Cisco Managed Wide Area Application Services Express: Extend Service Provider Managed WAN Optimization to Small Branch Offices

What You Will Learn

Cisco® Wide Area Application Services (WAAS) Express allows service providers to deliver a highly cost-effective WAN optimization service to customers who need to improve throughput and application performance for small remote branch offices.

By adopting a managed service for their small branch offices using Cisco WAAS Express, customers can reduce IT costs by centralizing infrastructure in the data center, while offloading network services management to the service provider. Cisco WAAS Express runs in Cisco® IOS software, this allows service provider to deliver service bundles that includes WAN optimization, security, voice connectivity, and routing from a single Cisco® ISR G2 router.

Challenge

Providing stable, secure, and cost-effective voice, data, and video network connectivity to the distributed workforce is an ongoing challenge for today's organizations. Historically, organizations distributed servers and storage equipment in each branch office to maintain LAN-like performance for users. This strategy resulted in increased costs and complexity, while also making it difficult to back up and protect data resources. The result has been costly and difficult-to-manage infrastructure at each location, including file, email, video, software distribution, and print services.

Increased deployment of servers and storage in each branch location has led to steadily rising IT costs. In 2007, a study by Microsoft, Cisco, and Nemertes Research noted that IT branch-office equipment consumes 33 percent of IT budgets for most organizations. This infrastructure creates isolated collections of data, making it difficult to implement regulatory compliance for data protection and replication. The increasing need to reduce IT costs, and to comply with industry and government regulations, require IT departments to consolidate their costly distributed infrastructure into the data center while maintaining the service levels expected by the distributed workforce.

Until recently, organizations had two options. They could choose a fully distributed architecture to help ensure comprehensive service levels, which requires costly branch-office equipment deployments, or they could choose a centralized architecture to consolidate their equipment, which provides poor application performance over long distances. This inflexibility has led to poor service agility, making it difficult to change existing services and provision new ones at the branch site. WAN limitations are the major impediments to stable, cost-effective connectivity to the branch office and beyond. Applications perform poorly over the WAN because of limited bandwidth, network latency and the fact that they have been developed to perform well on LAN networks and make excessive use of bandwidth.

Business Benefits

Cisco WAAS Express provides the following significant benefits for both managed service providers and customers.

- Simplified deployment: Cisco WAAS Express is a feature in Cisco IOS Software and is easily activated on Cisco Integrated Services Routers Generation 2 (ISR G2) products. Full integration on the network reduces the need for configuration and increases compatibility with other Cisco IOS Software services. Network transparency and preservation of IP and TCP header information provides ease of operation and interoperability with network services such as quality of service (QoS), NetFlow, Network Address Translation (NAT), access control lists (ACLs), firewalls, and VPNs.

- Low total cost of ownership (TCO): Cisco WAAS Express offers the lowest TCO of any comparable solution due to its availability on Cisco IOS Software and Cisco ISR G2 products. In addition to lowering operating expenses (OpEx) through ease of operation, Cisco WAAS Express reduces capital expenditures (CapEx). Fewer devices are required in branch offices, reducing the need for WAN bandwidth and expensive infrastructure upgrades to facilitate optimization. These cost savings can be promoted by managed service providers as a competitive advantage.
- Investment protection: Cisco WAAS Express service can be easily added to a deployment that has Cisco Services-Ready Engine (SRE) Modules or Cisco WAAS appliances already present in a customer's environment. The express service can share the existing Cisco® Wide Area Virtualization Engine (WAVE) or Wide Area Engine (WAE) and the management console, Cisco WAAS Central Manager.

Solution

Cisco WAAS Express is available through Cisco Borderless Networks, designed for managed service providers. The Cisco Borderless Networks architecture offers technologies, platforms, services, and deployment options that deliver secure, cost-effective, and energy-efficient enhanced experiences to workers in the office, at home, and on the move.

Cisco WAAS Express, available on the Cisco ISR G2 platform, offers bandwidth optimization and application acceleration services to small offices connected to a corporate data center (Figure 1). This managed WAN optimization service reduces the cost of IT infrastructure management and helps customers benefit from optimized throughput and increased performance across the WAN.

Cisco WAAS Express requires no additional hardware. Instead, it uses the CPU and memory of existing routers for optimization, reducing the cost of deployment and the footprint in the small branch office. To move traffic beyond bandwidth limits, Cisco WAAS Express addresses WAN traffic limitations and helps a WAN perform like a LAN. Several technologies make this possible.

- Transport flow optimization (TFO) is performed using Binary Increase Congestion Control (BIC) TCP and selective acknowledgments (SACKs) for better application response time. TFO reduces the effects of latency and congestion, accelerating application performance over the WAN.
- Data redundancy elimination (DRE) inspects TCP traffic and identifies repeating patterns. Redundant patterns are safely replaced by small signatures, optimizing throughput by reducing transmission of repeated traffic. This feature is implemented in router memory for fast performance at a lower cost.
- Data compression reduces data in transit, providing a compression ratio of up to 3:1 to optimize throughput.

Together, these technologies increase data transfer rates over the WAN and provide a dramatic improvement in application performance, allowing customers to gain the full benefits of their WAN investments and to take advantage of network services for their branch offices, as offered by service providers.
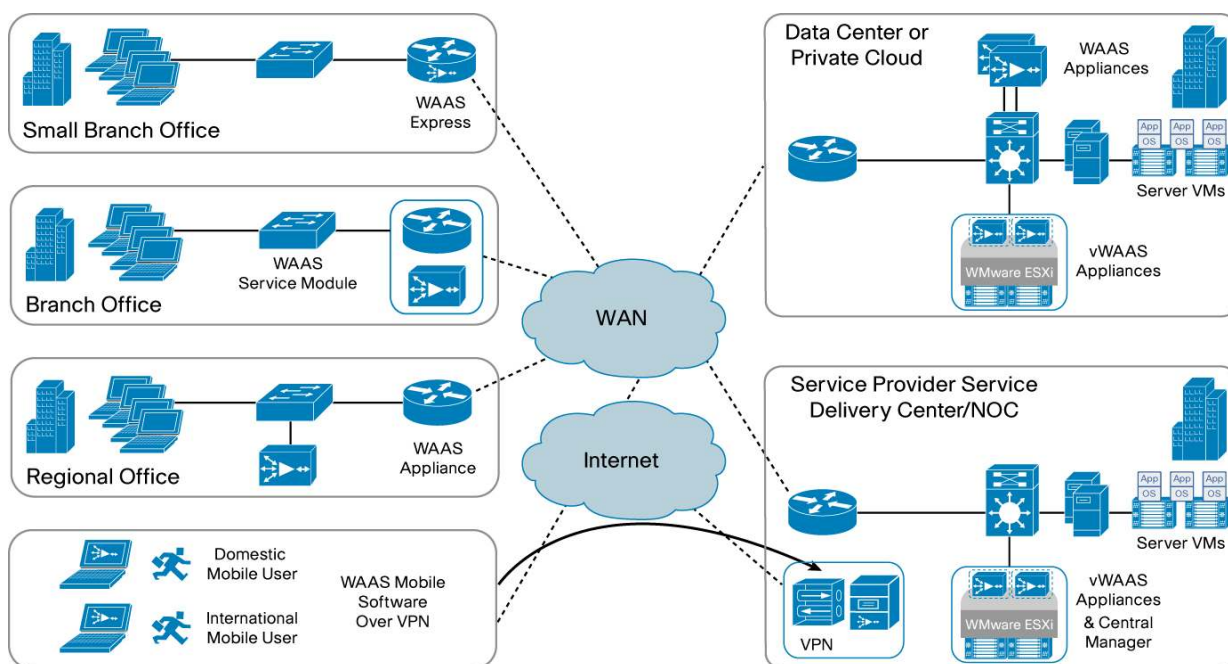
Figure 1. Managed Cisco WAAS Express Deployment

Figure 1 describe the architecture that service providers use to deliver managed WAAS services:

- WAAS Express in Small branch offices for cost effective service,
- WAAS software running in ISR G2 Service Ready Engine (SRE) module for larger branch offices,
- Dedicated WAAS appliances (WAVE or WAE appliances) to meet high performance and high availability requirements in regional offices,
- WAAS appliances or virtual WAAS appliances (vWAAS) in customer's main site,
- Service Provider use virtual WAAS appliances (vWAAS) for acceleration of hosted application and central manager running in virtual machines for managing Waas devices deployed at customer's premises.

Why Cisco?

Cisco WAAS Express allows service providers to lower the cost of entry and increase the services included in their managed service offerings. The small-footprint, cost-effective Cisco WAAS Express provides an effective service solution that can handle WAN optimization, security, voice transmission, and routing, deployed on a single router for a small remote branch office. Cisco WAAS Express promotes application performance and user productivity for customers, while helping service providers meet their monitoring, reporting, and application performance service-level agreements (SLAs). Cisco WAAS Express is an outstanding service offering for organizations that require increased application performance over low-speed, high-latency WAN links.

For More Information

- For information about Cisco WAAS Express, see http://www.cisco.com/en/US/products/ps6870/index.html.
- For information about managed services for service providers, see http://www.cisco.com/en/US/netsol/ns849/networking_solutions_market_segment_solution.html.