Acme Packet
Net-Net 4500

Overview

Acme Packet's Net-Net 4500 delivers unmatched performance and configuration capabilities in a 1 rack unit (RU) form factor. It satisfies all of the functionality, scalability, availability and manageability requirements of service providers and large enterprises.

The Net-Net 4500 operates Acme Packet's Net-Net OS to support a full range of product configurations and configuration options. Network interface units (NIU) for the Net-Net 4500 accelerate compute-intensive tasks, such as encryption and transcoding to deliver high-touch functionality at performance and capacity levels not typically achievable on general-purpose platforms.

Finally, the Net-Net 4500 features carrier-class high availability and NEBS certification to ensure non-stop operation and survivability in the most business-critical services and applications.

Acme Packet
Net-Net 4500

Acme Packet Edge
- Highest performance & capacity 1RU system
- Field-proven in demanding networks
- Broadest set of services & applications

Applications
- Medium to large service provider SBC: access & interconnect
- Access SBC with IMS core session management (Net-Net SMX)
- Member of Net-Net SBC cluster
- Access session-aware load balancer for Net-Net SBC cluster
- SRP, MSG & DSC
- Security-focused EBC for governments

Key Features
- High-performance dedicated multi-processors
- Hardware-accelerated transcoding, encryption & QoS measurement options
- Supports up to 40,000 signaled sessions
- High availability, redundant components
- NEBS-certified

Benefits
- Revenue optimization through diverse product configurationss
- Maximum reliability
- Scalable to limit capex & simplify operations

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Net-Net 4500

System Capacity, Performance and Availability

The Net-Net 4500 platform delivers industry-leading session performance, capacity and high availability in a 1RU form factor[†]

Signaled session capacity*:
• Up to 40,000 signaled sessions

Media session capacity*:
• Up to 16,000 simultaneous media sessions

IPsec tunnel capacity:
• Up to 200,000 tunnels with IMS-AKA

SIP-TLS capacity:
• Up to 200,000

SRTP capacity:
• Up to 10,000 call legs

Transcoding capacity:
• Up to 7,200 transcoded sessions

Route table capacity:
• Up to two million routes

System throughput:
• 5-20 Gbps

Network Interface Unit (NIU):
• Provides multiple ports of 10/100/1000 Mbps or 10 Gbps Ethernet connectivity for signaling, media and data services as well as management

Packaging:
• 1U rack-mount system

Management:
• Console and local storage interfaces and front panel display with keypad

Two-level encryption acceleration hardware:
• IPsec tunnel and TLS session set-up, IPsec and SRTP traffic encryption/decryption

High-availability (HA):
• Active/standby systems (1:1 redundancy) with check-pointing of signaling, media and configuration state for no loss of service

Supported Configurations

Net-Net OS configurations that operate on the Net-Net 4500 platform support a wide array of services and applications requiring mid-range to high-end functionality.

The table below shows the Acme Packet products and product configurations supported on the Net-Net 4500.

Further information on Acme Packet products/configurations, as well as the solutions enabled by them, is available at www.acmepacket.com.

Product/Configuration	Description
Net-Net Session Director (SD)	Session border controller (SBC) integrating controls for real-time communications signaling & media
Net-Net Edge Boundary Controller (EBC)	SBC configuration that integrates EBC functionality to meet United States Government specifications
Net-Net SIP Multimedia Xpress (SMX)	SBC configuration integrating SIP registrar, IMS P/S/I-CSCF, BGCF, PCRF & application server interfaces
Net-Net Access Session Load Balancer (A-SLB)	Session-aware load balancer that enables access SBC clusters that scale to support up to 2 million subscribers
Net-Net Session Router (SR)	Session routing proxy for SIP session routing between core & access networks & interconnects
Net-Net Diameter Director (DD)	Diameter signaling controller for authentication & QoS charging in 3G, LTE & IMS networks
Net-Net Security Gateway (SG)	Multiservice security gateway that secures small cell & voice over Wi-Fi sessions over untrusted networks

[†] Performance and capacity numbers reflect use of hardware-based QoS measurement/reporting and vary by signaling protocol, call flow, codec, configuration and feature usage.
* Performance and capacity vary by signaling protocol, call flow, codec, configuration and feature usage.

Net-Net 4500

Hardware

The Net-Net 4500 is a 1U rack-mountable (1RU) system. With its integrated multi-processor design, the Net-Net 4500 achieves the highest levels of session processing and capacity, system throughput and redundancy in a 1RU system designed for medium to large service provider, enterprise, government and contact center applications.

The front of the Net-Net 4500 features a bright LED display, single RJ-45 serial console interface, USB port for local storage and the system fan pack including replaceable filter. The rear of the Net-Net 4500 includes a single network interface unit slot as well as slots for redundant, load-sharing AC or DC power supply units (PSU).

Net-Net 4500 front

Net-Net 4500 rear

Network Interface Units

The rear slot of the Net-Net 4500 accommodates a single Network Interface Unit (NIU) module. Net-Net 4500 NIUs are offered in a variety of configurations to address a wide range of network, service and application scenarios.

Net-Net 4500 NIUs include two 10 Gbps or four 1 Gbps-capable Ethernet interfaces for signaling, media and data traffic. The NIUs also integrate the system alarm and management interfaces, including those used for the physical configuration of high-availability system pairs.

Net-Net 4500 NIUs are available in Base or Advanced models offering a selection of interface speeds and connection types:

- 10/100/1000 Mbps with copper RJ45 connectors
- 10/100/1000 Mbps via small form factor-pluggable (SFP) copper transceiver
- 1 Gbps via small form factor-pluggable (SFP) fiber optic transceiver

- 10 Gbps via small form factor-pluggable (SFP+) fiber optic transceiver

Net-Net 4500 Base NIUs with Encryption and QoS Monitoring and Reporting Options

To meet the demands of scalable, high-quality real-time communications, Net-Net 4500 NIUs offer on-board hardware designed to offload the CPU from processor-intensive functions, such as security and QoS monitoring and reporting.

Net-Net 4500 NIUs with SFP interfaces can accommodate on-board processors for IPsec and SRTP encryption, QoS monitoring and reporting, or both. The encryption acceleration hardware enables secure communications without compromising end user or subscriber quality of experience (QoE).

QoS monitoring and reporting hardware monitors and measures each media flow through the system, calculating quality scores (such as Mean Opinion Score, or MOS), and aggregating the information into data for transmission to external reporting or accounting systems. On-board QoS monitoring and measurement is also utilized for real-time functions such as QoS-based routing and load balancing, also without compromising end user or subscriber quality of experience.

Net-Net 4500 Advanced NIUs

Net-Net 4500 advanced NIUs help the Net-Net 4500 deliver a combination of performance, capacity and functionality unmatched by other platforms in its class.

With a distributed, multi-processor approach that leverages the latest DSP and multi-core processors, the Net-Net 4500 is capable of performing many high-end functions, but at capacity levels suitable for most enterprises and smaller service providers.

Transcoding NIU

The Net-Net 4500 Transcoding NIU delivers a powerful mid-range hardware-based transcoding solution that supports up to 7200 transcoded sessions. The Transcoding NIU also features QoS monitoring and reporting hardware for both transcoded and non-transcoded sessions.

The Net-Net 4500 Transcoding NIU may be populated with up to twelve transcoding modules, each supporting up to 600 transcoded sessions for pay-as-you-grow scalability.

Enhanced Traffic Control NIU

The Net-Net 4500 Enhanced Traffic Control (ETC) NIU offers a unique and highly-advanced design, with enhanced capabilities that address a wide range of next-generation services and applications.

The ETC NIU combines four 1 Gbps Ethernet ports with high-performance symmetric multi-processing that integrates multiple hardware-accelerated functions including:

• High-capacity SRTP encryption
• High-capacity termination for SIP-TLS
• Separate, dedicated processors for high capacity IPsec encryption and TCP termination
• Integrated hardware for QoS monitoring and reporting

The extensible multi-core architecture of the ETC NIU is capable of supporting additional applications and functions as new requirements emerge.

10 Gbps Enhanced Traffic Control (ETC) NIU

The 10 Gbps ETC NIU for the Net-Net 4500 offers two-ports of ultra-high throughput and advanced traffic control functions for Net-Net Security Gateway (SG) product configurations.

With two SFP+ interfaces that accommodate multimode or single mode fiber cabling, the 10 Gbps ETC NIU extends the throughput of the Net-Net 4500 to 20 Gbps. Like the 4x1 Gbps ETC NIU, the 10 Gbps version delivers very high capacity encryption, real-time QoS monitoring and other enhanced functions at wire speed for "over-the-top" (OTT) communications services and applications such as Wi-Fi data offload and others that leverage Net-Net SG functionality.

With more real-time communications services and applications requiring full 10 Gbps connectivity now and in the future, the 10 Gbps ETC NIU is extensible, with advanced multi-core processing designed to accommodate next-generation applications and service-related functions, along with investment protection and service expansion through support for additional Net-Net product configurations.

Physical

Dimensions	Height: 4.37 cm (1.72 in) Width: 43.18 cm (17.00 in) Depth: 48.26 cm (19.00 in) (Not including mounting hardware)
Weight	8.62 kg (19 lbs)
Colors	Front panel: Midnight black with Glacier blue trim
Temperature	Operating: 32 °F to 104 °F, 0 °C to +40 °C Storage: -4 °F to 149 °F, -20 °C to +65 °C
Relative humidity	10 to 85%, non-condensing
Air flow	50 cfm front to back
Heat dissipation	100W (341 BTU/hour) typical, 200W (682 BTU/hour) maximum
Power dissipation	100W typical, 200W maximum

Power

Two redundant load sharing supplies, 300 VA max

AC power option	Voltage: Autoranging 100-240 VAC wide input with power factor correction Frequency: 50/60 Hz Current: 3A x 2 rating Cable: 2.0 meter 18 AWG 3-wire cable, with 3-lead IEC-320 receptacle on the power supply end & a country-dependent plug on the power source end

Net-Net 4500
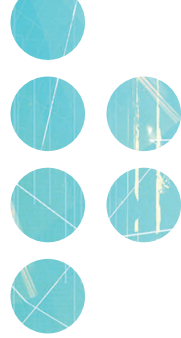
-48 VDC power option	Voltage: -48 VDC (+-10%) nominal in North America. Maximum range is -40 to -60 VDC Current: 7A x 2 rating Cable: 18 AWG recommended minimum, with at least 3 conductors rated for at least 140 °F (60 °C)
-72 VDC power option	Voltage: -72 VDC nominal in Russia Cable: 18 AWG recommended minimum, with at least 3 conductors rated for at least 140 °F (60 °C)

Specifications

Chassis	1U, rack-mount Front: display, console & local storage interfaces Rear: one network interface unit slot (signaling, media & management interfaces) Optional mounting brackets for front/rear or center-mount in 19" or 23" rack
Memory	4 GB for configuration files & Net-Net OS software storage 256 MB internal flash memory
Content addressable memory (CAM)	256K entries for static & dynamic ACLs, media control rules & ARP entries
Local storage	Optional 500 GB storage expansion module for CDR backup
Secure services module (SSM)	Hardware acceleration option for TLS, IPsec session establishment with use of non-manual keys Standard for MSG configurations Optional for SBC configurations: required for TLS, required for IPsec with use of non-manual keys

Network interface units (NIU)	Supports network interfaces for signaling, media & data
	Basic NIUs & options:
	  • Four 10/100/1000 Mbps Ethernet copper ports (RJ-45 connector)
	  • Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports (requires SFP transceivers)
	  • Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports with inline IPsec/SRTP encryption processors (requires SFP transceivers)
	  • Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports with inline QoS measurement processors (requires SFP transceivers)
	  • Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports with inline IPsec/SRTP encryption & QoS measurement processors (requires SFP transceivers)
	Transcoding NIU:
	  • Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports (requires SFP transceivers)
	  • Up to twelve on-board transcoding digital signal processor (DSP) modules
	  • Inline QoS measurement processors
	Enhanced Traffic Control NIU:
	  • Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports (requires SFP transceivers)
	  • Integrated high-capacity encryption (IPsec, SRTP, TLS) processors
	  • Inline QoS measurement
	  • Integrated hardware-based SIP-TLS & TCP processing
	10 Gbps Enhanced Traffic Control NIU:
	  • Two 10 Gbps Ethernet fiber ports (requires SFP+ transceivers)
	  • Integrated high-capacity encryption (IPsec, SRTP, TLS) processors
	  • Inline QoS measurement
	  • Integrated hardware-based SIP-TLS & TCP processing
	NIU management interfaces—included on all NIU options:
	  • Two 10/100/1000 Mbps interfaces with RJ-45 for HA node configurations
	  • One 10/100/1000 Mbps interface with IPsec encryption processor & RJ-45 for management networks (optional IPsec encryption of management interface via encryption capable NIU)
	  • One RS-232 serial console interface with RJ-45 connector (only rear or front interface may be used at any time)

Front panel management interfaces	One RS-232 serial console interface with RJ-45 connector (only rear or front interface may be used at any time) One USB 2.0 interface One system status display with keypad

Regulatory

Product bears CE[1] marking indicating compliance with the 99/5/EC directive, which includes the following EN & IEC standards for safety & EMI.

Safety	US: UL[2] 60950-1, 2nd edition Canada: CSA[3] 60950-1-07, 2nd edition-C22.2 No. 60950-1-03, 1st Ed. EU: EN[4] 60950-1:20012006
EMC	US: FCC[5] Part 15 (CFR 47) Class A limits Canada: ICES[6]-003 Issue 4, Class A limits EU: EN55022:2006 +A1:2007 Class A limits Germany: 1 TR 9 Japan: VCCI[7] Class A limits
Immunity	EU: EN 300 386 v1.4.1
NEBS	GR-63 GR-1089 SR-3580: Level 3 certified
U.S. Department of Defense Security	FIPS 140-2 compliant Defense Information Systems Agency (DISA) Unified Communications Requirements (UCR) compliant Listed: DISA Unified Capabilities Approved Product List (UCAPL)

[1]CE = European Compliance
[2]UL = Underwriters Laboratory
[3]CSA = Canadian Standards Association
[4]EN = European Norm
[5]FCC = Federal Communications Commission
[6]ICES = Interference-Causing Equipment Standard
[7]VCCI = Voluntary Control Council for Information Technology Equipment (Japan)

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