

PacketStar® PSAX Multiservice Media Gateway Portfolio



Deliver voice, video and data services rapidly with a single, cost-effective edge and access platform. Use the same high-density scalable platform to migrate easily to next-generation mobility and wireline networks.

Benefits

- Increase revenue potential with a scalable edge access strategy
- Introduce profitable, high-margin services rapidly with reduced risk
- Reduce capital investment and operating costs by lowering inventory, sparing, and training costs
- Simplify operations and network complexity by collapsing multiple technologies into one platform
- Protect your current investment, while migrating to tomorrow's infrastructure, with a rich selection of interfaces and advanced protocols

Lucent Technologies
Bell Labs Innovations



Help reduce operating costs with a single, scalable platform

The PacketStar® PSAX Multiservice Media Gateways are a portfolio of products that provide broadband access and convergence in the mission-critical access to edge space. With this portfolio, you can consolidate disparate access network elements into a single, multiservice platform to help generate profits and reduce operating costs.

PacketStar® PSAX media gateways are scaled to match a range of access-to-edge environments, from small hub locations to the central office, so you don't invest in more equipment than you need.

Applications

- **Multiservice Aggregation** – Ethernet, IP, FR, CES and ATM, plus Voice, and xDSL
- **Access Convergence** – Voice, Video, Wireless Data over MPLS
- **Voice Solutions** – Cost Effective, scalable, standards based solution (GR303/v5.2, H.248) with rich voice processing features
- **IP Service Selection & Aggregation** – Concentrating IP to ATM and IP/MPLS core with guaranteed QoS and scalable bandwidth management
- **Mobility Backhaul Solutions** – Aggregation, grooming, and consolidated traffic transport
- **CDMA, CDMA 1xEV-DO, CDMA 2000 Migration**
- **TDMA to GSM/EDGE to 3G/UMTS Migration**

All PacketStar® PSAX media gateways deliver high performance and high capacity in a small footprint. Whether used for intelligent voice and data aggregation, call control, high-density transport, or simple multiplexing, they provide you with a single, scalable, and highly available solution.

With the PacketStar® PSAX media gateways, you can bring intelligence to the edge of your network and help cut the cost of building and deploying new broadband networks while maintaining full compatibility with existing infrastructures.

Introduce high margin services rapidly

PacketStar® PSAX media gateways provide any-service, any-channel flexibility that lets you create innovative, software-selectable, service provisioning options. You only need one system to support your customers' service needs, including high-quality, high-capacity

voice services. And, using the PacketStar® PSAX media gateways' unique, high-density multiservice modules, with up to 24 individual T1s or 3 DS3s per slot, you can rapidly introduce innovative, high margin services. With the PacketStar PSAX portfolio, circuit emulation, frame relay (FR) and ATM traffic can coexist in N x 64 blocks within the same T1/E1 line. You can maximize circuit utilization by provisioning these protocols granularly, on a DS0 by DS0 basis, bundled or unbundled, contiguous or noncontiguous. For example, if you need to simultaneously deploy three technologies such as ATM, TDM, and frame relay, only one module is needed, saving valuable slots and costs. Inverse Multiplexing over ATM (IMA) is also included on some multiservice modules to further reduce required slots while increasing flexibility.

With the Enhanced Router Module, the PacketStar® PSAX media gateway family delivers cost-effective multiservice interworking to IP with QoS in addition to multiservice layer 2 VPNs. The PacketStar® PSAX product family now delivers complete services interworking between Ethernet and IP, plus FR, HDLC, and ATM. This functionality augments services capability while minimizing capital expenditures.



Reduce network complexity and simplify operations

The PacketStar® PSAX Multiservice Media Gateway portfolio lets you achieve convergence by collapsing multiple technologies into a single, scalable platform that is centrally managed. Parallel networks that once required separate equipment scenarios can be consolidated cost-effectively with minimum capital outlay. Convergence, plus the system's multiservice and multimedia versatility, eliminate the need for multiple switches, reducing network complexity and simplifying operations. A simpler network structure also reduces the need for physical channel management and reduces the burden on core switches.

Minimize capital expenditures and reduce operating costs

With the PacketStar® PSAX Multiservice Media Gateway portfolio's scalable architecture, you need only one platform to deploy many services. Each product in the portfolio meets specific customer needs in various deployment scenarios, so whether driven by footprint, line density, speed or cost, you can find the best fit for your application. Since all chassis share a common, scalable architecture, you can use the same system and management software, minimizing administrative and provisioning knowledge. And, since the modules are inter-changeable between chassis, you can redeploy a module in any other PacketStar® PSAX media gateway model where and when your network needs change, reducing not only provisioning, but also sparing, training and inventory costs. PSAX can perform out of service maintenance tests to qualify a line before assigning customer traffic, lowering the need for expensive truck rolls and the time to turn up a new line.

Protect existing investment and ensure easy migration

The PacketStar® PSAX Multiservice Media Gateway portfolio's wide variety of interfaces and features help to ensure compatibility with existing equipment, while providing the service richness of today's leading edge protocols. You can use the same high-density multitechnology platform to migrate to next generation networks while maintaining legacy services. Enabled through the tunnelling of private topology over ATM networks¹, PSAX allows protocols to be carried transparently, creating greater versatility at the edge and reducing the need for upgrades to existing equipment assets. Whether your future plans include the next generation of wireless or new broadband multimedia applications you can help to avoid obsolescence and expensive forklift upgrades. For increasing customer bandwidth allocations, PSAX can modify traffic management parameters on active connections so services are not disrupted. The PacketStar® PSAX media gateways support more than 40 interface modules that are interchangeable across the product portfolio. System software is also consistent across all platforms, eliminating branching and compatibility problems. To help drive down the expense of meeting customer demands, you can upgrade modules simply by downloading new software and firmware drivers.

Maximize switching capacity, availability and resiliency

The PacketStar® PSAX Multiservice Media Gateway portfolio builds the latest ATM technology into its system architecture for maximum switching capacity with high availability and resiliency. Robust, high-performance backplane designs offer several layers of protection for system resources. PacketStar® PSAX Multiservice Media Gateways offer 1+ 1 system protection on optical modules. The PSAX 1000 offers 1:1 protection and the PSAX 4500 offers N:1 protection at the DS3/E3 level. All models offer a non-service affecting upgrade feature. Further system resilience is ensured by optional redundancy for common equipment (power supplies, Stratum 3-4 timing modules, and CPU modules).

Add value, reduce costs with centrally managed options

The PacketStar® PSAX Multiservice Media Gateway portfolio supports a range of centralized network management options that add essential oversight and control while reducing the high cost of maintaining and managing the network. At the element level, you can manage the PacketStar® PSAX media gateways using Navis® EMS-PSAX Element Manager, a Java-based Graphical User Interface. Navis® EMS-PSAX element manager enables comprehensive, real-time, centralized management, including configuring and upgrading the system, as well as fault and performance monitoring.

For carrier-class end-to-end network management, the PacketStar® PSAX media gateway portfolio can be integrated into numerous third party network management solutions as well as with Navis® iOperations software including:

- rapid flow-through provisioning across multitechnology and multivendor environments with Navis® Provisioning Manager
- performance, fault and service management with Navis® Fault Manager and Navis® Extend Statistics Server
- service-level reporting with VitalSuite® Performance Monitoring Software
- overall server management and maintenance of user accounts.

¹ Public ATM networks or ATM networks that do not run PNNI over a MPLS core.

Technical Specifications

1. Protocols Supported

ATMI Frame Relay:

ATM Forum UNI, 3.0/3.1/4.0, IISP, PNNI 1.0, ILMI 4.0, Traffic Management 4.1, including traffic shaping and traffic policing, Interface Protection Groups, Dual Home PVCs, ATM Multicast, Early Packet Discard, configurable connection admission control, ITU-T I.610 F4/F5 OAM support, ATM frame relay network interworking (FRF.5) and service interworking (FRF.8), Guaranteed Frame Rate

IP/MPLS:

Ethernet bridging with spanning tree, RFC 2684, RIP V1/2 static routing, virtual router, Diffserve sensitive QoS, DHCP relay

Circuit Emulation & Signaling Gateway

Unstructured, Structured (with fractional services), CAS/CCS signaling, H.248, GR303/V5.2, AAL1, AAL2 (voice compression, silences suppression, echo cancellation, fax/modem bypass) A-law and μ -law companding, Dynamic Bandwidth Allocation, SCIP, IVA for ISDN D-channel transport to softswitch

2. Physical Interface Modules

DS1/E1/DS3/E3 Modules:

- a. 6-port enhanced DS1 multiservice
- b. 12-port medium density DS1 multiservice plus IMA
- c. 12-port DS1/E1/DSOA CES
- d. 24-port DS1 multiservice
- e. 21-port high-density E1 multiservice
- f. 6-port enhanced E1 multiservice
- g. 8-port enhanced E1 multiservice plus IMA
- h. 1-port Ch. STS-1e CES
- i. 1-port DS3 Frame Relay
- j. 1-port Ch. DS3 multiservice
- k. 3-port Ch. DS3/STS-1e CES
- l. 3-port DS3/E3 unstructured CES
- m. 3-port Ch. DS3/STS-1e CES protection*
- n. 3-port DS3/E3 unstructured CES protection*
- o. 3-port DS3/E3 ATM
- p. 3-port DS3/E3 ATM protection**
- q. 3-port DS3/STS-1e multiservice protection*

Optical Modules:

- a. 1-port Ch. OC-3/STM-1 CES APS/MSP (SM/MM)
- b. 1-port Ch. OC-3/STM-1 (UnCES/ATM) APS/MSP (SM/MM)
- c. 2-port OC-3c/STM-1 APS/MSP (SM/MM)
- d. 4-port OC-3c/STM-1 APS/MSP (SM/MM)
- e. 1-port OC-12c/STM-4 APS/MSP (SM/MM)

IMA Modules:

- a. 6-port DS1 IMA
- b. 12-port DS1 IMA
- c. 6-port E1 IMA
- d. 8-port enhanced E1 multiservice plus IMA
- e. 21-port E1 IMA
- f. 1-port Ch. STM-1 (UnCES/ATM/IMA) MSP (SM/MM)
- g. 1-port DS3 IMA (28 DS1)

Specialty Modules:

- a. 2-port Gigabit Ethernet
- b. 4-port Ethernet (all 10/100Base-T)
- c. 4-port Quadserial
- d. 6-port Multiserial
- e. 4-port voice 2-Wire Office FXO
- f. 8-port voice 2-Wire Station FXS
- g. 8-port HDSL-2
- h. DSPx Voice Servers
- i. Enhanced Router Module
- j. LIM 3-1

* PacketStar® PSAX 4500 Multiservice Media Gateway only

** PacketStar® PSAX 4500 and PSAX 1000 Multiservice Media Gateways only

k. LIM 3-4

l. Route Server

m. Tones and Announcement Server

Other modules and chassis accessories are available, for a comprehensive listing, please contact your sales representative.

3. System Architecture

Optionally redundant CPU modules

Stratum 3 and 4 modules accept external composite clock timing, T1 BITS and E1 ETSI timing, or external timing from any I/O port. Contact your Lucent representative for exceptions.

Dual bus (midplane design on PSAX 4500 and PSAX 1000)

Redundant fans (fault-tolerant design)

SONET and SDH automatic protection switching

1:1 protection

N:1 protection*

4. Regulatory Compliance and Certification

Telecommunications: FCC Part 68 (USA), CS-08 (Canada)

Safety: UL 60950-1 (USA), CSA 22.2 No. 60950-1 (Canada), EN 60950-1, EN 60825-1, EN 60825-2 (Europe), CB-Scheme - IEC 60950-1 (International), NOM (Mexico)

EMC: FCC Part 15 Class A (USA), ICES-003 Class A (Canada), EN 300 386 Class A, EN 55022, EN 55024 1250, 2300, 4500, EN 61000-3-2 1000, 1250, EN 61000-3-3 (Europe) 1000, 1250, AS/NZS-3548 (Australia), CISPR 22 (International), CISPR 24 (International) 1250, 2300, 4500.

Other: NEBS™ Level 1/3, OSMINE compliant

5. Operations, Administration and Maintenance

F4/F5 AIS, RDI, loopbacks, and continuity checks per ITU-T I.610

Telcordia GR-1248-CORE

Telcordia TR-NWT-000170

6. Element and Network Management

Navis® Integrated Network Management Products

Navis® EMS-PSAX Element Management System

Navis® network and service management system platforms

Other Management Tools

SNMP via Ethernet port or ATM in-band

Console interface via console port

Console interface via Telnet session

(Ethernet port or ATM in-band)

Specifications are subject to change without notice. Contact your Lucent representative for information on availability and upgrades. Lucent reserves the right to change, modify, transfer or otherwise revise this publication without notice.

To learn more about our comprehensive portfolio, please contact your Lucent Technologies Sales Representative, Lucent BusinessPartner or, visit our web site at www.lucent.com/data_networking

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