

Business in the Cloud: Will Your Internet Connectivity Provide a Positive ROI?

Availability and speed are critical performance metrics for the connectivity services which underpin virtually every online application or service. Using a simple Return on Investment (ROI) approach, enterprises can quantify the value of best-in-class connectivity. What are the tangible financial drawbacks when you experience outages or latency? How do you measure your risk and then mitigate it? This paper addresses all the factors associated with being able to calculate your own ROI.

An Internap White Paper



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Introduction

With the rapid and continuing growth of networks and network-based applications, the Internet has become the most important delivery platform for digital media. The economic value of online service delivery can be measured in the billions of dollars and any disruption to this delivery model has real and measurable costs. One of the key infrastructure elements in the online model is connectivity. Effective and efficient connectivity is critical to capitalizing on the value of an enterprise's online infrastructure. With so much at risk, it is worth taking a close look at the financial impact of connectivity choices on the enterprise bottom line. A Return on Investment (ROI) calculation is one measure that decision makers can use to model the impact of connectivity performance on their business.

The Importance of Connectivity to Online Application Performance

Connectivity is an essential part of the modern communications infrastructure. There is almost no activity in our growing digital economy that does not depend on parties being able to exchange information with each other.

The information exchange may assume different forms. It could be a telephone conversation or an Internet chat. It might be a file exchange or an exchange of credentials taking place to support a business application. With the explosion of the Internet as a platform for commerce and service delivery, the information exchange may be in support of an e-Commerce transaction, part of a Software as a Service (SaaS) application or it might be associated with an online gaming session. In short, it could be related to any of the thousands of applications that are currently mediated via the Internet.

Of course, to the average user, the whole process is completely transparent. There is no need to consider the complex infrastructure of data centers, servers, storage, applications, firewalls, browsers and high-speed connections that make the online user-experience possible. In fact, the average user is so conditioned to the experience that his or her expectation for performance from this infrastructure has become very high. According to a study of eCommerce website performance by Forrester Consulting, the average online shopper expects a web page to load within two seconds or less. After three seconds, abandonment rates of up to 40% are observed.¹ The level of user expectation reflected in the Forrester Consulting study is ultimately the driver for enterprises to ensure that they underpin their online presence with the best infrastructure solutions possible.

The Application Performance Chain

The delivery of a service or capability to an online user involves multiple processes and systems. The performance of online applications is in turn subject to the performance of a number of key architectural elements which support the provider-customer interaction. The most important links in the **application performance chain** are:

1. Application
2. Application Network Infrastructure
3. Connectivity Solutions

¹ Forrester Consulting, "eCommerce Web Site Performance Today: An Updated Look at Consumer Reaction to a Poor Online Shopping Experience". A commissioned study on behalf of Akamai Technologies, Inc. August, 2009.



Each of these links is subject to imperfections which can impact the overall performance of the application. The first source of performance delay is the application itself which may be poorly designed or poorly deployed and not optimized to account for latency, peak usage and a host of other factors. The second source of delay is sub-optimized network infrastructure including elements like storage and server capacity which can also have a negative impact on application performance. The final source of performance impairment is the connectivity which links users to the application and which can have a significant impact on the user's experience. Metrics such as latency (transmission delay), jitter (variation in data packet delivery) and throughput (actual delivery capacity) determine the quality of the connectivity solution.

Benchmarking – A Framework for Improving Performance

In an online performance benchmarking study conducted in 2008 by Aberdeen Group, 160 organizations representing several industries, geographies and enterprise sizes were surveyed.² Based on the survey results, three categories of companies were created: best in class, average and laggards. The criteria used to categorize the companies were average availability of web applications, success rate in preventing performance issues and average improvements in application response times.

The classification of companies based on the first two criteria appears in Table 1. Among the findings of the study was the fact that best-in-class companies focus on eliminating performance bottlenecks before applications are deployed into production. These companies recognize that there is an economic cost associated with sub-optimized online applications and seek to proactively address the issue. The approach of the best-in-class companies should be considered a best practice and all companies should carefully consider the performance capabilities of all elements of their application performance chain including connectivity.

The costs of poor performance are variable and subject to the specific operational setup and business model of the enterprise in question; however, online performance is a metric that no company conducting business on the Internet can afford to ignore. The nature of choice and competition demand that the application performance chain, including the connectivity solution, be optimized. Areas that can be impacted by poor connectivity are revenue generation, cost-containment and customer satisfaction. Some examples of the potential impact include:

1. Reduced transaction revenues resulting from connectivity issues which deny customers access to applications or render the application less efficient.
2. Increased costs resulting from the need to compensate for inadequate bandwidth or for additional customer care and warranty costs associated with failure to deliver what customers are seeking.
3. Reduction in future revenues if customers have a bad service experience. Poor customer experiences have a direct impact on retention rates and customer churn.

² Aberdeen Group, "The Performance of Web Applications: Customers are Won or Lost in One Second", Bojan Simic, November 2008.



Table 1: Categorization of Top Online Performers based on Aberdeen Group Survey

Best in Class – Top 20% of aggregate performance scores	<ul style="list-style-type: none"> • 99.85% average availability of business-critical web applications • 83% success rate in preventing user-impacting issues
Industry Average – Middle 50% of aggregate performance scores	<ul style="list-style-type: none"> • 97.8% average availability of business-critical web applications • 37% success rate in preventing user-impacting issues
Laggard – Bottom 30% of aggregate performance scores	<ul style="list-style-type: none"> • 86.3% average availability of business-critical web applications • 17% success rate in preventing user-impacting issues

Source: Aberdeen Group, November 2008

The Bottom-Line Business Impact of Poor Performance – Measuring Connectivity ROI

Enterprises intent on achieving best-in-class performance from their online applications should evaluate the potential financial impact of less than ideal performance. This can be accomplished by comparing the options available for supporting an application in terms of the level of performance that they are able to deliver. For a connectivity solution, two key factors need to be considered: availability and speed. With two comparable options, an ROI calculation can be made to determine the relative economic benefit of two alternatives.

Availability is a critical metric, usually described in terms of the percentage of time that a network is available to support its primary networking function. In this case, more is clearly better since availability for an online business directly translates to additional revenues by supporting a customer's ability to transact. Availability can also be a factor for companies offering performance Service Level Agreements (SLAs) where a lack of availability can cost money in the form of penalties, or worse, negatively impact customer satisfaction. According to the Aberdeen study, best-in-class companies typically experience an average availability for web applications of 99.85%. By comparing the difference in availability and the impact of loss of availability on revenue generated online, a value can be placed on the benefits of higher levels of availability realized by use of connectivity solutions from a provider like Internap.

The other area impacting performance is network speed. Faster networks are able to support greater transaction efficiencies and have a direct impact on user-experience, which in turn is reflected in metrics like website abandonment and conversion rates, churn rates and customer retention rates. With Internet applications often involving multiple hops across networks, the benefits of a low latency network from a provider like Internap become even more critical, particularly if the site is transactional in nature.



Based on performance goals, Internap can determine the financial impact in dollar terms of a high-performance connectivity solution for various types of enterprises which conduct their business online.

Internap ROI Example for eCommerce Application

An eCommerce company with annual revenues of \$25M and a total monthly bandwidth requirement of 750 Mbps requires a connectivity solution to support its core application. The company wants to ensure availability and performance. Two options are available. The first utilizes two carriers to assure redundancy with traffic evenly split between the two connections. The second option utilizes an Internap Performance IP solution. While the Internap solution commands a price premium of just under thirty percent, this is widely offset by an annual benefit of almost \$180K in incremental gross profit. The benefit is realized by maximizing the availability of the site, thereby increasing customer access and maximizing performance which reduces lost sales due to site transaction abandonment. With a positive ROI, the investment in an Internap solution makes good business sense for this customer and for the customers they serve.

Best-in-Class Application Performance

With its patented Performance IP™ solution, Internap is able to assure its customers access to best-in-class connectivity service. For companies aiming to achieve the highest level of performance from their web-based applications, Internap's standing as a best-in-class provider is supported by three pillars. First, Internap can demonstrate that its network experiences **six times fewer** network issues than the average provider network. Second, Internap's Private Network Access Point (P-NAP®) architecture provides users with access to all major Internet backbones from a single site, assuring access to viable network paths at all times. Finally, Internap's patented route optimization software enables identification and routing of customer traffic on the best performing route available at any given time. Together, these three capabilities give Internap the ability to maximize availability and minimize performance issues for users of the Internap solution.

With the Internap Performance IP solution deployed as part of a proactive approach to application performance, a number of benefits can be realized. They include:

- **Improved Availability** – Network availability is key to capturing customers and revenue. Availability is probably the most critical success metric for an online application.
- **Improved Customer Capture** – Speed is important to the online user with studies showing that potential customers are more than willing to quickly abandon non-responsive websites. Internap's low latency, low jitter network ensures that you will have the fastest connection possible to your prospective customers.
- **Improved Efficiency** – For any transaction-based business, the ability to increase transaction and conversion rates brings you closer to being able to maximize the revenue potential of your business.
- **Improved Customer Experience** – Customers who have poor experiences are more likely to leave a service (and more likely to talk about it) than any class of customer. For online businesses where availability and speed impact customer experience, such as SaaS businesses, a performance connectivity solution can have a direct impact on customer retention (future revenues).



With the strength of our IP solution, unique in the carrier industry, Internap serves a broad cross-section of customers whose business and value propositions are dependent on high-performing online applications. Ensuring that the application performance chain of a business-critical application is as strong as it can be is worth the investment in connectivity solutions that are able to demonstrate economic benefit – while at the same time delivering best-in-class performance.

Conclusion

The relative value of online performance options can be measured in dollars and cents by evaluating the impact on revenues, churn, site abandonment rates and customer retention of different connectivity options. Internap has established ROI as a tool to compare its connectivity solutions to that offered by alternative providers. By comparing the incremental revenue driven by an Internap connectivity solution, you will experience the benefits of a premium solution that ensures a greater economic return from an online application infrastructure.

For more information on how to cost-justify a premium connectivity solution for your business, contact us at **877.THE.PNAP (1.877.843.7627)**.

