

# Magic Quadrant for WAN Optimization

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Network managers are building hybrid networks to address increased cloud adoption and now see WAN optimization as just one feature needed for WAN designs. Vendors are responding by adding functionality that supports hybrid WAN, while carriers are embedding WAN optimization in the WAN infrastructure.

## Market Definition/Description

Gartner defines the WAN optimization market as solutions that improve the performance of applications running across the WAN as well as reduce WAN service expenses. The range and scope of features supported by WAN optimization solutions continue to evolve, and now support four high-level needs:

1. Improve the response times as experienced by users of business-critical applications over WAN links or mobile connections.
2. Assist in maximizing the ROI for WAN bandwidth, and delay bandwidth upgrades.
3. Optimize data-center-to-data-center traffic for faster storage replication and synchronization.
4. Assist in directing application traffic across multiple WANs, such as a hybrid WAN or public cloud connectivity.

In support of these needs, WAN optimization solutions are now evolving to include the following functionality:

- Protocol- and application-specific optimization, to minimize the effects of network latency
- Compressing, deduplicating or content caching to reduce the bandwidth required to transfer traffic across a WAN, as well as 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 MPLS for cost control

- Direct internet access from branch offices to enable traffic forwarding to public cloud services, while still controlling traffic forwarding to privately deployed applications

WAN optimization is deployed 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. This can be done in three different ways:

1. In-house via physical or virtual appliances deployed in branch offices and data centers.
2. For mobile or remote users, WAN optimization can be deployed as a soft client (that is, a software-based WAN optimization controller [SoftWOC]) that runs on individual user devices and communicates with a central appliance.
3. WAN optimization can also be delivered as a network-based "WAN optimization as a service." These 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.

## What Has Changed?

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While the primary focus of WAN optimization solutions is to improve application performance across the WAN, we now see enterprise network leaders moving their WAN strategies toward new WAN architectures:

- Hybrid WAN architectures, especially MPLS and internet hybrids, have become the de facto design, driven by the need to directly access applications residing in external clouds and to reduce expenses by offloading traffic to the internet from the corporate WAN, which typically employs MPLS. As a consequence, demand for WAN optimization as stand-alone products is declining, and instead is shifting to become a part of a solution that creates more efficient hybrid enterprise WAN. In support of this, we see inclusion of WAN path selection, direct internet connectivity and evolving support of software-defined WAN (SD-WAN) functionality.
- For enterprises seeking in-house deployments, this SD-WAN functionality is becoming one of three integrated functions in a single WAN edge appliance that also includes WAN optimization and internet security.
- We are also seeing growing enterprise demand for virtualized solutions due to their improved economics as well as increased agility. Virtualized solutions can be deployed either within the enterprise or as network function virtualization (NFV) deployed within the carrier's WAN infrastructure as part of its emerging NFV solutions.

# Magic Quadrant

Figure 1. Magic Quadrant for WAN Optimization



Source: Gartner (May 2016)

## Vendor Strengths and Cautions

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### Array Networks

Array is headquartered in Milpitas, California. The company offers a range of application delivery solutions in addition to WAN optimization, like application delivery controllers (ADCs), SSL VPN access gateways and web application firewalls. Array offers a 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). Array has focused on improving ease of use and centralized management with its aCelera Configuration Management System. Array provides cost-competitive products for common optimization requirements, and can be a single supplier for comprehensive application delivery solutions. Array should be considered particularly for deployments in India and China, where it has a significant presence and a technical support center.

### 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.
- Array can deliver an end-to-end application networking solution via WAN optimization, ADCs, SSL VPN access gateways and web application firewalls.
- Array offers up to 100GB local cache storage in its branch office device, as well as a centrally located networkwide image of all caching.
- Array Networks provides a storage backup/replication solution, which is bundled with Hitachi Data Systems for a strong solution targeted at the Indian market. In addition, it also supports a broad range of storage vendors, including Dell EqualLogic, Compellent, EMC and NetApp.

### Cautions

- Array does not support traffic management and WAN path control features for hybrid WAN or SD-WAN, and it does not support direct internet access.
- 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.
- Array lacks application-specific protocol optimization, User Datagram Protocol (UDP), video content and asymmetric web browser optimization.
- Support of visibility and reporting are not yet on par with leading vendors.

## Aryaka

Aryaka is headquartered in Milpitas, California. It was one of the first to embed functionality 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; and it is now also deploying POPs via partners such as KT (formerly Korea Telecom), which has added three new POPs. These POPs create Aryaka's core WAN network that is used for global connectivity. Aryaka also offers 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 via the MyAryaka portal. As such, traffic is optimized between Aryaka's globally distributed core POPs without the use of on-site appliances or mobile SoftWOCs. For situations in which the last mile limits application performance, Aryaka provides its own customer premises equipment (CPE) appliance, the Aryaka Network Access Point (ANAP). During 2015, Aryaka significantly enhanced the ANAP appliance, with two feature options: Smart Link, which offers WAN path control, load balancing, forward error correction and compression; and Smart Edge, which offers firewall, IPsec, network address translation (NAT), QoS, RIP and WAN path control. Aryaka has also introduced a last-mile management service that monitors issues across the last mile. Consider Aryaka for globally distributed networks where in-house router management is available, 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.
- The updated ANAP appliance now also supports secure direct internet access and hybrid WAN design.
- The ANAP appliance is offered without any additional fees as part of Aryaka's network as a service — including the Smart Link and Smart Edge features — delivering end-to-end WAN optimization.
- 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.

### Cautions

- The Aryaka offering does not include local access service, so enterprises must source all WAN access services connecting into Aryaka's network. These additional costs must be incorporated into an enterprise's cost comparison with a traditional managed WAN service.
- While Aryaka supports a hybrid WAN solution, it only supports basic RIP routing for its SD-WAN capabilities and WAN router replacement.
- Aryaka does not have a virtual appliance nor a mobile SoftWOC; however, mobile connections can be terminated in an Aryaka POP for network-based optimization.

- The Aryaka on-site appliance supports fewer application-specific proxies than leading vendors; also, it does not support dedicated data-center-to-data-center storage replication or caching/streaming for video on demand.

## Blue Coat

Blue Coat Systems is headquartered in Sunnyvale, California. It remains the fourth-largest WAN optimization vendor with a revenue share of 5.9% of the market, despite a 2015 revenue decline of 8.2% for its WAN optimization products according to Gartner Market Statistics. Blue Coat's strategy is a strong solution focus for secure asymmetric internet connectivity to cloud services and other internet-located content. Blue Coat's enterprise WAN optimization solution consists of two separate appliances: the MACH5 for application protocol optimization, deduplication, compression, content caching and video streaming optimization; and the PacketShaper for visibility, traffic classification and QoS. Both the MACH5 and PacketShaper products comprise a broad range of physical and virtual appliances and a SoftWOC called ProxyClient. MACH5 runs on the vendor's range of ProxySG appliances, which can also support Blue Coat's secure web gateway (SWG) software. ProxySG/MACH5 and PacketShaper have been integrated onto the same the Blue Coat common operating environment, operating on common hardware platforms and integrated into Blue Coat Management Center; however, they have not been commercially integrated on one appliance. Consider Blue Coat MACH5 for branch-office-to-data-center optimization, when direct internet access to SaaS providers is a priority. Consider PacketShaper when 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 2,025 channel partners distributed across all key regions of the world.

## Cautions

- Blue Coat's corporate strategy and marketing is dominated by security, which according to Gartner client inquiries continues to cause confusion and uncertainty among enterprises evaluating WAN optimization concerning the company's commitment to and focus on WAN optimization.

- Blue Coat does not have any focus on hybrid WAN or SD-WAN solutions, and only supports some WAN path control capabilities.
- MACH5 and PacketShaper have not yet been integrated and productized onto one appliance.
- Blue Coat's MACH5 has limited support for application-protocol-specific optimization and no specific storage protocol optimization, making it less suitable for data-center-to-data-center storage replication than competitors.

## Circadence

Circadence is headquartered in Boulder, Colorado. Circadence is focused on optimization for mobile connections and has developed extensive capabilities to optimize mobile traffic (3G and 4G), reduce loss, manage QoS, manage unreliable connections and improve link utilization. Circadence's MVO 1200 WAN Optimization Suite consists of integrated server-based appliances as well as the Virtual MVO product (which is available on a range of hypervisors). A SoftWOC is also available as Circadence MVO for Windows and Linux, and Circadence MVO Mobile for Android, Apple iOS and Microsoft Windows Mobile. The MVO appliances support a good range of commonly used WAN optimization features, such as compression, web caching, TCP and HTTP optimization. Consider Circadence SoftWOC when mobile application performance is critical to the business, and when support for a broad array of personal devices is required, 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 demonstrated scalability to support very large deployments.

## Cautions

- Circadence currently has no focus on enabling WAN architectures such as direct internet access, hybrid WAN or SD-WAN, and it does not support functionality such as link load balancing, link bonding, WAN path control, NAT or firewall features.
- Circadence lacks data-center-to-data-center-specific capabilities, has limited dedicated video optimization and application-specific acceleration capabilities, and no video caching.
- Circadence has limited support for visibility and reporting, and support for traffic discovery and traffic control capabilities are not as extensive 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 is headquartered in San Jose, California. It remains the second largest WAN optimization vendor with a revenue share of the market increasing in 2015 to 19.9%, and, according to Gartner Market Statistics, it is the only vendor with a 2015 revenue increase of 18.3%, driven by its router integrated solution. Cisco has a wide portfolio of WAN optimization products, including its Wide Area Application Services (WAAS), which is available in a dedicated appliance (Cisco Wide Area Application Virtualization Engine [WAVE]), and as router-hosted and software form factors. Cisco also offers a simplified version called WAAS Express, running as part of its router operating system, and a partnership with Akamai for a web cache that can be implemented as software on Cisco routers. While continuing to enhance WAAS with additional application optimizations, Cisco is placing the greatest emphasis on the virtualization of its WAN optimization capabilities, making them a key component of its Intelligent WAN (IWAN) solution and recently launched Enterprise Network Functions Virtualization (NFV) initiatives. The goal is to give enterprises more options for deploying WAAS on physical or virtual appliances or embedded in cloud services, and to simplify management via central policy management tools, such as its WAAS app on the Application Policy Infrastructure Controller Enterprise Module (APIC-EM) policy management platform. Consider Cisco WAAS for all branch-office WAN optimization deployments especially when the branch office routers need a refresh, and where price and Cisco router integration are primary criteria.

## Strengths

- The integration of Cisco WAAS into Cisco's IWAN platform, which also includes encryption, path control and QoS, creates a complete solution — making it an attractive proposition for Cisco-oriented enterprises.
- The price of WAAS, especially when running on routers, is very attractive as it reduces the total cost of ownership of a complete branch office WAN edge solution, since annual maintenance charges for WAN optimization are included in the router maintenance contract.
- Cisco WAAS is well-positioned to support enterprises' adoption of cloud IT delivery, thanks to the availability of Virtual WAAS (vWAAS) on leading cloud infrastructure-as-a-service platforms, the Akamai web cache and forthcoming single-ended SSL optimization.
- Cisco has strong global distribution and support capabilities for WAAS, including advanced services to assist with design and implementation of WAAS solutions.

## Cautions

- Cisco is placing less emphasis on its dedicated WAVE WAN optimization, with no new models launched in the past 12 months.
- Cisco has abandoned its plans for a new SoftWOC personal WAN optimization client.

- Cisco has yet to develop specific optimizations for data-center-to-data-center protocols such as storage replication and backup.
- Cisco WAAS has limited application visibility and reporting capabilities, instead requiring other elements of the IWAN product set to deliver this functionality, that is Application Visibility and Control (AVC) that includes Network Based Application Recognition (NBAR), NetFlow and Prime.

## Citrix

Citrix is a public company with headquarters in Santa Clara, California and Fort Lauderdale, Florida. It remains the fifth-largest WAN optimization vendor, with a revenue share of 4.6% despite a 2015 revenue decline of 5.1% according to Gartner Market Statistics. Its strategy is an end-to-end application delivery solution ranging from branch office SD-WAN and WAN optimization to application delivery control in the data center. The WAN optimization is offered through its Workspace Delivery Platform, which provides a centrally controlled and integrated set of solutions for hybrid WAN, optimized application delivery and visibility from the branch office to the server. WAN optimization is offered via the CloudBridge platform, which comes in three different editions: the CloudBridge WAN Optimization for bandwidth control and application acceleration; the CloudBridge Virtual WAN for SD-WAN and hybrid WAN; and the CloudBridge Enterprise edition, which integrates WAN optimization and SD-WAN into a single platform. Citrix's CloudBridge offering comprises a broad range of physical appliances, from small branch offices to large data centers, which can be used for both SD-WAN and WAN optimization and can provide an optional integrated Windows server. Its solution includes a tool for planning, configuration, troubleshooting and proactive management. Consider Citrix for branch-office-to-data-center WAN optimization when VoIP, multimedia or strong Independent Computing Architecture (ICA) acceleration is needed, and when a comprehensive SD-WAN solution is needed.

## Strengths

- Citrix supports broad WAN optimization capabilities, as well as good application classification and strong SD-WAN capabilities, including a network-as-a-service solution managed from the cloud.
- Citrix has a strong cloud-focused WAN optimization offering, including direct internet access with basic firewall, IP VPN, SSL proxy and a virtual appliance sold through cloud providers.
- Citrix has a strong offering for session-based ICA acceleration, and provides detailed application analytics with Insight Center.
- Citrix offers one of the best video optimization solutions of the evaluated vendors, including video stream splitting, video caching of multiple formats, content repositioning into cache and playback format optimized to the capabilities of the device.

## Cautions

- A main percentage of WAN optimization is sold as an attachment to Citrix's XenDesktop, but WAN optimization is getting more attention from Citrix's direct and indirect sales forces, and is now seeing increased sale of broader stand-alone WAN optimization solutions.
- 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's direct internet access solutions do not include asymmetric optimization, except for video caching. Currently, there is no web caching, but enhancements are planned for 2Q16.
- Compared to leading vendors, Citrix has few carrier partner for managed services: Expereo and Inmarsat, and Citrix WAN optimization is available as part of NTT Communications' network-based service.

## Exinda

Exinda is headquartered in Boston. Its key strategic focus is on enabling better application experience, and, via the Exinda Network Orchestrator solution, it assists enterprises in operating increasingly diverse and complex networks. This provides enterprises an all-in-one solution for application optimization, bandwidth reduction, traffic control and shaping, detailed reporting, traffic analytics with predictive recommendations, and automated trouble resolution. Also included is Active Directory integration for user-specific policies as well as centrally defined network policies. Exinda offers a wide range of physical appliances, as well as a small branch office appliance, a virtual appliance and a separate mobile solution. While Exinda continues to add enterprise-specific performance enhancements to its portfolio, it also continues to add specific capabilities for its managed service provider partners, leading to more carrier partners and growing sales through these partnerships. New enhancements during 2015 included a refresh of Exinda's hardware platform, more granular application control, improved application analytics, reporting and performance trouble resolution, and the introduction of a central management center for automation of product deployment, configuration and policy management. Consider Exinda for all branch-office-to-data-center needs, 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 can 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 is leading the integration of traffic analytics with trending and predictive recommendations, as well as with automated trouble resolution into a single platform with a single all-inclusive license.

- 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 has grown strong relationships with both network service providers, such as Tata Group, Telefonica and Vodafone, and is offered in a growing number of cloud providers, such as Microsoft Azure and Amazon Web Services (AWS), providing additional sourcing options for its products.

### Cautions

- Exinda currently has no focus on enabling WAN architectures such as hybrid WAN or SD-WAN, and it does not support functionality such as link load balancing, link bonding or WAN path control.
- Exinda does not support direct internet access, IPsec, NAT or firewall features. It does, however, support single-ended caching, filtering and reporting of video and web content.
- Exinda is less suitable than segment-leading vendors for data-center-to-data-center storage replication, but continues to improve its capabilities with a 10 Gbps interface, solid-state drive (SSD)-based storage and reasonable reduction for replication solutions (such as NetApp's SnapMirror) in moderate bandwidth scenarios.
- Exinda is not as evolved as leading providers' solutions for cloud-based deployments, and it needs enhancements, such as tunnel support.

### FatPipe Networks

FatPipe is based in Salt Lake City, Utah, and specializes in the development of technology that provides redundancy, reliability and optimization of enterprise WANs. It originally specialized in WAN router clustering, link load balancing and path selection, and it offers one of the market's most advanced WAN path controllers. FatPipe has enhanced this to an SD-WAN solution with centralized configuration and zero-touch deployment of appliances. FatPipe offers a good range of commonly used WAN optimization features, such as TCP, UDP, SMB, CIFS, ICA and HTTP, as well as compression and up to 1TB SSD storage for caching. Other enhancements during 2015 included enhanced visibility and increased security for hybrid WANs, routing (BGP, OSPF, virtual routing and forwarding [VRF]) and an API for third-party controllers. FatPipe Networks offers a range of physical appliances as well as a virtual appliance, with all functionality deployed on one appliance in three functional license options: FatPipe MPVPN, FatPipe WAN Optimization or a bundle of these two. Consider FatPipe for branch office WAN optimization when seeking an all-in-one integrated appliance for WAN optimization and good WAN path control capabilities.

### Strengths

- FatPipe is one of the leading vendors for WAN link load balancing and WAN path control capabilities for hybrid WAN and SD-WAN solutions.

- 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 into one platform and managed with a single high-level user interface.

### Cautions

- Although it does support all of the most common features, FatPipe's WAN optimization features are more limited than those of the leading providers — for example, there is no MAPI, no storage-protocol-specific optimization, and limited video streaming 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 single-ended internet optimization.
- FatPipe does not focus on data-center-to-data-center storage replication, and has no dedicated solution for this scenario.

### InfoVista (Ipanema Technologies)

Ipanema Technologies was acquired by InfoVista in April 2015, and has now been integrated as the Ipanema product line. After the acquisition, both entities' headquarters have merged in Paris, France. InfoVista's traditional focus has been network performance monitoring and diagnostics tools. The new, combined vision is to develop an integrated solution for orchestration of application and network performance to guarantee business application experience by unifying visibility, application control, dynamic WAN selection and performance degradation troubleshooting into a single solution. Ipanema's WOC capabilities are delivered through the vendor's wide range of nano|engine and ip|engine appliances, as well as the tele|engine monitoring and application control agent, the nano|engine appliances for very small branch offices, and a SoftWOC. During 2015, Ipanema released a virtual appliance portfolio (vip|engine) and is working with a number of carriers (such as BT) on NFV solutions. Ipanema also introduced basic firewall capabilities, IPsec and Generic Routing Encapsulation (GRE) for integration with Zscaler in addition to its SSL proxy. Ipanema has also introduced IpanemaCloud, a SaaS-based consumption model. 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 application-policy-driven solution combining workflows for performance troubleshooting, configuration and reporting.
- Ipanema offers a strong hybrid WAN solution with dynamic per-flow or per-packet control, WAN path selection, link load balancing, direct access to internet, firewall, IPsec and WAN optimization in a single, centrally managed system.

- Both Ipanema and InfoVista have strong and long-lasting carrier relationships with products available as managed services and performance reporting services from many leading network service providers, such as AT&T, BT and Orange Business Services.
- 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 Skype for Business and Polycom.

### Cautions

- While Ipanema supports a strong hybrid WAN solution, it is not an SD-WAN solution because it does not support any type of dynamic routing and cannot replace the WAN router. However, routing support is planned for 1H17.
- Ipanema does not yet support stream splitting for live video or caching/streaming for video on demand.
- Ipanema's two entry-level branch office devices, nano|2 and nano|5, are targeted at visibility, traffic control and WAN path selection for hybrid WAN design; they do not support WAN optimization functionality.
- Ipanema's sales and support organization has expanded via the acquisition. Enterprises buying direct from Ipanema need to consider the ongoing knowledge and experience transfer across the combined workforce.

### NTT Communications

NTT is headquartered in Tokyo. It was one of the first network service providers to offer a range of virtualized services from within its network, such as secure web gateway (firewalls), intrusion prevention system (IPS), URL filtering, IPsec VPN, SSL VPN and WAN optimization. This virtualized service solution is based on an NFV platform deployed in 50 globally distributed local cloud networking centers. 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). The customer portal offers unified on-demand and self-managed provisioning for both NFV platform services and network services. As a managed service provider, NTT extends cloud-based WAN optimization with on-site-deployed appliances when needed. During 2015, the services were extended with a managed hybrid WAN service, as well as direct internet access with IPsec. In addition, NTT has extended the WAN optimization service to in-the-cloud connections to third-party cloud providers such as AWS and Microsoft Azure. Consider NTT when planning to outsource your entire WAN, including the upper-layer services such as WAN optimization, and when you need 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 Cloud Software Defined Networking (SDN) orchestration platform has been integrated with the Universal One customer portal. This enables enterprises to instantly activate new functions — such as firewall, intrusion prevention, URL filtering, IPsec gateway and WAN optimization.
- The cloud-based service is fully on-demand with hourly, daily, weekly, monthly and yearly price options available; and for new customers, NTT offers WAN optimization for free.

### Cautions

- The actual capabilities of the WAN optimization and hybrid WAN service will depend on the WAN optimization vendor chosen for a specific service.
- NTT does not yet offer support for a mobile optimization.
- The NTT Universal One portal reporting function is not as granular or application-specific as those of leading vendors.
- To use NTT's in-the-cloud services, such as WAN optimization as a service, enterprises must either subscribe to NTT's WAN services or use a public internet service.

### Riverbed

Riverbed is headquartered in San Francisco. It continues to lead the WAN optimization market with the broadest set of capabilities and the largest market share at 51.3%, despite a revenue decline of 9.4% according to Gartner Market Statistics. The solution is based on the SteelHead appliance and the SteelCentral Controller. It also offers the SteelFusion appliance, with unique capabilities that allow applications to remain distributed while storage is centralized, and that allow applications to work in disconnect mode. Riverbed's strategic goal is to provide a unified system for optimization, visibility and control for the hybrid enterprise across the WAN, in the cloud and at the edge. This has been leading to an evolutionary approach to product enhancements, and few innovative enhancements. In particular, Riverbed has been slow at recognizing emerging needs to incorporate hybrid WAN and SD-WAN capabilities. Key functional enhancements in 2015 were improving visibility for internet and SaaS content, adding single-ended caching for internet and video content, and updating WAN path control features. In January 2016, Riverbed announced the acquisition of the German company Ocedo, which will allow it to deliver an SD-WAN solution that supports LAN, WAN and cloud under a single management platform. However, the fully integrated solution is not expected to be ready until the end of 2016. 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, single remote users, and optimization to cloud services.
- Riverbed offers a good direct internet solution with IP VPN and single-ended HTTP caching, advanced SSL proxy for public SaaS connectivity, and internet- and SaaS-specific visibility.
- 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 is extensive and has a broad solution scope, with six product ranges and multiple options within each range. However, this can make it difficult to understand how to meet functional needs.
- Riverbed has innovated less in the past 12 months than previously, and has been slow to embrace hybrid and SD-WAN. Its WAN path selection capabilities are more basic than segment-leading vendors.
- 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 very responsive and highly rated by Gartner clients.

## Sangfor

Sangfor is headquartered in Shenzhen, China. Its key market focus and product evolution are based on the needs of the Chinese market. However, Sangfor is gradually increasing its presence outside of China, and establishing offices in several Asian countries as well as the U.S., where it is taking advantage of its already established security channel partners. Its strategic focus is WAN optimization solutions for branch office to data center, with a more limited focus on cloud and hybrid WAN architectures. Besides platform enhancements and operational improvements during 2015, Sangfor also implemented functional enhancements. The Sangfor WAN Optimization (WANO) supports a broad range of 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. The appliance also supports IPsec, SSL proxy, SSL pass-through, firewall capabilities and a secure web

gateway module. 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. The Sangfor WANO is a good choice for price-sensitive enterprises in Asia seeking branch-office-to-data-center WAN optimization, including secure direct internet connectivity with asymmetric optimization in one device.

### 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.
- The Sangfor solution is competitively priced.
- Sangfor is a strong and well-established vendor in the Chinese market.

### Cautions

- Sangfor does not offer any hybrid WAN or SD-WAN solutions, although it does offer basic link load balancing.
- Only around 20% 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, nor WAN path control.
- Compared to leading vendors, Sangfor has a more limited number of carrier partners for managed services.

### Silver Peak

Silver Peak is headquartered in Santa Clara, California. It remains the third-largest WAN optimization vendor, with a revenue share of 9.2% of the market, according to Gartner Market Statistics. It continues to evolve its strategic focus, which is well-aligned with the emerging market requirements for SD-WAN and the blending of SD-WAN and WOC capabilities. This includes a strong focus on data-center-to-data-center storage replication, aggressively championing virtual-appliance-based solutions in both the data center and branch office, and now focusing on a unified WAN optimization and SD-WAN solution to support new integrated WAN architectures. Silver Peak now supports two product lines on a common software base; the traditional WAN optimization via its NX and VX product families, and the SD-WAN Unity EdgeConnect, which also includes the optional Unity Boost for full WAN optimization support. The Unity Orchestrator offers centralized policy-based network orchestration for both product lines. The Silver Peak Unity solution includes the Cloud Intelligence and Advanced Exterior WAN routing, which optimizes external SaaS applications, and monitors and maintains performance metrics for more than 50 SaaS applications. Silver Peak continues to evolve its security capabilities for internet connectivity, and to support meshed IPsec

tunneling, full SSL proxy, enhanced WAN path control, basic NAT and basic firewall screening, and integration with Zscaler. Consider Silver Peak for all branch office optimization needs, data center replication needs, and for hybrid WAN and SD-WAN.

### Strengths

- Silver Peak offers a very strong solution for optimizing data center storage replication, with segment-leading products and good strategic and go-to-market alliances with data center infrastructure companies, such as VMware, EMC, Hitachi and Dell.
- Silver Peak now supports rich traffic management capabilities for hybrid WAN and SD-WAN solutions, ranging from single-ended link load balancing for branch office direct internet access to dual-ended dynamic path control and packet-by-packet link bonding with subsecond failover.
- Silver Peak has introduced an innovative license model where it offers licensing for specific application optimization and licensing based on networkwide bandwidth slicing, in addition to the traditional site-by-site appliance-based licensing.
- The company has a wide range of appliances, from small branch office appliances to large data center appliances, supporting flexibility in deployment options of both physical and virtual appliances.

### Cautions

- While monitoring capabilities continue to become more granular, Silver Peak still needs to improve visibility capabilities and support for end-to-end performance troubleshooting. It plans to release enhanced application visibility and control features by 2Q16.
- Silver Peak still lacks SoftWOC capabilities for mobile users.
- Silver Peak does not support application-specific caching, and asymmetric caching of internet content or video content is not available.
- Silver Peak is in the initial stages of growing its service provider relationships, and while it still needs to introduce multitenant capabilities, it plans to introduce them in 3Q16.

### Vendors Added and Dropped

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We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant 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

InfoVista has been added because it acquired Ipanema.

## Dropped

Ipanema has been dropped because it was acquired by InfoVista.

## Inclusion and Exclusion Criteria

Inclusion criteria are used to determine which vendors will be covered in this research. To qualify for inclusion in this Magic Quadrant, 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 of the following regions: 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 roadmap 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 subcriterion is more highly rated than the pricing subcriterion.

**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' experiences 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 (May 2016)

## 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 roadmap.

**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 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	Not Rated
Business Model	Medium
Vertical/Industry Strategy	Not Rated
Innovation	High
Geographic Strategy	Medium

Source: Gartner (May 2016)

## Quadrant Descriptions

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### 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 as yet are 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 as yet are 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 as yet are 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 also transforming so that WAN optimization can be delivered as a cloud service. As application environments become more distributed, enterprises should look beyond traditional appliance models — 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.

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.

## 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 \$815 million market, and we estimate a revenue compound annual growth rate (CAGR) of  $-2.3\%$ , however, we expect a unit shipment growth of  $12.4\%$  through 2019 (see "Forecast: Enterprise Network Equipment by Market Segment, Worldwide, 2012-2019, 4Q15 Update"). Unit shipment is growing in two specific areas: virtual WOC-based solutions will see a unit shipment growth of  $17.8\%$ , and router integrated solutions will see growth of  $37.6\%$ . The router integrated solutions are driven by Cisco in particular, and the aggressive pricing strategy by Cisco is leading to an overall revenue decline of  $5.8\%$  for these solutions — causing a rapid commoditization of the market. Riverbed remained the revenue leader with  $51.3\%$  market share, and Cisco is No. 2 with  $17.9\%$  (see "Market Share: Enterprise Network Equipment by Market Segment, Worldwide, 4Q15 and 2015"). Beyond that, there is a degree of fragmentation because no other vendor has more than  $10\%$  market share; Silver Peak accounts for  $9.2\%$ , Blue Coat  $5.9\%$ , Citrix  $4.5\%$ , and all other vendors combined at  $11\%$ .

Most wide-area 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 continue to see the continued need to optimize data replication between data centers. We see 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. Two advantages are 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 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 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 hosted virtual desktop (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 for 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.

## Gartner Recommended Reading

*Some documents may not be available as part of your current Gartner subscription.*

"RFP Template for WAN Optimization Controllers"

"How to Pick the Right WAN Optimization Solution for Your Organization"

"The Future of Application Delivery Is (Partly) Cloudy"

"Market Share: Enterprise Network Equipment by Market Segment, Worldwide, 4Q15 and 2015"

"Forecast: Enterprise Network Equipment by Market Segment, Worldwide, 2012-2019, 4Q15 Update"

## "How Markets and Vendors Are Evaluated in Gartner Magic Quadrants"

### 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 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.

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