



The ROI of Application Performance Management

Build a Business Case for Your Enterprise

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Abstract

Application performance management tools are a requirement for today's complex networks. They allow businesses to proactively manage their investments in bandwidth and the business-critical applications used every day, across the enterprise. An application performance management solution is recognized as an essential component of WAN optimization—techniques that help businesses get the best possible performance from existing networks.

However, building a business case for an application performance management solution requires more than a belief in its benefits. It requires some data to quantify the value of a bottom-line result. But how can that be done?

This white paper reviews ten business scenarios in which application performance management solutions are used to monitor applications across the WAN deliver a quantifiable Return on Investment (ROI). Example cases and calculations are provided for each scenario, describing how companies have quantified the value of an APM solution in that area. The examples and simple calculations can provide a starting point in building a business case for an application performance management solution.

Introduction

In our survey, loss of revenue and reduced productivity were two key issues resulting from application service outages. To determine if your company will benefit from APM, assess whether application performance is affecting the bottom line.¹

Today's network managers are responsible for more than bandwidth and connectivity—they're accountable for the network impact on applications and the users that rely on them—employees, customers, partners and vendors. That's no small task in today's complex network environments. And while network and applications performance once applied only to the LAN, now the same network managers have the WAN to think about.

This comes at a time when application performance has become more critical than ever. When applications are mission-critical and tied to revenue streams, compliance, inventories and customer support, application performance on the network has significant bottom-line impact. Certain applications, like VoIP, cannot tolerate any performance delays, and require extra attention to ensure their success.

Application performance management is quickly becoming an undisputed requirement for managing today's networks. By a panoramic view across the enterprise network, issues can be identified faster, bandwidth can be better allocated, application performance by Class of Service can be monitored, better planning for network upgrades and new applications can occur—with a host of other advantages. Application performance management is recognized as a key component in WAN optimization, helping businesses get the best possible performance from new or existing networks.

¹ Biddick, Michael. "Perception is Reality: Why IT Must Own Application Performance," InformationWeek Analytics Report (April 2009). <http://reports.informationweek.com>, accessed February 2012.

The Qualitative Benefits of Application Performance Management

Quantifying the benefits of a technology solution—defining its benefits in dollars and figures, is often required to make a viable case for purchase. It provides a common language, and gets everyone on the same page. However, organizations do understand that technology solutions often provide great qualitative benefits, those that are not as easily quantified. Understanding all the potential benefits of a solution—qualitative or quantitative—are an ideal way to approach a business case. Following are a few qualitative benefits that APM tools frequently offer:

The ability to shape, monitor and manage traffic is critical to the success of VoIP. Application performance management has a special relevance to VoIP applications. Unlike data, voice offers no margin for error. Critical voice communications, whether it's a video conference with a critical client, or a 911 emergency call, must come through at the level of quality that people have come to expect from their legacy technologies.

Real network data provides a concrete, objective foundation for network planning and substantiating decisions. With real network data, businesses can determine bandwidth needs with more accuracy, saving the costs of over-provisioning or risking poor application performance from under-provisioning bandwidth. Gaining visibility into the network allows companies to understand who is using what applications on the network and where, how the traffic is flowing, and other criteria that can help make decisions and help substantiate those decisions.

Business Objectives of APM

The following are common objectives of application performance management deployment on the WAN. The scenarios and mini-cases described in this paper correspond to one or more of these objectives.

- Increase application uptime and improve business performance with a detailed understanding of applications and network domains.
- Improve problem solving and reduce incidents by proactively accessing performance data from across the entire infrastructure to uncover unauthorized applications, bandwidth hogs, viruses, congestion areas and trends.
- Right-size resources and bandwidth and ensure performance without exceeding bandwidth—or financial—budget limits.

As the market migrates to MPLS VPNs to take advantage of the network's ability to support traffic prioritization through class of service, there is a growing focus on network and application performance monitoring tools. Both these tools are critical for the success of MPLS VPN implementation as customers make the move to a converged architecture and demand more control over the applications they wish to run on the network.²

² Frost & Sullivan, "U.S. MPLS-IP VPN Services Market Update 2010," October, 2010.

Reducing Costs through Managed APM Services

The exploding complexity and volume of technologies in the IT landscape is driving demand for tools that help manage it all—and yet—how do you manage another management tool? And how do you obtain funds for it? In some cases, deploying APM through a WAN services provider instead of owning and operating it in-house can provide a higher value at a lower total cost of ownership (TCO).

A managed service can pass along savings from economies of scale. By providing the service to a number of customers, the service provider's equipment, technology, upgrades, maintenance, and staffing resources are leveraged, providing a better value for the enterprise when compared with managing an in-house solution.

By partnering with a service provider, the enterprise can deflect some costs entirely, such as the initial investments and turn-up (servers, hardware, software), ongoing administration and support, upgrades and maintenance. Partnering with a service provider can also offer some additional benefits, such as:

- **Budget Predictability:** Monthly recurring cost vs. the unknown of ongoing maintenance costs such as upgrades, equipment and unexpected expenses.
- **Collaboration between Enterprise and Service Provider:** A managed service enables collaboration between the enterprise and the service provider by providing a key connection point between the organizations. When everyone is looking at the same view of the same data, not only does it make for faster troubleshooting; it provides a way to examine trend and issues, and identify opportunities for improvement—and gain competitive advantage.
- **End-to-End SLAs:** A service provider can be expected to stand behind the performance and accuracy of its managed APM tool. The SLAs can help verify the provider's commitment to the tool and accountability for the metrics.

Ten Scenarios that Derive Business Value from APM

Qualitative benefits aside, making a business case for an application performance management solution requires more than a belief in the benefits of application performance management. It requires a demonstration of potential ROI.

The following section describes ten scenarios in which businesses can receive financial benefit from applications network performance solutions, and a worksheet that shows how to calculate an estimated payback period and ROI for application performance management. Each situation is accompanied by an example case of how a business quantified that benefit, including some simple formulas, calculations and results. This information provides a start in finding ways to quantify the value of an application performance management solution to make a business case for its adoption.

(Please note that the numbers used in the case scenarios are strictly examples, and although the cases represent actual company scenarios, it does not provide data from any actual company.)

1. Improving Production and Preserving Revenue

What does it cost your organization when your most business-critical application is down?

Downtime costs vary among industries and businesses. Companies that are technology-dependent or highly automated, for example, are impacted the most. According to leading APM solutions provider Visual Network Systems, issues with applications performance impact up to 9% of overall corporate revenue, and 58% of IT organizations are “not satisfied with performance of business critical applications.”

Even just reducing the duration of an incident--by reducing the time to isolate or remedy the problem—provides a direct savings and helps preserve revenue and production.

Case 1: Decrease lost revenue from credit card outages

A national U.S. retail chain relies on credit card sales for revenue. When a network outage prevents stores from verifying credit cards, stores have two options: accept credit cards without verifying them, or deny cards altogether. Both choices carry risk: denying the use of credit cards is likely to result in substantial revenue loss, and accepting cards without verifying them could result in revenue loss from accepting stolen, over-limit, or otherwise bad cards.

By using an application performance management solution to optimize network efficiency and troubleshooting, the chain was able to better pinpoint the problem and reduce the time to repair, resulting in a substantial time and cost savings.

Calculating the savings

- The chain estimates that on average, 10% of its 1,800 stores (180 stores) are affected by any one outage. Each store processes \$23,250 in credit cards per hour.
- Historically, 1.25% of credit card transactions are bad, stolen, or over-limit
- Without APM, average outage duration was 2.5 hrs and cost \$726.56 hr, per store. Across 180 stores (10% of 1,800 stores) total cost per incident is \$130,781. (2.5 hrs x \$23,250 /hr x 1.25% exposure = \$726.56 per store x 180 stores = \$130,781)
- With APM, average outage duration decreased 40%, from 2.5 hrs to 1.5 hrs (1.5 hrs x \$23,250 /hr x 1.25% exposure = \$435.94 per store x 180 stores = \$78,469)

	Ave. hourly card revenue per store	Ave outage duration (hrs)	Exposure of accepting cards w/o verification	Cost per incident, per store	Stores affected (10% of 1,800)	Total cost per outage
Without APM	\$23,250	2.5	1.25%	\$726.56	180	\$130,781
With APM	\$23,250	1.5	1.25%	\$435.94	180	\$78,469
					SAVINGS	\$52,313

Result: Preserved revenue, \$52,313 per outage

2. Optimizing Bandwidth Expenditures

Bandwidth expenditures can consume as much as two-thirds of total networking budgets. IT organizations walk a fine line between having sufficient bandwidth resources for business-critical applications and not wasting critical budget dollars by over-engineering the network infrastructure.

Making things harder for many enterprises is the proliferation of bandwidth-thirsty applications. When enterprises roll out applications that impact existing networks, like VoIP, Oracle, SAP, and Citrix, they may choose to increase bandwidth without knowing if—or where—those increases are needed. With tighter IT budgets, arbitrarily adding bandwidth is no longer a viable solution. Optimizing bandwidth expenditures by using an application performance management solution to ‘right-size’ bandwidth helps ensure reliability and performance – and saves money.

Case 2: Right-sizing bandwidth for a VoIP rollout

A medium-sized organization was planning to roll out VoIP across 22 domestic locations. The company knew that success depended upon allocating sufficient bandwidth to ensure the high levels of reliability that VoIP required. Initial upgrade plans were made based on guesstimates about existing network utilization and the requirements to ensure performance of delay-sensitive VoIP.

Later, with application performance management in place, the enterprise recalculated using real network data collected by APM. Based on that detailed utilization information, the company was able to better plan the bandwidth upgrades. In this case, it turned out that less bandwidth was required than was initially estimated. Based on real network data from the APM solution, the businesses was able to ‘right-size’ bandwidth for the rollout to ensure VoIP reliability without over-provisioning.

Calculating the savings

- The initial plan was to upgrade: 18 T1 sites to 2xT1, and upgrade 4 larger sites to 10 Mbps Ethernet.
 $(18 \text{ T1s} \times \$1,000) + (4 \text{ 10 Mbps Ethernet} \times \$1,750) = \$25,000 \times 12 \text{ mo.} = \$300,00 \text{ per year}$
- The revised plan based on data from APM was to upgrade 9 sites to 2xT1, 1 large site to 10 Mbps Ethernet, and keep the remaining 12 sites at 1 T1.
 $(12 \text{ T1s} \times \$500) + (9 \text{ 2xT1} \times \$1,000) + (1 \text{ 10 Mbps Ethernet} \times \$1,750) = \$16,750 \times 12 \text{ mo.} = \$201,000 \text{ per year}$

	Circuit type	Cost per unit	Units	Cost per month	Total annual cost
Without APM	10Mbps Ethernet	\$1,750	4	\$7,000	\$84,000
(estimates)	2xT1	\$1,000	18	\$18,000	\$216,000
	T1	\$500	0	\$0	\$0
	Total		22	\$25,000	\$300,000
With APM	10Mbps Ethernet	\$1,750	1	\$1,750	\$21,000
(real data)	2xT1	\$1,000	9	\$9,000	\$108,000
	T1	\$500	12	\$6,000	\$72,000
	Total		22	\$16,750	\$201,000
				SAVINGS	\$99,000

Result: Optimized bandwidth expenditures, annual savings: \$99,000 (33%)

3. Eliminating Redundant Tools & Equipment

An application performance management solution can often eliminate the need for tools or equipment with similar functionality and save costs on equipment leases and maintenance. By eliminating point solutions such as portable protocol analyzers or 'dumb' Channel Service Unit/Data Service Units (CSU/DSUs), organizations create savings that go straight to the bottom line.

Case 3: Enterprise eliminates costs of CSU/DSUs and protocol analyzers

An application performance management solution allows an enterprise to eliminate T-1 and fractional T-1 traditional CSU/DSU units across the infrastructure, along with the monthly leasing price (equipment and maintenance) for each device. The new solution that terminates the circuit allows the enterprise to eliminate the legacy DSUs. In addition, the application performance management solution provides extensive application visibility so the enterprise is less reliant on portable protocol analyzers, and can eliminate some of these as well.

Calculating the savings

With APM:

- Eliminated 30 T-1 and fractional T-1 traditional CSU/DSU units. Monthly leasing avg. \$80 in equipment and maintenance per unit. (30 traditional CSU/DSUs x \$80/mo. x 12 mo = \$28,800 yr)
- Eliminated 3 portable analyzers, saving \$4,500 per unit. (3 portable analyzers x \$4,500 maintenance=\$13,500 yr)

Equipment Eliminated	Cost per unit.	Units	Annual Cost
CSU/DSU Units (T-1 & fractional T-1)	\$80/mo	30	\$28,800
Portable protocol analyzers	\$4,500/yr	3	\$13,500
		SAVINGS	\$42,300

Result: Reduced annual lease and maintenance costs on leased equipment, savings: \$42,300

4. Improving Identification and Repair of Virus and Worm Attacks

Even though every enterprise has firewalls, virtually every organization has been penetrated to some degree within the past year by a virus or worm attack. Enterprises tend to classify virus attack impacts in two ways: severe threat and residual impact.

Severe threats are the most dangerous: these degrade the applications and network to such an extent that key programs or business activities are affected, leading to possible lost revenue or costs.

Residual impact occurs once the severe threat has passed, but the enterprise must still update its systems and perform maintenance. On average, severe threats tend to last approximately 3-6 hours, while residual impacts tend to last several days.

The savings calculation for improved virus/worm detection and resolution depends upon how quickly the attacks can be resolved. With application performance management in place, performance data across the enterprise can be observed for problem indicators—such as an unusual spike in traffic. Downtime costs will depend upon organization size, number of users, and the importance of application and network integrity).

Case 4: Cost of a virus and worm attacks down 70%

Over the past year, an enterprise experienced virus/worm attacks with varying degrees of pain. The severe threats ranged in duration from two hours for a smaller, common security breach to nine hours for one severe attack that crippled the organization for over a day. With an application performance management solution in place, this enterprise estimated that downtime/degradation from a severe threat could be reduced 70% by observing the spike caused by the attack, and using troubleshooting tools to isolate and resolve the problem.

Calculating the savings

- Without APM, 5 threats per year took 2 hours to resolve at a cost of \$9K/hr downtime (\$9K x 2 hours = \$18K x 5 incidents = \$90K annual cost)
- With APM, downtime/degradation was reduced 70%, reducing annual cost to \$27K (\$9K x .6 hours x 5 events= \$27K annual cost)

	Downtime cost/hr	Time to repair (hrs)	Cost per incident (\$9K/hr downtime cost)	Incidents	Annual cost (5 incidents)
Without APM	\$9,000	2.00	\$18,000	5	\$90,000
With APM	\$9,000	0.60	\$5,400	5	\$27,000
				SAVINGS	\$63,000

Result: Faster response to severe threats, annual savings: \$63,000 (70%)

5. Reducing Application MTTR

For many organizations, poor application performance is the most vexing network problem. The challenge lies in finding the origin of the problem, ranging from the local loop to the circuit to the network to the application servers. If the problem is intermittent, the challenge grows exponentially.

The key to reducing application mean time to repair (MTTR) is the ability to isolate where the problem is occurring. (MTTR represents the average time required to repair a failed component.) Also critical is the ability to go back in time—an hour, a few days, or a couple of weeks—to identify the cause of intermittent problems so that they don't recur and pose greater threats. The goal is to identify degradation in application performance before it impacts end-users and reduce risk to the organization. Application performance management solutions can provide visibility across the WAN so that the problems can be located and repaired faster.

Case 5: Isolating the problem application

This calculation is similar to the virus/worm attack scenario, but deals with typical day-to-day issues in identifying and resolving trouble tickets--like a reported inability to process an order or check e-mail.

For one enterprise, quantifying the impact of intermittent application performance issues on day-to-day functions required a different approach from calculating the impact of a single catastrophic event. The organization focused on times when users cannot use applications completely.

With an application performance management solution that provided extensive Layer 1-7 visibility and real-time and historical views, the enterprise conservatively estimated that the time required to solve problems was cut by half. Estimating a severe impact once every two months, this results in a substantial savings from reducing application MTTR.

Calculating the savings

- Without APM, the annual cost of poor application performance is approx. \$216,000:
(6 hrs to repair x \$6K/hr poor performance x 6 incidents per year = \$216,000 avg. annual cost)
- With APM, the poor application performance is reduced by 50% (\$108,000):
(3 hrs to repair x \$6K/hr poor performance x 6 incidents per year = \$108,000 avg. annual cost)

Calculating the savings from reduced application MTTR

	Time to repair	Cost of poor performance (hr)	Incidents per year (ave.)	Cost per incident	Annual cost
Without APM	6.00	\$6,000	6	\$36,000	\$216,000
With APM	3.00	\$6,000	6	\$18,000	\$108,000
				SAVINGS	\$108,000

Result: Reduced Application MTTR, annual savings: \$108,000 per year

6. Reducing Trouble Tickets and Support Calls

IT organizations often find themselves deluged with trouble tickets and support calls. Handling individual tickets and calls can be time consuming and expensive. The reactive nature of this process often means that other users will be impacted by the same performance degradation.

It's lose-lose when end users are negatively impacted, and IT incurs additional costs trying to resolve the problem.

The cost of trouble tickets and support calls can be decreased through application performance management, and is often among the easiest values to quantify. Enterprises are typically aware of ticket and call volumes, time to resolve tickets, and the cost of support staff.

With application performance management, the enterprise gains visibility across its network, allowing it to find areas where it can make improvements. When problems do appear, some can be identified and addressed before users are even aware of them, avoiding some support requests altogether. When support tickets come in, problems to be identified and located more quickly, and addressed faster. Time spent fixing problems is reduced, business moves forward, and IT can go on to address other issues.

Case 6: Optimizing the network and isolating issues faster equals savings

One enterprise, after deploying an application performance management solution, made some enhancements to optimize its network and saw the benefit it hoped for—fewer trouble ticket. Of course, some support will always be needed, but when problems arise now they can be more quickly identified and located on the network, and resolved in less time.

Calculating the savings

- Without APM, time to resolve a ticket was 30 minutes at a staff cost of \$45 hr, with an average of 200 tickets per month. The monthly cost was \$4,500, annual cost \$54,000.
(.5 hrs to resolve x \$45 hr x 200 = \$4,500 mo x 12 = \$54,000 per yr)
- With APM, time to resolve tickets decreased by 10 minutes (now 20 min). Monthly ticket volume decreased 25%, to 150 tickets. Annual cost dropped to \$26,730.
(.33 hrs to resolve x \$45 hr x 150 = \$2,227.50 mo x 12 = \$26,730 per yr)

Calculating the savings

	Time per ticket (hrs)	Hourly staff cost*	Cost per ticket	Ticket volume (month)	Monthly cost	Annual cost
Without APM	0.50	\$45.00	\$22.50	200	\$4,500	\$54,000
With APM	0.33	\$45.00	\$15.00	150	\$2,227.50	\$26,730
					SAVINGS	\$27,270

* Average fully loaded hourly rate

Result: Reduced trouble tickets and support calls, annual savings: \$27,270

7. Reducing Network Configuration Time

The biggest challenges of network configuration are ongoing network support and network refresh. In ongoing network support, typical moves/adds/changes require configuration changes—remapping virtual circuits or re-configuring class of service (CoS) settings. Minimizing the time and resources required for these ongoing configurations can reduce costs. A network refresh typically places a larger burden on IT staff, which may need to configure each location initially and re-configure or fine-tune a portion of these over time.

If MPLS-based services are deployed, configuration times may increase when CoS settings are deployed. Historically, an enterprise often requires at least three configuration attempts for initial setup and semi-annual fine-tunings of CoS settings. Each configuration or fine-tuning pulls resources from the network organization.

An application performance management solution can reduce the time and the number of configurations needed for ongoing maintenance and network refreshes. By being a point of demarcation and completing active connectivity tests, the configuration maintenance is easier and requires less time. In addition, MPLS-based networks with CoS settings will not only greatly reduce the amount of time for setup, but also reduce the number of re-configurations required to optimize the applications and network.

Case 7: Reducing configuration time for MPLS-based and other networks

This enterprise acquired an application performance management solution that allowed it to test connectivity remotely, reducing network configuration time significantly. Quickly adding to the savings was time savings from re-configuration and fine-tuning of complex networks, including MPLS based networks with CoS. Finally, with detailed reporting on CoS settings, time for fine-tuning is reduced dramatically, resulting in more savings for the company and increased ROI for the application performance management solution.

Calculating the savings

- Without APM:
 - » 1 ongoing network config per site, per year requires 1.5 hrs of IT support staff at \$60/hr, 70 sites.
 - » 3 reconfigurations per site, per year requires 1.5 hrs of IT support staff at \$60/hr, 70 sites.
 - » 2 fine-tunings per site, per year requires 1.5 hrs of IT support staff at \$60/hr, 70 sites.
- With APM:
 - » Testing connectivity remotely reduces time by 80% and saves \$6,300 (70 sites x 72 minutes saved/site x \$60/hr).
 - » Reconfiguration & fine-tuning of MPLS-based networks with CoS, 3 configs for CoS setup, 2 fine-tunings of CoS per year, saving \$12,600 (2 less configurations x \$60/hour x 70 sites x 1.5 hrs/site)
 - » Detailed reporting on CoS settings, reduces fine-tuning by 85%, saves \$10,710 (70 sites x 2 fine-tunings x 1.5 hrs per site x \$60/hour x 85% time reduction)

		Tasks	Time	Annual Cost per site (\$60/hr)	Annual Cost, all sites (70 sites)
Without APM	Network configuration	1	1.5 hrs	\$90	\$6,300
	Reconfiguration	3	1.5 hrs	\$270	\$18,900
	Fine-tuning	2	1.5 hrs	\$180	\$12,600
				Total	\$37,800
With APM	Network configuration	1	.3 hrs	\$18	\$1,260
	Reconfiguration	1	1.5 hrs	\$90	\$6,300
	Fine-tuning	2	0.225 hrs	\$27	\$1,890
				Total	\$9,450
				SAVINGS	\$28,350

Result: Reduced network configurations and time, annual savings: \$28,350

8. Improving End-User Productivity

It can be difficult to quantify the impact of poor application and network performance on end users. For example, although it's understood that users are affected when the order processing system is down, it might be difficult to quantify the outcome. Business impact varies depending upon the business process that is disrupted. A stockbroker prevented from placing a trade and an end-user inconvenienced by an email outage are impacted differently.

Quantifying the impact of poor network productivity requires a realistic view of the impact of application and network downtime and degradation. An application performance management solution improves end-user productivity by improving application up-time.

Case 8: Reducing downtime impact on users

When a 2,500-employee enterprise acquires application performance management, it gains visibility into the network that improves troubleshooting of network and applications, reducing the costs of downtime in terms of end-user productivity.

Calculating the savings

- Without APM: 2,500 users x 10% negatively impacted for business critical activities x \$37,500/yr x 2% downtime based on estimate of historic data
- With APM: downtime is reduced 45% x 2,500 users x \$37,500/yr x 2% downtime x 10% x 45% reduced = \$84,375

	Total Users	Impacted number of users	Average Salary per user	Downtime	Downtime Cost per employee	Total per enterprise
Without APM (2% downtime)	2500	10%	\$37,500.00	2%	\$750.00	\$187,500.00
With APM (2% downtime reduced 10%)	2500	10%	\$37,500.00	1.10%	\$412.50	\$103,125.00
					SAVINGS	\$84,375

Result: Improved end-user productivity, annual savings: \$84,375 per year

9. Reducing Costs and Increasing Collaboration through a Shared View of Infrastructure Performance

“Shared View” for collaborative troubleshooting between the customer and the managed service provider—viewing the same data from the same data source on the customer premise

Application performance management tools can enable collaboration within enterprise IT organizations. By correlating network and application performance and presenting it in a single view, all stakeholders—including network and applications teams—can view the same data and work more readily toward a resolution. Further, if APM is managed through a service provider, another key player—the service provider—has the same view of data. This enables all of the organizations—the enterprise network department, the applications department, and the service provider’s IT organizations—to view the same network performance analyses.

When everyone looks at the same data, everything becomes clearer, communication becomes easier and mutual understanding and partnerships can begin to develop. When issues arise, the enterprise and service provider can work together to quickly isolate the cause without spending hours determining the root cause of a problem or going back and forth between organizations.

Faster problem resolution means more uptime and less disruption for end-users, and more time for IT resources to focus on strategic objectives, future-proofing the organization to stay ahead of requirements and keep the business competitive.

Case 9: Saving Hours in Finding the Root Cause of a VoIP Issue

In the process of configuring 80 sites, a single error was made when defining high priority QoS at one location. As time went on, the company began to experience intermittent degradation of VoIP calls at this location. The VoIP phones and IP-PBXs appeared to be fully operational, so a network issue was suspected. The network provider was contacted, but testing returned “No Trouble Found.” VoIP was thought to be set at the highest priority, so it wasn’t suspected as a problem. Troubleshooting began on other parameters, including CPE failures.

Without the ability to track VoIP performance and correlate it to network performance, the enterprise was significantly handicapped in isolating the cause. In addition, without a shared view, they were not able to collaborate with the network provider during troubleshooting.

Later, an APM service enabled the correlation of VoIP performance to network conditions. With APM, a network engineer at the enterprise site was able to locate and isolate the problem and validate that a call quality issue did exist. In a few mouse clicks, the engineer quickly drilled down and determined that the cause of degradation was a misconfigured policy.

APM enabled the viewing of historic data on telephone calls– a capability they didn’t have before using the APM service – and one that allowed them to troubleshoot and diagnose problems. Without the ability to go back or correlate the data, the enterprise was significantly handicapped in isolating the cause of network problems. With the APM tool and a shared view, everyone can work in lockstep to quickly identify and resolve incidents of network degradation or other problems.

Calculating the savings

- Without APM: 107 hours x \$60/hr x 16 incidents per year = \$102,720 estimated cost per year
- With APM: 16.05 hours x \$60/hr x 16 incidents per year = \$15,408 estimated cost per year (85% reduction in MTTR)

Without APM	Hours	Cost (\$60/hr)	Annual Cost (16 application performance instances/yr)
Network staff	5	\$300	\$4,800
Applications staff	2	\$120	\$1,920
Enterprise Employees (20 end users, 5 hrs each)	100	\$6,000	\$96,000
Lost business of downtime & ticket admin)	TBD	TBD	TBD
		TOTAL	\$102,720
With APM (85% reduction)			
Network staff	0.75	\$45	\$720
Applications staff	0.30	\$18	\$288
End users	15.00	\$900	\$14,400
		TOTAL	\$15,408

Result: Improved productivity, annual savings: \$87,312 per year

Estimating ROI and Payback Period for an Application Performance Management Solution

To justify the purchase of a new technology, enterprises will often estimate the ROI or payback period—the time it takes for the solution’s cost savings to pay for the cost of deployment. Following the process explanation is a spreadsheet containing numbers from a hypothetical scenario where an enterprise was estimating potential ROI and payback from an application performance management solution (Table 2).

Step 1: Estimate the annual savings offered by the solution

The first step is to estimate the annual savings. The nine cases presented in this paper offer some basic ideas and simple calculations for determining potential savings. Once the areas of savings are established, add them together for a total estimate.

In the example (Table 2), the total savings from the nine cases are estimated at \$372,534

Step 2: Obtain the cost of the solution

The cost of application performance management will vary, depending upon the deployment choice. There is great variation in costs among enterprises depending upon the specific requirements, size, sites, and other factors including the choice of APM services. This case will use a hypothetical example of a 50-site network with one data center, one high speed location and 50 low speed locations.

- Monthly recurring cost (MRC) \$5,995
- $MRC \times 12 = \text{annual cost } \$71,940$

Step 3: Estimate a payback period or ROI

Calculate (estimated) payback period

Payback period refers to the time it will take to recoup the cost of the investment.

This calculation can be as simple as dividing the total cost of deployment by the potential savings.

Payback Period = $(\text{Total cost of deployment} / \text{potential savings}) \times 12 \text{ months}$
 $2.32 \text{ months} = (71,940 / 372,534) \times 12$

Calculate annual savings

Table 2. Payback Period Worksheet

Payback / ROI Worksheet	
Savings with improved application and network performance	
1. Improving production and preserving revenue	\$ 52,313
2. Optimizing bandwidth expenditures	\$ 99,000
3. Eliminating redundant tools and equipment	\$ 42,300
4. Improving identifications and repair of virus and work attacks	\$ 63,000
5. Reducing application MTTR	\$ 108,000
6. Reducing trouble tickets and support calls	\$ 27,270
7. Reducing network configuration time	\$ 28,350
8. Improving end user productivity	\$ 84,375
9. Reducing costs & increasing collaboration through a shared view of infrastructure performance	\$ 87,312
Total savings per year	\$ 591,920
Cost of deploying XO Applications Performance Management	
Monthly recurring fees	\$ 5,995
Total cost of deployment	\$ 71,940
Payback period (months)	2.32
Projected ROI	
Annual ROI	\$ 519,980

10. Reducing TCO with a Managed Service Provider

Enterprises have a number of options for deploying application performance management on the WAN. Among these is whether to own and operate the solution in-house or operate it as a managed service. After calculating the potential ROI of an Application Performance Management solution, you may wish to compare the result against the cost of partnering with a service provider.

Partnering with a service provider can deflect a number of costs associated with the APM process as well as bring other value to the organization that can be more difficult to quantify such as budget predictability (through monthly recurring charge), better collaboration between enterprise and provider with everyone looking at the same data, and end-to-end SLAs enforced by a provider-endorsed tool. In addition, when the APM tool has the provider’s full endorsement, it can eliminate questions about its reliability or accuracy.

Case 10: The Cost of Managing APM in an Online Retail Business

A virtual catalog order company was considering its options for APM. The company had 30 locations with 1 x GigE, 4 x 100M FastE, and 25 x T1 ports. It owned a number of point solutions, but was overburdened with managing the systems and wondered if there was a way to streamline and simplify the operation—and reduce costs. The point solutions had a host of associated costs and required staffing to support them. When the company switched over to a managed solution, many of those expenses were deflected to the service provider, as seen below:

Expenses	APM (Customer-owned and operated)	APM (Managed Service with Network Provider)
Capital Expenditures <ul style="list-style-type: none"> • Server Hardware (production & backup) • Probes • Software Licensing 	\$61,190 \$62,565 \$179,250	\$0 \$0 \$0
Initial Deployment Costs <ul style="list-style-type: none"> • Pre-deployment Testing/Validation • Server installation and configuration • Probe deployment and configuration • System Provisioning 	\$17,850 \$3,570 \$19,875 \$13,000	\$0 \$0 \$0 \$0
Personnel Training Costs <ul style="list-style-type: none"> • Field dispatchers • Server administrators • System provisioners • System users 	\$7,140 \$15,300 \$10,200 \$12,750	\$0 \$0 \$0 \$0
Ongoing Monitoring & Management Costs One full-time employee (annual salary) Responsible for: <ul style="list-style-type: none"> • Monitoring 24x7x365 • System upgrades (implementing new releases on server, application software, and probe firmware) • System changes - Moves, adds, changes 	\$75,000/yr	\$25,000/yr (Would not require a full-time employee)
Maintenance Fees (annual) <ul style="list-style-type: none"> • Server Maintenance fees • Probe Maintenance (break/fix, dispatches) • Software Maintenance fees 	\$11,016/yr \$10,056/yr \$9,360/yr	\$0 \$0 \$0
Managed Service Fee XO APM Service (Monthly Recurring Charge)	\$0	\$3965/mo
TOTAL (for first year)	\$508,122	\$72,580

Result: First year cost savings: \$435,542

XO Applications Performance Management

XO Applications Performance Management is a suite of analytical tools that help network administrators optimize the performance of your XO MPLS IP-VPN service with real-time visibility into every facet of your network and all of the applications that run over the network, including VoIP. XO Applications Performance Management is one of the industry's most comprehensive solutions to help you analyze and predict the performance of different applications you use every day across the enterprise. The XO Applications Performance Management suite of tools is fully integrated as part of the XO MPLS IP-VPN network service. Businesses using the service can connect offices, customers and partners, and converge a range of voice, video and data applications over a single IP network or as part of the XO IP Flex with VPN service that includes the award-winning XO IP Flex bundle of voice, data and web hosting. Customers of these XO MPLS network services select from one of three tiers of XO Applications Performance Management that corresponds to their network needs and requirements.

XO Applications Performance Management provides the intelligence that network administrators need to make informed decision about the issues confronting them every day. For more information, visit XO Applications Performance Management at: <http://www.xo.com/services/network/mpls-ipvpn/Pages/APM.aspx>

Next Steps

While the business-critical applications running over the network vary by enterprise, be it VoIP, SAP, Oracle or Citrix—the exposure of poor performance can mean bottom-line impact.

Today's network managers have to consider not just bandwidth and connectivity issues, but also network impact on applications and end-users. Application management tools can provide visibility across the infrastructure that helps improve network and application performance and improve the bottom line.

A tool that offers full management without sacrificing control and visibility allows IT resources within the enterprise to concentrate on supporting the core objectives of the business.

The TCO of a managed application performance management solution can be dramatically less when compared with a solution that is owned, operated and maintained by the enterprise. Further, using the provider-endorsed tools means that the provider endorses the accuracy of the tool and will stand behind its performance.



About XO Communications

XO Communications is a leading nationwide provider of advanced broadband communications services and solutions for businesses, enterprises, government, carriers and service providers. Its customers include more than half of the Fortune 500, in addition to leading cable companies, carriers, content providers and mobile network operators. Utilizing its unique combination of high-capacity nationwide and metro networks and broadband wireless capabilities, XO Communications offers customers a broad range of managed voice, data and IP services with proven performance, scalability and value in more than 85 metropolitan markets across the United States. For more information, visit www.xo.com.

For more information on XO WAN Services and XO Applications Performance Management, visit <http://www.xo.com/services/network/pages/overview.aspx>.

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