A Guide to SD-WAN ROI with Riverbed SteelConnect EX

AN ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) WHITE PAPER
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JANUARY 2020

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EXECUTIVE INTRODUCTION

This paper reviews the potential return on investment (ROI) that an enterprise can earn when it implements Riverbed's software-defined WAN (SD-WAN) solution, SteelConnect EX. This ROI analysis examines the financial return on such an investment for 100- and 1,000-branch enterprises. The key benefits of this ROI analysis include the reduced WAN circuit costs associated with the implementation of hybrid and internet-only WAN topologies, the replacement of legacy routers with SD-WAN gateways, improved uptime, and productivity gains within the IT organization. This paper also highlights potential qualitative benefits associated with a migration to Riverbed SteelConnect EX, such as increased bandwidth, enhanced security, and user productivity.

Enterprise Management Associates (EMA) found that a Riverbed investment for a 100-branch company would pay for itself within 4.6 months and return a 3.7x ROI. A Riverbed investment for a 1,000-branch company would pay for itself within 4.3 months and earn a 3.9x ROI.

ROI Analysis Highlights

100-site Enterprise
- 3.7X ROI over 5 years
- 4.6 months payback
- 7-10X increase in capacity

1000-site Enterprise
- 3.9X ROI over 5 years
- 4.3 months payback
- 7-10X increase in capacity

THE PROMISE OF SD-WAN

Why do enterprises invest in SD-WAN? EMA research reveals several business drivers for SD-WAN adoption. First, the technology facilitates affordable increases in WAN capacity. Enterprises have an ever-growing demand for more bandwidth, driven by adoption of internet-based services along with increased use of rich media, video, and real-time collaboration applications. SD-WAN allows enterprises to augment or replace expensive, bandwidth-constrained MPLS circuits with affordable, higher-capacity Internet broadband circuits.

Cloud adoption and user experience are also major business drivers. SD-WAN provides secure and easy-to-implement internet breakouts that provide remote sites with direct access to SaaS and IaaS services, which reduces the latency associated with conventional backhauling of Internet-bound traffic.

Enterprises also seek network agility through SD-WAN. The technology can accelerate the deployment of new sites with zero-touch provisioning. It can also simplify the rollout of new applications and streamline ongoing operations with policy-based automation, which minimizes error-prone configurations and increases uptime. Centralized, policy-based management can replace intensive, device-centric management.

Next, enterprises are seeking to evolve network security with SD-WAN. Its ability to centrally orchestrate services can be applied to native and third-party security services, especially for remote sites that provide direct access to cloud- and Internet-hosted applications.

Finally, SD-WAN can accelerate business strategy by empowering IT staff to be more productive, particularly for enterprises that are pursuing digital transformation. SD-WAN solutions offer centralized management capabilities that allow senior network engineers and architects to apply more time to strategic projects, rather than recurring maintenance and troubleshooting tasks.

EMA research found that SD-WAN solutions deliver positive ROI, and can do so rather quickly. Sixty-five percent of enterprises engaged with SD-WAN expect to earn an ROI with the solution within two years or less. When assembling an ROI analysis for WAN-related investments, enterprises said the most important benefits they target with their analysis are reduced downtime (51%), reduced security risk (47%), and reduced recurring expenses, such as MPLS circuit costs (44%). Many also consider reduced capital expenses (36%) and IT efficiency and productivity enhancements (34%).[1]

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1 EMA, "Wide-Area-Network Transformation: How Enterprises Succeed with Software-Defined WAN," December 2018.

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EMA considered these perceived benefits while building this ROI analysis. This paper will examine the following top-level ROI benefits.

- **Reduced capital expenses and hardware costs**. EMA compared the costs of a Riverbed SD-WAN investment to the cost of a traditional router refresh with a leading networking vendor.

- **Reduced recurring expenses**. EMA calculated the estimated savings of migrating from an MPLS network to a mixture of hybrid and internet-based WAN topologies with SD-WAN technology.

- **Reduced maintenance and management requirements.** EMA analyzed the financial payoff of the productivity enhancements provided by an SD-WAN solution, when enterprises can assign high-skilled engineers to strategic initiatives from recurring maintenance and troubleshooting.

- **Reduced downtime.** EMA examined the financial benefits of improving uptime with an SD-WAN solution.

STEELCONNECT EX: SD-WAN FROM A PROVEN WAN PERFORMANCE LEADER

SteelConnect EX, the solution under consideration in this paper, is an enterprise-grade SD-WAN product offered by Riverbed, an industry leader in network performance management and application acceleration. The SteelConnect EX architecture has three key components: SteelConnect EX appliances, SteelConnect Director, and SteelConnect Analytics.

SteelConnect EX Appliances

SteelConnect EX appliances are designed to support the networking and security requirements of locations with varying sizes. They offer industry-leading SD-WAN functionality, beginning with features that enable secure hybrid WAN and internet-only WAN connectivity. Such capabilities include dynamic traffic conditioning, application path control, quality of service features, zero-touch provisioning, template-based policy management, Layer-7 application-based traffic identification, and flexible topology support (including full mesh, partial mesh, and hub-and-spoke).

SteelConnect EX appliances also offer enterprise-grade routing, which eases SD-WAN design and integration with legacy networks. Enterprises can avoid complex transit hub configurations because SteelConnect EX can leverage its advanced routing capabilities to interface directly with the underlay network. Riverbed's SD-WAN appliances also offer a broad suite of integrated security capabilities, including next-generation firewalling, URL and IP filtering, intrusion prevention, antivirus and malware protection, and SSL inspection. It also supports the ability to integrate with third-party security services hosted on-premises or in the cloud via flexible service chaining.

SteelConnect Director

The SteelConnect Director is an enterprise-scale SD-WAN management console and network controller for centralized, GUI-based network engineering and operations tasks. All of the beneficial capabilities of the security, networking, and SD-WAN technology embedded on SteelConnect EX appliances are administered and scaled through SteelConnect Director.

SteelConnect Analytics

Finally, SteelConnect Analytics can analyze SD-WAN data for real-time and historical insight into performance, capacity, security, and more. It gives network operations advanced insights into the state of networks, security, and applications as seen by the SD-WAN fabric.

ASSEMBLING THE ROI MODEL FOR STEELCONNECT EX

Adjusted Cost of a Five-Year Investment in Riverbed's Solution

For this study, EMA assumed an initial five-year investment in a SteelConnect EX solution for two deployment scenarios. First, EMA considered a 100-branch network, with 80 small branches and 20 large branches. Second, EMA considered a 1,000-branch network with 800 small branches and 200 large branches. All prices quoted in this report are list prices, but the analysis assumes street prices that a customer is likely to pay.

Small branch offices will require a SteelConnect EX 580 appliance, available at a price of $1,395 per branch, plus an annual fee of $335 for device support. Large branches will require a SteelConnect EX 780 appliance, which costs $1,995 per device and $335 per year for device support.

The SD-WAN solution will also require an annual software license fee per device based on certain bandwidth levels: $1,488 for the SteelConnect EX 580 and $2,976 for the SteelConnect EX 780. These licenses will enable many of the beneficial capabilities that a legacy WAN solution lacks, such as central control and management, hybrid WAN connectivity, cloud connectivity, application steering, integrated security, integrated operational monitoring, and policy-based management.

Most enterprise investments in SD-WAN occur at the time of a network hardware refresh. The existing routers are typically reaching end of service, and the enterprise looks at SD-WAN as an alternative to a traditional router refresh. Thus, the cost of a Riverbed investment will be partially offset by the avoided investment in legacy routers, which includes initial capital expenditures and five years of maintenance costs. Please note that EMA's analysis assumes no link-level high-availability configurations (redundant routers) in legacy networks. This analysis also does not include any management platform licenses and support costs associated with the management platforms. Enterprises may want to include these added costs in their own ROI analysis.

EMA subtracted the cost of a potential refresh of a leading vendor's routers from the cost of a five-year investment in SteelConnect EX. The following table shows the adjusted cost of a Riverbed investment for 100-branch and 1000-branch networks.

Deployment scenario	Five-year Riverbed SteelConnect EX investment	Avoided cost of router refresh with five years of support	Total adjusted cost of Riverbed investment
100-branch network	$1,061,130	$560,340	**$500,790**
1,000-branch network	$10,611,300	$5,603,400	**$5,007,900**

Note: The Riverbed investment will vary based on product quantities, bandwidth requirements, product model details, and configuration requirements and is not intended to represent any commitment on pricing.

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Network Connectivity Savings and Capacity Increases

One of the first benefits of investing in SD-WAN is increased bandwidth at a lower cost. The typical legacy WAN relies primarily on MPLS connectivity for enterprise application traffic. MPLS is typically expensive and bandwidth is constrained.

SD-WAN enables enterprises to transition to hybrid and internet-based networks, which can deliver more bandwidth at a lower price. The typical MPLS network will rely on multiple types of connectivity that come at a premium. One example is a DS3 link, which EMA estimates will cost an average of $58.21 per Mbps per month globally in 2020, based on an analysis of publicly available information about network connectivity price trends.

With SD-WAN's ability to aggregate bandwidth and intelligently steer traffic based on policies and network conditions, enterprises are able to use business broadband for frontline network connectivity. EMA estimates that business broadband will cost $2.16 per Mbps per month (on average) globally in 2020.

For this study, EMA assumed that an enterprise enabled by SteelConnect EX would replace a legacy MPLS network with a hybrid network. EMA suggests that a typical small branch office would go from having 10 Mbps of MPLS connectivity to 100 Mbps of broadband (two 50 Mbps links if redundancy is required), which would provide a 10x increase in available bandwidth.

A typical, large remote site would supplement its 50 Mbps of MPLS bandwidth with 300 Mbps of business broadband. This change would provide a 7x increase in available bandwidth.

The transition would not only increase bandwidth significantly, but simultaneously reduce costs. The following table examines the potential cost benefits of this transition from a legacy MPLS network to a hybrid network.

Deployment scenario	5-year cost for MPLS network	5-year cost for Riverbed-enabled hybrid network	Total connectivity savings
100-branch network	$6,286,680	$5,307,000	**$979,680**
1,000-branch network	$62,866,800	$53,070,000	**$9,796,800**

IT Productivity Gains

Riverbed SteelConnect EX improves operational efficiency and IT staff productivity through the use of an intuitive and workflow-based management console. The SD-WAN console not only simplifies network infrastructure management, but also includes centralized workflows for end-to-end security policies, automation, application prioritization, and more.

This GUI management environment provides engineering and operational workflows that can significantly reduce the time required to perform common WAN and security management tasks. Based on interactions with SD-WAN users, EMA determined that SD-WAN solutions can provide a boost in productivity, resulting in tremendous value in an ROI analysis.

With SD-WAN, high-value CCIE engineers can reduce the time spent on day-to-day management and troubleshooting of WAN routers and WAN connectivity, while less experienced tier 1 engineers are able to take on an expanded role in day-to-day operations. In turn, high-value CCIE resources (of which there is usually a worldwide shortage) can turn their attention to strategic projects that are otherwise delayed by a lack of skilled personnel and deliver significantly more value to the business.

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The time investments that high-value network engineers are able to apply toward accelerating such strategic business initiatives, often anchored in digital and cloud transformation, typically come with an ROI to the business well in excess of the cost of their employment. An approximate calculation of minimum business benefit, however, can be derived as the average delta between salaries of CCIE-certified and non-CCIE network engineers. According to an analysis of ZipRecruiter data, the average cost of employing a CCIE-certified network engineer in North America is $197,457 (salary plus benefits and other overhead). A tier-1, non-CCIE engineer costs $119,669.

EMA estimates that a 100-site enterprise might apply three CCIE full-time equivalent (FTE) engineers to legacy WAN management. With SD-WAN, it could redirect CCIE resources to strategic initiatives while applying two tier-1 engineers to SD-WAN management. EMA estimates that a 1,000-site enterprise might apply 34 CCIE FTEs to legacy WAN management and could redirect them to strategic tasks, while applying just 10 tier-1 engineers to SD-WAN. EMA arrives at a financial benefit by subtracting the cost of tier-1 engineers devoted to SD-WAN management from the cost of the CCIE engineers released from legacy WAN management. The result represents resources that have been unlocked from WAN management. An enterprise can assign these skilled resources to high business value projects. The following table enumerates these findings.

Deployment scenario	Five-year employee time investment for operating a legacy network	Five-year employee time investment for Riverbed SD-WAN	Minimum business value of productivity gain applied to strategic project
100-branch network	$2,961,855	$1,196,690	**$1,765,165**
1,000-branch network	$33,567,690	$5,983,450	**$27,584,240**

Improved Uptime

EMA's analysis estimates that a successful Riverbed SteelConnect EX SD-WAN implementation could reduce WAN downtime by an average of 33% by removing human error from WAN management. This reduced downtime will translate into significant savings.

The Riverbed SteelConnect Director enables GUI-based centralized orchestration and policy-based management. Since network managers no longer have to manually program and configure individual network devices via a command-line interface (CLI), the chances of downtime due to a configuration error are reduced nearly to zero.

EMA assumed that the typical enterprise achieves "3.5 nines" of uptime on the WAN, which translates into 4.38 hours of downtime per year. Industry research found that a majority of enterprises (52%) place the cost of one hour of downtime at between $300,000 and $1 million.[2] EMA estimated that a 100-branch enterprise loses $300,000 per hour of downtime, while a 1,000-branch enterprise would place on the high end at $1 million per hour across the enterprise.

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2 2019 survey by Information Technology Intelligence Consulting

EMA research found that 33% of network incidents are attributable to manual configuration errors.[3] The size of a network will impact this incident. Thus, EMA theorizes that a 100-site WAN will have a 25% manual error rate, while a 1,000-site WAN would have a 40% incident rate. These incident rates represent the opportunity that SD-WAN offers for downtime reduction.

The following table reveals the potential financial benefits of this reduced downtime.

Deployment scenario	Five-year downtime costs associated with a WAN with 3½ "9s" reliability	Benefit of reducing downtime with Riverbed SD-WAN
100-branch network	$6,600,000	$1,650,000
1,000-branch network	$22,000,000	$8,800,000

FINAL FIVE-YEAR ROI ANALYSIS

The following table reveals the potential return on investment with a Riverbed SteelConnect EX solution by subtracting the adjusted five-year cost of a Riverbed investment from the financial benefits described in this paper. It also reveals that in both 100- and 1,000-branch scenarios, an enterprise can expect the solution to pay for itself in less than five months and provide more than a threefold financial benefit over five years.

	100-Branch Enterprise	1000-Branch Enterprise
Adjusted five-year Riverbed investment	$500,790	$5,007,900
Network connectivity savings (hybrid network)	$979,680	$9,796,800
Enhanced IT productivity	$1,765,165	$27,584,240
Benefit of improved uptime	$1,650,000	$8,800,000
Total ROI on 5-year SD-WAN investment	**$3,894,055**	**$41,173,140**
ROI factor	**3.7x**	**3.9x**
Time until Riverbed solution payback	**4.6 months**	**4.3 months**

Note: These ROI calculations are based on multiple industry-wide assumptions. ROI results will vary by geography, vertical industry, and other variables. The Riverbed investment will vary based on product quantities, bandwidth requirements, product model details, and configuration requirements and is not intended to represent any commitment on pricing.

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ADDITIONAL BENEFITS OF RIVERBED SD-WAN INVESTMENT

There are many other potential quantitative and qualitative benefits associated with an SD-WAN solution. Although EMA did not include them in its ROI analysis, enterprises should consider them when making a business case for a Riverbed SteelConnect EX investment.

User Productivity with More Bandwidth

In both scenarios reviewed in this analysis, enterprises were able to reduce costs while increasing bandwidth. This analysis only considered the cost savings, not the business benefits, of increasing bandwidth.

This bandwidth expansion will improve the performance of applications and services. Those performance improvements will make employees more productive and improve customer experiences, two factors that commonly lead to positive gains for business.

Cloud Enablement

SD-WAN facilitates secure connectivity to, and improved performance of, cloud-based applications. In particular, Riverbed's solution offers WAN optimization and SaaS acceleration, which will promote user adoption of new and valuable cloud-based applications. The facilitation of cloud adoption will improve employee productivity, since enterprises are able to support new and innovative applications rapidly. It will also support digital transformation initiatives that are driven by cloud adoption.

Integrated Security

The shift from an MPLS-centric network to a hybrid WAN will require enhanced security. For site-to-site and site-to-cloud connectivity, each remote site will need a next-generation firewall (NGFW), threat protection, data loss prevention, and more. This can result in an added cost. EMA estimates that a 100-site enterprise would have to invest an additional $482,000 in security appliances based on list prices from a leading network security vendor. A 1,000-site company would have to invest $4.8 million to deliver this security protection.

A standard Riverbed SteelConnect EX license includes an integrated NGFW. For an additional license fee, enterprises can add additional Riverbed security services to remove a need for an additional security appliance. Riverbed SteelConnect EX also includes a flexible service-chaining mechanism that supports seamless integration of third-party security services (on-premises or in the cloud), enabling customers to leverage security solutions of their choosing.

Engineering Productivity and Digital Transformation

EMA's ROI analysis included the monetary value of productivity boost. It showed that enterprises no longer have to apply high numbers of CCIE FTEs to the WAN. Rather than manage and troubleshoot legacy routers, those CCIEs can devote their time to key business initiatives that deliver higher business value.

In EMA's interactions with the industry, analysts have found that network engineers freed from the manual administration of legacy infrastructure can focus on cloud transformation, enablement of new products and services, the Internet of Things, mobility initiatives, and security and compliance projects. All of these accelerated initiatives will deliver an added financial benefit over and above the unlocked salary considered in this paper.

EMA PERSPECTIVE

Based on EMA's analysis, a successful WAN transformation with Riverbed SteelConnect EX can deliver a 3.7x return on investment over five years for a 100-branch enterprise, with a full payback on the initial Riverbed investment in 4.6 months. For a 1,000-branch enterprise, the five-year return is 3.9x with a full payback on the initial investment in 4.3 months.

EMA bases this ROI analysis on several assumptions:

- An investment in a Riverbed SD-WAN solution, which includes initial hardware costs, support, and recurring software costs for SD-WAN functionality and is partially offset by the avoided cost of refreshing a network of legacy branch routers from a leading networking vendor.

- A hybrid WAN enabled by SteelConnect EX, which shifts the balance of overall bandwidth from premium MPLS connectivity to hybrid connectivity with business broadband, and results in lower monthly network connectivity costs and higher total available bandwidth.

- The Riverbed SteelConnect EX solution is more flexible to manage than a legacy network and typical network deployment and management tasks will be accelerated. Advanced CCIE-level network engineers can focus their time on strategic IT projects that deliver more value to the enterprise. That productivity boost represents a financial return.

- The ease of managing the Riverbed SD-WAN solution reduces network downtime. Significant levels of automation and policy-based management lead to the reduction of configuration errors associated with manual CLI-based management of legacy networks. This allows an enterprise to reduce the costs associated with network downtime.

Given this analysis, enterprises that adopt Riverbed's SD-WAN solution can expect to earn an ROI that runs into millions of dollars over a five-year period.

ABOUT RIVERBED

Riverbed® enables the world's largest organizations to maximize network performance and visibility, allowing them to fully capitalize on their cloud and digital investments. The Riverbed Network and Application Performance Platform enables organizations to visualize, optimize, remediate and accelerate the performance of any network for any application. The platform addresses performance holistically with best-in-class WAN optimization, network performance management (NPM), application acceleration and enterprise-grade SD-WAN. Riverbed's 30,000+ customers include 100% of the Forbes Global 100. Learn more at riverbed.com.

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Founded in 1996, Enterprise Management Associates® (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help EMA's clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals, and IT vendors at www.enterprisemanagement.com or blog.enterprisemanagement.com. You can also follow EMA on Twitter, Facebook, or LinkedIn.

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