

Performance Management Insights

Saving Millions With A New Approach
To Service Performance

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Executive Summary

In today's challenging economic times, business productivity takes precedence over many other considerations. Poor service performance has grown from a subjective user satisfaction problem into one quantifiable in lost revenue or productivity. To achieve satisfactory quality of service, IT infrastructure and operations (I&O) professionals usually monitor what they believe to be the weakest service delivery infrastructure links. Over time, the focal point has moved from networks to systems to application code. But the current complexity of business services is such that issues can spring from anywhere in the service delivery chain.

To explore best practices in resolving performance problems, NetScout commissioned Forrester Consulting in August 2014 to evaluate the notion that an end-to-end service performance management approach across application, network, server, and database is superior to traditional methods in providing a holistic view of service performance. Forrester developed a hypothesis that tested the assertion that in traditional IT service degradation and outage monitoring and resolution processes, time is primarily wasted in identifying where a problem has originated, and that an effective approach to reducing this "mean time to knowledge" is through the use of application-oriented network performance monitoring.

In conducting an in-depth survey of senior IT decision-makers at large North American firms with responsibility for their organizations' application, network, and/or service monitoring technology, Forrester found tangible benefits to improving and accelerating the resolution process.

KEY FINDINGS

Forrester's study yielded four key findings:

- › **Service outage events can cost companies millions per year.** Survey respondents reported an average of 8.7 brownouts and 9.9 downtime events per year, with costs of one hour of these events at \$19,162 and \$29,162, respectively. The 50% of respondents who reported that more than 90% of their IT issues take more than 24 hours to resolve stand to lose nearly \$11 million per year at these averages.

Assuming average rates of service interruption cost, time-to-resolve, and frequency of events, 50% of respondents stand to lose nearly \$11 million per year.

- › **Identification of failed service delivery components is the No. 1 issue in performance management.** 91% of our survey respondents cited problem identification and alerting as the No. 1 improvement needed in their organization's performance and availability management. As applications and business services increase in complexity, the key to reducing the time to resolution of a problem hinges critically on proactively detecting service degradations and a rapid triage to identify its origin.

Ninety-one percent of survey respondents cited problem identification as the No. 1 improvement that is needed.

- › **Organizations take a bottom-up approach to service management.** 73% of survey respondents have more than ten monitoring tools, such as Network Performance Management (NPM), Application Performance Management (APM), and log data analytics to detect, alert, and help resolve performance and availability issues. But these tools are acquired in an ad hoc fashion to address problems that occurred in the past - 90% of respondents agreed that their tools were purchased to prevent specific issues, not as the result of strategic planning. The outcome is a bottom-up approach to service management consisting of a multitude of silo-specific point tools and disparate data that lacks the ability to triage complex service delivery issues. It extends the Mean Time to Resolution (MTTR) due to lack of insight into the interrelationships and dependencies across service delivery components. The analytic constructs resulting from any attempt to use a global framework approach to automate the aggregation, normalization, correlation, and contextual analysis of large volumes of data in real time across multiple disparate data sets are extremely complex and may be impossible to implement.
- › **Infrastructure and operations decision-makers see value in a top-down approach.** An average of 93% of survey respondents anticipate high or moderate levels of improvement across five service management metrics, such as time-to-issue-identification and time-to-issue-resolution, as a result of an end-to-end monitoring and analysis solution. This top-down service triage methodology relies on a consistent and cohesive set of data that provides a meaningful and contextual view of all interrelationships and dependencies across service delivery components.

IT Plays A Big Role In Achieving Business Goals

The role of IT organizations in the enterprise has changed considerably over the years. The ever-decreasing cost of hardware, availability of middleware and integration technologies, and increasing productivity in software development have enabled a myriad of applications and business services that have quickly become woven into the business fabric. As a consequence of this omnipresence of IT in business activities, there has been an evolution of the role of IT from business support to business service provider. This role change has several implications, the more significant of which are: 1) the accent on the quality of services provided to the business groups; 2) the focus on customer experience; and 3) the cost of these services, which are now an integral part of the business bottom line. Today, the business expects that IT will play a major role in:

› Improving the productivity of the business workforce.

In an economic downturn, one of the key objectives is clearly to improve an enterprise bottom line by improving results rather than increasing headcount, a notion supported by the 89% of respondents to our survey who expect increased productivity from IT.

› Lowering the company operational costs.

Improvement in business productivity cannot be obtained at any cost, as IT operational costs are part of the bottom-line equation. Thus, 80% of survey respondents expect quality services at low costs.

› Improving the quality of business processes.

By providing information collected from transactions and interactions between the business and its clients, IT provides more focused marketing and sales strategies, a sentiment echoed by 81% of respondents.

› Acquiring and retaining customers.

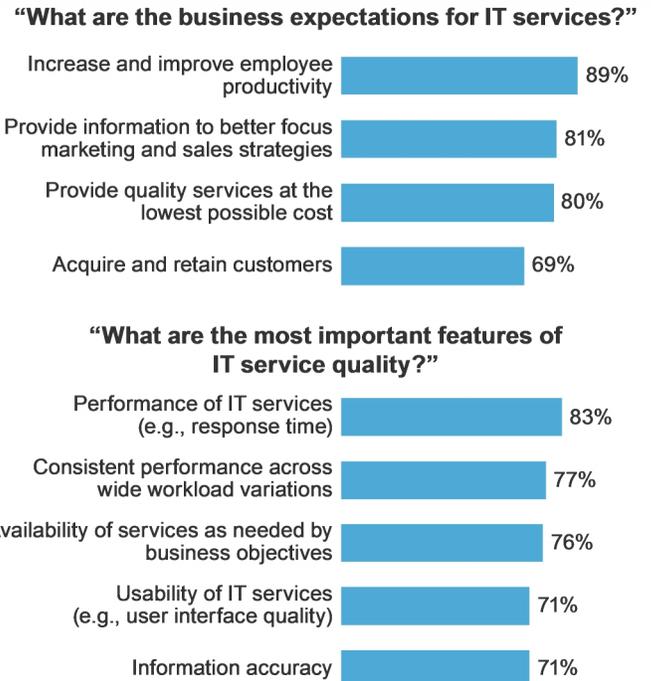
Constantly improved quality of service, critical to end user experience, is also the key to retaining customers and keeping a business alive. It's no surprise, then, that nearly 70% of respondents consider IT services as a component of acquiring and retaining customers.

› Delivering high performance.

IT services are evaluated on many metrics, but respondents agreed that consistent and satisfactory performance is king among them (see Figure 1).

FIGURE 1

Business Expects A Lot From IT, And Performance Is The Most Valued Quality



Base: 150 US enterprise infrastructure and operations decision-makers

Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

Complexities Of New Services Create Quality Of Service Issues

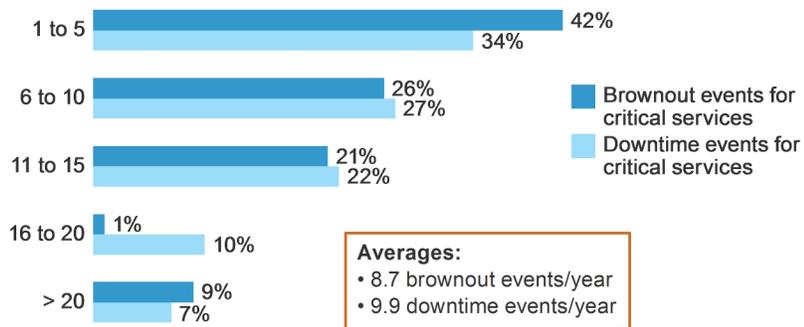
The ever-decreasing cost of hardware and its ever-expanding capabilities help create a better value-cost ratio for a number of business services that would otherwise not make economic sense. The quest for a more business-responsive IT has led to a considerable amount of application software integration, facilitated by the appearance of middleware and service-oriented architectures. Thus, the size of companies' software portfolios has grown exponentially over the past few years and produced a considerable uptick in multitiered applications that combine together several business services located on different platforms. As a consequence:

› **Firms experience numerous extended service outage events per year.** The complexity of many transactional business services has reached a point at which the diversity of issues coming from multiple dependencies is way beyond team skill and cooperation levels. The difficulty of resolving issues in transactions and applications directly affects the quality of service and the

enterprise’s overall productivity and revenue. It’s also a source of unplanned work for many IT resources, which has consequences on IT operational costs. Our survey shows that enterprises average 8.7 brownout events and 9.9 downtime events for critical services per year (see Figure 2). In addition, 50% of respondents said more than 90% of their performance problems take more than 24

FIGURE 2
Firms Experience A Combined Average Of More Than Eighteen Critical Brownout Or Downtime Events Annually

“Using your best estimate, approximately how many downtime events for critical services/ brownout events for critical services does your organization experience annually?”

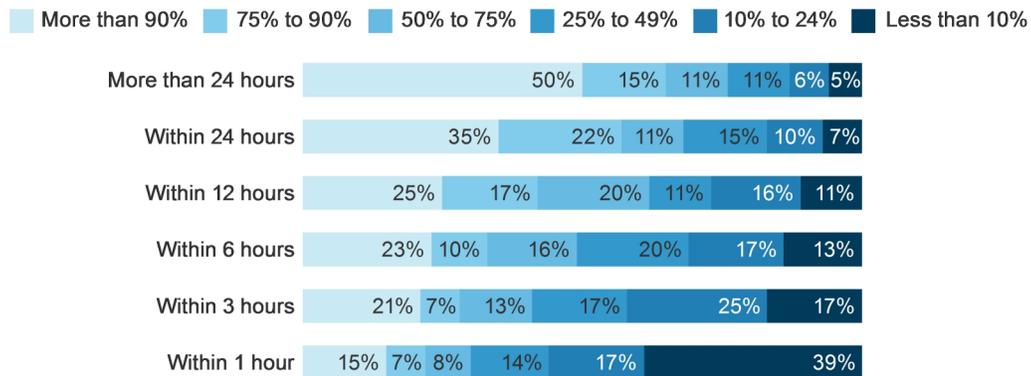


Base: 150 US enterprise infrastructure and operations decision-makers

Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

FIGURE 3
Few Performance Issues Are Resolved Quickly, And Many Persist For Extended Periods

“Using your best estimate, what percentage of availability or performance problems are resolved within the following timeframes once identified?”



Base: 150 US enterprise infrastructure and operations decision-makers

Note: Percentages may not total 100 because of rounding.

Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

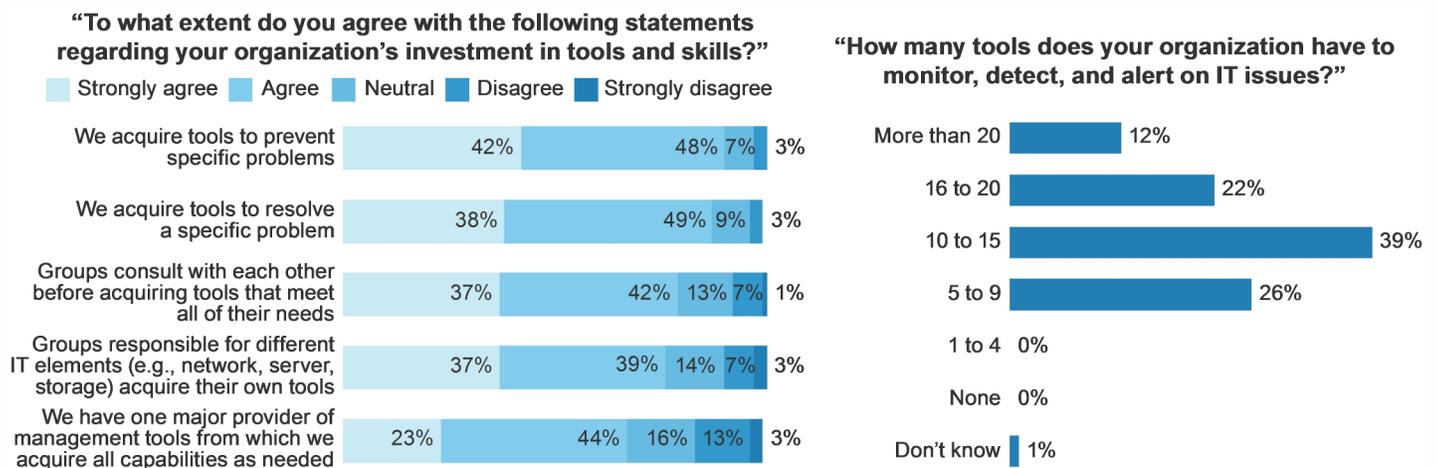
hours to resolve. Only 15% said they resolve more than 90% of performance issues within an hour (see Figure 3).

- › **Service outage events cost companies millions per year.** Survey respondents reported the average cost of one hour of downtime and brownouts to be \$29,162 and \$19,162, respectively. As such, the cost of failed problem resolution has a considerable impact on the business bottom line, either through lost employee productivity or customer business losses. In fact, those 50% of respondents who reported more than 90% of their IT issues as taking more than 24 hours to resolve stand to lose nearly \$11 million per year at these averages. The potential costs are even higher for industries like financial services, which estimates hourly costs of \$30,333 for downtime and \$20,200 for brownouts.
- › **There are clear consequences for IT operational costs.** Monitoring and performance management tools are often afterthoughts akin to closing the barn door after the horses escaped. Once a problem appears and is successfully solved, many organizations set to prevent its re-occurrence by purchasing a specific tool. 90% of our survey respondents said they buy tools to prevent specific problems, and 87% said they do the same to solve specific problems. But this leads to an accumulation of riches. As tools are all aimed at specific issues, they lack the cohesion and integration that could help proactively

identify problems. As a consequence, respondents use a minimum of five tools, with the largest portion (39%) using between ten and fifteen and over a third (34%) of respondents using even more (see Figure 4). Such reliance on multiple NPM, APM, and log data analysis tools as part of a bottom-up performance management methodology has the potential to inhibit service triage activities and extend the MTTR.

- › **Availability and performance issues have many sources.** These difficulties have been so acute over the past five years that they have led to a proliferation of point tools based on a variety of technologies such as Simple Network Management Protocol (SNMP), Remote Network MONitoring (RMON), bytecode instrumentation, synthetic transactions, application agents, server agents, and device and server logs. These technologies, although effective in managing individual aspects of service delivery, lack service-level context from interrelationships and dependencies across service delivery components, a particularly salient point given the variety of sources to which our survey respondents attribute performance issues (see Figure 5).

FIGURE 4
IT's Full Toolbox Reflects A Focus On Specific Issues



Base: 150 US enterprise infrastructure and operations decision-makers

Note: Percentages may not total 100 because of rounding.

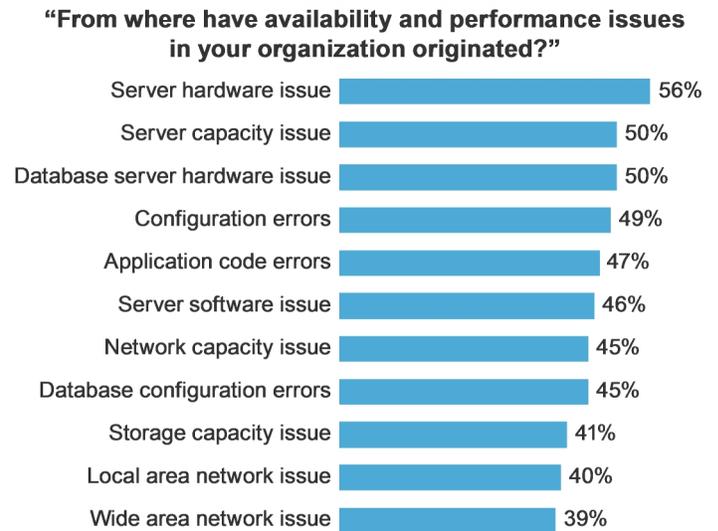
Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

Current Approaches To IT Performance Management Fail Businesses

IT exists in any enterprise for the purpose of supporting business processes with a satisfactory level of performance. Studies have shown that the keys to productivity in interactive services are performance and availability: As long as the user and the machine keep a compatible pace — that is, they don't have to wait on each other — productivity increases, cost of business drops and quality, and thus business revenue, improves.¹ Of course, the cost of providing these functions and keeping the user satisfied must be minimal, or at least competitive with other providers. But many IT organizations are working in “firefighting” mode, meaning through help desk, trouble tickets, and the like, they basically wait for the user to complain before identifying problems and correcting them. Working in this mode risks reduced user confidence in the IT organization; higher costs due to constant “fixing” under time pressure, with excessive time spent in war rooms; a lack of awareness by IT management of long-term infrastructure deficiencies; and a lack of even basic information needed for implementation of improvements.² The fundamental reasons for these difficulties can be traced to:

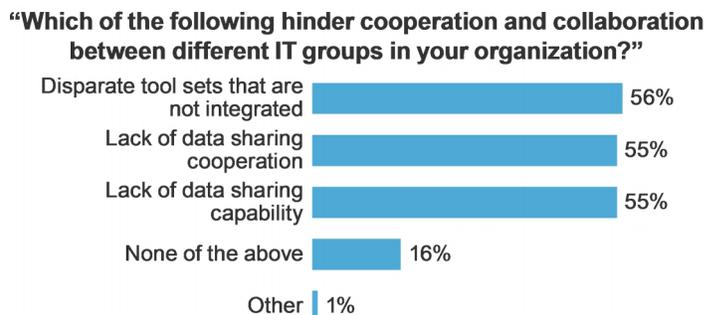
- › **Insufficient cooperation between different teams.** A major issue is lack of cooperation between various teams that manage different aspects of infrastructure, applications, or business services. As these teams use different, specialized, and silo-specific tools, they don't collect information from the same perspective and data sometimes contradicts each other, thereby hindering cooperation. Our survey results back this up. When we asked respondents what hinders cooperation between different IT groups, more than half cited disparate tool sets, lack of data sharing cooperation, and lack of data sharing capability (see Figure 6).
- › **The difficulty to be proactive.** It is extremely difficult to proactively manage service performance through traditional means, since there is no global visibility into the composite n-tier service delivery infrastructure. This difficulty is compounded by IT's use of virtualization and internal cloud technologies, whose virtual internal clocks complicate the use of traditional monitoring agents.

FIGURE 5
Availability And Performance Issues Have Various Sources Beyond The Code



Base: 150 US enterprise infrastructure and operations decision-makers
Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

FIGURE 6
Disparate Tool Sets And Lack Of Data Sharing Hinder Collaboration



Base: 150 US enterprise infrastructure and operations decision-makers
Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

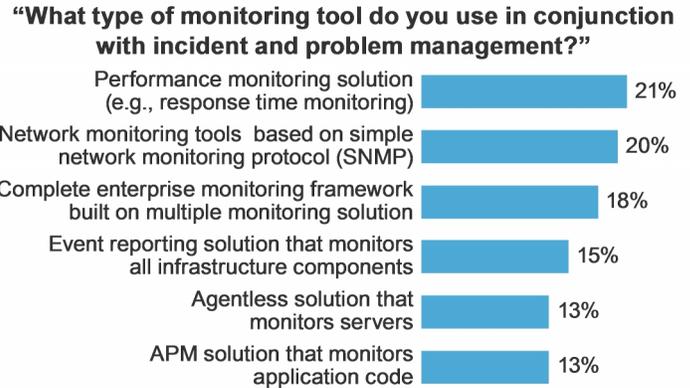
An Effective Performance And Availability Solution Requires A New Approach

These difficulties stem from an inadequate tool set. Management solutions are often acquired as an afterthought, when services are already in production. When asked which type of tools are used in conjunction with performance management, respondents cited from all over the management spectrum: response time monitoring (21%), SNMP-based network monitoring (20%), management framework using multiple monitoring solutions (18%), and application code monitoring (13%). Using disparate point solutions that are not time-aligned makes end-to-end analysis challenging, if not impossible. This bottom-up performance management approach results in considerable delays in problem identification and has a major impact on MTTR (see Figure 7). Respondents to our survey agree that:

› **Problem identification and alerting capabilities are crucial.** Respondents to our survey are well aware of these tool inadequacies. Thirty-eight percent said that it is difficult to determine where an issue originates or identify the right person to handle the issue. What's more, an almost general consensus (held by 91% of respondents) is that improved problem identification alerting capability would have a high or moderate impact on resolving performance issues (see Figure 8).

FIGURE 7

Companies Acquire Disparate Tool Sets In Reaction To Specific Problems



Base: 150 US enterprise infrastructure and operations decision-makers

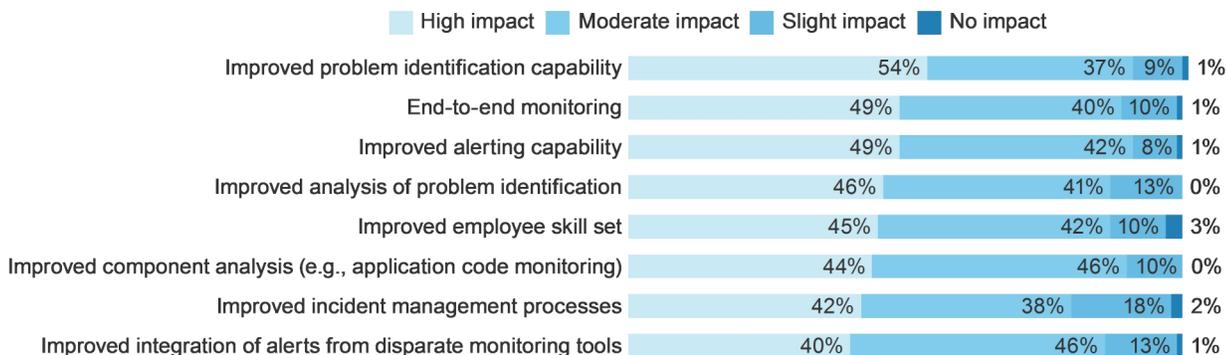
Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

› **Time is of the essence.** An overwhelming majority (92%) of survey respondents said that time-to-issue-identification would be highly or moderately improved by an end-to-end monitoring solution, in addition to high levels of improvement across other metrics (see Figure 9). From all the data collected in this study, Forrester's conclusion is that the time to alert and identify performance and availability problems is where time is wasted, leading to high costs for the business and IT.

FIGURE 8

I&O Sees Much Room For Improvement In Their IT Performance Approaches

“To what degree do you think each of the following may improve your organization's IT performance issues?”



Base: 150 US enterprise infrastructure and operations decision-makers

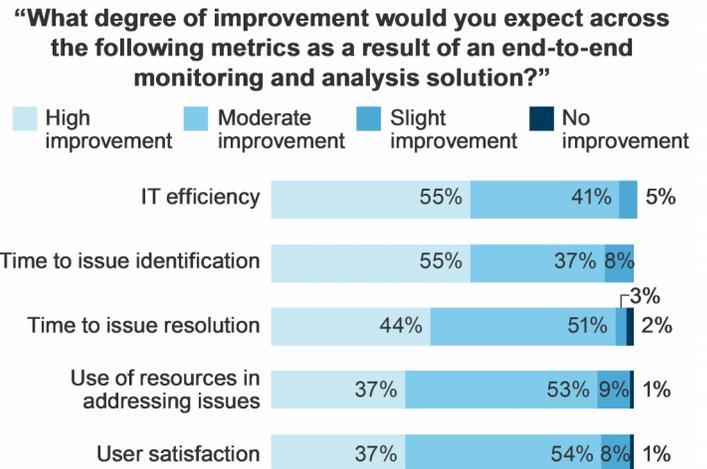
Note: Percentages may not total 100 because of rounding.

Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

› **End-to-end performance monitoring is difficult with common approaches.** The bottom-up approach to end-to-end performance monitoring is based on analytics of disparate data sets collected from point solutions. The major shortcoming of such an approach, beyond the hardship of deploying it across the enterprise, lies in the need to aggregate, normalize, correlate, and contextually analyze large volumes of data. Lack of consistency across monitoring tools makes it virtually impossible to analyze these disparate data sets in a service contextual fashion for real-time performance management purposes. The analytic constructs resulting from any attempt to use a global framework approach to automate these processes is extremely complex and may be impossible to implement.³

At the core of today's data center, the network is where data and transactions flow from one server to the next. They are routed to service enablers and then from application servers to the database, thus providing not only an end-to-end view of the transaction flow, but also a consistent set of metrics that are time-aligned. The flow of packets through the network provides the raw data that can instantly identify the source of service degradations and outages. Contrary to a bottom-up approach that provides detailed views of individual components that are impossible to reconcile in a coherent ensemble, the network view shows a complete picture of the service performance and its deviations in terms of availability and performance. This is a top-down approach to performance management.

FIGURE 9
I&O Sees Many Benefits From End-To-End Monitoring And Analysis



Base: 150 US enterprise infrastructure and operations decision-makers

Note: Percentages may not total 100 because of rounding.

Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

Key Recommendations

Forrester's in-depth surveys of senior IT infrastructure and operations decision-makers yielded several important recommendations:

- › **Assess the cost of your firm's service outages.** The loss of employee productivity and confidence of clients, as well as the extra operational burden placed on IT staff, can all be quantified. If the numbers add up, a better approach to the resolution of problems could effectively pay off quickly.
- › **Move beyond specialized APM, NPM, and log analysis solutions.** Since all components of service delivery infrastructure can be the root cause for performance and availability issues, relying on multiple disparate data sets collected from silo-specific APM, NPM, and log analysis tools is ineffective. This approach does not provide visibility into the interrelationships and dependencies across the individual service delivery components, and as a result prolongs the MTTR, inhibits IT collaboration, and leads to higher operational expenses and extended time spent in the war rooms.
- › **Don't jump into a global framework approach either.** The analytic constructs resulting from any attempt to automate the aggregation, normalization, correlation, and contextual analysis of large volumes of data in real time across multiple disparate data sets may be extremely complex and impossible to implement and maintain across the entire service delivery infrastructure. In the current type of complex service environment, the tradeoff between the cost of deployment and the benefits for IT operations is heavily in favor of simpler products that provide a solid support to staff engineers.
- › **Follow a simple, global, and effective top-down performance management approach.** Service degradations and outages can originate anywhere. Today's complex services are delivered on an increasingly abstracted and opaque infrastructure. Our study found that performance and availability issues can be blamed on many hardware and software components, and that monitoring tools limited to single elements of this complex ecosystem are not effective solutions. Alternative performance management approaches that rely on a consistent and cohesive set of metrics based on analysis of network traffic exist today. These solutions may provide faster deployment, lower infrastructure overhead, improve IT collaboration, reduce MTTR, and support efficient new service rollouts in various data center environments, both physical and virtual.
- › **Get a holistic view of your application infrastructure through network traffic analysis.** A holistic view based on a consistent and cohesive set of metrics derived in real time from deep analysis of the traffic traversing the service delivery infrastructure is now readily available. Specialized technology using rich packet-flow data to generate scalable metadata that enables a comprehensive real-time and historic view of important metrics related to network and application performance in a service contextual fashion provides an effective way to quickly identify components at fault in the delivery of a service.
- › **Save time and money through metrics.** These metrics should include the key service performance indicators such as application traffic volumes, application server response times, server throughputs, aggregate error counts, and error codes specific to application servers and domains, as well as other data related to network and application performance. This approach should be based on a holistic view across the entire service delivery infrastructure from a single pane of glass and provide contextual top-down workflows to proactively detect service degradations and quickly identify the failed service delivery component.

Appendix A: Methodology

In this study, Forrester conducted an online survey of 150 North American senior IT infrastructure and operations decision-makers across various industries with responsibility for application, network, and/or service monitoring technology, tools, and process adoption and deployment. The study evaluated the shortcomings of current IT network and application monitoring tools and processes, the value in various related capabilities, and perceptions of an integrated application-network approach. Questions provided to the participants asked about the types of IT issues their organizations experience, where these issues originate, and the processes and resources used to identify and resolve these issues. Respondents were offered a small incentive determined and distributed by their survey panels as a thank you for time spent on the survey. The study began in August 2014 and was completed in October 2014.

Appendix B: Supplemental Material

RELATED FORRESTER RESEARCH

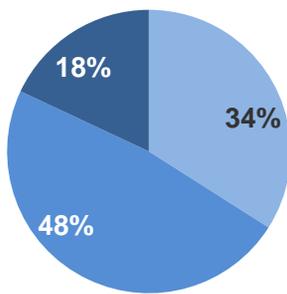
“Develop Your Service Delivery Monitoring Strategy,” Forrester Research, Inc., September 6, 2012

“Guarantee Business Value From Technology Monitoring,” Forrester Research, Inc., November 1, 2013

Appendix C: Demographics/Data

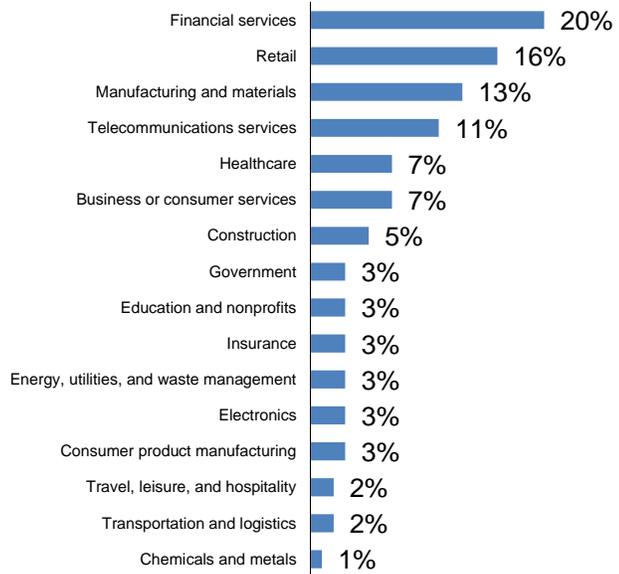
FIGURE 10
Respondent Demographics

“Using your best estimate, how many employees work for your firm/organization worldwide?”

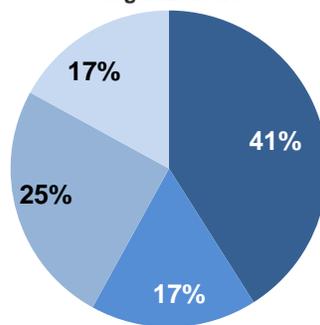


- 2,500 to 4,999 employees
- 5,000 to 19,999 employees
- 20,000 or more employees

“Which of the following best describes the industry to which your company belongs?”



“Which title best describes your position at your organization?”



- C-level executive
- Vice president
- Director
- Manager

Base: 150 US enterprise infrastructure and operations decision-makers

Note: Percentages may not total 100 because of rounding.

Source: A commissioned study conducted by Forrester Consulting on behalf of NetScout, October 2014

Appendix D: Endnotes

¹ Source: Jakob Nielsen, *Usability Engineering*, Morgan Kaufmann Publishers, 1993.

² A recent survey of IT service management professionals found high maturity self-assessments of classic “firefighting” processes such as incident management or problem management, but low or nonexistent maturity when it comes to more strategic processes. Source: “The State And Direction Of IT Service Management: 2012 To 2013,” Forrester Research, Inc., March 18, 2013.

³ Source: “Develop Your Service Delivery Monitoring Strategy,” Forrester Research, Inc., September 6, 2012.