



Cisco Intelligent WAN with Akamai Connect: Maximize Your WAN Investment

What You Will Learn

Akamai Connect is a fully integrated solution from Cisco and Akamai that provides next-generation optimization by integrating the best-in-class advanced WAN optimization and intelligent caching techniques directly into the Cisco® Integrated Services Router Application Experience (ISR-AX) routers at the branch office. It effectively extends the Akamai Intelligent Platform across the last mile from the Internet directly into the branch office. Akamai Connect provides an optimal user experience over bandwidth-constrained networks, regardless of device, connectivity, or location including private clouds, public clouds, or the global Akamai platform. This process is done through integration of industry-leading routing, security, caching, and WAN optimization technologies.

Through this integrated solution, customers are able to significantly offload traffic from their enterprise WAN and Internet links not only to provide a superior end-user experience but also to maximize their WAN return on investment (ROI) while lowering operating costs. In addition the integrated solution includes the fundamental building blocks for deploying hybrid network architectures by seamlessly optimizing and securing both WAN and Internet connectivity.

Business Challenges the Cisco and Akamai Solution Addresses

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.

Business leaders are innovating at the branch office to engage customers and increase revenue with performance-sensitive and data-heavy web and media applications.

In retail, they are extending existing online commerce services into the store and embracing new digital experiences by enabling creative omnichannel touchpoints to maximize engagement and conversion. They are further enhancing the customer experience by enabling their employees to better engage by investing in online training, improved business processes, and other SaaS-based productivity applications.

This trend extends to other industries - banks launching digital in branch-office applications, schools delivering rich-media curriculum, clinics obtaining medical images, enterprises delivering sales or new-hire training, and the list goes on. Yet these heavy web and media applications consume substantially increased bandwidth with no tolerance for poor performance - all at a time when IT budgets are often constrained.

Business requirements will continue to change faster than traditional WANs can adapt, and IT must rethink its network strategy (see Table 1). Now more than ever, business leaders and IT must come together to create customer value and capture revenue.

Table 1: IT Challenges to Meet Business Requirements

	Business	Customer	IT
Requirements	Accelerate Business Innovation to Increase Revenue	Instant Access to Immersive Content on Any Device	Address Infrastructure Constraints of Poor App Performance and High WAN Costs
IT Challenges	<ul style="list-style-type: none"> • Provide an immersive customer experience - Provide high-quality engagements in the branch office through mobile and other connected devices accessing rich-media applications • Increase employee productivity in remote locations - Enable employees with on-demand training and faster-responding applications to better service customers with a personalized experience 	<ul style="list-style-type: none"> • Satisfy growing customer expectations - Consumerization of IT has raised user expectations to access information immediately, meaning an instant and smooth experience regardless of device • Provide high-quality digital experiences - Ensuring security and performance for rich media apps from anywhere - corporate data centers as well as private and public clouds (Akamai accelerates but does not technically host apps) 	<ul style="list-style-type: none"> • Address need for increased bandwidth (but too expensive) - 68% of organizations expect bandwidth growth and 75% have no additional WAN budget; customers are unable to keep pace with business demands • Deliver superior in-branch office web performance - Increased traffic leads to congestion of the existing WAN and poor end-user performance for customers and employees; current IT architecture does not scale

Cisco and Akamai are enabling 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 Akamai Connect solution tackles many of the architectural challenges hybrid clouds impose on traditional hub-and-spoke networks.

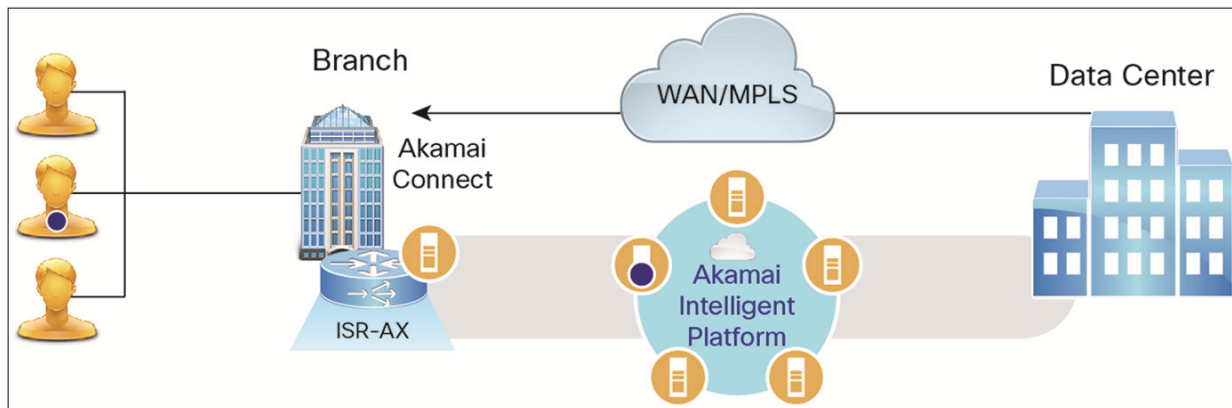
Solution Overview

The Cisco Intelligent WAN (IWAN) solution enables businesses to deliver an uncompromised experience over any WAN or Internet 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 1000 Aggregation Services Router 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.

Akamai Connect delivers next-generation application optimization that turbo charges the Cisco Intelligent WAN by bringing Akamai intelligent caching into the branch-office router. This integrated technology addresses the last mile of the WAN where bandwidth is typically limited and significantly offloads the WAN. It builds on Cisco investments in advanced WAN optimization on the all-in-one Cisco ISR-AX platform, combining Cisco Wide Area Application Services (WAAS) compression, optimization, and de-duplication efforts with Akamai's industry-leading caching technology to deliver the world's best optimization solution for HTTP traffic.

This Akamai Connect solution integrates the best-in-class technology from the two industry leaders in networking and cloud services. Customers can take advantage of their Cisco ISR-AX routers, which enable full-service branch-office operations. Akamai Connect provides an application-aware router combining Akamai caching technology with WAN optimization, Cisco Application Visibility and Control (AVC), path selection using Cisco Performance Routing (PfR), and branch-office security. The solution provides 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: Cisco Intelligent WAN with Akamai Connect



The Cisco IWAN solution with Akamai Connect includes:

- **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 Cloud Web Security (CWS) for direct Internet access.

- **Cisco Application Visibility and Control (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:**

Performance Routing (PfR) 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 Wide Area Application Services (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 /Encrypted Messaging Application Program Interface (MAPI/eMAPI), Citrix ICA, HTTP and Secure HTTP (HTTPS), SharePoint, and others.

- **Connected Cache for Akamai Platform:**

Akamai delivers 15-30 percent of the traffic on the web, representing much of business web traffic, and accelerates this HTTP traffic to deliver superior performance.

Akamai Connect extends the Akamai Intelligent Platform into the branch-office Cisco ISR-AX platform to eliminate last-mile bottlenecks of HTTP web applications; it also utilizes caching rules (or metadata) configured on the Akamai platform to intelligently cache content which is noncacheable with alternative solutions.

Examples include corporate websites, on-demand training, rich CRM and Point of Commerce applications, and partner content.

- **Transparent Cache for Private Cloud/Data Center:**

Transparent cache takes advantage of Akamai's high-performance HTTP object cache for web applications directly in the branch office to create LAN-like performance speeds for Intranet web applications. It provides multiple levels of transparent caching - standard to aggressive - to offload Corporate WAN links.

Examples include Point of Commerce web applications, on demand video training, catalogs or partner content.

- **Over-the-top Cache for Public Cloud/Internet:**

High-performance object-level cache from Akamai caches HTTP content despite frequently changing URLs for the same HTTP objects.

Examples include YouTube videos for product demos or ads displayed in stores on digital signage.

- **Content repositioning:**

Reposition any content with a URL inside the branch office during nonpeak hours, possibly improving performance during work hours by significantly offloading WAN links.

Examples include training videos, product demonstrations, and product catalogs.

The Akamai Connect solution 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 enables 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.



Summary of Business Benefits

The Akamai Connect functionality opens new innovative ways for businesses to engage customers and improve employee productivity to increase revenue by allowing an optimal user experience over bandwidth-constrained networks. It also simplifies management, improves visibility, and accelerates rich-media web applications whether they are hosted within the corporate data center, the private cloud, or the public cloud.

Using Cisco ISR-AX in the branch office running Akamai Connect, organizations can deliver routing, security, application visibility and control, and traditional WAN optimization as well as advanced intelligent caching and optimization techniques from Akamai in an all-in-one platform.

The Benefits follow:

- **For Businesses:** In-branch office revenue growth with new and improved connected digital experiences for customers and employees. By caching and prepositioning content, businesses can deliver superior performance for a host of applications including: Point of Commerce, on-demand training, product demonstrations, eCatalogs, social media, and guest Wi-Fi.
- **For Customers:** Optimal experience by extending today's web experiences and elevating the customer engagement with creative rich-media applications inside the branch office. Businesses can deliver LAN-like performance on any device for the widest range of web applications and content.
- **For IT:** Simple management framework at lowest cost by essentially "marrying" the Cisco branch-office infrastructure and the Akamai caching and content delivery platform, allowing rich applications to be delivered over existing thin pipes. Organizations can also ensure application performance even during peak usage by accelerating applications and prepositioning business-relevant content during nonpeak hours to minimize network impact.

Customers across multiple industries including retail, healthcare, financial services, and traditional enterprise can now:

- **Converge the online and in-store buying experience** (omnichannel) by providing immersive web-based content on mobile devices including concierge services and customer in-store purchasing without degradation or impact to business systems.
- **Enable Guest Wi-Fi** while preserving existing bandwidth, and still allow dynamic social media content like YouTube, Facebook, and Twitter.
- **Preposition content** in the branch office for a LAN-like experience for training videos, digital signage, software upgrades, and catalogues to avoid bursty content that can congest the network and impact performance.
- **Reduce bandwidth costs** by optimizing business and Internet traffic.

Solution Performance Results

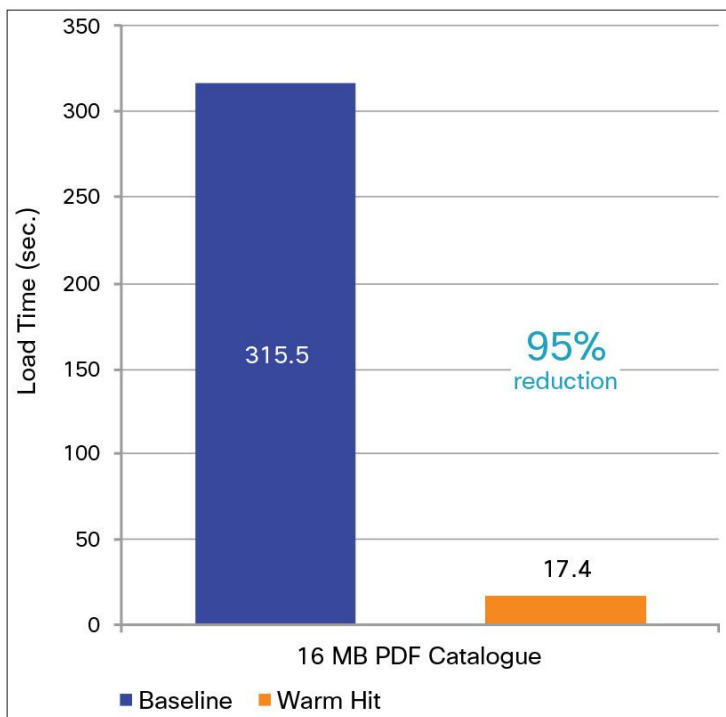
Results of performance testing for this solution have shown significant improvements in customer environments. Typical results show webpages that load 90% faster and information that is instant.

Mobile Assisted Selling	Without Akamai Connect	With Akamai Connect First Hit	With Akamai Connect Second Hit
ERP App	57 sec	18 sec	2 sec
Product Repair App	70 sec	28 sec	< 1 sec
Catalog App	28 sec	13 sec	< 1 sec

Omni Channel	Without Akamai Connect	With Akamai Connect
CompanyA.com	5.44 sec	2.72 sec
CompanyB.com	4.25 sec	2.60 sec

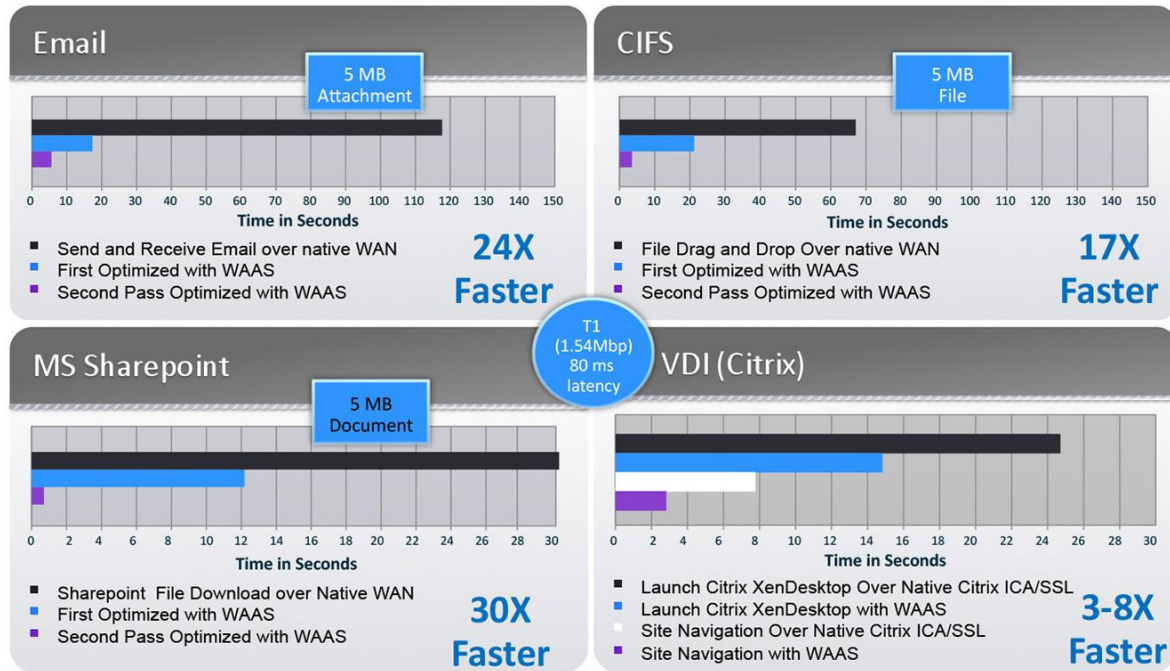
Training	Without Akamai Connect	With Akamai Connect
Default Quality	144p	720p (HD Automatic)
Time to Load	14 sec	Instant

Figure 2: Reduce Download Times with Akamai Connect



* Results are from customer trials of Akamai Connect.

Figure 3: Cisco WAAS with Akamai Connect Delivers User Experiences for Enterprise Applications at Scale



* Results are from Customer trials of Cisco WAAS Technology.

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

© 2014 Akamai Technologies, Inc. All Rights Reserved. Reproduction in whole or in part in any form or medium without express written permission is prohibited. Akamai and the Akamai wave logo are registered trademarks. Other trademarks contained herein are the property of their respective owners. Akamai believes that the information in this publication is accurate as of its publication date; such information is subject to change without notice. Published: 04/14.