

# 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 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 configurations
- Maximum reliability
- Scalable to limit capex & simplify operations

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Net-Net 4500



## 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.<sup>†</sup>

### Media session capacity\*:

- Up to 30,000 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 Gbps

### Network Interface Unit (NIU):

- Provides multiple ports of 10/100/1000 Mbps 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](http://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

<sup>†</sup> 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.

All Net-Net 4500 NIUs include four 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 offered with the following 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

## 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.

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**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 includes 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 is a high-performance multi-processor engine that combines 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, multi-processor architecture of the ETC NIU is capable of supporting additional applications and functions as new requirements emerge.

**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
-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)

## Net-Net 4500

## Specifications

Chassis	<p>1U, rack-mount</p> <p>Front: display, console &amp; local storage interfaces</p> <p>Rear: one network interface unit slot (signaling, media &amp; management interfaces)</p> <p>Optional mounting brackets for front/rear or center-mount in 19" or 23" rack</p>
Memory	<p>4 GB for configuration files &amp; Net-Net OS software storage</p> <p>256 MB internal flash memory</p>
Content addressable memory (CAM)	<p>256K entries for static &amp; dynamic ACLs, media control rules &amp; ARP entries</p>
Local storage	<p>Optional 500 GB storage expansion module for CDR backup</p>
Secure services module (SSM)	<p>Hardware acceleration option for TLS, IPsec session establishment with use of non-manual keys</p> <p>Standard for MSG configurations</p> <p>Optional for SBC configurations: required for TLS, required for IPsec with use of non-manual keys</p>
Network interface units (NIU)	<p>Supports network interfaces for signaling, media &amp; data</p> <p>Basic NIUs &amp; options:</p> <ul style="list-style-type: none"> <li>• Four 10/100/1000 Mbps Ethernet copper ports (RJ-45 connector)</li> <li>• Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports (requires SFP transceivers)</li> <li>• Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports with inline IPsec/SRTP encryption processors (requires SFP transceivers)</li> <li>• Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports with inline QoS measurement processors (requires SFP transceivers)</li> <li>• Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports with inline IPsec/SRTP encryption &amp; QoS measurement processors (requires SFP transceivers)</li> </ul> <p>Transcoding NIU:</p> <ul style="list-style-type: none"> <li>• Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports (requires SFP transceivers)</li> <li>• Up to twelve on-board transcoding digital signal processor (DSP) modules</li> <li>• Inline QoS measurement processors</li> </ul> <p>Enhanced Traffic Control NIU:</p> <ul style="list-style-type: none"> <li>• Four 1000 Mbps Ethernet fiber or four 10/100/1000 Mbps copper ports (requires SFP transceivers)</li> <li>• Integrated high-capacity encryption (IPsec, SRTP, TLS) processors</li> <li>• Inline QoS measurement</li> <li>• Integrated hardware-based SIP-TLS &amp; TCP processing</li> </ul> <p>NIU management interfaces—included on all NIU options:</p> <ul style="list-style-type: none"> <li>• Two 10/100/1000 Mbps interfaces with RJ-45 for HA node configurations</li> <li>• One 10/100/1000 Mbps interface with IPsec encryption processor &amp; RJ-45 for management networks (optional IPsec encryption of management interface via encryption capable NIU)</li> <li>• One RS-232 serial console interface with RJ-45 connector (only rear or front interface may be used at any time)</li> </ul>
Front panel management interfaces	<p>One RS-232 serial console interface with RJ-45 connector (only rear or front interface may be used at any time)</p> <p>One USB 2.0 interface</p> <p>One system status display with keypad</p>

## Net-Net 4500

## Regulatory

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

Safety	US: UL <sup>2</sup> 60950-1, 2 <sup>nd</sup> edition Canada: CSA <sup>3</sup> 60950-1-07, 2 <sup>nd</sup> edition-C22.2 No. 60950-1-03, 1 <sup>st</sup> Ed. EU: EN <sup>4</sup> 60950-1:20012006
EMC	US: FCC <sup>5</sup> Part 15 (CFR 47) Class A limits Canada: ICES <sup>6</sup> -003 Issue 4, Class A limits EU: EN55022:2006 +A1:2007 Class A limits Germany: 1 TR 9 Japan: VCCI <sup>7</sup> 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)

<sup>1</sup>CE = European Compliance

<sup>2</sup>UL = Underwriters Laboratory

<sup>3</sup>CSA = Canadian Standards Association

<sup>4</sup>EN = European Norm

<sup>5</sup>FCC = Federal Communications Commission

<sup>6</sup>ICES = Interference-Causing Equipment Standard

<sup>7</sup>VCCI = Voluntary Control Council for Information Technology Equipment (Japan)



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