Acme Packet Net-Net 4000 series

product information

Overview

Acme Packet's Net-Net 4000 series, the industry's most widely deployed carrier-class session border controller platform, delivers unmatched capabilities in a 1 rack unit (RU) form factor. Comprised of two distinct platforms, the Net-Net 4250 and Net-Net 4500, the Net-Net 4000 series satisfies all of the functionality, performance, capacity, availability and manageability requirements of service providers, enterprises and contact centers.

For service providers, the Net-Net 4000 series plays a critical role in next-generation, converged fixed-mobile architectures including 3GPP IMS, 3GPP2 MMD, ATIS, ETSI TISPAN, GSMA, the MultiService Forum and PacketCable.

For enterprises and contact centers, the Net-Net 4000 series enables the secure delivery of a broad range of interactive communications services and applications ranging from basic VoIP to presence-enabled unified communications.

With Acme Packet's Net-Net OS, the Net-Net 4000 series supports all session border controller (SBC), multiservice security gateway (MSG) and session routing proxy (SRP) configurations, functions and features. It provides all of the capabilities needed to deliver trusted, first class interactive communications—voice, video and multimedia sessions—and data services across IP network borders. These capabilities span five key areas - security, service/application reach maximization, SLA assurance, revenue and cost optimization, and regulatory compliance.

As a SBC, the Net-Net 4000 series secures subscriber access and interconnect/peering borders and enables interoperability of heterogeneous endpoints, service infrastructure elements and networks to maximize service reach. It controls admission, overload, IP network transport and session routing to assure SLAs, maximize revenues and minimize costs. Lastly, it enables regulatory compliance with emergency service (E911), national government priority service (GETS) and lawful intercept (CALEA) requirements. In enterprise networks, it ensures interoperability of both legacy IP-PBX equipment and next-generation unified communications platforms such as Microsoft® Office Communication Server and manages their traffic load and resource availability.

In MSG configurations, it enables fixed-mobile substitution (FMS) and convergence (FMC) by securing the delivery of voice and data services over untrusted Internet and WiFi networks to femtocells and dual-mode endpoints.

As a SRP, it consolidates and simplifies the routing of large numbers of SIP-based voice, video, instant messaging and multimedia sessions within and between mobile, fixed-line and transit networks. Leveraging both internal and external best-of-breed routing databases via industry-standard protocols, the Net-Net session router (SR) helps service providers reduce capital and operating expenditures while optimizing service revenue.

Acme Packet Net-Net 4250

Acme Packet Net-Net 4500

System capacity, performance and availability

Each Net-Net 4000 series platform delivers industry-leading capacity, performance and high availability in a 1RU form factor (Table 1).

	Net-Net 4250	Net-Net 4500
SIP signaling performance*	1.0	2.5
Media session capacity**	32,000	64,000
IPsec tunnel capacity	128,000	512,000
Local route table entries	1,000,000	2,000,000
Content addressable memory (CAM)	64K	256K
Random access memory (RAM)	2 GB	4 GB
Flash storage	32 MB	256 MB
Network Interface Unit (NIU) slots	2 front	1 rear
System throughput	5 Gbps	5 Gbps
* Performance and capacity vary by signaling protocol, call flow, codec, configuration and feature usage. ** With hardware-based QoS measurement/reporting		

Table 1 - Net-Net 4000 series system performance and capacity specifications

Net-Net 4000 series platforms also support the following capabilities and features:

- Network Interface Units (NIU) – provide multiple ports of 10/100/1000 Mbps Ethernet connectivity for signaling, media and data services as well as management
- 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, IPsec tunnel and configuration state for no loss of service
- Management – console and local storage interfaces and front panel display with keypad
- Packaging – 1U rack-mount system

Session Border Controller (SBC) configurations

The Net-Net 4000 series may be configured to support either SBC deployment model—integrated or decomposed. As an integrated SBC, the Net-Net 4000 series tightly integrates signaling and media control on a single hardware platform and provides comprehensive support for SIP, H.323, SIP-H.323 interworking, MGCP/NCS and H.248 signaling and media sessions. Net-Net OS offers proven signaling interoperability with all major softswitches, IMS CSCF elements, SIP servers, H.323 gatekeepers, call agents, application servers, media servers, media gateways, IP PBXs and numerous IP-based voice and video endpoints. Decomposed SBC configuration options include SIP signaling-only control with an H.248 control interface to a border gateway, or media-only control with an H.248 control interface from a SIP call/session agent.

Specific SBC configuration options include:

- **Net-Net Session Director (SD)** – integrated SBC with multi-protocol signaling and media control
- **Net-Net Border Gateway (BG)** – decomposed SBC with media-only control, uses H.248 control interface to master Acme Packet Session Controller or third-party SIP signaling element
- **Net-Net Session Controller (SC)** – decomposed SBC with SIP signaling-only control, uses H.248 control interface to slave Acme Packet Border Gateway or third-party media proxy/relay
- **Net-Net Signaling Firewall (SF)** – decomposed SBC with SIP signaling security and other control functions

Configurations supporting subscriber access are available with and without IMS P-CSCF SIP functionality to complement the IMS CSCF functions offered by Acme Packet's partners in their products.

Multiservice Security Gateway (MSG) configurations

The Net-Net 4000 may be configured to support MSG configurations for securing voice and data services over untrusted wireless or wireline networks using IPsec tunnels. The Net-Net Security Gateway (SG) supports the following roles within the 3GPP architecture:

- **I-WLAN Tunnel Terminating Gateway (TTG)** - 3GPP Interworking-Wireless LAN (I-WLAN) Tunnel Terminating Gateway (TTG) secures SIP interactive communications services and packet data services
- **UMA Security Gateway (SeGW)** - 3GPP Unlicensed Mobile Access (UMA) Security Gateway (SeGW) secures GSM voice services and packet data services

The Net-Net 4000 series can support multiple, separate logical I-WLAN TTG and UMA SeGW functions within a single physical system. Virtualization enables service providers to use a single system to support multiple services— I-WLAN and UMA, residential and enterprise, retail and wholesale, or multiple mobile virtual network operator (MVNO) customers—minimizing capital and operating expenses. Acme Packet's industry-leading SBC functionality can also be physically integrated with the I-WLAN TTG configuration and virtualized, speeding time to service via proven interoperability and minimizing capital and operating expenses.

Session Routing Proxy (SRP) configuration

The Net-Net session router (SR) is a high-performance session routing proxy (SRP) responsible for efficiently routing SIP-based interactive communication sessions—voice, video, instant messaging and multimedia—within and between networks. The Net-Net SR plays a central role in Acme Packet's Open Session Routing Architecture (OSR).

In Acme Packet's OSR architecture, the Net-Net SR works in conjunction with best-of breed routing database products and services from Acme Packet partners. These complementary product vendors and service providers offer centralized routing databases and database provisioning tools for dynamic route selection. Acme Packet's Net-Net SR queries these databases using industry-standard ENUM, SIP and DNS protocols. The Net-Net SR's local route tables may also be provisioned by these partners' products or by the Acme Packet Net-Net EMS using XML.

Using these databases, the Net-Net SR dynamically routes sessions between all types of borders, including access and interconnects, IP and TDM. More specifically, the Net-Net SR routes sessions between stateful service control elements such as Acme Packet SBCs, wireless Mobile Switching Centers (MSC), IMS subscriber call control elements, CLASS 5 softswitches, Cable Modem Termination Systems (CMTS) and softswitches controlling media gateways. Since the source and destination SIP signaling elements are session-stateful, the Net-Net SR can operate in a stateless or transaction-stateful mode, maximizing its performance.

Common SBC, MSG & SRP functions

Net-SAFE, Acme Packet's security function, is supported via the tight integration of the Net-Net 4000 series hardware and Net-Net OS software. Net-SAFE features powerful denial-of-service/distributed denial-of service protection at the layer 3, layer 4, IPsec and SIP signaling level; and intrusion detection/prevention capabilities. Other security features support dynamic access control, topology hiding, privacy and confidentiality, service infrastructure DoS/DDoS protection, virus and SPIT protection, and fraud prevention.

Net-Net EMS, a GUI/browser-based client/server application supporting configuration, fault, performance and security management for multiple border elements in multiple networks, is one of many management tools available. Net-Net EMS can efficiently integrate into existing and next-generation operational support systems through industry-standard SOAP/XML, SNMP v2c and syslog interfaces. Other management tools include Historical Data Recording, CLI, telnet/SSH, FTP/SFTP, and RADIUS accounting and authentication.

Net-Net 4500 specifications	
Chassis	• 1U, rack-mount • Front – display, console and local storage interfaces • Rear – one network interface unit slot (signaling, media and management interfaces) • Optional mounting brackets for front/rear or center-mount in 19” or 23” rack
Memory	• 4 GB for configuration files and Net-Net OS software storage • 256 MB internal flash memory
Content addressable memory (CAM)	• 256K entries for static & dynamic ACLs, media control rules and ARP entries
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 interfaces unit (NIU)	• Supports service network interfaces for signaling, media and data services **Service network interfaces for signaling, media and data** • Four 10/100/1000 Mbps Ethernet copper ports (RJ-45 connector) • Four 1000 Mbps Ethernet fiber/copper ports (requires SFP transceivers) • Four 1000 Mbps Ethernet fiber/copper ports with inline IPsec/SRTP encryption processors (requires SFP transceivers) • Four 1000 Mbps Ethernet fiber/copper ports with inline IPsec/SRTP encryption and QoS measurement processors (requires SFP transceivers) **NIU management interfaces – included on all NIU options** • Two 10/100/1000 Mbps interfaces with RJ-45 connectors for HA node configurations • One 10/100/1000 Mbps interface with IPsec encryption processor and RJ-45 connector 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) • One alarm interface with RJ-45 connector
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
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: 5A rating, not to exceed 3.5A maximum at 100 VAC and 1.5A maximum at 240 VAC • Cable: 2.0 meter 18 AWG 3-wire cable, with 3-lead IEC-320 receptacle on the power supply end and 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: 10A rating, not to exceed 7.4A maximum at -48 VDC and 5.9A maximum at -60 VDC • 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)
Physical	
Dimensions	• 1.72 in H x 17.00 in W x 19.00 in D (not including mounting hardware) • 4.37 cm H x 43.18 cm W x 48.26 cm D (not including mounting hardware)
Weight	• 19 lbs, 8.62 kg
Colors	• Front panel - Midnight black with Glacier blue trim
Temperature	• Operating: 32ºF to 104ºF, 0ºC to +40 ºC • Storage: -4ºF to 149ºF, -20ºC to +65 ºC
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

Regulatory	• Product bears CE[1] marking indicating compliance with the 99/5/EC directive, which includes the following EN and IEC standards for safety and EMI
Safety	• US: UL[2] 60950-1, 1st Ed. • Canada: CSA[3]-C22.2 No. 60950-1-03, 1st Ed. • EU: EN[4] 60950-1:2001
EMI	• US: FCC[6] Part 15 (CFR 47) Class A limits • Canada: ICES[7]-003 Issue 4, Class A limits • EU: EN 55 022:2006 Class A limits • Japan: VCCI[8] Class A
Immunity	• EU: EN 55 024:1998 + A1:2001 +A1:2003 • EU: EN 300 386 v1.3.3
NEBS	• GR-63 • GR-1089 • SR-3580 - Level 3 certified

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

Net-Net 4250 specifications	
Chassis	• 1U, rack-mount • Front – display, 2 slots for two network interface units • Rear - fixed management interfaces
Memory	• Choice of 1GB or 2GB for configuration files and Net-Net OS software storage
Content addressable memory (CAM)	• Choice of 64K or 256K entries for static & dynamic ACLs, media control rules and ARP entries
QoS measurement engines	• Standard - measures media packet jitter, loss and latency per session
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 interfaces unit (NIU)	• Supports service network interfaces for signaling, media and data services **NIU configuration options - two per system** • Two 1000 Mbps Ethernet interfaces - configurable for fiber SX or LX or copper via SFP transceiver • Two 1000 Mbps Ethernet interfaces with in-line wire-speed IPSec encryption/decryption hardware - configurable for fiber SX or LX or copper via SFP transceiver • Two 1000 Mbps Ethernet interfaces with in-line wire-speed IPSec encryption/decryption hardware - copper via RJ-45 connector • One 1000 Mbps Ethernet interface - configurable for fiber SX or LX or copper via SFP transceiver • Four 10/100 Base-T Ethernet interfaces - copper via RJ-45 connector MSG configurations require NIUs with in-line wire-speed IPsec encryption/decryption hardware
Management interfaces	**Rear of system:** • Three 10/100 Base-T interfaces with RJ-45 connectors for management networks and HA node configurations • One RS-232 serial console interface with RJ-45 connector (only rear or front interface may be used at any time) • One alarm interface with RJ-45 connector **Front of system:** • One RS-232 serial console interface with RJ-45 connector (only rear or front interface may be used at any time) • One PCMCIA slot • One system status display with keypad

Power	• Two redundant load sharing supplies, 150 VA max
AC power option	• Voltage: auto-ranging 100-240 VAC wide input with power factor correction • Frequency: 50/60 Hz • Current: 2A rating, not to exceed 1.5A max. at 100 VAC and 0.75A max. at 240 VAC • Cable: 1.5 meter 18 AWG 3-wire cable, with 3-lead IEC-320 receptacle on the power supply end, and a country-dependent plug on the power source end
-48 VDC power option	• Voltage: -48 VDC (±10%) nominal in North America. Maximum range is -40.5 to 60 VDC • Current: 3A rating, not to exceed 2.0A max. at -48 VDC and 2.4A max. at -40.5 VDC • 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. Maximum range is -36 to -72 VDC • Current: 3A rating, not to exceed 2.0A max. at -48 VDC and 2.7A max. at -36 VDC • Cable: 18 AWG recommended minimum, with at least 3 conductors rated for at least 140° F (60° C)
Physical	
Dimensions	• 1.72 in H x 17.00 in W x 19.00 in D (not including mounting hardware) • 4.37 cm H x 43.18 cm W x 48.26 cm D (not including mounting hardware)
Weight	• 12 lbs, 5.44 kg
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	• 30 cfm front to back
Heat dissipation	• 205 BTU typical, 511 BTU/hour maximum
Power dissipation	• 150 W max
Regulatory	• Product bears CE[1] marking indicating compliance with the 99/5/EC directive, which includes the following EN and IEC standards for safety and EMI
Safety	• US: UL[2] 1950 • Canada: CSA[3]-C22.2 No. 950 • EU: EN[4] 60950, EN 60825-1, EN 60825-2 • IEC[5] 60950, IEC 60825-1, IEC 60825-2
EMI	• US: FCC[6] Part 15 (CFR 47) Class A • Canada: ICES[7]-003 Class A • EU: EN55022 Class A, EN50081-1, EN50082-1 • Japan: VCCI[8] Class A
Immunity	• EU: EN55024
NEBS	• GR-63 • GR-1089 • SR-3580 - Level 3 certified

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

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