

Managed Network Services on the Cisco Catalyst 8500 MSR



Introduction

Today, most enterprise networks are built on the Internet Protocol (IP) infrastructure because of its high performance, low cost, and familiarity. While for service providers, Asynchronous Transfer Mode (ATM) is still the prevalent technology used in the wide-area network (WAN) for service delivery because of its high performance, advanced quality of service (QoS) capabilities, and support for multiservice voice, video, and data integration. Therefore, today's service providers must seamlessly integrate Layer 3 and ATM environments to offer a wide range of revenue-generating services to satisfy the networking requirements of enterprise customers.

Managed Network Services: Why the Model Makes Sense

Enterprise customers face several challenges in building their networks today. First, as the complexity and the scale of the enterprise network expands, building, maintaining, and managing a large network becomes less cost-effective. Enterprise customers need to focus their efforts on their core business, rather than managing their network, to be successful in a highly competitive marketplace. In addition, to scale the enterprise network effectively, there must be flexibility in the routing protocols, efficient network design such as IP multicast functionality, and reliability and robustness as offered by Hot Standby Router Protocol (HSRP). Furthermore, because the enterprise business applications today demand a wide range of services including local and long-distance voice, videoconferencing, dedicated Internet access, IP-based VPNs, and transparent local-area network (LAN) services, a flexible multiservice networking solution is required.

Similarly, service providers are faced with new challenges today. To ensure the quality of the services offered, the ATM technology is the default choice because of its ability to guarantee the bandwidth of the network links and uphold the service-level agreements (SLAs). Furthermore, PNNI support, the ATM signaling protocol used in the ATM core, is critical to the scalability, connection resiliency, and standards-based interoperability of the network. In addition, as service providers extend their network reach geographically, a cost-effective, multiservice customer located access device must be in place to aggregate traffic from one or more customers in the same geographic location. As service providers expand their customer base, they must offer a wide range of interface speeds including T1/E1, Inverse Multiplexing over ATM (IMA), DS3/E3, OC-3c, OC-12c, OC-48c, Ethernet, Fast Ethernet, and Gigabit Ethernet.

In a managed network services environment, the Cisco Catalyst[®] 8500 Multiservice Switch Router (MSR) series provides the answer to these challenges. It enables service providers to deliver a complete portfolio of differentiated service offerings scaling from DS0 (64 Kbps) to OC-48c (2.48Gbps) speeds. With integrated ATM and IP support, new data services such as dedicated internet access, transparent LAN service, and IP

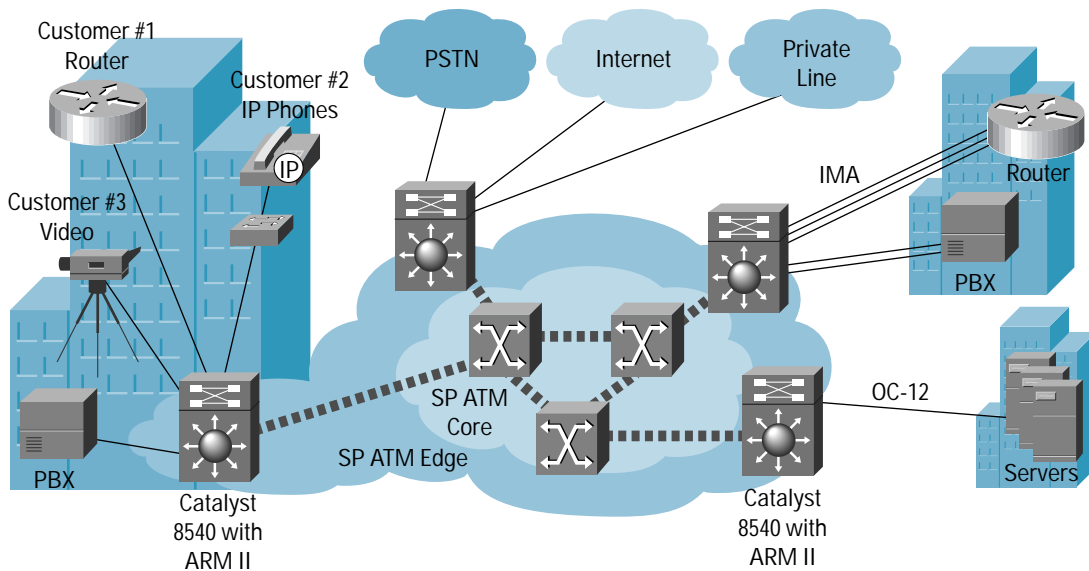
Virtual Private Networks (VPNs) can be delivered over Ethernet, Fast Ethernet, and Gigabit Ethernet interfaces. These new services let service providers maintain and manage the network services, freeing the enterprise customer the cost and efforts in maintaining the network uplinks.

Managed Network Services Application

Application

Service providers using the Cisco Catalyst® 8540 MSR and Cisco Catalyst 8510 MSR platforms at the edge of their ATM core network can now expand their customer base by offering full range of options for network connectivity in a cost effective manner. The Cisco Catalyst® 8500 MSR family seamlessly integrates Fast Ethernet/Gigabit Ethernet and ATM, and this combination enables service providers to offer a wide range, cost-effective services that meet the needs of enterprise business applications. Furthermore, service providers benefit from this tight IP and ATM integration by retaining the application-layer visibility of IP and the QoS characteristics of ATM.

Figure 1 Managed Network Services Using the Catalyst 8500 MSR Family



Available Services

- Transparent LAN services at 10 Mbps, 100 Mbps, and GE speeds—A powerful application is when the corporations are looking to extend their Ethernet and Layer 3 LANs to all of their employees at remote offices while providing the same level of access, services, and security.
- Voice applications—Applications include PBX to PBX interconnectivity, local and long-distance voice services over ATM.
- Video applications—Applications include real-time videoconferencing, e-learning initiatives, and video-on-demand for training or presentation purposes.
- Dedicated Internet accesses—Providing high-speed connectivity to the Internet.
- ATM services (T1/E1, IMA N x T1/E1, E3, DS3, OC-3/STM-1, OC-12/STM-4, OC-48/STM-12)
- Frame Relay services—Frame relay services can be offered over the ATM core.
- Private lines (from N x DS0 up to T1/E1)
- VPNs—Intranet/Extranet services used to connect enterprise customers to their intranet and extranet (partners, suppliers, and customers)

Table 1 summarizes the benefits of using the Catalyst 8500 MSR as a key part of a managed network service offering.

Table 1 Catalyst 8500 MSR Benefits as Part of MNS

Benefits
• Low cost MNS platform with wide range of services
• Wide range of customer interfaces: ATM (T1 to OC-12c), 10/100, CES, Frame Relay
• Enterprise customer can receive a wide range of services without the hassle of managing their network infrastructure
• Easily integrates and extends the ATM core by supporting PNNI, providing robustness and scalability
• Strong NMS support for provisioning and monitoring

Table 2 summarizes the key requirements of a managed network service offering, and how the Catalyst 8500 MSR can address these requirements and provide value to the customer.

Table 2 Catalyst 8500 MSR Requirement/Benefit Summary

Requirement	Benefit
Value Proposition	Catalyst 8500 MSR family enables service providers the ability to offer a wide range of revenue-generating services on a single integrated platform.
Flexible Range of Interface Speeds	<ul style="list-style-type: none"> • ATM: T1/E1, IMA, DS3/E3, OC-3c, OC-12c, OC-48c¹ • Layer 3: Ethernet, Fast Ethernet, and Gigabit Ethernet • Voice & Video: T1/E1 CES • Frame Relay: Channelized DS3 and Channelized E1
Portfolio of Services	Supports business critical services: <ul style="list-style-type: none"> • Voice • Video services • Transparent LAN services • Dedicated Internet access • Private line • ATM services • Frame Relay Services
IP-aware Switching	Integrated IP and ATM support enables service providers to extend their existing ATM network to the customer and offer a wide range of IP-based services.
Multiprotocol Routing Support	Cisco IOS support allows for the deployment of scalable IP networks based on popular routing protocols including OSPF, EIGRP, or BGPv4.
Comprehensive Network Management	CiscoWorks and Cisco Element Management Framework (CEMF) simplifies provisioning and monitoring of the network.

1. OC-48c support is available only on the Catalyst 8540 MSR



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