



## Five myths of infrastructure monitoring: how end-user monitoring can help you improve customer satisfaction

White paper

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## Is your infrastructure monitoring responsive enough to satisfy your customers?

More than ever before, businesses seek to wield IT as a competitive weapon—one that can help the business satisfy ever-increasing customer requirements. IT is under pressure to act less as a provider of technology and more as a partner fully engaged with the larger organization to achieve business objectives.

To rise to this challenge, IT must focus on the issue of primary importance to the business—namely customers. To demonstrate how it can support customer requirements, IT will typically present to the business a wide range of key metrics focusing on issues such as application uptime, network availability, database response times and the like. Where IT scores high on these key performance indicators, this is often taken as evidence that IT is supporting high levels of customer service.

But increasingly, business owners detect cracks in the façade. While IT can show “five nines” uptime and availability, the business is often far less sanguine regarding the level of availability for its key customer-facing business processes. Customers still experience service outages and poor performance—leading to lower customer satisfaction and potential loss of market share. The problem at the heart of this disconnect is one of perspective. The business remains focused on the customer. IT, in large part, remains focused on technology. While infrastructure monitoring can tell IT

a lot about the performance of its software and technology components, it often fails to reveal useful information regarding the quality of the experience for the customer/end user. This situation is amply illustrated in the following five myths of infrastructure monitoring.

### Myth #1: monitoring technology components tells you everything you need to know.

Most IT organizations struggle with a siloed approach to infrastructure monitoring. One group monitors databases, another the network, another the middleware—and so on down the line. In such an environment, even if you diligently monitor every technology component in the IT infrastructure 24x7, you still may fail to reveal meaningful information about the end-user experience. Each group, from their isolated perspective, may report acceptable levels of system availability. But from a holistic perspective—where each subsystem needs to work in a coordinated fashion to support the customer-facing business process—the story may be drastically different. End users may be experiencing poor performance or outages, and the only way IT gets clued into this reality is when a frustrated customer picks up the phone and calls into the help desk.

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Customers are the most expensive monitoring devices you can have.

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## Myth #2: we've got things covered. We'll just respond to the few customer calls as they come in.

Organizations that depend on infrastructure monitoring tools for insight into the end-user experience are likely to develop a false sense of security. According to a survey conducted by IDC, these tools detect only 18 percent of service disruptions, whereas 42 percent are reported by customers calling into the help desk.\* Of course, by the time the customer calls in, the damage is already done. By finding ways to focus more effectively on the experience of the end user, IT can be far more proactive while reducing expensive calls into the help desk.

42 percent of service disruptions are reported through the help desk. Only 18 percent are caught by infrastructure monitoring tools.\*

## Myth #3: if I can ping the website, then the application is working well.

One time-honored method for confirming the availability of an online application is pinging the website that hosts it. Unfortunately, knocking on the front door doesn't tell you much about who's inside the house. Today, companies increasingly use service-oriented architecture (SOA) based development techniques to deliver applications and support processes in composite fashion using web services, XML, JavaScript and a host of other technologies. This means that entire customer transactions are composed of loosely coupled process steps that are strung together—often across enterprise boundaries—to increase the flexibility of service delivery. Pinging a website might tell you that the first step for a given transaction is up for customer use, but it doesn't tell you anything about the rest of the transaction. A customer may be able to search for a book and add it to their order, but can they jump to another part of the website and add a CD? And what happens when your third-party credit processing service steps into the process to complete the transaction? Is the service delivered seamlessly and in a way that supports a positive customer experience? These are the kinds of issues IT needs to know about to properly understand the end-user experience.

Knocking on the front door doesn't tell you who's inside the house.

\* Source: October 2007, IDC #209092, Volume: 1

## Myth #4: when there's an application performance problem, we know exactly who should get the ticket.

When it comes to solving IT problems, many organizations underestimate the time and resources involved in the seemingly simple step of allocating the problem to the right team. According to Ziff Davis (IT Management Solutions Study, March 2007), 60 percent of service outage problems require the involvement of at least ten different people in the organization. According to industry benchmarks, 80 percent of the time required to fix a problem is spent on finding the right problem area. This means that only 20 percent of the time can be spent on addressing the problem itself. Ultimately, this is a problem of IT process; not technology complexity.

80 percent of the time for fixing a problem is finding the right team to fix it. Only 20 percent of the time is actually dedicated to the problem itself.

## Myth #5: by reporting infrastructure metrics, IT is fully aligned with the business.

It is appropriate for IT to focus on technology. But when communicating with the business, IT needs to translate technology language into business language. A database response time of less than one second, for example, tells the business little about how its customers are doing. Wouldn't it be better if IT could tell the business that customers are able to book an online ticket from login to confirmation in less than 20 seconds? When you bring your suit to the cleaners, do you want a clean suit the next day or detailed specs on the machinery used to clean it? Businesses are not much different. If a router is down, the business cares less about the router itself and more about how it's impacting the customer. Can customers still book tickets online? Can the bank process a payment? How many customers or transactions are impacted when there is a problem? Are all geographies impacted or is the problem related to a specific location? The extent to which IT can answer these questions is the extent to which it can demonstrate its value to the business.

Knowing what a router is doing is important, but routers don't pay the bills.

# End-user management: focus on the business by focusing on the customer.

The myths described above persist in environments where IT has abundant means to monitor technology components yet little insight into the customer/end-user experience. To better serve customers, partners and business owners, IT must find a way to make the user reality its own reality. The business, after all, is focused on serving its customers to the best of its ability—and the reason the business funds IT is to help it execute on this mission.

This is where the idea of end-user management can help. With an end-user management solution in place, IT can see beyond technology components and into the experience of the customer. It's worth mentioning, however, that end-user management should be designed to build off of your infrastructure monitoring foundation—rather than replace it. After all, IT must maintain a focus on technology in order to do its job effectively. Where end-user management adds value is in its ability to help IT associate technical metrics to issues that impact the customer experience. This helps IT align more effectively with the business and demonstrate its value in terms the business can understand.

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End-user management complements infrastructure monitoring—rounding out IT's ability to effectively serve the business.

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## Understanding the customer experience with synthetic and real-user monitoring

End-user management supports two fundamental approaches to facilitating a positive customer experience: synthetic and real-user business process monitoring. While separate technologies, the two work in conjunction with one another to help IT understand the user reality. In closed-loop fashion, both approaches can also contribute to more relevant testing procedures during the application development phase to help improve the overall application performance lifecycle.

### Synthetic monitoring

With synthetic monitoring, you can execute simulated user transactions from multiple locations inside or outside your firewall. This enables you to identify availability and performance issues before they impact your customers and the business.

To create a synthetic monitor, IT simply records the steps a user would go through to complete a transaction on the live system. This is then run from various locations on a periodic basis. Just as with a live user, the synthetic monitor proceeds through a series of discrete process steps, traversing a wide range of tiers in the IT infrastructure including firewalls, switches, load balancers, web and applications servers, mainframe environments, databases and more. In return, IT gets solid data on the real-time health of its business processes. Reports and alerts point to outages or performance issues, and IT can relate any detected problem to the specific process step at the specific location where the issue arises. Over time, this information can form the foundation for a more business-centric approach to managing service levels—where IT focuses less on sharing discrete IT metrics and more on whether or not customers are able to satisfactorily execute their transactions.

Equally important is the fact that synthetic monitoring helps IT to become more proactive. Now IT can detect and head off issues before they impact the customer. A leading bank in Europe, for example, uses the synthetic monitoring functionality to test banking transactions before the bulk of its customers come online at the start of the business day. This has helped the bank maintain exceptionally high services levels resulting in greater customer retention.

### Real-user monitoring

Where synthetic monitoring simulates the user experience by executing a business transaction in a consistent manner, real-user monitoring captures the actual real-time customer experience by monitoring all users from all locations all the time. Real-user monitoring software enables IT to capture what actual users see on the screen as they proceed step-by-step through live business transactions. Running as a server-side solution, real-user monitoring involves the use of a probe that listens in on the incoming HTTP(S) traffic from users across all IP addresses and locations. This probe then feeds data into an analysis engine that generates usable information on a variety of customer experience metrics such as round-trip time, application availability, errors experienced and more.

Importantly, this monitoring is conducted in a non-intrusive manner that does not increase network traffic. Neither does it violate privacy standards because the monitoring is in no way focused on specific or identifiable users. Listening to every request and response, the probe

## Synthetic and real-user monitoring: supporting the entire application performance lifecycle

The recorded procedures used to test applications during the quality assurance phase can serve as the starting point for synthetic monitors. IT can then enhance these synthetic monitors based on real-world data gleaned from real-user monitoring. Finally, IT can send the customized recorded procedures back to quality assurance (QA) to improve application testing. This makes for a closed-loop process that helps reduce time to market for applications changes and continuously improve performance.

unobtrusively tracks activity from the user domain to the web server. The data collected is analyzed as a set to reveal problems tied to specific domains and user locations or to understand important customer experience issues such as rates of abandonment and network traffic patterns. This can provide significant insight into real-user behavior patterns that can be used to improve performance moving forward. It also enables IT to provide tangible data to the business based on real-world user metrics rather than on data collected from simulations.

Real-user monitoring can also significantly improve time to resolution when customers call into the help desk. By viewing the actual web pages the customer sees—while masking certain fields to maintain privacy—help-desk agents can significantly enrich the ticket with valuable information to lead to a faster resolution. In addition, by zeroing in on the number of users and the specific IP domains tied to an incident, IT staff can effectively measure business impact and take action to maintain quality of experience standards on a continuous basis.

### Synthetic vs. real: IT needs both.

Debates over which is better—synthetic monitoring or real-user monitoring—miss an essential point: Namely that for effective end-to-end customer experience monitoring, IT needs both. While synthetic monitoring can help organizations proactively monitor the health of business processes in a location-specific context, real-user monitoring can help IT understand what users really do while providing valuable data required for effective problem isolation and diagnostics. As figure 1 shows, running together, synthetic monitoring and real-user monitoring can provide the full spectrum of information required for IT to better understand the customer experience and serve the business more effectively.

**Figure 1**  
Synthetic and real-user monitoring work together to provide a complete picture of the end-user experience.

Requirement	Synthetic	Real-user
Check health when no one is using	●	
Monitor from multiple locations	●	
Diagnose actual user problems		●
Track user behavior patterns		●
Multi-step capture of business processes	●	●
Service level reporting	●	●

With both approaches to monitoring the customer experience in place, IT organizations can address the full spectrum of issues that lie at the heart of the first three myths discussed above. As demonstrated, an exclusive focus on monitoring IT infrastructure components—especially in siloed environments—can lead to an inaccurate read regarding the quality of the end-user experience (myth #1). Using synthetic and real-user monitoring, IT can get a far better understanding of how the business’s customers fare in the real world. Detecting potential issues before they become customer problems, IT can become far more proactive and reduce calls into the help desk (myth #2). IT can also become far more effective by zeroing in on discrete process steps that comprise the typical transaction, rather than simply checking to see if the front door is open by pinging the website that hosts the application in question (myth #3).

## End-user performance drill-down

Information gathered from synthetic and real-user monitoring also helps to dispel the remaining myths on our list. Myth #4 focuses on the common issue of allocation churn—where, as statistics show, the typical IT problem is passed to several different teams before finding the right home.

Many organizations simply accept this problem as part of the reality of IT. But the time and resources wasted by allocation churn make the issue worth looking at it more deeply.

The fact remains that when a help-desk agent receives a call or when your monitoring environment generates an alert, the root of the problem is seldom self-evident. Is the problem a network path issue that should be allocated to the network team? Is it a runaway data query that should be assigned to the database team? Or maybe the fault lies with a third-party application being managed by an outsourced partner. Whatever the case, end-user monitoring can give you valuable information that can help you pinpoint the root cause faster and assign the problem to the right team.

For example, let’s say that your help desk takes a call from a customer who can’t complete a transaction on your online airline reservation system. Synthetic monitors can provide information on which process steps within the transaction are experiencing trouble. They could also indicate whether or not the problem is still occurring: Is it a blip on the radar screen or a serious degradation that needs to be addressed immediately? Synthetic probes also monitor processes from multiple locations. If a customer transaction works from New York and Paris, but not from London, the issue is likely to be a problem with the network between London and the application server.

Focused on representative business transactions, synthetic monitoring can't possibly account for every possible eventuality. This is where real-user monitoring can add value. When a customer calls for help, the help-desk agent on the other end of the line can access the very step where the process broke down for that specific user even if that step was delivered by a third-party provider. Did the system hang at the beginning of the transaction when the customer attempted to choose a flight for the day before Christmas? Perhaps the database storing holiday information is being overtaxed? Or did the problem occur when the customer attempted to finalize the transaction? If so, this may point to a problem with the application server gateway.

Real-user monitoring can also serve up valuable data that can help IT identify trends over time. Perhaps overall volume is up due to a marketing promotion. Or maybe certain process steps tend to hang at the exact same time every day—indicating, perhaps, a network path conflict between an application and a batch process that runs every day at the same time. Analysis based on real-user monitoring can reveal the sort of insights that can identify such issues. Our objective here isn't to enumerate every possible way in which end-user monitoring works with existing monitoring tools to isolate and resolve infrastructure issues. Rather, the point is to show that end-user monitoring adds another tool to the IT tool belt—one that can help IT execute on its mission to better serve the business by serving customers more effectively.

## Reporting to the business in business terms

In the end, as myth #5 implies, the business needs to understand the services delivered by IT not in technology terms, but in business terms. While infrastructure monitoring tools can provide valuable information on the performance of technology components in the IT environment, only end-user monitoring allows IT to track business service levels from the customer perspective—and this is what the business cares most about.

With end-user monitoring, IT benefits from real-time, business-aligned service level reports that can help it prioritize activities based on business criticality. IT can also generate historical reports that reveal trends and help IT to proactively identify problem areas. In both cases, automation is critical for efficiency. IT does not want to waste time manually building reports and mapping service metrics to business issues.

Ultimately, such reporting capabilities can allow IT operations teams to report reality to the business in a language the business understands. This can help forge consensus on what the business wants out of IT. It can also help establish a commonly shared version of the truth that IT can use to justify ongoing investment. When IT speaks the language of business, the business can better understand the value of IT.

## HP solutions for end-user management

As a global leader in the area of network performance and availability, HP Software is uniquely positioned to help your organization achieve higher levels of success with end-user monitoring. By augmenting your infrastructure monitoring foundation with HP End User Management software, your IT organization will be able to:

- Monitor the full customer experience.
- Provide proactive alerts regarding potential problems.
- Account for and capture all steps in complex customer transactions.
- Speed problem resolution with intelligent drill-down into performance issues.
- Report to the business in business terms rather than technology terms.

These capabilities are supported in part through the combined use of synthetic and real-user monitors, business impact analysis technology, and tools that help IT staff members manage the triage process so that they can make more informed decisions when it comes to scoping, identifying and resolving incidents.

HP Business Process Monitor software supports synthetic monitoring. Based on a proven, mature business process monitoring technology that leverages the well-known HP LoadRunner software, our synthetic monitors cover the widest number of protocols, technologies and environments. This is relevant because synthetic monitors run against real-world business processes in highly complex, heterogeneous environments that often extend beyond enterprise boundaries. HP Software helps to verify that your synthetic monitoring will work in such an environment so that you can quickly start reaping the benefits.

HP Real User Monitor software supports real-user monitoring—providing complete visibility into the customer experience from every location for the critical applications that your business runs. You can capture live customer sessions, see where they clicked, measure response time and see the pages they saw (including

error messages) when they experienced a problem. This enables you to catch intermittent problems and quickly resolve them by replicating the exact problem conditions.

Both monitoring technologies work in conjunction with HP LoadRunner and HP Performance Center to improve the application performance and availability lifecycle in an iterative fashion. For example, scripts generated during the testing phases using HP LoadRunner or HP Performance Center can be stored in a common repository and used with HP Business Process Monitor to build highly effective synthetic monitors. HP Real User Monitor, meanwhile, can capture the activities of live customers and translate it into a script that can be exported back to HP LoadRunner or HP Performance Center to better inform the quality assurance process. This creates a virtuous cycle of continuously fine-tuned scripts that progressively improve both monitoring and testing on an ongoing basis.

## Real world benefits: how one company put the focus back on the customer.

When you're a leading global online careers property, business success depends on a positive online user experience. That's why the IT group for this company took deliberate steps to augment its customer monitoring capabilities. Originally, the monitoring environment for this IT group focused heavily on examining server logs and measuring the performance of infrastructure components. What the business wanted was better reporting on customer's day-to-day experience.

Rising to this challenge, the IT group set an objective of always being the first to know. This required early warning alerts that reflected the end-user perspective and trending capabilities to identify potential problems. The organization also wanted aggregated monitoring data so that it could reduce the overall time-to-resolution and the ability to monitor the customer experience across multiple protocols to achieve global coverage.

To meet its objectives, the group implemented HP software to augment existing infrastructure investments and leverage the combined benefits of synthetic and real-user monitoring. Today, the group uses synthetic monitors to execute live business processes and report performance statistics from the end-user perspective. It also uses real-user monitoring to track real traffic "on the wire." Powerful diagnostics give the group the ability to view applications errors and dig into the code to identify the object causing the failure. Service-level management capabilities, meanwhile, helps the group define business objectives relative to monitoring performance and availability.

With more effective end-user management, the IT group has been able to align more effectively with the business it serves. Conversations are focused on business issues not technology. The group can now respond in real-time to incidents as they arise and is far more effective at spotting trends and reacting to alerts before they impact the customer experience. The group even uses the software to establish and enforce service level agreements (SLAs) it has developed with third-party service providers.

### Find out more.

To learn more about how HP Software can help you build upon your existing infrastructure monitoring to improve the availability of critical business services, call your HP representative today, or visit us online at [www.hp.com/software](http://www.hp.com/software).

To learn more, visit [www.hp.com/software](http://www.hp.com/software)

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