

Cisco 7200 Series Enterprise WAN Aggregation Application



Introduction

Large enterprise networks face certain challenges when aggregating multiple branch offices or remote locations. Enterprise WAN aggregation requires a flexible solution that accommodates a wide range of connectivity and service options, and is cost-effective, reliable, and scalable to meet future requirements. The Cisco 7200 Series' performance per price ratio in the DS0 to OC3/STM1 range, combined with a wide range of benefits, make it particularly ideal for large enterprise edge aggregation.

Key Benefits

The Cisco 7200 Series key benefits in an enterprise WAN aggregation environment include:

- **Breadth of connectivity options**—With more than 60 port adapters in a variety of densities, the Cisco 7200 Series offers an unparalleled number of LAN and WAN configuration options to meet any connectivity or density requirement.
- **Quality and reliability**—The well-established Cisco 7200 Series Router's reliability allows enterprises to concentrate their efforts on their core business rather than network maintenance.
- **Performance**—As the most powerful single-processor platform, the Cisco 7200 Series offers enterprise customers a superior price/performance ratio in the DS0 to OC3/STM1 range.
- **Maximum return on investment (ROI)**—A low price-per-port entry point makes the Cisco 7200 Series an unbeatable value, while still allowing customers to upgrade or redeploy their equipment as their network needs change.

Breadth of Connectivity Options

The Cisco 7200 Series supports more than 60 interfaces with an unparalleled breadth of connectivity options. (To view the port adapters supported on the Cisco 7200 Series, go to <http://www.cisco.com/warp/public/cc/pd/ifaa/pa/index.shtml>.) These connectivity options provide flexibility, scalability, and the ability to meet changing network needs without chassis replacement. Because these port adapters are common to the Cisco 7100, 7200, 7400, and 7500 routers, and the FlexWAN module for the Cisco 7600 Series, customers are ensured continued investment protection. The common port adapters also lower operational costs by simplifying stocking of replacement parts and allowing platform migration at minimal cost.

Quality and Reliability

The Cisco 7200 Series is a well-established router with approximately 200,000 units installed in the field. Its unique blend of connectivity, services, and reliability has made it the vehicle of choice for numerous Cisco developments, including Parallel Express Forwarding (PXF) technology, quality-of-service (QoS) features,

and Multiprotocol Label Switching (MPLS) provider edge (PE) functionality. The Cisco 7200 Series carries GD code support and has a DOA rate that is less than .01percent and decreasing. Customers who select the Cisco 7200 Series are investing in proven technology.

Performance

With forwarding speeds of up to 400 kpps and a 1.2 GB backplane, the Cisco 7200 Series is the fastest single-processor Cisco router, giving customers the power they need in the DS0 to OC3/STM1 bandwidth range. In addition, the new NPE-G1 processor guarantees continued forwarding capability performance improvement at an anticipated 800 kpps to 1 Mpps. Contact your account representative for the latest information on this next-generation processor.

Maximizing ROI

The Cisco 7200 Series provides outstanding value, offering unmatched low-density configuration options while also providing up to 48 ports per chassis. In addition, the Cisco 7200 Series' processor and port adapter modularity protect customers' investment by providing scalability plus the ability to redeploy the system as their network needs grow.

Pricing

The Cisco 7200 Series is available in several cost-effective bundles, including the following high-end base configuration:

- C7206VXR/400/2FE
- Cisco 7206 VXR with NPE-400 and I/O Controller with two auto-sensing Fast Ethernet/Ethernet ports
- Bundle List Price: US\$17,500

Deployment

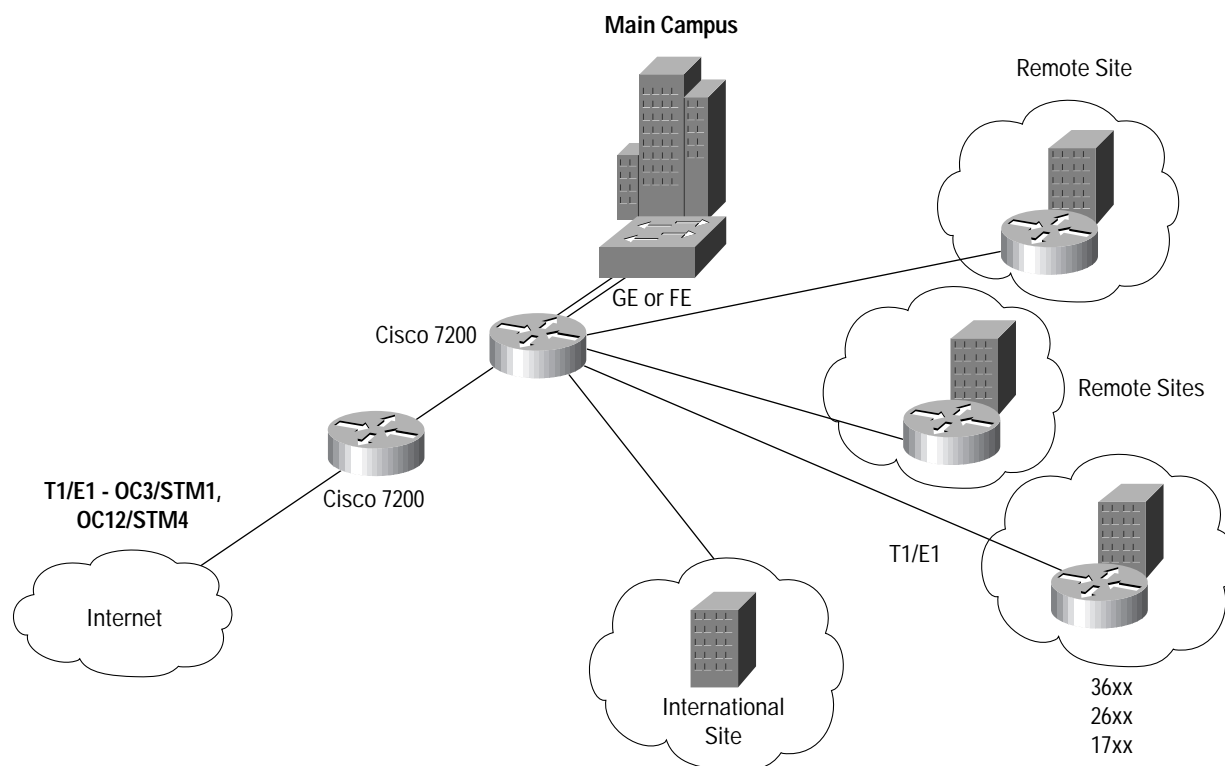
Hub & Spoke and *Mesh* topologies are the most common enterprise WAN aggregation deployment methods. Smaller campuses typically require T1/E1 connectivity with up to T3/E3/DS3 connections between sites, while larger campuses may require OC3/STM1 speeds.

Hub and Spoke

Cisco recommends hub-and-spoke topologies for use at main campus sites with remote offices and light overall traffic. A typical configuration (Figure 1) might include a Cisco 7200 Series at the main campus connected to remote sites at speeds up to T3/E3/DS3, with dual Fast Ethernet or Gigabit Ethernet connections to the campus switch. A second Cisco 7200 Series might be linked to the first as a managed customer premises equipment (CPE) device for Internet connectivity, usually at speeds up to OC3/STM1. Alternatively, the Internet connection can be directly off the first Cisco 7200 Series or via a separate customer-owned route.



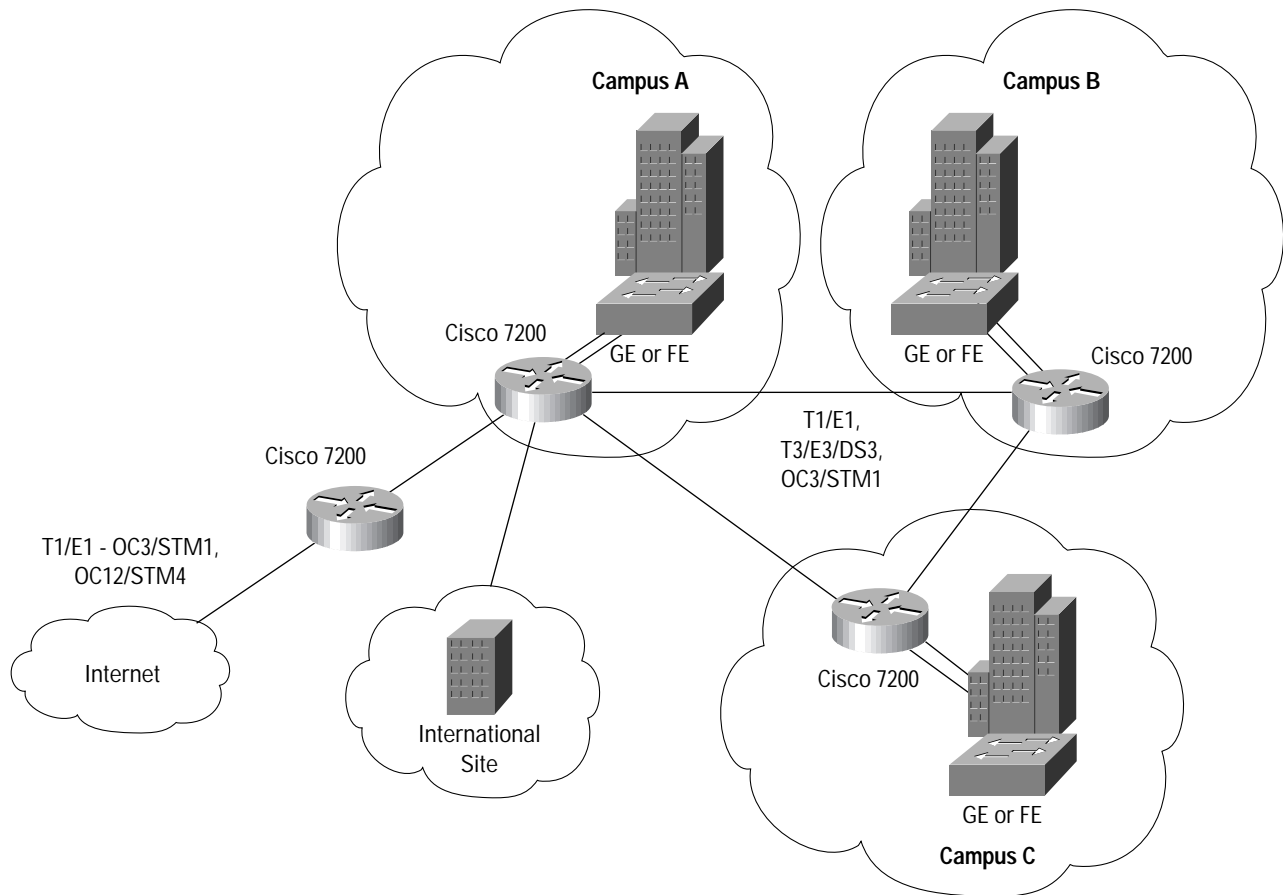
Figure 1 Hub and Spoke Sample Topology



Mesh

Cisco recommends Mesh topologies for use at larger sites with heavier traffic, a greater number of links, or a need for redundancy. A typical configuration (Figure 2) might include multiple Cisco 7200 routers with redundant connectivity of speeds up to OC3/STM1 between sites, or possibly a ring. This topology would include dual Gigabit Ethernet or Fast Ethernet connections to each campus switch and usually a data center link to one campus and an Internet uplink from at least one campus at speeds of OC3/STM1 or greater.

Figure 2 Mesh Sample Topology



Product Positioning

Cisco offers a suite of routers for enterprise WAN aggregation needs, each offering unique advantages (Table 1). The Cisco 7200 Series is the platform of choice for customers who need the following capabilities:

- Wide range of WAN connectivity options
- Scalability and ability to redeploy equipment
- Low initial investment
- 400-kpps processing speed
- Rich IP features
- Support for multiservice or security
- Gigabit Ethernet connectivity
- Multiprotocol support (AppleTalk, IPX, DLSw, and so on)
- Channel Interface Processor (CIP) support



Table 1 Cisco Enterprise WAN Aggregation Routers

	Cisco 7200	Cisco 7500	Cisco 7300
	Mid-range aggregation	High-density aggregation	Optical aggregation
Connectivity	Up to GE/OC12/STM4	Up to GE/OC12/STM4	Up to GE/OC48/STM16
Processing	Up to 400 kpps	Up to 800 kpps	Up to 3.5 Mbps
Form Factor	3RU form factor	Up to 13 slots	4RU form factor
Modularity	Modular processor/ports	Modular processor/ports	Modular processor/ports
Other	Low initial investment	High availability	High availability (roadmap)

Recommended Configuration

The recommended configuration for both Hub and Spoke and Mesh topologies would include the following hardware and features:

Table 2 Recommended Hardware

Chassis	Cisco 7206 VXR
Processor	NPE-400
LAN interface(s)	Gigabit Ethernet or Fast Ethernet
WAN interface(s)	T1/E1, T3/E3/DS3, OC3/STM1 interfaces (HSSI, ATM, Packet over SONET, Frame Relay)

Features

Possible feature requirements for the enterprise might include:

- Bandwidth management
 - Quality of service (QoS)
- Security
 - Access Control List (ACL)
 - Network Address Translation (NAT)
 - Hardware encryption for virtual private network (VPN)
 - Firewall
 - NetFlow
- Multiservice (data, voice, and video)
 - Low Latency Queuing (LLQ)
 - Real Time Protocol Header Compression (cRTP)
 - Link Fragmentation and Interleaving (LFI)

Summary

The Cisco 7200 Series is the ideal solution for enterprise WAN aggregation, offering an unparalleled range of connectivity options along with superior single-processor performance. The platform provides scalability and the ability to redeploy equipment at a low initial price point, for guaranteed investment protection. The Cisco 7200 Series is a proven choice, offering a multitude of services and redeployment options and bringing tremendous value to the enterprise customer.



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