

# Magic Quadrant for WAN Optimization

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**VIEW SUMMARY**

WAN optimization increasingly resembles a mature market with increasing feature standardization. Vendor innovation is focused on supporting new application types and deployment options, with WAN optimization migrating toward more diverse platforms or to a WAN cloud.

## Market Definition/Description

WAN optimization provides a range of features to: (1) improve the performance of applications running across the WAN; and (2) reduce the cost of the WAN. The range and scope of features supported by WAN optimization solutions continue to evolve, typically in support of three high-level needs:

- Improve the response times as experienced by users of business-critical applications over WAN links or mobile connections, often addressing application performance problems caused by bandwidth constraints, latency or protocol limitations.
- Assist in maximizing the ROI for WAN bandwidth, and delay costly bandwidth upgrades.
- Optimize data-center-to-data-center (DC-to-DC) traffic for faster replication and synchronization.

In support of these needs, WAN optimization includes some or all of the following functionality:

- Generic protocol- and application-protocol specific optimization to minimize the effects of network latency
- Compression, deduplication or content caching to reduce the bandwidth required to transfer WAN traffic, as well as to improve user access times
- Traffic identification, prioritization, policing and shaping to ensure acceptable access for mission-critical applications during periods of high traffic load
- Traffic monitoring and reporting to aid in troubleshooting and network planning
- WAN path control, WAN virtualization or link load balancing to control traffic forwarding across multiple networks, such as Internet and Multiprotocol Label Switching Transport Profile (MPLS-TP) for resilience and to optimize utilization
- Direct Internet access via the ability to forward traffic to public cloud services, while still controlling traffic forwarding to privately deployed applications

WAN optimization is typically deployed in-house via physical appliances in a symmetrical solution — that is, the devices are deployed at each end of the network connection, such as in the branch office and the data center. These appliances can also be deployed as virtual appliances or as a cloud resident service. For mobile or remote users, WAN optimization can be deployed as a soft client that runs on individual user devices. Some features, such as HTTP optimization and bandwidth management, can operate in an asymmetrical fashion, allowing deployment at either the branch or data center end of the network (see "Use New WAN Optimization Models to Increase Flexibility and Reduce Costs").

When WAN access bandwidth is adequate, WAN optimization can also be delivered as a network-based "WAN optimization as a service" (WOaaS), such as those from Aryaka and NTT Communications. WOaaS services are delivered from service delivery points embedded in carrier service infrastructure and enable enterprises to avoid the need to deploy on-premises physical appliances.

## Magic Quadrant

**Figure 1.** Magic Quadrant for WAN Optimization



### EVALUATION CRITERIA DEFINITIONS

**Ability to Execute**

**Product/Service:** Core goods and services offered by the vendor for the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

**Overall Viability:** Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

**Sales Execution/Pricing:** The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

**Market Responsiveness/Record:** Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

**Marketing Execution:** The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional initiatives, thought leadership, word of mouth and sales activities.

**Customer Experience:** Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

**Operations:** The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

**Completeness of Vision**

**Market Understanding:** Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

**Marketing Strategy:** A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning



Source: Gartner (March 2015)

## Vendor Strengths and Cautions

### Array Networks

Array is particularly strong in Asia/Pacific with its main presence in China and India. Array's WAN optimization portfolio is the result of its integration with the assets of Certeon, acquired in 2013, which complement Array's existing solutions in application delivery control and secure access gateways. Array offers a good range of physical appliances from 10 Mbps to 1 Gbps throughput, as well as its software-based WAN optimization products (aCelera Virtual Appliance, aCelera for Windows Server and aCelera Mobile). These appliances support common WAN optimization functionality, such as compression, deduplication, HTTP, TCP, Common Internet File System (CIFS), Messaging API (MAPI) optimization, Citrix Independent Computing Architecture (ICA), traffic shaping and quality of service (QoS). Consider Array when a single supplier for application delivery controllers (ADCs), Secure Sockets Layer (SSL) virtual private network (VPN) and WAN optimization controllers (WOCs) is a priority. Also consider Array when price is a primary decision factor, especially for deployments in India and China.

#### Strengths

Array Networks offers a full range of physical and virtual appliances with good performance and features at prices that are typically lower than those of the leading WAN optimization vendors.

The aCelera Virtual Appliance is available on VMware ESX/ESXi, Microsoft Hyper-V, Citrix XenServer and Windows Server 2008 R2, and as a small-footprint mobile client for Windows XP and Windows 7.

Array offers up to 100GB local cache storage in its branch office device as well as a centrally located networkwide image of all caching, thus improving the scalability of its solution.

Array Networks provides a storage backup/replication solution that supports a broad range of storage vendors, including Dell EqualLogic and Compellent, EMC, and NetApp, and bundles with Hitachi Data Systems for a strong solution targeted at the Indian market.

#### Cautions

Array Networks' distribution is limited outside India, China, Japan and North America, although it is expanding. In addition, Gartner inquiries show enterprise awareness of Array Networks remains limited.

statements.

**Sales Strategy:** The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

**Offering (Product) Strategy:** The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

**Business Model:** The soundness and logic of the vendor's underlying business proposition.

**Vertical/Industry Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.

**Innovation:** Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

**Geographic Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.

Array lacks specific application protocol optimization, User Datagram Protocol (UDP), video content and asymmetric Web browser optimization.

Visibility and reporting, although improved, are not yet on par with leading vendors.

Array does not offer WAN path control, local link load balancing capabilities or direct Internet access.

## Aryaka

Aryaka is one of the primary innovators, embedding WAN optimization within its WAN infrastructure to offer WAN optimization as a service. Aryaka does this via 25 points of presence (POPs) distributed across North America, South America, Europe, Africa and Asia/Pacific. These POPs create Aryaka's core WAN network that is used for global connectivity. These POPs also offer a range of services, such as WAN optimization, a content delivery network (CDN), Internet and public cloud connectivity, remote access services, and visibility and reporting. As such, traffic is optimized between Aryaka's globally distributed core POPs without the use of on-site appliances or mobile software-based WOCs (SoftWOCs). The Aryaka offering does not include an on-site managed router service, and enterprises must source and manage all WAN access services connecting into Aryaka's network. In situations in which the core WAN optimization is insufficient for the chosen last-mile connection, Aryaka provides its own WOC appliance without additional fees. Consider Aryaka for globally distributed networks where in-house router management is required and where the flexibility of cloud-based WAN optimization is desired.

### Strengths

Aryaka offers a simplified deployment model that eliminates the need for on-premises WAN optimization appliances and replaces its customers' capital expense with an ongoing monthly fee.

For locations in which local loop performance is unacceptable, Aryaka provides an on-premises appliance.

The network-based solution offers broad and well-rounded service capabilities, such as WAN optimization, visibility and custom reporting, CDN, remote access with IPsec termination, and Internet access.

The Aryaka model delivers good network-level performance and visibility, but is not on par with leading vendors.

### Cautions

Compared with managed WAN services that include WAN optimization, Aryaka can be often as much as 30% more expensive when all additional costs are included, such as access services and WAN routers. Aryaka does not provide specific application optimization features or dedicated data-center-to-data-center storage replication that compares to that of leading vendors in this report, although it supports standard network-based optimization.

Enterprises must ensure that their branch offices have low-latency (25 milliseconds [ms] or less) connectivity to an Aryaka POP in order to get the best application performance, although Aryaka continues to roll out more POPs.

The Aryaka on-site appliance has limited functional capabilities and does not support WAN path control functions, although it supports basic optimization, link bonding, failover and limited visibility.

## Blue Coat Systems

Blue Coat Systems' WOC solution consists of three separate appliances: the MACH5 for WAN optimization, compression and caching; the PacketShaper for reporting, traffic control and compression; and CacheFlow, which is dedicated to high-end service provider caching needs. Both the MACH5 and PacketShaper products comprise a broad range of physical and virtual appliances and a SoftWOC ProxyClient. MACH5 runs on the vendor's range of ProxySG appliances, which can also support Blue Coat's secure Web gateway (SWG) software. The PacketShaper platforms have now been completely refreshed and use the new Blue Coat common operating environment. Blue Coat has also refreshed MACH5 using the same new hardware platforms (that is, the S200, S400 and S500). Riverbed has been acquired by Thoma Bravo, the same private equity firm that took Blue Coat private in 2012. Riverbed and Blue Coat have different Boards of Directors, and the businesses should follow independent strategies. Additionally, Blue Coat is currently in the process of being acquired by Bain Capital with the aim of going public. Consider Blue Coat for all branch-office-to-data-center optimization, particularly when direct Internet access to software as a service (SaaS) providers, video delivery, and detailed visibility and traffic management are priorities.

### Strengths

Blue Coat provides a strong feature set for cloud-based applications via its local link load balancing and direct-to-Internet capabilities combined with its cloud-based SWG service and asymmetric caching.

The company's portfolio provides one of the industry's broadest ranges of WAN optimization techniques, especially for video (where it supports stream splitting and caching of many streaming protocols, although these features are spread across multiple platforms).

Blue Coat PacketShaper offers some of the most detailed application traffic visibility and traffic control solutions of any optimization vendor, and via integration with WebPulse (Blue Coat's Web intelligence cloud service), PacketShaper also provides granular visibility and control of Web content and URL categorization.

Blue Coat has a good vision around integration of WAN optimization, security and cloud-based applications.

### Cautions

Blue Coat's marketing is dominated by security, which, together with its multiple WAN optimization product lines, leads to market confusion around the company's commitment and focus on WAN optimization. This has also led to a decline in 2013 to 2014 WOC revenue.

Feature support of the mobile client — Blue Coat ProxyClient — is still limited.

Blue Coat's MACH5 has limited support for application-protocol-specific optimization and no specific storage protocol optimization, making it less suitable for DC-to-DC storage replication than competitors.

Blue Coat does not support any WAN path control features or IPsec VPN capability, although it does support link load balancing for Internet traffic.

### Circadence

Circadence's MVO product range consists of preintegrated server-based appliances and the Virtual MVO product, which is available on a range of hypervisors, as well as Circadence MVO for Windows and Linux and Circadence MVO for Mobile for Android, Apple iOS and Microsoft Windows Mobile. The MVO appliances support a good range of commonly used WAN optimization features, such as caching, TCP and HTTP optimization, and WAN path control. Circadence is focused on optimization for mobile connections and has developed extensive capabilities to optimize mobile traffic (3G and 4G), reduce loss, manage QoS and improve link utilization. Consider Circadence when mobile application performance is critical to your business and when support for a broad array of client devices is required. Also evaluate Circadence for branch-to-data-center optimization, especially when link quality is problematic.

### Strengths

Circadence has one of the strongest SoftWOCs on the market, with support for a wide variety of optimizations across a wide range of OSs.

Circadence continues to innovate on the mobility front, particularly with enhanced congestion control, dynamic network recognition (circuit versus packet) and Wi-Fi/cellular handoff.

Circadence Link Resilience maintains application session persistence for unreliable wireless connectivity — that is, when connectivity is re-established, the session picks up where it left off.

Circadence has shown scalability in very large deployments.

### Cautions

Circadence lacks data-center-to-data-center-specific capabilities, although it now supports higher-bandwidth connections on its physical and virtual appliances.

Circadence has limited dedicated video optimization and application-specific acceleration capabilities.

Circadence has limited support of visibility and reporting and does not support as extensive traffic discovery and traffic control capabilities as leading vendors.

The company has limited brand awareness in the general market, especially outside of the U.S., although efforts are underway to improve this situation. Enterprises should verify local support capabilities outside of the U.S.

### Cisco

Cisco has one of the widest portfolios of platforms, including Cisco Wide Area Application Services (WAAS) appliances, the Cisco ISR G2 and Cisco 4000 Series Integrated Service Router with Application Experience (ISR-AX) limited-function WAAS embedded in ISR G2 IOS, an OEM SoftWOC and the Cloud Services Router (CSR) 1000v with WAAS. This range also includes a high capacity WAAS appliance suitable for DC-to-DC traffic. Cisco's strategy is strongly based on the router as a cornerstone in its architecture where the Cisco 4000 Series ISR is positioned as a "network server" that hosts all network functionality. The combination of the ISR and WAAS in the new Cisco Intelligent WAN (IWAN) architecture has created a more complete solution that is becoming easier to manage, although enterprises still need to navigate the complexity of combining multiple functions such as Performance Routing (PfR) path selection and Next-Generation Network-Based Application Recognition (NBAR2) QoS. This may drive the need to use management tools like Cisco Prime Infrastructure or third-party solutions such as Glue Networks. Consider Cisco WAAS for all WAN optimization deployments when the branch office routers need a refresh, particularly where price and Cisco router integration are primary criteria.

### Strengths

Cisco's broad WAN product portfolio, addition of embedded Akamai Web caching, aggressive pricing and global distribution make WAAS a compelling option for Cisco-oriented network teams.

Cisco provides a strong advanced service arm to design and implement WOC optimization services.

Enterprises with a preference for Cisco solutions will appreciate the ability to deploy the full solution set on one physical platform via the ISR-AX bundle, especially since it is often licensed at extremely competitive prices.

Cisco's broader IWAN offering provides support for cloud-based applications via Performance Routing version 3 (PFRv3), local forwarding selection and direct-to-Internet capabilities, combined with Cisco Cloud Web Security (CWS).

### Cautions

Cisco WAAS does not support application-protocol-specific optimization beyond common capabilities such as Server Message Block (SMB), Exchange, Citrix ICA or SharePoint.

The Cisco WAAS appliance does not natively support any application discovery or visibility and reporting capabilities. These capabilities remain supported only via AX bundling on the ISR router. For AVC reporting, Flexible NetFlow data needs to be exported to Cisco Prime or to third-party systems such as LiveAction, CA, InfoVista or Plixer International.

Cisco's WAAS Mobile product is an independent product, although integration into its AnyConnect VPN client is under development.

Data-center-to-data-center optimization does not support storage-protocol-specific optimization; however, WAAS storage has been increased, and WAAS can scale to 10 Gbps of optimized throughput by pooling WAAS resources using AppNav.

### Citrix

Citrix continues to evolve its focus on the broader branch office needs and is expanding solution and sales focus beyond its XenDesktop customer base. Citrix's CloudBridge WOC offering comprises seven physical appliances from small branch office to large data centers, a wide range of virtual appliances, and a SoftWOC client for Windows laptops and desktops. Select appliances also support hosting of Windows services. Citrix is particularly focused on evolving product capabilities in the areas of WAN virtualization and video control and has enhanced its link-bonding capability with WAN path control as well as direct Internet access capabilities. To improve both network and application visibility, CloudBridge has now been integrated with Insight Center. Consider Citrix for data-center-to-data-center, branch-office-to-data-center or cloud optimization, particularly when optimization of Citrix applications is important.

### Strengths

Citrix supports broad WAN optimization capabilities, as well as good application classification and traffic control capabilities.

Citrix has a strong cloud-focused offering with support of Layer 2 bridging, especially with cloud bridging work with Amazon.

Citrix has a strong offering for session-based ICA acceleration, hosted virtual desktop (HVD) application visibility.

Citrix offers one of the best video optimization solutions of the evaluated vendors, including video stream splitting, video caching of multiple formats, content prepositioning into cache and playback format optimized to the capabilities of the device.

### Cautions

Citrix's direct and indirect sales force is not always focused on the WAN optimization products.

The offering for data-center-to-data-center storage replications is more limited than leading competitors' offerings, but it does support Layer 2 bridging and specific optimizations for NetApp and Hitachi Data Systems storage.

Citrix has no carrier partner for managed services; however, Citrix WAN optimization is available as part of NTT's network-based service, and it also partners with Inmarsat.

Citrix's visibility and reporting is not on par with leading vendors, although enhancements are planned for 2Q15.

### Exinda

Exinda now has a wide range of physical appliances, as well as a virtual appliance and a separate mobile solution. While Exinda continues to add enterprise-specific performance enhancements to its portfolio, it also has added specific capabilities for its managed service provider partners. Exinda delivers a strong platform that combines solid WAN optimization capabilities with leading application and user characterization, including Active Directory integration for user-specific policies. This allows for granular and user-specific content and bandwidth control and reporting into a single platform. Exinda's technology vision is to create a WAN orchestration solution that can assist enterprises in operating increasingly diverse and complex networks. Exinda has added analytics capabilities with a Predictive

Recommendation Engine that provides proactive recommendations for problem resolution, policy adjustment and optimization. Exinda also refreshed and enhanced its user interface for support of network analytics. Exinda specifically targets the midmarket enterprise and has also carved out a strong position within the education segment due to its content and bandwidth control abilities. Consider Exinda for branch-office-to-data-center optimization, particularly when detailed visibility, bandwidth and traffic management are priorities.

### Strengths

Exinda offers one of the industry's strongest and most detailed application traffic visibility and traffic control solutions. It is able to link user identity (via Active Directory integration) to application identification and policy, allowing personalized acceleration and content access decisions, as well as user-based application reporting.

Exinda offers enhanced reporting with customized and purpose-built reporting capabilities, with a traffic pattern and trend analysis function for real-time policy and configuration adjustment recommendations.

Exinda provides video bandwidth optimization capabilities in the form of video stream splitting and extensive local caching support for both HTTPS and video, with a specific focus on YouTube and Vimeo.

Exinda has strong relationships with both network service providers and a growing number of cloud providers, providing additional sourcing options for its products.

### Cautions

Although Exinda supports a 10 Gbps interface, it does not support solid-state drive (SSD)-based storage, and it does not support storage protocol optimization, making it less suitable than segment-leading vendors for DC-to-DC storage replication with fast connectivity. Exinda's WAN Memory provides reasonable reduction for replication solutions such as NetApp's SnapMirror in moderate bandwidth scenarios.

Exinda does not offer WAN path control functionality, local link load balancing or IP VPN for direct Internet access.

Exinda's cloud solution is not as evolved as leading providers' solutions, and it needs enhancements, such as tunnel support for cloud-based deployments.

Exinda is a relatively small company by both revenue and market share, and enterprises should ensure they have adequate local support from Exinda and an experienced local channel that can also provide service.

### FatPipe Networks

FatPipe Networks offers a range of physical WAN acceleration appliances as well as a virtual appliance, with three functional license options: FatPipe IPVPN with WAN optimization add-on, FatPipe Multipath VPN with WAN optimization add-on, and the stand-alone WAN acceleration appliance, which is a common hardware platform. FatPipe originally specialized in WAN link bonding, load balancing and path selection, and it offers one of the market's most advanced WAN path controllers. FatPipe has a good range of commonly used WAN optimization features, such as TCP, UDP, SMB, CIFS, ICA and HTTP, as well as compression and substantial storage for caching. FatPipe also partners with managed service providers, such as AT&T, Windstream and Inmarsat. Consider FatPipe for WAN optimization when it is beneficial to combine basic WAN optimization features with good WAN path control capabilities.

### Strengths

FatPipe is one of the leading vendors for WAN link load balancing and has very good WAN path control capabilities.

FatPipe supports comprehensive application identification, classification and control capabilities.

FatPipe offers detailed network visibility and reporting capabilities.

The FatPipe solution is relatively simple to operate because all functions are integrated onto one platform and managed with a single high-level user interface.

### Cautions

Although they do support all of the most common features, FatPipe's WAN optimization features are more limited than those of the leading providers — for example, no MAPI, no storage-protocol-specific optimization, limited video streaming optimization and no application-protocol-specific optimization.

FatPipe neither supports video delivery optimization nor provides a soft client.

FatPipe's support for cloud services is more basic than that of leading providers, lacking in features such as asymmetric optimization.

FatPipe has relatively small numbers of sales and support worldwide, but is currently expanding and is planning to have close to 200 sales and support staff by mid-2015. However, it partners with around 200 resellers internationally and 700 in U.S.

## Ipanema Technologies

Ipanema's WOC capabilities are delivered through the vendor's wide range of nano|engine and ip|engine appliances, which are available as both physical and virtual appliances and can operate in symmetrical and asymmetrical configurations. Ipanema also has introduced the tele|engine monitoring and application control agent, the nano|engine appliances for very small branch offices, and a SoftWOC. Ipanema has a strong vision and strategy toward application performance control in a hybrid WAN with highly distributed endpoints, such as internal data centers, branch offices, external cloud services, and remote and mobile users. Ipanema integrates per-connection dynamic path selection support for hybrid WANs, as well as single-ended asymmetric link load balancing for Internet access, and Ipanema has partnered with Zscaler for secure Web gateway services. Consider Ipanema for all branch-office-to-data-center or cloud/SaaS WAN optimization, particularly when sophisticated application-based point-to-multipoint or any-to-any QoS-based (for example, unified communications and collaboration) and Internet/VPN hybrid WANs are important.

### Strengths

Ipanema supports a unique policy-driven solution based on application performance, SLA configuration and enforcement, integrating application visibility and reporting, dynamic per-flow or per-packet control, WAN path selection, direct access to Internet and WAN optimization in a single, centrally managed system.

Ipanema products are available as managed services from many leading network service providers, such as BT and Orange Business Services, and for direct enterprise purchase via system integrators.

Ipanema has introduced application traffic classification and control for all types of unified communications and collaboration (UCC) flows (signaling, chat and presence, screen and document sharing, voice, and video) for several vendors, including Microsoft Lync and Polycom.

The Salsa management platform has proven scalability and robustness in very large single-tenant and multitenant managed service deployments.

### Cautions

The product does not yet support stream splitting for live video or caching/streaming for video on demand.

Ipanema does not support application-protocol-specific optimization, except for UCC and CIFS traffic.

Ipanema's two entry-level branch office devices, nano|2 and nano|5, are targeted at visibility, traffic control and WAN path selection, and they do not support WAN optimization functionality.

Ipanema currently has no support for IPsec tunneling to secure paths and direct to Internet for cloud services connectivity, although this is planned for 3Q15.

Ipanema's sales and support coverage of the U.S. market is weaker than that of leading vendors in this report; however, it will double its head count in the U.S. during 2015.

## NTT Communications

Having completed the integration of Virtela into the NTT global network, NTT is one of the first network service providers to provide a range of virtualized services from within its network, such as firewalls, IP VPN, intrusion prevention system (IPS), URL filtering and WAN optimization. This is based on a network function virtualization (NFV) solution deployed in 50-plus globally distributed local cloud networking centers. NTT has a good vision for its service and plans to expand to over 100 local cloud networking centers, including penetrating into emerging markets like China and India. An orchestration platform enables service activation in near real time and via self-service (enabling pay-as-you-go WAN optimization on demand in the cloud). As a managed service provider, NTT extends cloud-based WAN optimization with on-site deployed appliances when needed. Consider NTT when you want to outsource your entire WAN, including the upper-layer services such as WAN optimization, with the flexibility of both on-site and in-the-network delivered services.

### Strengths

NTT offers a fully managed end-to-end WAN service with in-the-cloud services, as well as an on-premises managed service. The on-premises service includes dedicated appliances and virtual appliances that run on standard servers or virtual machines or are integrated into routers.

Enterprises have a choice of several WAN optimization vendors integrated on the NTT platform for both cloud-based optimization and managed services.

The NTT's Cloud Software Defined Networking (SDN) orchestration platform has been integrated with the Universal One portal. This enables enterprises to create and instantly activate new functions — such as firewall, intrusion prevention, URL filtering, IPsec gateway and WAN optimization — for a specific branch office.

The cloud-based service is fully on-demand with no long-term contracts and a flexible pricing with hourly, weekly or monthly price options available.

### Cautions

In order to get best application performance optimization, enterprises must ensure that their branch offices have low latency (25 ms or less) connectivity to the nearest NTT POP or consider using NTT's customer premises equipment (CPE)-based service offering.

NTT partners with WOC vendors for significant parts of its road map and product development.

The NTT Universal One portal reporting function is not as granular or application-specific as those of leading vendors.

In order to use NTT's in-the-cloud services, such as WAN optimization as a service, enterprises must also subscribe to NTT's managed WAN services.

## Riverbed

Riverbed continues to lead the WOC market with the broadest capabilities in WAN optimization, network and application performance monitoring, protocol analysis, remote server restoration, and remote storage acceleration. In December 2014, Riverbed was acquired by Thoma Bravo, the same private equity firm that took Blue Coat private in 2012. Riverbed and Blue Coat have different boards of directors, and the businesses should follow independent strategies. However, enterprises should seek confirmation of product road map details to ensure new features that are critical to their deployments are included. Riverbed supports a broad range of physical and virtual appliances, a subscription-based appliance, a mobile client and a high-capacity appliance for DC-to-DC. Since 2013, Riverbed's strategic goal has been to provide a closed-loop system for optimization, visibility and control across the entire enterprise, leading to an evolutionary approach to product enhancements and fewer new and innovative enhancements. Enhancements in 2014 included integration across all products into the Riverbed Application Performance Platform, which now combines SteelHead for WAN optimization, SteelFusion for branch office converged infrastructure, SteelCentral for performance monitoring and SteelScript for open APIs. Consider Riverbed for all enterprise WAN optimization projects.

### Strengths

Riverbed offers the broadest set of capabilities in the industry, including features for large branch office networks, data center replication and storage networking protocols, and single remote users.

Riverbed's SteelFusion appliance offers unique capabilities, allowing applications to remain distributed while storage is centralized.

The combination of SteelHead and SteelCentral AppResponse provides very good visibility and reporting capabilities for drill-down reporting across networks, servers, applications, Web apps, pages, objects, sites and users (including end-user experience).

The new Secure Transport feature supports an IPsec-encrypted overlay mesh network, and a partnership with Zscaler provides the ability to scan optimized traffic for security purposes before going to the cloud.

### Cautions

Riverbed's price can be significantly higher than its leading competitors, and although it does respond when competitively challenged, its discount policies can be inflexible and inconsistent.

Riverbed's portfolio has become extensive, with six product ranges and multiple products within each range, which can make it difficult to understand how to meet functional needs in a cost-efficient manner.

Riverbed has been slow to embrace hybrid WANs, and its WAN path selection capabilities are rudimentary; they lack link quality assessment and performance-based forwarding capabilities, although these capabilities are planned for 4Q15.

Gartner clients have reported that the solution can be difficult to manage in complex application environments, which can lead to misconfiguration and degraded application performance. However, Riverbed is adding autoconfiguration capabilities, and support is generally very responsive and highly rated by Gartner clients.

## Sangfor

Sangfor's appliance range continues to expand and now supports appliances from a small 4 Mbps branch office appliance to a 2.5 Gbps throughput appliance, as well as a full-featured virtual appliance. However, Sangfor has a more limited market vision than leading vendors. Its key market focus and product evolution is based on the needs of the Chinese market. The Sangfor WANO range supports functionality, such as compression and caching, as well as TCP, UDP, HTTP/HTTPS, MAPI/encrypted MAPI (EMAPI), CIFS, ICA support for proxy optimization on Oracle TNS, Microsoft Exchange Server synchronization, Outlook Anywhere, and QoS features. Sangfor is gradually increasing its presence outside of China and establishing offices in several Asian countries, where it is taking advantage of its established security channel partners. The Sangfor WANO is a good choice for price-sensitive enterprises in Asia seeking branch-office-to-data-center or cloud WAN optimization.

### Strengths

Sangfor WANO supports a broad range of commonly used WAN optimization features.

The Sangfor WANO supports local Web and file caching, firewall functionality, good application and



URL classification and control, IP VPN termination, and link load balancing, making it an ideal "all in one box" solution for branch offices that use direct Internet access, particularly connecting to cloud services.

Sangfor is a strong and well-established vendor in the Chinese market.

### Cautions

There is limited application-protocol-specific optimization, and there is no support for dedicated video caching or video stream splitting.

Only a small percentage of Sangfor's revenue currently comes from sales outside of China, and enterprises should be cautious about experience and capabilities outside of China. However, Sangfor is expanding presence in the U.S. with its own support staff and partners.

Sangfor does not support a mobile client and does not support WAN path control.

Sangfor currently only partners with a few Chinese service providers.

### Silver Peak

Silver Peak has aggressively championed virtual-appliance-based solutions in both the data center and branch office, with a wide range of virtual appliance configurations for flexible deployment models. However, Silver Peak also offers a wide range of physical appliances, from a small branch office appliance to a high-capacity data center appliance. Silver Peak is maintaining its leadership position in the data-center-to-data-center segment, but continues to expand a comprehensive solution for the branch-office-to-data-center WOC segment. Its WAN path control solution now offers a comprehensive hybrid WAN (SD-WAN) that includes meshed tunneling overlay with path conditioning, multipath WAN control, and optimization for both external SaaS and internal enterprise applications via the Unity fabric and distributed WAN edge devices. The new Unity solution includes the innovative Cloud Intelligence and Advanced Exterior WAN routing, which optimizes external SaaS applications and monitors and maintains performance metrics for more than 30 SaaS services. Consider Silver Peak for all mainstream branch office optimization needs and, in particular, for all data center replication projects.

### Strengths

Silver Peak offers a very strong solution for optimizing data center storage replication, with segment-leading products and good strategic alliances with data center infrastructure companies, such as VMware, EMC, Hitachi and Dell.

Silver Peak has combined products, price, packaging and tailored deployment models to allow storage administrators to deploy WAN optimization specifically for remote replication workloads without a requirement to reconfigure the routed network.

The company has a large portfolio of appliances, with flexibility in deployment options (hardware and virtual appliances) and pricing (subscription, perpetual and pay as you grow) with options to convert licenses for free.

Silver Peak's dual-ended path selection features link quality assessment and remediation as well as topology awareness. It supports single-ended link load balancing for direct Internet access from branch offices, including IPsec tunneling.

### Cautions

Silver Peak support of traffic identification, classification and visibility is less granular than segment-leading vendors.

Silver Peak still lacks SoftWOC capabilities for mobile users, but its strategy is to use WAN optimization distributed in the WAN via its Unity fabric to address this requirement.

The company's video-on-demand support does not provide specific video format caching or support of remote streaming to offload the origin server, although it does incorporate stream splitting and remote office format-independent file caching to offload the network.

As it continues to focus on its network-based application optimization approach, Silver Peak offers fewer application-protocol-specific optimizations than other leading vendors.

Silver Peak does not have any service provider partners, but a new organization has been created with the aim of establishing service provider partnerships.

## Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants and MarketScopes as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant or MarketScope may change over time. A vendor's appearance in a Magic Quadrant or MarketScope one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

### Added

NTT Communications has been added because it acquired Virtela.

## Dropped

Virtela has been dropped because it was acquired and integrated by NTT.

## Inclusion and Exclusion Criteria

Inclusion criteria are used to determine which vendors will be covered in this research. To qualify for inclusion in Gartner's "Magic Quadrant for WAN Optimization," vendors must meet all of the following criteria:

- Have WAN optimization products or services in general availability and actively sold.
- Deliver WAN optimization solutions to the enterprise market in at least three regions out of North America, South America, Europe, Asia/Pacific and Africa.
- Achieve a minimum of \$10 million in WAN optimization product revenue or \$3 million revenue in ongoing WAN optimization service fees during the past four quarters.
- Must offer more than just managed on-premises WAN optimization based on another vendor's technology. However, the service may include network-based WAN optimization capabilities that use technology supplied by third parties.

## Evaluation Criteria

### Ability to Execute

Gartner analysts evaluate providers on the quality and efficacy of the processes, systems, methods or procedures that enable IT provider performance to be competitive, efficient and effective, and to positively impact revenue, retention and reputation. Ultimately, providers are judged on their ability and success in capitalizing on their vision.

**Product/Service:** This criterion evaluates the vendor's execution on its product road map and product enhancements. This includes evaluating the comprehensiveness of the overall WAN optimization portfolio, including the ability to deliver capabilities in each of four broad categories:

- Bandwidth reduction capabilities, including compression, caching and/or data deduplication
- Generic protocol acceleration (for TCP or HTTP, for example)
- Application-protocol-specific optimization features, such as acceleration of the CIFS file-sharing protocol
- Network traffic management capabilities, such as prioritization, classification, policy enforcement, traffic shaping, monitoring and reporting, hybrid WAN, WAN virtualization, link load balancing, and direct Internet access

Gartner also evaluated each provider's ability to support a range of deployment scenarios, such as data center to data center, small to large branch offices, virtualized solutions, cloud delivery, mobile solutions and evolving symmetric solutions from "hub and spoke" to "meshed" topologies.

**Overall Viability (Business Unit, Financial, Strategy, Organization):** This criterion looks at a vendor's investments in the WAN optimization market, the vendor's financial investments and capabilities, and its long-term viability.

**Sales Execution/Pricing:** This includes capabilities in all presales activities and the structure that supports them. This includes deal management, prices and negotiation, presales support, and the overall effectiveness of the sales channel. For the WAN optimization market, the sales execution subcriteria is more highly rated than the pricing subcriteria.

**Marketing Execution:** This criterion is defined as the clarity, quality, creativity and efficacy of programs designed to deliver the organization's message in order to influence the market, promote the brand and business, increase awareness of products, and establish a positive positioning of the vendor's solutions. For example, is the WAN optimization vendor perceived as being strong only in a specific solution, such as data center to data center or traffic management and reporting, or is the vendor perceived as viable across the complete solution spectrum?

**Customer Experience:** This includes relationships, products and services/programs that enable clients to be successful with the WAN optimization products they purchase. Specifically, this includes the ways customers receive technical support and account support, and in particular, we consider the WAN optimization vendor's global installation and global support capabilities. This extends to considerations such as the WAN optimization product's ease of use, ancillary tools, customer support programs (and their quality) and availability of user groups. We place emphasis on the vendor's customer references and Gartner clients' experience with the vendor.

The following evaluation criteria have not been used:

- Market Responsiveness and Track Record are evaluated under Marketing Execution.
- Operations are evaluated under Overall Viability.

**Table 1. Ability to Execute Evaluation Criteria**

Evaluation Criteria	Weighting
Product or Service	High
Overall Viability	Medium
Sales Execution/Pricing	Medium
Market Responsiveness/Record	Not Rated
Marketing Execution	High
Customer Experience	High
Operations	Not Rated

Source: Gartner (March 2015)

### Completeness of Vision

Gartner analysts evaluate technology suppliers on their ability to convincingly articulate logical statements about current and future market direction, innovation, customer needs and competitive forces and how well they map to Gartner's position. Ultimately, we rate Magic Quadrant participants on their understanding of how market forces can be exploited to create opportunity for the provider.

**Market Understanding:** This criterion is defined as the ability to understand buyers' needs and to translate those needs into products and services. We evaluate how the WAN optimization vendors respond to changing customer needs around cloud services, mobile solutions, small branch office solutions, emerging application architectures and evolving charging options. We also expect to see a consistent track record of feature enhancements together with a sound product road map.

**Marketing Strategy:** Marketing strategy involves a clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements. For example, is the WAN optimization vendor focusing on a specific solution, such as data center to data center or traffic management and reporting, or is the vendor focusing on the complete solution spectrum?

**Sales Strategy:** This criterion entails the strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communications affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base. We will evaluate WAN optimization vendors' global distribution strategies, and we expect each vendor's vision to address the increasing importance of managed WAN optimization services.

**Business Model:** The soundness and logic of a technology provider's underlying business proposition.

**Innovation:** Innovation describes direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes. WAN optimization vendors with a track record of responding to market needs with early introduction of new features and capabilities will be highly rated. As well as feature innovation, we expect to see innovation in the scope of product offering (for instance, breadth of product range, including offering data center, branch and remote access products), in high-availability options, and in manageability and maintainability.

**Geographic Strategy:** This criterion entails the technology provider's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries, as appropriate for that geography and market. For the WAN optimization market, we expect to see a sales and support strategy that recognizes the global nature of many user organizations' WAN optimization needs.

The following evaluation criteria have not been used:

- Offering (Product) Strategy is covered under Market Understanding and Innovation.
- Vertical/Industry Strategy

**Table 2. Completeness of Vision Evaluation Criteria**

Evaluation Criteria	Weighting
Market Understanding	High

Marketing Strategy	Medium
Sales Strategy	Medium
Offering (Product) Strategy	No Rating
Business Model	Medium
Vertical/Industry Strategy	No Rating
Innovation	High
Geographic Strategy	Medium

Source: Gartner (March 2015)

## Quadrant Descriptions

### Leaders

Leaders exhibit an ability to shape the market by introducing additional capabilities in their product offerings and by raising awareness of the importance of these features. We expect a Leader to grow the market as a whole and to have solutions that resonate with an increasing number of enterprises. Leaders in the WOC market must have a broad feature set, including QoS, generic compression, protocol acceleration and file system acceleration, with the majority of features proved in substantial real-world implementations. They also must offer sales and support on a global basis.

### Challengers

A Challenger in this market is a follower from a product or innovation perspective, but it has demonstrated the ability to take its products into the market and to show its relevance to a wide audience. Challengers may have less complete feature sets than Leaders, or they may have new products that are as yet unproved in substantial real-world implementations.

### Visionaries

Visionaries need to address the whole market and must exhibit strong market understanding and innovation. They can be pointers to the market's future. However, they currently lack the ability to influence a large portion of the market and have yet to expand their sales and support capabilities globally. In addition, they may have new products that are as yet unproved in substantial real-world implementations, or they may lack the funds to execute with the same capabilities as a vendor in the Leaders quadrant.

### Niche Players

Niche Players provide a more limited set of capabilities, and they have not demonstrated enough vision or focused execution to warrant a stronger position in our analysis. They may be indicative of emerging requirements and features. Niche Players may have yet to expand their sales and support capabilities globally. Additionally, they may have new products that are as yet unproved in substantial real-world implementations, or they may lack the funds to execute with the same capabilities as a vendor in the Leaders quadrant.

## Context

The WAN optimization market remains dynamic, gradually integrating other functionality, such as WAN path controllers (WPCs), while itself transforming so that WAN optimization can be delivered as a cloud service. New solutions are arising to support cloud services, including SaaS and infrastructure as a service (IaaS) deployments, and allow broader support for virtual WAN optimization. As their application environments become more distributed, enterprises should look beyond traditional appliance models as their application environments become more distributed. We still observe a highly differentiated range of capabilities and optimization effectiveness, so enterprises should continue to do proofs of concept on real-world traffic to test the effectiveness of possible solutions. Because the WAN optimization market continues to expand and evolve, Gartner expects further consolidation over the next 24 months.

## Market Overview

WAN optimization is about improving the performance of business applications over WAN connections. This means matching the allocation of WAN resources to business needs and deploying the optimization techniques that deliver measurable business benefits.

WAN optimization is a \$1.1 billion market, and we estimate a revenue compound annual growth rate (CAGR) of 2% and unit shipment growth of 12% through 2018 (see "Forecast: Enterprise Network Equipment by Market Segment, Worldwide, 2011-2018, 4Q14 Update"). Unit shipment is growing in several areas: virtual WOCs, integrated solutions, data center to data center and mobile SoftWOCs. Riverbed is the revenue leader with 50% market share, and Cisco is No. 2 with 16% (see "Market Share: Enterprise Network Equipment by Market Segment, Worldwide, 3Q14"). Beyond that, there is a degree of fragmentation because no single vendor accounts for more than 10% and there are multiple

vendors that account for 4% to 10% of share. Thus, we anticipate further market consolidation within the next 24 months.

Most networks carry a variety of application traffic types of differing characteristics and importance. Many organizations are striving to manage this traffic to optimize the response times of critical applications and to reduce costs, given that bandwidth continues to represent a significant proportion of operating expenditure for wide-area data networks. Different types of traffic and IT architecture present both difficulties and opportunities for improving the response times of essential applications. For example:

Traffic that isn't response-time sensitive (such as email, data backup and personal Web access) can swamp WAN links, leading to slow response times for business-critical applications.

Applications that make extensive use of dynamic content, such as Microsoft SharePoint, can swamp WAN links, while delivering poor application response times.

Global centralization of branch office servers and data centers can expose latency-sensitive protocols, again leading to slow response times.

Public cloud services often introduce additional latency, which degrades application response times.

File transfers, OS patch distribution and similar applications, such as the delivery of training videos, can quickly saturate WANs.

Repeated transmissions of the same, or similar, files, objects or data patterns can create opportunities for data compression and caching.

Growing use of live or on-demand video streaming has become a concern for most enterprises, where significant volumes of video traffic saturate local access links.

Dynamic multipoint unified communications and collaboration video sessions can saturate edge network nodes without passing through the data center, making visibility and control very difficult to achieve.

Because enterprises continue to demand improved performance of their applications, WAN optimization solutions keep evolving with improved and increasingly granular application optimization and visibility capabilities. This Magic Quadrant reviews vendors that address the common need to make more efficient and effective use of wide-area connections, regardless of the type of traffic or application.

Although the predominant need still is to optimize the connection between users (both in remote branch locations and single remote users) and centralized IT resources, we also see the continued need to optimize data replication between data centers, and we are seeing early signs of the need to optimize traffic to mobile devices, including tablets and smartphones, and to access externally hosted applications (in the cloud).

The development of the application acceleration market has been driven by customer demand for highly integrated solutions that employ a wide range of techniques to optimize network traffic and that offer scalability and fault tolerance. Vendors in this space initially addressed either the traffic shaping/QoS market or the compression/caching market. These two segments have now largely merged, with most products supporting both sets of capabilities. Increasingly, the combination of application visibility/QoS and latency mitigation is required to achieve acceptable application performance. We therefore see a need for application identification/control and both generic and application-specific optimizations to mitigate the impact of network latency on remote application performance.

While the traditional deployment model has involved internally installed appliances managed by the enterprise IT staff, we are seeing significant changes in the deployment models made available from vendors and providers, as well as new WAN architectures:

In branch offices, the capabilities of WOCs now support serverless branch operations, also described as branch office boxes (BOBs). Customers often need to maintain one or two key applications in the branch. BOBs are now leveraging hypervisor or OS capabilities to host one or more applications on the BOB hardware.

An alternative offered by most vendors is to install a virtualized WOC in a server at the branch. That server can then run the virtualized WOC along with other virtualized appliances. An advantage is the availability of a standard virtualization environment at the branch and easier replacement of the hardware if there's a failure. However, integration of the branch server can be complex, and hardware bypass network interface cards (NICs) for a fail-to-wire operation may not be available for a particular hypervisor.

Virtual WOCs are also being loaded into clouds and used to accelerate cloud-based applications. These deployment models will evolve significantly under the influence of software-defined networking (SDN) and NFV.

There is increasing interest in SoftWOC clients for mobile devices, such as smartphones and tablets, but adoption is still limited.

Optimization of SaaS applications, such as Office 365, is a key trend that is moving WAN optimization into external data centers or into services from providers such as Aryaka, NTT or Akamai.

Access to cloud-based applications increasingly makes use of direct access to the Internet from the branch office to reduce latency. This approach often integrates a cloud-based SWG service.

We have seen leading network service providers incorporating WOC appliances — especially from Cisco, Ipanema and Riverbed — in their managed network service portfolio. We are also seeing network service providers expand these solutions to include router-based WAN optimization and WAN-embedded WAN optimization. Alternative delivery models, such as cloud-based solutions or cloud/premises-based hybrid solutions, are generating interest in managed service providers such as Aryaka and NTT and in the Riverbed/Akamai or Cisco/Akamai joint offering.

There remains a focus on security — including the acceleration of encrypted protocols such as HTTPS and the security of data stored on WOC systems — as well as secure access to off-premises applications. Ensure that your vendor provides timely support for new versions of applications and protocols and that data in flight and at rest in the appliance is protected by strong encryption. Some vendors can decrypt HVD traffic to provide QoS for interactive versus print and file transfer traffic. In some cases, cross-session compression/deduplication and caching are performed. Other vendors provide QoS only for the encrypted streams, in some cases with guaranteed in-order delivery of packets.

As basic acceleration capabilities mature, we see a resurgence of enterprise client interest in visibility and control, both as a means to assure WOC effectiveness and as a bandwidth/response-time planning tool. Providing advanced traffic management capabilities for application and user performance measurement and SLA reporting are key emerging requirements for WOC equipment.

As WAN optimization appliances increasingly include WAN path control and local link load balancing capabilities, these products are morphing into SD-WAN solutions.

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