series offers network appliances that are specifically made for challenging security managements. By integrating sizeable storage and high-end network processing capabilities in one chassis, Lanner FX-3000 line is the ideal platform for log management, SAN, compliance reporting, event management, and real-time monitoring.

HCP-7000 and FX-7000 Series

Both HCP-7000 and FX-7000 product lines consist of network appliances that apply Lanner's Hybrid Telecommunications Computing Architecture (HybridTCA), which is created to meet the challenging requirements for carrier-grade network control, cloud computing and data center. These appliances have advantages over the prevalent AdvancedTCA infrastructure in aspects of hardware design, customization options and cost/energy efficiency.

HCP-72i1



High Availability Hybrid Network Security Appliance, 2 Mainboards with up to Ivy-Bridge E5-2600 v2 and 3 I/O Blades of Copper/Fiber 1/10/40G Gigabit

HCP-72i1 is based on Lanner's unique Hybrid Telecommunications Computing Architecture (HybridTCA), which offers an alternative to ATCA. The system integrates control, management and data processing in one system.

Two Mainboards

HCP-72i1 is equipped with a primary mainboard using two powerful Intel® Xeon® processor that handle core network applications, and has room for a custom secondary mainboard that is dedicated to a secondary function such as network processing.

Selection of I/O Blades

With up to three swappable I/O blades, the HCP-72i1 can be configured with up to 36 1GbE network ports or 24 10GbE network ports, in an array of SFP or copper combinations. With 8 quad-channel DDR3 modules and two removable SATA hard drive bays, the HCP-72i1 is also easily expanded to tackle future requirements.



Redundant Power Supplies

Secure your network and protect your investment in the case of component failure with two high-efficiency 1200W-AC/1010W-DC power supply units.



Field-replaceable mainboard trays



Optimized Airflow Design



Specifications

Primary Mainboard	Processor	Supports four Intel® Xeon® E5-2600 v2 Series processors on LGA2011
	Chipset	Intel® C604 Chipset
	System Bus	Supports Intel Quick Path Interconnect link speeds up to 20GT/s bi-directional
	BIOS	AMI BIOS on 32MB Flash ROM
System Memory	Technology	Quad-channel DDR3 1066/1333/1600 MHz (Registered, ECC)
	Max Capacity	512 GB (Registered)
	Socket	Up to 32 x 240-pin DIMM, each blade support 16 DIMM
OS Support		Linux kernel 2.6, Windows Server 2003, 2008.
Storage	HDD Bay(s)	2.5" x 2 (removable tray)
	Flash	1 x mSATA socket
Networking	Ethernet Ports	Up to 36 via 3 network blades with onboard 1 management port and 1 SFP+ dedicate port
I/O Interface	Console	RJ-45 x 1 for each blade unit
	USB 2.0	2 x type A
	Sync port	10GbE x 1 for each blade unit
	OPMA slot	Yes
Form Factor		2U Rackmount
Cooling	Processor	1U CPU passive heatsink
	System	5 x cooling fans (swappable) with Smart Fan per mainboard
Environmental Parameters	Temperature, ambient operating / storage	0 ~55°C / 95W 0 ~40°C / 130W
	Humidity (RH), ambient operating and non-operating	5 ~ 95%, non condensing
	LCD Module	Yes
Miscellaneous	Watchdog	Yes
	Internal RTC with Li Battery	Yes
Physical Dimensions	Dimensions (WxHxD)	431 x 88 x 718.1 mm
	Weight	35 kg (77.16 lbs)
Power	Type / Watts	AC 1200 watt 1+1 redundant / each DC 1010 watt 1+1 redundant / each PM bus support
	Input	AC 100~240V@50~60Hz DC -36~-72V
	Output	+5V 30A, +12V 32A, +3.3V 0-24A, +3.3V 10.0A, +5V 13.0A, +12V 10.0A, +5Vsb 2.0A, -12V 0.5A
Approvals & Compliance		CE Emission, FCC Class A

I/O Blades List

NCM-BPGC01A	12 ports GbE RJ-45	Gen 2 Bypass
NCM-BPGC01B	12 ports GbE RJ-45	Without Bypass
NCM-BPSC01A	12 ports GbE SFP	Without Bypass
NCM-BPX402A	4 ports 10G SFP+	Without Bypass
NCM-ITM801	8 ports 10G SFP+	Without Bypass
NCM-IQT401	4 ports 40G QSFP+	Without Bypass

HybridTCA - Cloud Computing in the Network Data Center

Performance-Optimized Carrier Class Servers for Software-Defined Networking



Background

With cloud computing transforming nearly every industry, telecom providers have a unique opportunity. Not only can they use cloud computing to improve their existing operations, but they can also take on new roles as cloud providers. With their well-established network-based businesses, local presences, customer relationships, and aggregator expertise, telecom providers hold many advantages over other cloud providers.

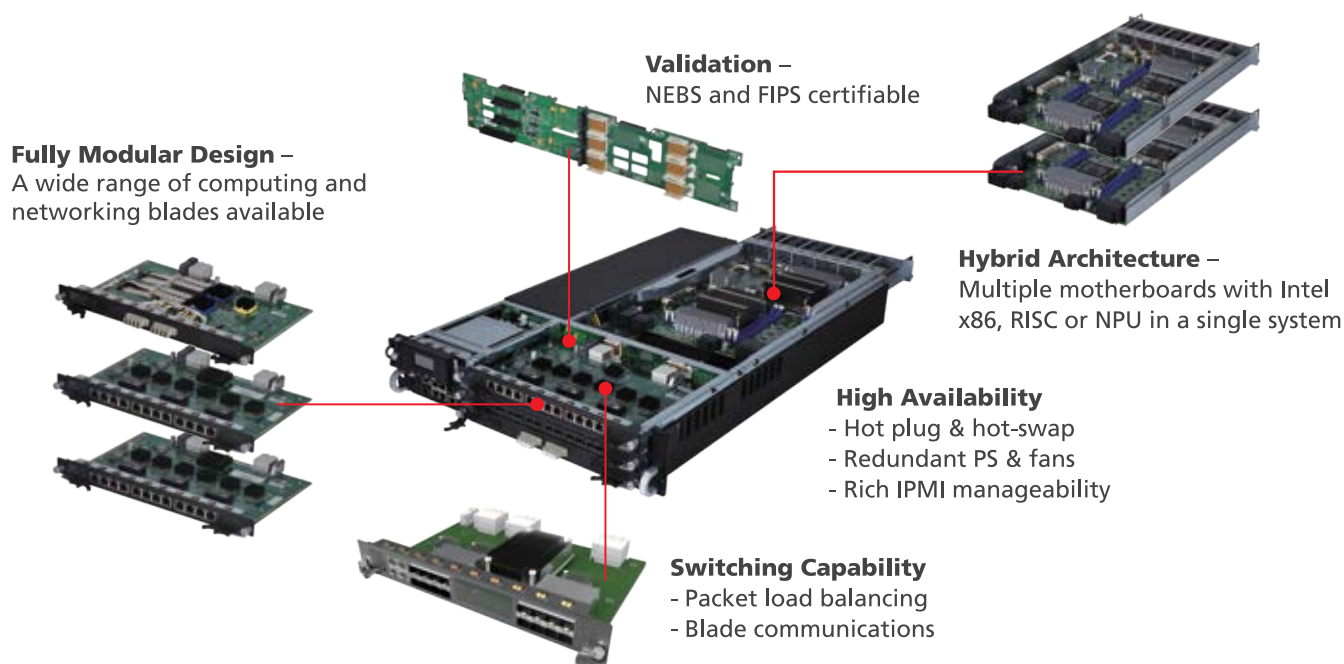
The move to SDN is a key enabler for telecom cloud computing. SDN allows telecom providers to flexibly and strategically use cloud resources. Providers can deploy virtualized network functions when and where they are needed to launch new services, create new businesses with ecosystem partners, and improve network operations. Latency-sensitive applications (such as video, voice, and gaming) can be hosted locally to deliver the best quality of service. Less sensitive applications can be hosted in centralized locations that are more cost-efficient. In short, SDN enables the network to be programmed, managed, and optimized more dynamically and at much larger scale.

The advantages of Lanner HybridTCA Platform

The Lanner HybridTCA (Hybrid Telecommunications Computing Architecture) platform was designed to integrate control plane and data plane in a single 2U appliance, delivering up to 400Gbps throughput.

As the name implies, HybridTCA is based on AdvancedTCA (ATCA) technology. What sets the two apart is HybridTCA's flexibility. AdvancedTCA standards limit each board to 200W. With HybridTCA, everything is customizable. For example, each board on the new HCP-7000 HybridTCA Communication Platform can support up to four CPUs with a thermal budget of 130W for each CPU. HybridTCA can also deliver significant power and space savings – up to 70 percent smaller and up to 70 percent more energy efficient than traditional appliances. In fact, a 2U HybridTCA design can outperform a 5U ATCA design.

HybridTCA Solution Brief



The Modularized Architecture

The HybridTCA architecture centers on the middle plane. This board connects the other elements together, making cable connections unnecessary. At the back, the Back Blade Unit (BBU) can host two processing blades. Using the latest Intel® Xeon® processor E5 2600 v3 product family, each of these boards can host dual-core configurations with 24 cores, for a total of 48 cores across two BBUs. The interconnection between these two boards is going through the Non-Transparent Bridge (NTB) port inherent in the CPUs, achieving a bandwidth beyond 30 Gbps. Because the architecture can support up to four CPUs per BBU, the system can readily expand to higher core counts in the future.

Moving to the front, a Front Blade Unit (FBU) supports up to three swappable Ethernet interface blades that can be configured with up to 36 1GbE or 12 10GbE network ports in an array of SFP or copper combinations. The front storage unit supports up to three 3.5" hard drives (HDDs) or six 2.5" HDDs/SSDs. A hinged LCD display provides status information. Under the storage area are the USB and serial ports and the IPMI management port.

The HybridTCA also features 1600W redundant power units, and all system fans are placed on each BBU for easier service. Through FIPS/NEBS certification, hot plug and hot swap capabilities, redundant power supplies and fans, and rich IPMI manageability, Lanner HybridTCA platforms deliver high levels of reliability, availability and serviceability.

A Versatile Solution

Already in telecom use for application delivery, load balancing, high-end data center security, the Lanner HybridTCA platform demonstrates the versatility of the latest Intel technology. What's more, the modular design of the platform can be adapted to a wide range of uses, helping service providers keep up with rapidly changing markets. By blending the best features of data center and telecom infrastructure capabilities, the HybridTCA platform is an excellent match for the emerging needs of the telecom cloud.

Disclaimer: An earlier version of this article appeared in the Embedded Innovator magazine (11th edition, 2015) published by the Intel® Internet of Things Alliance.

FX-7220

Dual Mainboard Network Appliance with
Three I/O Blades and Intel® Xeon® Processor



FX-7220 is based on Lanner's unique Hybrid Telecommunications Computing Architecture (HybridTCA), which offers a flexible alternative to ATCA. The system integrates control, management and data processing in one system.

Two Mainboards

FX-7220 is equipped with a primary mainboard using two powerful Intel® Xeon® processor that handle core network applications, and has room for a custom secondary mainboard that is dedicated to a secondary function such as network processing.

Selection of I/O Blades

With up to three swappable I/O blades, the FX-7220 can be configured with up to 36 1GbE network ports or twelve 10GbE network ports, in an array of SFP or copper combinations. With 8 quad-channel DDR3 modules and two removable SATA drive bays, the FX-7220 is also easily expanded to tackle future requirements.



Redundant Power Supplies

Secure your network and protect your investment in the case of component failure with two high-efficiency 1200W-AC/1010W-DC power supply units.



Field-replaceable Mainboard Trays



Optimized Airflow Design

Primary Mainboard Specifications

Primary Mainboard	Processor	Supports two Intel® Xeon® E5-2600 series processors on LGA2011
	Chipset	Intel® C600
	System Bus	Supports Intel Quick Path Interconnect link speeds up to 8GT/s
	BIOS	AMI BIOS on 32MB Flash ROM
System Memory	Technology	Quad-channel DDR3 up to 1600 MHz
	Max Capacity	128 GB
	Socket	240P DIMM x 8
OS Support		Linux kernel 2.6
Storage	HDD Bay(s)	3.5" x 2 (removable tray)
	Storage Interface	Serial ATA 6Gb/s
Networking	Ethernet Ports	Up to 36 via 3 network blades with onboard 1 management port and 1 SFP+ dedicate port
	Console	RJ-45 x 1
I/O Interface	USB 2.0	2
	OPMA slot	Yes

Secondary Mainboard Specifications

Contact Lanner for a custom designed mainboard that exactly matches your requirements.
Chassis Specifications

Form Factor		2U Rackmount
Cooling	Processor	1U CPU passive heatsink
	System	5 x cooling fans (swappable) with Smart Fan per mainboard
Environmental Parameters	Temperature, ambient operating / storage	0 ~55°C support CPU watt up to 95 watt 0 ~40°C support CPU watt up to 130 watt
	Humidity (RH), ambient operating and non-operating	5 ~ 95%, non condensing
	LCD Module	Yes
Miscellaneous	Watchdog	Yes
	Internal RTC with Li Battery	Yes
Physical Dimensions	Dimensions (Wx-HxD)	431 x 88 x 710 mm
	Weight	32 kg (48.5 lbs)
Power	Type / Watts	AC 1200 watt 1+1 redundant /each DC 1010 watt 1+1 redundant /each PM bus support
	Input	AC 100~240V@50~60Hz DC -36~72V
	Output	+5V 30A, +12V 32A, +3.3V 0-24A, +3.3V 10.0A, +5V 13.0A, +12V 10.0A, +5Vsb 2.0A, -12V 0.5A
Approvals & Compliance		CE Emission, FCC Class A, UL, C-Tick, VCCI

I/O Blades List

NCM-BPGC01A	12 ports GbE RJ-45	Gen 2 Bypass
NCM-BPGC01B	12 ports GbE RJ-45	Without Bypass
NCM-BPSC01A	12 ports GbE SFP	Without Bypass
NCM-BPX402A	4 ports 10G SFP+	Without Bypass

FX-3411

High Performance 3U Cloud Storage Appliance with Two Intel® Xeon® E5-2600 Series Processors (Sandy/Ivy Bridge-EP)

Designed for datacenters and telecommunication market, FX-3411 series is a high performance 3U rackmount cloud storage appliance, supporting Sandy/Ivy Bridge-EP CPU on the “Romley” platform, up to 12 3.5” SAS/SATA drive bays and up to 16 copper GbE ports or 8 SFP+ ports.

IPMI/Management Port

FX-3411 includes one IPMI/management port for in-band management and out-of-band remote management.

Expandable with Lanner Ethernet Modules

Lanner’s unique modular design allows you to mix and match your networking ports to suit your needs.

ECC Memory Support

FX-3411 supports Error-Correcting Code (ECC) memory technology, a server-grade memory technology that can identify and correct data error automatically. With ECC, system performance is more secure and stable.

Cavium Nitrox® Security Acceleration Processor

Depending on the SKU chosen, the FX-3411 may come with the optional Cavium Nitrox® CN1620 security acceleration processor.

Redundant Power Supply Units

By having dual power supplies, each connected to different power sources, users safeguard their appliance against electrical failure.

Optional SAN Card

Support extended storage system.

Optional PCI SSD Card

Support VM and Hardware Virtualization.



Specifications

Form Factor		Rackmount 3U
Platform	Processor Options	Intel® Xeon® processor E5-2600 series on LGA2011 (Sandy Bridge-EP or Ivy Bridge-EP)
	Chipset	Intel C604 Chipset
OS Support		Windows Server 2003, 2008, Linux Kernel 2.6 or above
BIOS		AMI BIOS 64Mb
System Memory	Technology	Quad-channel DDR3 1066/1333/1600 MHz (Registered or unbuffered, Ecc or non-ECC)
	Max. Capacity	512GB (Registered)
	Socket	16 x 240-pin DIMM
Storage	HDD Bays	12 x 3.5” HDD/SSD kit
	CF/SD	1 x CF card Type II ast
Networking	Ethernet Ports	1x RJ-45 with LED for IPMI / Management port
	Bypass	Depends on NIC module Bypass specification
	Controllers	Intel Ethernet controller, depends on NIC module specification
	Ethernet Modules	Two
	Management Port	One, share with IPMI port
I/O Interface	Reset Button	Yes
	Console	1 x RJ45
	USB	2 x USB 2.0
	OPMA slot	Yes
	Display	VGA support via optional IPMI
Expansion	PCIe	1 x PCI-E*8 full height PCI-E card in the front 1 x PCI-E*8 via riser card with I/O port in the rear
	PCI	N/A
Cooling	Processor	2 x CPU heatsink with fan duct
	System	3 x independent hot-swappable cooling Fans with smart fan control
Environmental Parameters	Temperature, ambient operating / storage	0 ~ 40° C / -20~70° C
	Humidity (RH), ambient operating and non-operating	5~95%, non-condensing
Miscellaneous	LCD Module	128 x 32 text LCM with keypad
	Watchdog	Yes
	Internal RTC with Li Battery	Yes
Physical Dimensions	Dimensions (WxHxD)	442 x 132 x 631 mm
	Weight	35 kg
Power	Type / Watts	800W redundant power supply units
	Input	90~264V@47~63Hz
Approvals and Compliance		CE Class A, FCC Class A, RoHS



Swappable Fans



Redundant Power Supply

FX-3210

2U Rackmount Appliance with Support for
Intel® Sandy Bridge / Ivy Bridge Processors and Intel C206 Chipset

Intel® 2nd and 3rd generation Processors support

The FX-3210 is compatible with both 2nd and 3rd generation Intel® Xeon® and Core™ processors. The 3rd generation Intel® Core™ processor is the first 22nm CPU in the market, delivering increased performance with lower power consumption, and also enabling multiple enhancements to connectivity, responsiveness and security.

Solid Expansion Capabilities

The FX-3210 is also equipped with four 3.5" SATA HDD/SSD bays for large capacity storage drives.

Lanner NIC Modules

Lanner's unique modular design allows you to mix and match networking ports to suit your needs. Choose from various NIC modules including RJ-45 with bypass, fiber bypass and 10GbE modules. Two optional 8-port NIC modules can be fitted to the FX-3210, making available a total of 20 LAN ports.

Redundant Power Supplies

Having dual power supplies allows some redundancy protection for users that have highly sensitive networks. For maximum effectiveness, these power supplies should be connected to different sources of electricity (i.e. wall socket and battery).



Specifications

Form Factor		2U Rackmount
Platform	Processor Options	Intel® Sandy Bridge/Ivy Bridge processor in LGA 1155 package
	Chipset	Intel® C206 series chipset Cougar Point PCH
BIOS		AMI BIOS
System Memory	Technology	DDR3 1333/1600 SDRAM, ECC or non-ECC
	Max. Capacity	32GB
	Socket	4 Dimm socket from 2 channel
OS Support		Linux kernel
Storage	HDD Bays	3.5" HDD x 4 (HDD Tray x4)
	Flash	Compact Flash Type II Socket x 1
Networking	Ethernet Ports	4 x GbE RJ-45 default 20 GbE ports maximum
	Bypass	2 Pairs Gen3
	Controllers	2 x Intel i350
	Ethernet Modules	2
	Management Port	1 x GbE RJ-45
	Security Acceleration	N/A
I/O Interface	Reset Button	1 x Reset button (Software Reset)
	Console	1 x RJ-45
	USB	2 x USB 2.0
	OPMA slot	Yes
Expansion	PCIe	2 x PCI-E * 8 (via 1 x PCI-E * 4 signal)
	PCI	N/A
Cooling	Processor	2U CPU heat-sink
	System	3 x 13000rpm System 2U Fan
Environmental Parameters	Temperature, ambient operating / storage	0 ~ 40° C / -20~70° C
	Humidity (RH), ambient operating / ambient non-operating	5~90%, non-condensing
Miscellaneous	LCD Module	2 x 20 characters
	Watchdog	Yes
	Internal RTC with Li Battery	Yes
Physical Dimensions	Dimensions (WxHxD)	444 x 550.2 x 87.8 mm
	Weight	20 kg
Power	Type / Watts	350W AC redundant power supply
	Input	100~240V ~ 5-3A, 60-50Hz
Approvals and Compliance		CE, FCC Class A



Network Processor Platforms (MR Series)

Introduction to the MR Series

Lanner's MR Series of MIPS RISC network processing appliances use the latest processors from Cavium®, Freescale® and Marvell® for boosting network throughput performance in applications like IPS, VPN and virus scanning.

Freescale® QorIQ

The QorIQ P1 platform series CPUs allows for high levels of integration and clever power mechanics to enter a wide range of industries including networking, telecommunications, manufacturing, maintenance, and security applications. The series allows for both single and dual core solutions in the 533MHz to 800MHz performance range with minimal power consumption.



Cavium® OCTEON

The Cavium® OCTEON® family of multi-core MIPS64 processors is a scalable, high-performance, and low-power solution for intelligent networking applications.

These software-compatible processors integrate next-generation networking I/Os along with the most advanced security, storage, and application hardware acceleration, offering throughput and programmability for the Layer 2 through Layer 7 processing requirements of intelligent networks.



Marvell®

Lanner offers products with processors from Marvell® Technology. Marvell® processors accelerates complex network traffic to significantly enhance the performance and functionality of advanced mobile and wireless infrastructure, storage, cloud services, and infrastructure networks.



Redundant Power Supplies

Many top-of-the-line network appliances utilize dual power supplies to ensure a constant flow of power. These appliances are relied on to be in operation 24 hours a day, 7 days a week, and every failure, no matter the length of time is equal to lost dollars. Therefore, smart network maintenance experts utilize dual power supplies, often attached to different sources of power to make sure these appliances do not fail.

Bypass

Bypass ports allow uninterrupted network traffic even if a single in-line appliance is shut down or hangs. Lanner's R&D have further developed basic bypass functionality to provide higher reliability and greater control.

For more information on Lanner's advanced bypass technology, please see our white paper "The Evolution of LAN Bypass Technology: Lanner's Generation One to Generation Three Bypass."

PCI Expansion Slots

Most MR products come with a Mini-PCI, Mini-PCle, or PCI-X slot so that new functionality can be added. This can for example be used for VGA cards, acceleration cards with Cavium® NITROX®, or encryption cards.

Selection Guide for Network Processor Platforms



Feature	Description	MR-301	MR-326
Form Factor		Desktop	Desktop
Platform	Processor Options	Marvell® Sheeva SOC 88F6281 1.2GHz (1.5GHz Max)	Cavium® Octeon CN6010 600MHz, 3.6W CN6020 800MHz, 6.5W
OS Support		Linux OS (Kernel version depends on BSP)	Linux Kernel 2.6 or above
Flash Memory	Boot Flash	512Mbit NAND Flash	2Mbyte NOR Flash
	Extra Flash	N/A	N/A
System Memory	Technology	DDR2 800 MHz 512MB/1GB	DDR3 ECC Onboard
	Max. Capacity	1 GB	1 GB
	Socket	Onboard	Onboard
Storage	HDD Bays	1 x 2.5" (Optional)	1 x 2.5" HDD (Optional)
	CF/SD	Optional	1 x Type II CompactFlash
Networking	Ethernet Ports	5 x GbE RJ-45 switch ports 1 x GbE RJ-45 port for internal ADSL connection	8 x GbE RJ45 Switch ports
	Bypass	N/A	Reserved for ODM/OEM only
	Controllers	Marvell® 88E6161 GbE switch Marvell® 88E1116	Vitesse® VSC7420e
	Ethernet Modules	N/A	N/A
	Management Port	N/A	Yes (Optional)
I/O Interface	Reset button	Yes	Yes
	Console	1 x RJ-45	1 x RJ45
	USB	1 x USB 2.0	2 x USB 2.0
Expansion	PCIe	Either 1 x Mini-PCIe, or 1 x PCI-E golden finger	N/A
	PCI	N/A	N/A
Cooling	Processor	Passive heatsink	Passive heatsink
	System	1 x cooling fan	1x System fan
Environmental Parameters	Temperature, ambient operating / storage	0°C ~40°C / -20°C~70°C	0°C ~40°C / -20°C~70°C
	Humidity (RH), ambient operating / ambient non-operating	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing
Miscellaneous	LCD Module	N/A	N/A
	Watchdog	Yes	Yes
	Internal RTC with Li Battery	Yes	Yes
Dimensions	Dimensions (WxHxD)	210 x 44 x 190 mm	215 x 44 x190 mm
	Weight	1.2 kg	1.5 kg
Power	Watts / Type	60 W power adapter	60 W power adapter
	Input	AC 100~240V	110~240V AC
Approvals & Compliance		CE Emission, FCC Class A, RoHS	CE Emission, FCC Class A, RoHS



MR-328	MR-350	MR-631
Desktop	Desktop / Half-rack	1U Rackmount
Cavium® Octeon III CN7010 800MHz	Freescall® P1011 533 MHz , Freescall® P1020 533 MHz	Freescall® P2041-1.2GHz SOC
Linux OS (Kernel version depends on BSP)	Linux OS (Kernel version depends on BSP)	Linux kernel 2.6 or up
2MB NOR Flash	16Mbit NOR Flash	2Mbyte NOR Flash
512MB NAND Flash	2048MBit NAND Flash	2Gbyte Nand Flash (Optional)
DDR3 Onboard 2 GB	Dual-Channel DDR3 @ 667 MHz 512MB (MR-350A) 1GB (MR-350B)	DDR3 1333 MHz DIMM with ECC support
2 GB	1 GB	2 GB
Onboard	Onboard	2
1 x 2.5" HDD (Optional)	N/A	1 x 2.5"
1 x SD	1 x SD(MR-350B)	1x Type II CompactFlash
6 x GbE RJ-45 switch ports	5 x GbE RJ-45 switch ports	8 x GbE RJ-45
N/A	N/A	1 pair (SKU A)
Marvell® 88E6172 switch + Intel i211	Marvell® 88E6171R switch	VSC7420-02 Switch Marvell® 88E1111 Chip (management)
N/A	N/A	N/A
N/A	N/A	Yes
Yes	Yes	Yes
1 x RJ-45	1 x RJ-45	1 x RJ-45
2 x USB 3.0	1 x USB 2.0	2 x USB 2.0
1 x Mini-PCIe	1 x Mini-PCIe (MR-350B)	1 x PCI-E*4 golden finger
N/A	N/A	N/A
Passive heatsink	Passive heatsink	Passive heatsink
Fanless	1 x cooling fan (MR-350B)	2 x cooling fans
0 ~ 40° C / -20 ~ 70° C	0 ~ 40° C / -20 ~ 70° C	0 ~ 40° C / -20 ~ 70° C
5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing	5 ~ 90% non condensing / 5 ~ 95%, non condensing
N/A	N/A	N/A
N/A	N/A	Yes
Yes	Yes	Yes
231 x 44 x 200 mm	216 x 44 x 189 mm	431 x 44 x 305 mm
2 kg	1.2 kg	4 kg
36 W power adapter	36 W power adapter	150 W single power supply
110 ~ 220 V AC	110 ~ 220 V AC	AC 110~240V

CE Class B, FCC Class B, RoHS

CE Emission, FCC Class A, RoHS

CE Emission, FCC Class A, RoHS

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Lanner

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Introductory
Video

