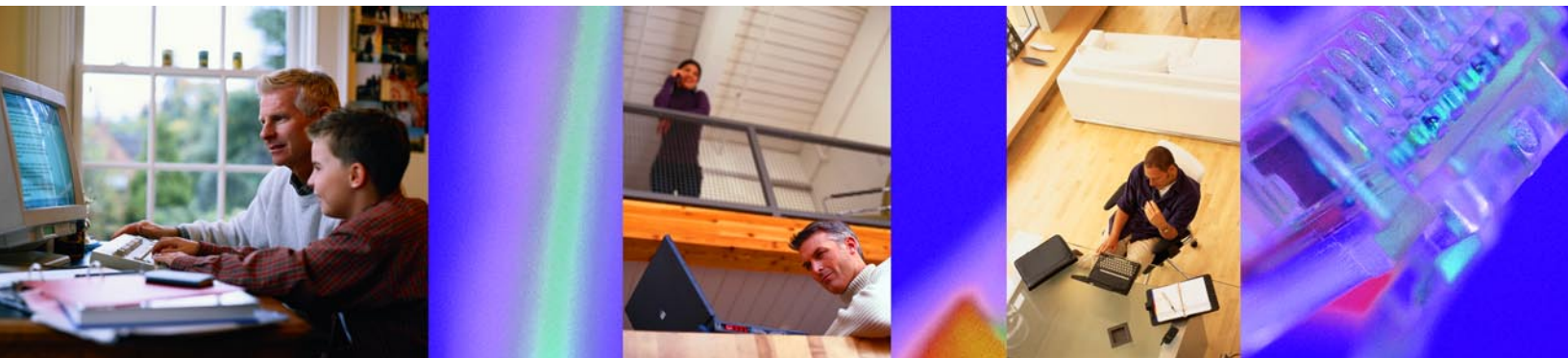


Stinger® FS+ DSL Access Concentrator



Introducing the new standard in high-density DSL access concentrators—advancing the delivery of intelligent IP services

Benefits

- Manage more subscribers in less space—with 50% greater density
- Achieve incomparable performance for present and future DSL services
- “Turn-up” revenue-generating business and residential services quickly
- Reduce deployment and backhaul costs
- Capitalize on both IP and ATM capabilities
- Slash DSL operations costs—by increasing service efficiencies
- Start deploying new multimedia services

Lucent Technologies
Bell Labs Innovations



Technology that can turn DSL opportunities into bottom line profits

High-speed broadband access networks offer you a lucrative source of revenue and profits. By leveraging IP (Internet Protocol) transport and services, combined with advanced ATM switching, you can deploy more high-profit services for your business and residential customers as you reduce your infrastructure costs.

The broadband opportunity

Experts predict the growth potential of converged access networks to be huge, an excellent opportunity for providers who have the infrastructure to take advantage of it. For example, IP services are expected to be a \$25 billion opportunity for service providers by 2004¹. Fully, 84% of large enterprises are expected to utilize VPNs by 2005². Similar trends are predicted for bandwidth-intensive video services (broadcast TV, entertainment on demand, etc.), with demand *quadrupling* each year through 2003 and doubling through 2005³.

In addition, in spite of the economic downturn of 2001, a number of subscriber trends look very positive. Broadband subscribers should reach 165 million in 2005⁴, while the U.S. DSL market will grow from 4.5 million in 2001 to 13.9 million by 2004⁵.

Lucent Technologies leadership

The core of Lucent's DSL solution is the Stinger® DSL access concentrator, the most widely deployed highest density DSLAM available. Well known for its flexibility, reliability and performance, Stinger delivers the highest level of service quality (QoS) through Service Level Agreements (SLAs), and Voice Over DSL to many major providers worldwide. These include Sprint, QSC, Broadstreet, Xspedius, France Telecom, Qwest Communications International, PT Telekomunikasi Indonesia Tbk, Moscow City Telephone Network (MGTS), and other leading global providers.

Lucent introduces the high-capacity Stinger FS+

Set against its superior legacy for innovation and leadership in ATM and every IP services category, Lucent now introduces the newest generation of its Stinger DSLAM line, the Stinger FS+. Leveraging today's most advanced access technology, ATM, and IP services capabilities, the Stinger FS+ is the most complete DSL solution available.

- Today's highest capacity solution, increasing density 50%
- Dramatically lowers your DSL costs



The Stinger FS+ utilizes multiple high performance, minimum delay, redundant ATM and IP switching fabrics for supporting the highest speed network application requirements of today.

- Enhances IP performance of your broadband networks
- Extends your services offerings to include revenue-generating business class and residential services

Key Stinger FS+ features and benefits

Stinger FS+ sets a new standard for today's networks. It gives you all the functionality, versatility, provisioning, troubleshooting and management capabilities of its predecessor, the Stinger FS. But it goes even further.

Leveraging Lucent's Service Intelligent™ Architecture, the Stinger FS+ provides a complete, innovative solution that combines advanced ATM and intelligent IP services all within the chassis, or distributed as needed, to deliver a number of exclusive capabilities today:

- **Cost-saving port density**—While many companies claim to offer the world's highest density DSLAMs, only the Stinger FS+ can honestly lay claim to that title. The new platform increases the capacity of the Lucent DSL offer by 50%. By relying on 72-port modules, it supports 1,008 subscribers per chassis, up to 3,024 per rack, in both ANSI and ETSI installations. This is over 500 more ports than its nearest competitor, and 50% greater density than available previously. The increased density also means you'll have lower capital and operating expenditures because it:
 - Reduces power consumption per port by more than 30%

Footnotes:

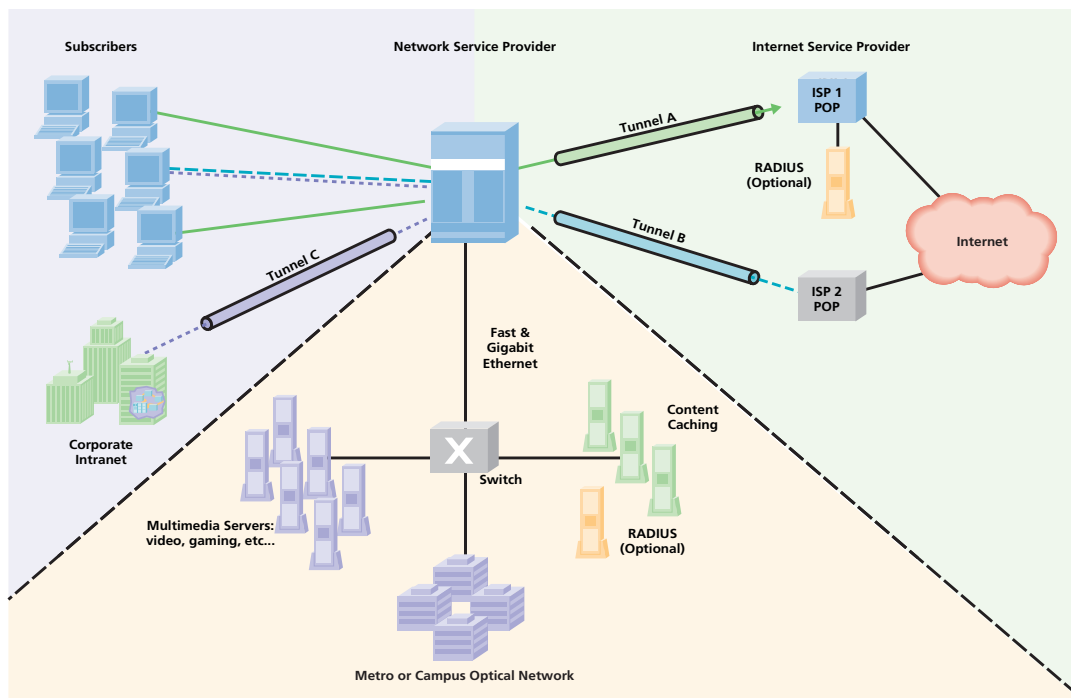
¹ IDC, 2001

² Infonetics Network Technology Adoption Forecast, 2001

³ Cahners In-Stat Group

⁴ IDC. "Five Key Trends That Drive Service Provider Infrastructure Spending," Bulletin #25229, August 2001.

⁵ TeleChoice, August 2001. http://www.xdsl.com/content/resources/deployment_info.asp



Multi-service capabilities from a single platform.

- Lowers your cost per port through increased hardware integration
- Shrinks the equipment footprint by more than 33% over previous Stinger solutions (50% versus other vendors' solutions)
- Reduces the need to subtend multiple DSLAMs, translating to fewer ports in the aggregation network

Lightning-fast switching capacity—Traffic speed is critically important to the quality delivery of your business and consumer-oriented multimedia services. By providing the bandwidth needed to support increased subscriber densities, the Stinger FS+ more than quadruples its previous performance levels to real data forwarding throughput up to 7.2 Gbps. With Gigabit Ethernet and OC-12 bandwidth to the backbone and enhancements such as IP multicast, the new Stinger solution enables you to offer high-speed video and data delivery over DSL.

Some DSL vendors promote backplane capacity figures as a measure of their DSLAM's performance. In reality, switching performance is a factor by which consumable bandwidth should be measured, since this is the true determinant of how fast the platform can forward traffic. The Stinger FS+ utilizes multiple high performance, minimum delay, redundant ATM and IP switching fabrics for supporting the highest speed network application requirements of today. Streaming media applications such as video and audio require constant data flow, greatly upping the performance ante for edge aggregation devices. The FS+ high speed switching fabric is up to the task-built to handle the requirements of next generation, high performance services over DSL.

New, intelligent IP Services modules—Stinger now offers intelligent IP services capabilities and a complement of end-to-end subscriber solutions. By utilizing the latest in Stinger's advanced ATM capabilities and intelligent IP services, you can cost-effectively and efficiently deploy more business class and residential multimedia services. You can offer your customers everything from broadband voice and data to broadcast and on-demand video capabilities today.

IP intelligence at the network edge also simplifies subscriber VC management and reduces the number of network elements. It enables you to:

- Better utilize your WAN links via edge routing
- Improve network robustness with distributed routing
- Increase your network security
- Add to your network design flexibility

QoS and reliability from blending IP and ATM—By bringing together both IP and ATM switching on all ports, the Stinger FS+ enhances the overall QoS by enabling the fastest local switching between subscriber ports. Also, high-performance trunk-to-trunk switching means you can star and/or daisy-chain subtending multiple systems in support for over 31,000 xDSL ports in a single switching group. As a result, the Stinger FS+ enables not only migration from traditional telephony, but the highest performance, most redundant interconnections (whether through gigabit or ATM interfaces) for local and long distance data, voice and video services. *This level of built-in redundancy and reliability means that you can now offer advanced IP services, including VPN and interactive multimedia services, with complete confidence.*

In addition, the Stinger FS+ chassis and components are built on the same operating system, enabling *inherent switching awareness* by all components of any Stinger product. So, if you add or replace a card, it is easily configured and automatically becomes part of the Service Intelligent Architecture.

Performance from robust routing—Routing functionality is distributed across every routing card. By making each its own routing engine and lowering reliance on costly, or unreliable, centralized routing devices, Stinger FS+ improves the overall robustness of your networks. In addition to greater flexibility in how your network is deployed, you get added backup and redundancy.

Definitive Quality—Not only does the FS+ architecture have exceptional quality, with no single point of failure and integrated loop testing, it also features Automatic Protection Switching (APS)/Multiplex Section Protection (MSP). This compelling redundancy feature enables the Stinger FS+ to work with Stinger's sister architecture, the AnyMedia® Access System, to transport both voice traffic and DSL data in a *fail-safe manner*.

Multiple levels of redundancy—With Stinger FS+ you also benefit from exceptional built-in redundancy for mission-critical business xDSL, including:

- APS/MSP for 1:1 trunk port redundancy with hot standby and sub-25 millisecond switchover
- 1:n subscriber port redundancy and independent 1:n switching of failed ports
- 1:1 trunk port redundancy and network node failure recovery via PNNI/Soft PVCs
- Multiple trunks to enable protection and to accommodate diverse facilities
- Hot-swappable subscriber and trunk modules
- Distributed power system with redundant line filters

Support for advanced applications—You will find that today's and tomorrow's most advanced applications work easily, supported by:

- IP multicast for broadcast audio/video, interactive TV, video on demand/pay-per-view

To learn more, contact your dedicated Lucent Technologies representative, authorized reseller, or sales agent. You can also visit our Web site at www.lucent.com.

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- Subtending of multiple systems in support for over 31,000 xDSL ports in a single switching group
- Gigabit Ethernet and OC-12 bandwidth to the backbone
- IP backhauling and traffic offload
- Private virtual routing and secure tunneling
- Management of all traffic per ATM Forum Traffic Management 4.0 specifications for UBR, CBR, and VBR rt/nrt

Advanced operations features—The Stinger FS+ also features:

- Integral loop qualification & metallic testing capability under remote control
- Automated VC provisioning via PNNI/Soft PVCs
- Automated end-to-end provisioning with the TurnUp™ CPE configuration and management tool

Stinger portfolio meets every need

The Stinger FS+ chassis supports a choice of optional modules that perform line testing functions:

Path Selector Module (PSM)—The PSM provides the full functionality of a Line Protection Module (LPM) in addition to loop test access. When the PSM is used in conjunction with a redundant LPM, it provides access from an external copper loop tester to any subscriber line attached to a Stinger chassis.

Copper Loop Test (CLT) Module—In addition to supporting access for an external test set, the Stinger system also offers its own integrated test module. The CLT module consists of a PSM with an integrated test head on a daughterboard. The CLT performs a wide variety of copper loop testing and qualification functions, simplifying DSL deployment for carriers.

The Stinger FS+ and the entire Stinger family of DSL access concentrators, CellPipe™ products, and Integrated Access Devices (IADs) remain today's products of choice for Broadband Access solutions. Lucent DSLAMs fit any size need. You can choose from architectures for central offices (CO's) and remote terminals (RT's). Lucent access concentrators can be placed in indoor and outdoor cabinets of all types and sizes, whether in buildings or outside on the curb.

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