Cisco IWAN and Akamai Intelligent Platform™: Maximize Your WAN Investment

What You Will Learn

Cisco Systems and Akamai Technologies intend to deliver the world's first combined Cisco Intelligent WAN with Akamai Unified Performance solution that delivers a high-quality end-user experience for both public and private cloud applications to all remote offices.

This proposed solution will include best-of-class routing, security, and WAN optimization; unparalleled acceleration; caching; and Internet traffic optimization based on technologies from both companies.

Through this integrated solution powered by the Cisco® Integrated Services Router Application Experience Routers (Cisco ISR-AX), customers will be able to significantly offload traffic from their enterprise WAN and Internet links not only to provide a superior end-user experience but also maximize their WAN return on investment (ROI) while lowering costs.

Business Challenges the Cisco and Akamai Solution Will Address

The application landscape is dramatically changing. In most organizations, IT is centralizing applications in the public or private cloud to promote efficiencies, but this shift is resulting in new traffic patterns that are increasing the burden on the WAN. In addition, this trend has limited IT visibility and control to prioritize the most critical traffic or troubleshoot problems.

IT organizations are under tremendous pressure to meet the growing bandwidth demands of public and private cloud traffic, mobile devices and guest Wi-Fi, as well as those of high-bandwidth applications such as video employee training, multimedia product information, corporate web applications, interactive kiosks, and even third-party web content. Expanding private WAN bandwidth to meet these needs is cost-prohibitive because WAN budgets are not increasing in most organizations and businesses are striving to do more with less. In addition, the Internet edge is moving to the branch office to support direct connection to Software-as-a-Service (SaaS) and web-based services, and IT departments are looking for scalable branch-office security solutions to provide direct Internet access for more efficient application transport.

The result follows:

- Congested WAN bandwidth degrading application performance
- Inability to capitalize on branch-office business opportunities (digital signage, in-store apps, mobility, or guest Wi-Fi)
- Potential security and compliance risks associated with direct Internet connections
- Poor user experiences (employee and customer)
- Slow response to business needs
- Complex remote-office management

More recently, with the Internet becoming a suitable platform for running business-critical applications, enterprises are shifting to hybrid network architectures that include Multiprotocol Label Switching (MPLS) and Internet-based WAN.

In fact, 46 percent of customers are looking to move to Internet connections (Source: Nemertes, Benchmark 2012-13 Emerging WAN Trends: The Internet Arises) to lower their WAN costs significantly. However, despite the improvement, reliability of the Internet does not meet most business standards.

Cisco and Akamai are working together to enable organizations to take advantage of the Internet as a fast, reliable, deterministic, cost-effective WAN option to address the exploding traffic requirements on the corporate network. The proposed integrated solution will tackle many of the architectural challenges hybrid clouds impose on traditional hub-and-spoke networks.

Solution Overview

The Cisco Intelligent WAN (IWAN) solution enables businesses to deliver an uncompromised experience over any connection. Now IT organizations can right-size their branch-office connections using competitively priced WAN transport options without affecting performance, security, or reliability. Powered by the Cisco ISR-AX and Cisco Aggregation Services Router 1000 with Application Experience (ASR 1000-AX) IT has an operationally scalable solution at an attractive price that includes the networking and application services necessary to maximize your WAN investment, roll out service faster, and reduce costs. With Cisco IWAN, traffic is dynamically routed based on application, endpoint, and network conditions to deliver the best-quality experience.

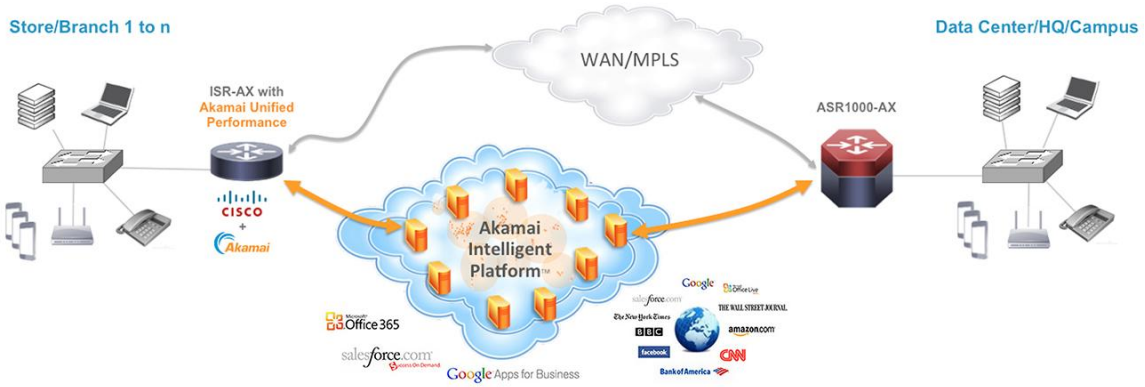
The solution will bring the power of Cisco Wide Area Application Services (WAAS) with Akamai Unified Performance extending the corporate data center and the Akamai Intelligent Platform™ into the branch to offload existing network links and improve the in-branch web and application experiences.

The proposed solution will integrate sophisticated caching and optimization within the private WAN along with support for Akamai Unified Performance technology to cache, optimize, and accelerate the Internet. Designed to be simple to deploy and cost-effective, the proposed solution is intended to be integrated in the industry's leading application delivery platform, the Cisco ISR-AX, and managed through a single pane of glass. The Solution is also designed to automatically link to the Akamai Intelligent Platform™, enabling enterprises that invest in their digital web experiences to extend those experiences to the branch office in a fast, cost-efficient manner.

To support our joint customer needs, Cisco and Akamai plan to deliver best in class WAN architectures and hybrid cloud network solutions by adding Akamai Unified Performance features into the ISR-AX.

This proposed initiative will integrate the best-of-class technology from the two industry leaders in networking and cloud services. Customers will be able to take advantage of their Cisco ISR-AX routers, which enable full-service branch-office operations. The proposed initiative will also provide an application-aware router combining Akamai Unified Performance technology with WAN optimization, Cisco Application Visibility and Control (AVC), path selection, and branch-office security. The solution is intended to provide end-to-end optimization from the branch office to the data center or the private cloud and also a single-sided optimization for any traffic coming from the Internet (Figure 1).

Figure 1: Proposed Cisco IWAN and Akamai Intelligent Platform™



The Cisco IWAN solution with Akamai Unified Performance plans to include:

- **Flexible and secure WAN design over any transport using Dynamic Multipoint VPN (DMVPN), firewall, and Cisco Cloud Web Security (CWS) technologies:** Together, these capabilities provide easy multihoming over any carrier service offering, a single routing control plane with minimal peering to the provider, automatic site-to-site IP Security (IPsec) tunnels, comprehensive threat defense with Cisco ASA Adaptive Security Appliances and Cisco IOS® Firewall and Intrusion Prevention System (IPS), and Cisco CWS for direct Internet access.
- **Cisco AVC:** Cisco AVC provides IT visibility and control at the application level (Layer 7) through AVC technologies such as Network-Based Application Recognition 2 (NBAR2), NetFlow, quality of service (QoS), Performance Monitoring, medianet, and more. Cisco AVC allows IT to determine what traffic is running across the network, tune the network for business-critical services, and resolve network problems.
- **Cisco Intelligent Path Selection:** This component dynamically determines routing decisions by looking at application type, performance, policies, and path status. Now the growth of new cloud traffic, guest services, and video can be easily load balanced across multiple WAN paths.
- **WAN optimization for minimal WAN load and application acceleration:** To minimize any WAN burden, IWAN uses Cisco WAAS to compress data in flight using long-lived compression techniques including standards-based compression and context-aware data redundancy elimination (DRE). Coupled with TCP optimizations that enable more intelligent and high-performance use of the network, Cisco WAAS provides application-specific acceleration features for both encrypted and unencrypted applications such as Common Internet File System/Server Message Block Protocol (CIFS/SMB), Messaging Application Program Interface(MAPI)/Encrypted Messaging Application Program Interface (eMAPI), Citrix ICA, HTTP and Secure HTTP (HTTPS), SharePoint, and others.
- **Akamai Unified Performance:** To maximize performance and reduce bandwidth needs, Akamai Unified Performance technology provides Intranet and Internet traffic optimization, acceleration, and caching of content. Critical to support the needs of rich media applications, Akamai Unified Performance can cost-effectively extend high-quality digital web experiences to the branch office.
- **Private WAN Cache Optimization:** Optimized caching and pre-positioning of Intranet web, HTTP, and HTTPS applications, objects, files and content
- **Connected cache:** Cache and deliver content in the branch office through a connection to the Akamai Intelligent Platform. The content may be an enterprise's own web content or other content delivered by the Akamai Intelligent Platform, which typically delivers between 15 and 30 percent of all web traffic.
- **Transparent cache:** Cache web content from third-party domains to reduce network congestion and save on Internet bandwidth costs.
- **Content prepositioning:** Organizations can define a policy to proactively fetch content on a specific schedule. By warming the Cisco WAAS DRE cache and the HTTP web cache during nonpeak times, organizations will be able to improve application performance and maximize network offload for when the network is busiest.

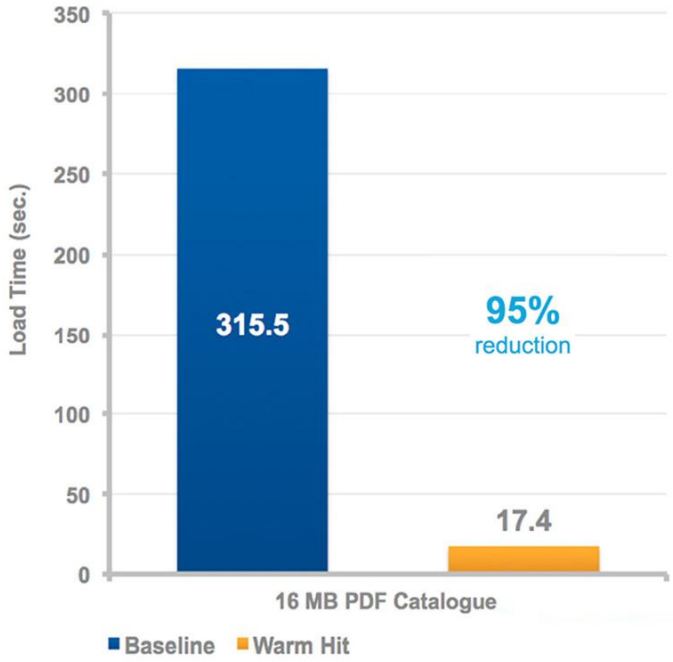
The proposed integrated solution between Cisco and Akamai helps provide unmatched performance by integrating best-of-class technologies from Cisco and Akamai including DRE, caching, content federation, and Secure Sockets Layer (SSL) key management. An all-in-one branch-office platform, the Cisco ISR-AX will enable end-to-end application optimization for applications hosted in the data center or private cloud and also single-sided optimization for applications and content served from the Internet or public clouds.

Solution Benefits

The following benefits are intended as part of the proposed solution:

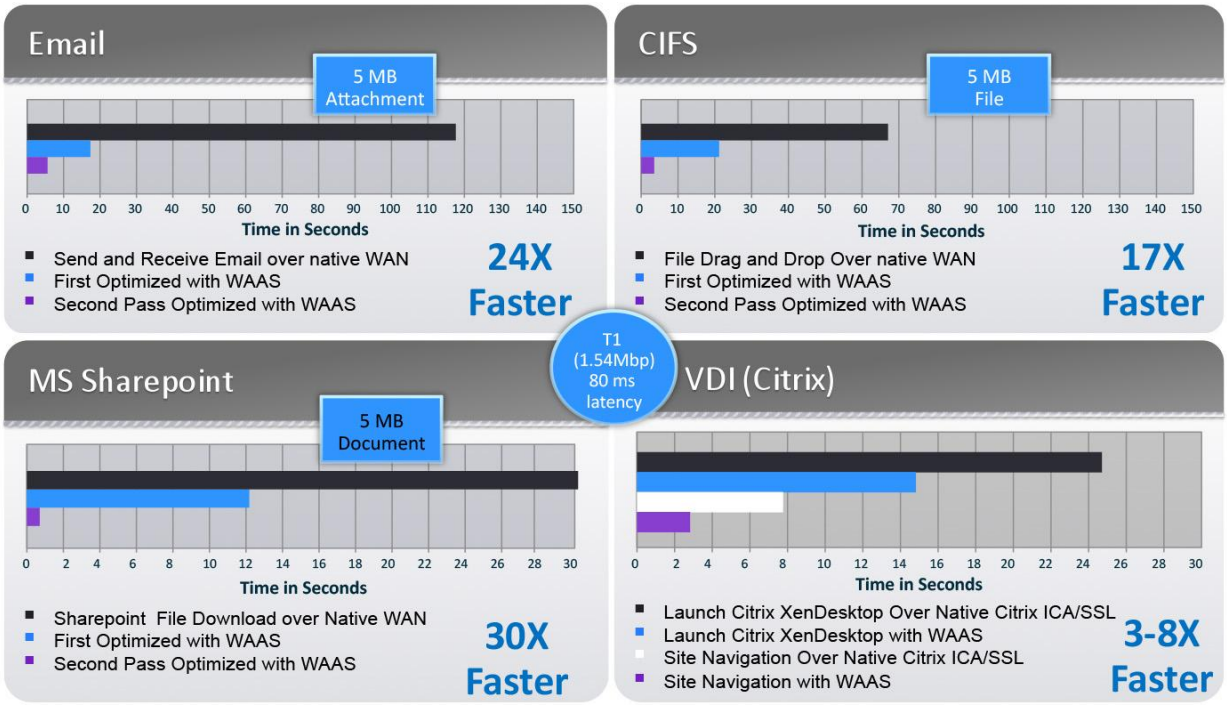
- Augment or supplement premium WAN bandwidth with cost-competitive Internet transport with high reliability.
- Offload guest and public cloud directly to the Internet with secure and efficient transport (avoid the trombone effect).
- Provide a high-quality experience on any device, regardless of where the application resides.
- Efficiently deliver innovative employee and guest services.
- Enable in-branch connected digital experiences.
- Manage the demands on the WAN with cloud traffic, device proliferation, video, etc.
- Lower operational complexity with IT consolidation and a smaller branch-office footprint.
- Converge multiple network optimization functions in a single solution providing unified performance.
- Provide unmatched branch office performance through the integration of best-of-class technology from Cisco and Akamai.
- See up to 95-percent reduction in webpage load times with IWAN and Akamai Unified Performance (Figure 2).

Figure 2: Reduce Webpage Load Times with IWAN and Akamai Unified Performance



* Results are from customer trials of Akamai Unified Performance Technology

Cisco IWAN and Akamai Unified Performance delivers user experiences for enterprise applications at scale (Figure 3).



* Results are from Customer trials of Cisco WAAS Technology

Summary of Business Benefits

With the Internet becoming a more stable platform for running business transactions, the proposed Cisco IWAN and Akamai allows IT to successfully transition from premium WAN bandwidth to lower, cost-competitive transport without compromising security, reliability, or user experience. The solution allows businesses to realize the cost benefits of provider flexibility and deploy new services faster no matter which transport model they prefer - MPLS only, hybrid WAN, or direct Internet access.

Any savings from IWAN can help pay for the branch-office infrastructure investments, and will also free resources for new innovative business services. With Cisco IWAN hosted on AX routers, IT will be able to quickly roll out bandwidth-intensive applications such as video, Virtual Desktop Infrastructure (VDI), guest Wi-Fi with lower costs, and a great user experience.

The benefits for customers follow:

- Lower WAN costs that can pay for the infrastructure refresh.
- Free resources so they can focus on other strategic projects and business opportunities.
- Simplify IT with a scalable one-box solution that they can remotely manage and avoid the costs of extra system upgrades for change management.
- Expand bandwidth availability to support rich network services such as VDI, video, and guest access.
- Increase business agility to bring up branch-office sites, migrate to cloud, and roll out new services quickly.
- Improve employee productivity with an optimized user experience.

C11-729752-00 10/13