PRODUCT INFORMATION

Ascend

GX 550



Forming the Foundation of the
Next-Generation Public Network

ASCEND



The Core of the Next-Generation Public Network

To meet growing data transport requirements and satisfy legacy services, an intelligent next-generation public network must be built. The core of this network requires Quality of Service, high availability, capacity with cost-effective scaling, and end-to-end performance. The GX 550 Core ATM Switch brings unsurpassed intelligence, availability, capacity, performance, and port densities to build a “smart core” for the next-generation public network.

Carrier Class for the Core

The GX 550 Smart Core ATM Switches from Ascend Communications provide the capacity, performance and port densities required for carrier services. The GX 550 combines industry-leading port densities for OC-3/STM-1 and OC-12/STM-4 interfaces with industry-first OC-48/STM-16 high-speed trunking, providing carriers with capacity for today and investment protection for tomorrow.

The scalable, high-capacity GX 550 switch supplies the high-availability that is essential at the core of the next-generation public network. Features such as lossless fabric switchover, port redundancy using 1+1 Automatic Protection Switching (APS), line card redundancy, holdover timing and extensive port and circuit statistics provide carrier-class networks with the resiliency that's necessary to maintain network integrity.

Ascend has taken the lead in redefining the switching and transmission core for the next-generation public network.



Working Solutions for Carriers, Internet Service Providers and Online Service Providers

Building the next-generation public network

The trend in telecommunications is shifting rapidly from private Wide Area Networks (WANs) to public data services that are being constructed today by service providers. Today's architecture uses the Time Division Multiplexing-based voice telephony network to provide the WAN infrastructure for data services. This Infrastructure simply does not have the capacity and flexibility to support the exponential growth of IP traffic, which is driven by both intranets and the Internet. The traditional voice telephone network cannot provide the required infrastructure for success in data service provisioning.

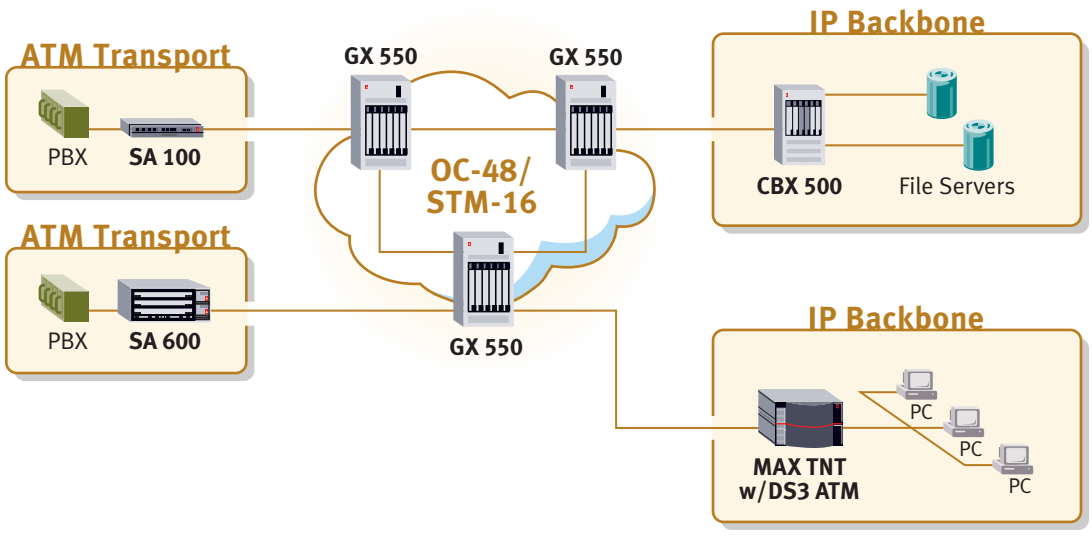
As users migrate their WAN data to public services, carriers need to build an infrastructure that is optimized for multiuser, multiservice data requirements. This infrastructure is the next-generation public network.

The next-generation public network requires intelligence at the core. It calls for a product that meets the requirements of Quality of Service (QoS), high availability, capacity, end-to-end performance, and cost-effective scalability for investment protection. The GX 550 delivers on these requirements with its "smart core" capabilities.

Coupled with customers moving from private WANs to the next-generation public network, the magnitude of both cell and packet traffic traversing the network has brought ATM to the forefront as the transport of choice for the core switching/transmission infrastructure of the next-generation public network. Only by running a connection-oriented ATM core can QoS requirements be met.

In addition, those customers moving to the next-generation public network expect performance levels equal to those of their private network. The GX 550 delivers this performance as well as superior scaling, capacity, and QoS with its "smart core" capabilities.

Native ATM service deployment IP backbone



The GX 550 provides the core of the next-generation public network.

Network Availability

Delivering service-level guarantees

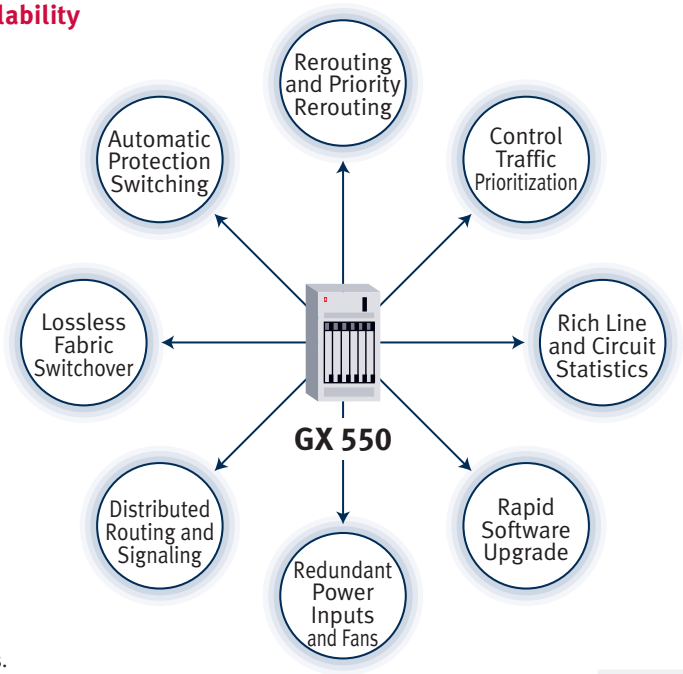
In the BT/MCI Global Communications Report 1996/97 Gallup Survey Results, 68% of respondents indicated that their need for high reliability of data transmissions is not being met. When data networks become critical to business users, the core of the next-generation public network must provide the same availability that exists today in the voice telephony network. As customers move from private line services to public data services, they demand service level guarantees that span the spectrum — from simple uptime criteria through complex per-virtual circuit (VC) performance guarantees.

A sophisticated set of features is required on the switch at the core to provide high availability. Historically, this has meant redundant power supplies and cooling systems. The GX 550 raises the bar, delivering advanced availability features for the core of the network.

Lossless fabric switchover on the GX 550 switches from active to standby with no loss of data. Distributed routing and signaling control eliminate a single point of failure on the system. Rapid software upgrades minimize disruption to user traffic by taking advantage of hardware-based switching during software reconfiguration.

Automatic Protection Switching (APS) provides millisecond recovery on transmission facility failures. If the transmission facility cannot be recovered, circuit rerouting can be performed at a rate of hundreds of thousands of circuits per second, ensuring that services remain up and running. Rich line and circuit statistics provide detailed service statistics for delivery of service level guarantees. Control traffic prioritization ensures that management traffic is delivered regardless of network congestion. The GX 550 delivers the highest availability for the core of the next-generation public network.

Industry-leading availability



The GX 550 switch delivers advanced availability features.

Network Availability

Introducing the Smart Core

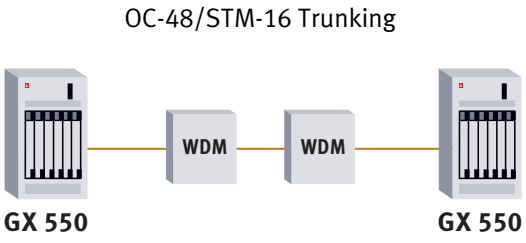
Service providers must build a core network that can not only move bits at very high speeds but can provide the advanced networking services required in today's competitive environment. The GX 550 Core ATM Switch provides the capacity and scalability of a core switch with the service capabilities and cost-effectiveness of an edge switch.

These features include connection agile buffering with advanced traffic management that provides the ability to efficiently mix all traffic classes and users on a single network; high Switched Virtual Circuits (SVC) setup rates approaching 5000 SVCs per second or 8 million calls per busy hour for continued scalability; and Service Aware Routing that provides end-to-end QoS and creates enhanced services, such as Virtual Private Networks. The GX 550 advanced networking features allow service providers to differentiate with Closed User Groups, Security Screening, and SVC-to-PVC interworking.

Finally, the GX 550 gathers extensive statistics to be used for customer accounting, service level guarantees and reporting. These statistics are used by the NavisCore™ and NavisXtend™ family of network management products to provide end-to-end service and network management.

Meeting at the Glass

Today's data networks are backboned at OC-12/STM-4 rates. The continuing growth in data being transported over public networks makes it critical that service providers move to OC-48/STM-16-based backbones. As data is moved at OC-48/STM-16 rates and ATM switches become increasingly more resilient, the distinction between switching and transmission blurs. Rather than backboning over a traditional SONET/SDH ring architecture, service providers have the option to connect GX 550 switches directly to the fiber through Wave Division Multiplexing (WDM) equipment or through direct fiber connect. This moves statistical multiplexing into the transmission facility and gives the carrier the most cost-effective and efficient means for data transport. In addition to outstanding ease-of-use, meeting at the glass also lowers cost of operation and speeds provisioning.



Instead of traditional SONET/SDH ring, the GX 550 can connect directly to the fiber.

Network Availability

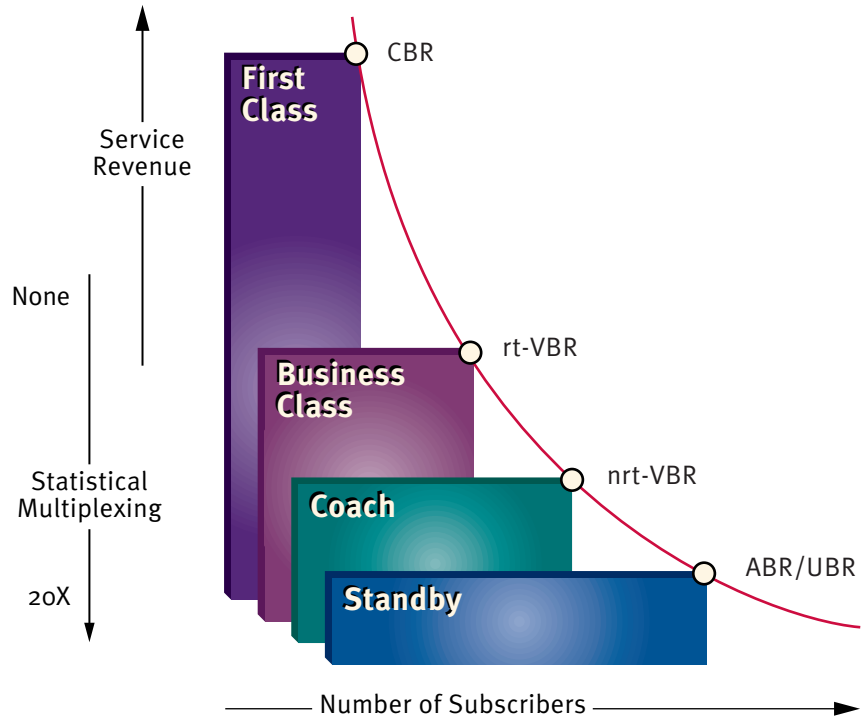
Capacity

The GX 550 is a 25 Gb/s capacity switch that supports industry leading OC-3/STM-1, OC-12/STM-4 and OC-48/STM-16 port density. GX 550 is the first switch to deliver OC-48/STM-16 trunking capability, allowing service providers to continue to scale their networks and keep pace with the exponential growth of IP traffic.

Economics of QoS

Multiservice/multiuser carrier networks are a reality. Service providers must support a complete mix of voice, video, and data over a single network, while providing differentiation between users, for example, a teenager surfing the web versus a company's intranet traffic.

The GX 550 delivers the ability to differentiate and guarantee QoS for all traffic types, through either the Enhanced Quad-Plane architecture, which provides user-definable Classes of Service, or through per-VC queuing, which gives service providers infinite levels of QoS control.



The GX 550 gives service providers infinite levels of QoS control.

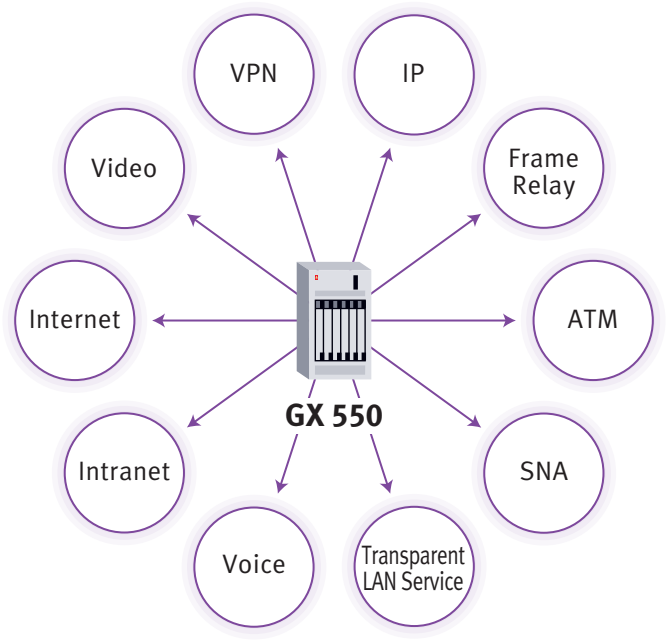
Network Availability

Traffic agility

The reality is that much customer premises equipment is ATM-unaware because it does not understand traffic contracts, policing, or shaping. Thus, the network must be able to respond effectively to instantaneous bursts of data and be able to absorb, as well as intelligently forward, this data. The GX 550 delivers this functionality through dynamic buffer sizing and flexible traffic shaping.

Congestion in networks is inevitable and the network must be able to respond fairly and deterministically to control congestion. The GX 550 uses cell discard techniques for voice and video applications, while intelligent packet discard is used for data applications, increasing network throughput and eliminating undesirable cell loss scatter across multiple connections.

Advanced Services Delivery



The GX 550 has the capacity and flexibility to support the next-generation public network.

Product Highlight: Network Management

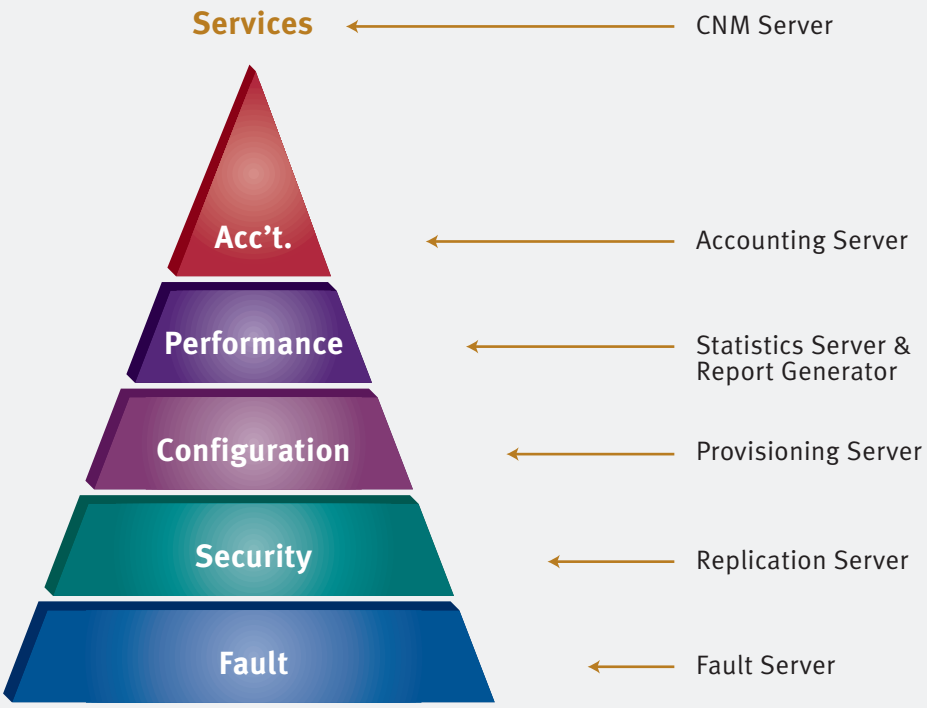
Advanced service management

The NavisCore and NavisXtend family provide standards-based management of Ascend IP, Frame Relay and ATM backbone networks from end-to-end, giving service providers unprecedented service management control.

The NavisCore Network Management System offers exceptional management of a GX 550 network, using industry-standard TCP/IP protocols such as SNMP, TFTP, and Telnet. Ethernet and asynchronous serial console connections are provided with a command line interface for monitoring and configuration as well as collection of performance statistics.

In addition, NavisXtend applications deliver sophisticated add-on functions, such as automated provisioning, real-time statistics monitoring and accounting. Together, NavisCore and NavisXtend offer unparalleled management control.

Managed by Navis™



Summary

The GX 550: The Foundation of the Next-Generation Public Network

Ascend Communications, Inc. is strategically focused on delivering carrier-class products and technologies for building the next-generation public network.

The GX 550 revolutionizes service delivery by providing a "smart core" for intelligence, availability, scalability, and end-to-end QoS. The GX 550 Core ATM Switch, with its scalable distributed process architecture and OC-3/STM-1 through OC-48/STM-16 capacity, provides the high-density, high-speed ATM, IP, and Frame Relay support that's necessary at the core of the next-generation public network. Its high availability features, critical for network integrity, coupled with an innovative, Ascend, advanced network management system that reliably scales with network growth and provides the open approach to management, delivers the end-to-end QoS necessary for a multiservice "smart core" network.

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Ascend Communications, Inc. develops, manufactures and sells wide area networking solutions for telecommunications carriers, Internet service providers, and corporate customers worldwide. For more information about Ascend and its products, please visit the Ascend Web site at http://www.ascend.com, or e-mail info@ascend.com.

Ascend markets the Ascend SS7 Gateway, B-STDX, CBX, GRF, GX, Intragy, IP Navigator, MAX, Multiband, MultiDSL, Navis, Pipeline, SA, SecureConnect and STDX families of products. Ascend products are available in more than 40 countries worldwide.

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