

# Stop the Firefighters

## How to Fend Off System Downtime and Slowdowns

by Tim Conley

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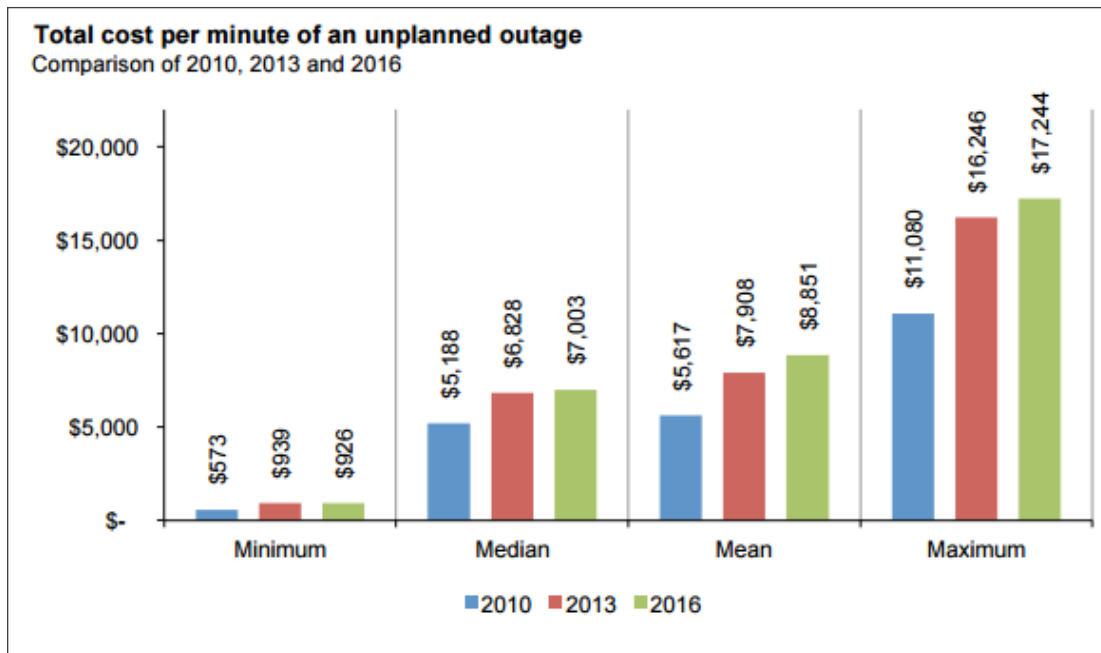
# The Staggering Cost of Downtime

North American businesses are hemorrhaging \$700 billion a year from information and communication technology downtime.

That's according to the [Cost of Server, Application and Network Downtime North American Enterprise Survey and Calculator](#). This study was released in 2016 by IHS, Inc., a provider of global market, industry and technical expertise. Losses range from \$1 million a year for typical mid-sized companies to a gut-wrenching \$60 million for large enterprises.

With an average of five downtime events a month per company, the dollars add up quickly. That's because, as reported in an Emerson Network Power study, the [2016 Cost of Data Center Outages](#), the average cost of data center outages is nearly **\$9,000 per minute**.

Figure 1



Source: Emerson Power Network study: *2016 Cost of Data Center Outages*

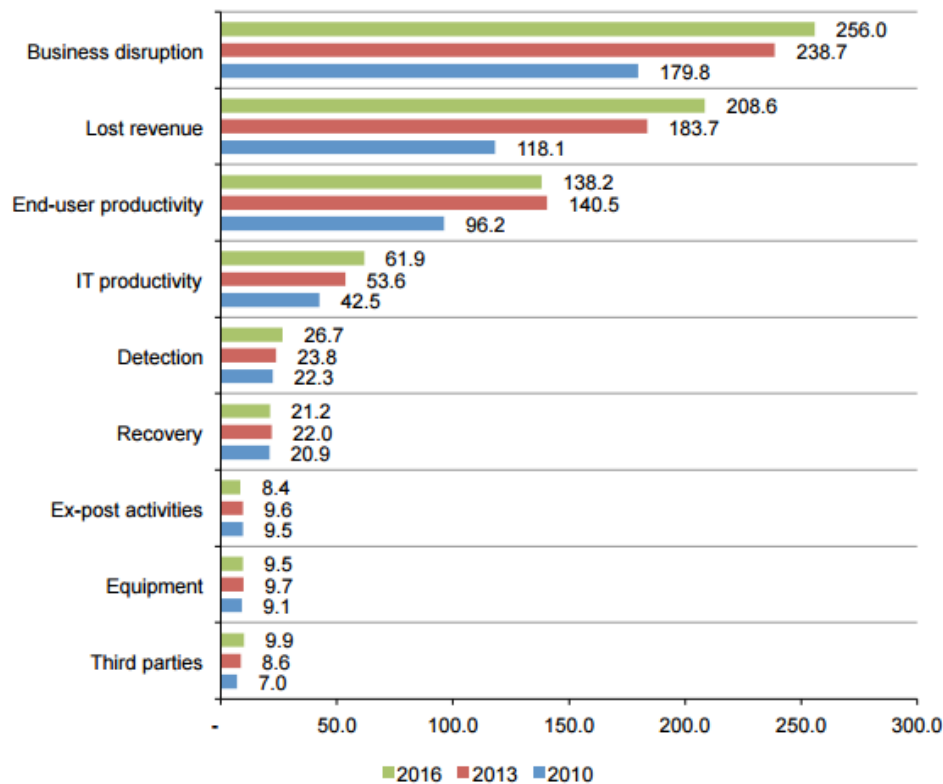
Just imagine, in the two minutes it takes to brush your teeth, the average unplanned data center outage costs \$18,000. Adding to concerns, the damages are climbing steadily. As shown in Figure 1, the cost-per-minute of an unplanned outage in 2016 is 38% higher than it was in 2010.

What’s driving these burgeoning costs? As shown in Figure 2, the costs of problem-solving and repair pale in comparison to those of business disruption, lost revenues and overall productivity. Mathias Machowinski, Research Director at IHS, says:

*“The main cost of downtime is lost productivity and revenue. Fixing the problem is a minor cost factor, which means a small investment in increasing the reliability of ICT systems will provide an outsized return by reducing productivity and revenue losses.”*

Figure 2

**Comparison of activity cost categories**  
Comparison of 2010, 2013 and 2016 results  
\$1,000 omitted



Source: Emerson Power Network study: *2016 Cost of Data Center Outages*

With this information as a backdrop, it’s easy to understand why costs are ratcheting up. After all, we are becoming increasingly dependent on technology for all aspects of our lives. Take shopping, for example. In 2010, Amazon had revenues of \$34.2 billion.

In 2015, they climbed over the \$107.0 billion mark.<sup>1</sup> As revenues increase, so too do the costs of downtime. Today, a 20-minute outage at Amazon racks up damages of around \$3.75 million.<sup>2</sup>

## The Hidden Costs of Slowdowns

A more insidious and possibly larger issue than outages is slowdowns, which can go unnoticed and undocumented as they eat quietly away at bottom lines.

There are a couple of reasons why the cost of sluggish systems mount up. First, employees may not recognize a problem exists. For instance, one day it might take a customer service representative 30 seconds to process a transaction; the next day it takes 31 seconds. The difference is imperceptible.

Also, once employees notice it is taking longer to do everyday tasks, it's harder for technical experts to unravel and mitigate the cause of a slowdown than to determine what triggers downtime. Technology associates spend hours in the war room pursuing one false lead after another because they do not have the tools to approach the problem strategically.

While costs of slowdowns are not well documented, there is anecdotal evidence of how damaging they can be. When customers of one of our clients called to place an order, it used to take salespeople five minutes and 45 seconds to enter the required data into two fields on each of five screens. Between each display, they waited 45 seconds. To the reps, it was business as usual. In reality, it was an unnecessary delay. Spread across hundreds of customer calls, it added up to thousands of dollars. When the IT technicians located and eliminated the issue that was impeding the process, they slashed order processing time by 75 percent, reducing it to one minute and 25 seconds.

As a result, they were not only able to decrease the number of reps taking orders, but also to process more transactions and improve customer service. In this case, eradicating a system slowdown increased revenues, reduced costs, and improved customer satisfaction.

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<sup>1</sup> Statista, Net sales revenue of Amazon 2004 to 2015 (in billions of U.S. dollars), Accessed July, 14, 2016 from <http://www.statista.com/statistics/266282/annual-net-revenue-of-amazoncom/>

<sup>2</sup> Statista, Net sales revenue of Amazon 2004 to 2015 (in billions of U.S. dollars), Accessed July, 14, 2016 from <http://www.statista.com/statistics/266282/annual-net-revenue-of-amazoncom/>

## Finding the Bottlenecks

If you're not monitoring your IT environment, finding the source of a costly system problem becomes much like a scavenger hunt where fingers point in all directions.

In the situation described above, the sales manager, suspecting the CRM application was at fault, might have called the application's vendor. Typically, the vendor would have shied away from getting involved until the company proved that it did not have network problems.

Given an unsatisfactory response, the sales manager might then check an IT administrator. The technician would likely tell the sales manager to go back to the supplier because he was unaware of a slowdown.

Because no one takes ownership, the problem lingers. After all, there is no data to prove who is accountable or to help the responsible party take action, so it takes guesswork and a potentially lengthy process of elimination to find the root of a problem. Thus, to avoid downtime and slowdowns, you need to monitor your entire IT environment.

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### The Challenges of Overseeing Your IT Infrastructure

IT infrastructure problems stem from several sources, all of which are interconnected: servers, storage, storage area networks (SAN), and the tracks that run between them. For instance, there might be bottlenecks within a server due to disk latency, or excess CPU or memory usage. If the server is connected to other servers or SAN storage, the logjam could be anywhere within that network. Given the infrastructure's complexity, it's difficult to find the source of the problem.

To make matters worse, IT departments often treat servers, storage, and SAN as silos across which communication is weak. This leads to finger-pointing between associates from different IT areas rather than problem-solving. Sometimes you even need to call on an outside consultant to help because no one in the organization has the expertise to solve the problem.

## Why Many of Today's Monitoring Tools Fail

To locate and resolve performance issues, most companies recognize the need to monitor their IT environment, and do so with tools that range from homegrown scripts to enterprise-wide solutions. Largely, however, they fall short of accomplishing the task.

Internally written programs, freeware, and software from technology vendors offer patchwork solutions at best, enabling you to see one sliver of your IT infrastructure at a time. What's happening in the coverage gaps is anybody's guess. Purchased alert software tells you what's happened after the fact, throwing you into a race against the thousands-per-minute clock instead of providing a way to prevent the business disruption.

Finally, those who invest in an enterprise-wide performance management solution may think they have conquered the requirement to oversee their whole environment. After all, they have paid a hefty upfront cost and continue to spend heavily on the associated infrastructure and full-time employees necessary to manage it. Sadly, while these solutions capture a broad view, they typically do not enable you to dig deeply enough to pinpoint the cause of slowdowns.

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## Why You Need to Monitor Your Whole IT Environment

By monitoring your IT infrastructure broadly and deeply, you can understand trends and issues impacting its ability to run smoothly. This enables you to stop problems that could cause system delays and outages.

Because everything in the IT environment is connected, you need to oversee all technologies. This includes computing efficiency, resource utilization, server operations, storage environments, SAN, and virtualization efficiency. Also, you must blur the line between vendors, looking at them all at once. Only with such a big picture approach can you locate the source of the problem, whether it's related to servers, storage or SAN. Once found, you can focus your energy on drilling down into that area, perhaps looking at a particular business unit or geography, to determine the issue or set of issues.

## Big Picture Benefits

If you are in charge of storage, servers or SAN, associates will seek you out when there's a problem. Once contacted, whether or not the source of the slowdown is in your domain, you have to do something—either resolve the problem or absolve yourself of the responsibility. Having the facts at your fingertips on the whole IT infrastructure empowers you to do that. This enables you to find the problem and solve it, or to determine if the issue is in another area, so the individual responsible for it can take action. Thus, the data prevents too many people from becoming unnecessarily involved in resolving IT performance issues and reduces the time required to fix them, minimizing the costs.

Finally, monitoring should not be solely about solving today's slowdowns and downtime. It should also be about averting tomorrow's business disruptions. Historical data from monitoring that shows usage trends helps you to plan and budget for capacity, cloud migration, server consolidation, and more.

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## 5 IT Infrastructure Performance Management Solution Must-Haves

Given the problems monitoring complex IT environments and the deficiencies of many tools, what should you look for in an infrastructure performance management (IPM) solution? Look for one that:

### 1. Offers a Bird's Eye View of the Whole Enterprise

You need to be able to oversee your entire business environment, regardless of the technology or the vendor. Such an overview includes looking at computing efficiency, resource utilization, server operations, storage environments, SAN, and virtualization efficiency.



## 2. Marries Visual Appeal with Valuable Insights

Another must-have is a visual dashboard in a single pane of glass that makes it easy to identify problems and drill down to the root causes.

Data needs to be visually easy to understand; however, be careful of fancy graphics that mask meaningless data. You do not want to drown in information and be starved of insights. The dashboard must show the key areas that drive performance in an at-a-glance fashion. Without the right data and analytics, you will waste time digging through multiple charts to unearth the answers you need.

What data and metrics should you look for? To understand how well your servers function, your tool needs to monitor CPU and memory usage, network and adapter performance, and disk space. Throughput, IOPs, and latency are the top areas it should watch for in storage. Lastly, for SAN, your solution needs to keep an eye on throughput, latency, and errors. Underneath each of these umbrella areas, you must be able to drill down to a subset of metrics that tell the performance story.

**The dashboard must show the key areas that drive performance in an at-a-glance fashion.**

## 3. Provides an Easy Way to Determine Trends and Deviations

To minimize slowdowns and outages, you need to monitor key performance metrics over time. Historical data enables you to ascertain regular patterns, spot trends, discover what impacts performance, and to detect deviations from the norm.

If you usually use 60 percent of a server's memory, for example, but you notice it's climbing gradually and consistently, you can forecast there will be a memory crunch in a month or so. This insight empowers you to fix the memory leak before the system either slows down or goes down.

Historical data and trend analysis are also helpful when demands on servers and storage are rising due to organizational growth. In this situation, if you fail to make modifications to accommodate the increased usage, you will max them out at some point. Instead of blindly driving towards a capacity barrier, you need to notice it as it emerges ahead of you and prepare for it.

If you have *and use* a tool that analyzes your environment and informs you about usage and trends, you will not need an alert system. That's because you will know where an issue lurks before it harms your business operations. It's like having a

smoke detector instead of a fire alarm. If you are not watching your IPM dashboard for signs of trouble and taking corrective action, however, get the fire alarm as a backup.

#### **4. Includes Thresholds for Advanced Warnings**

To make it easier to focus your attention when issues are brewing, your solution should include thresholds. Just as the gasoline gauge on your car turns red or orange when the tank is almost empty, a CPU threshold might alert you once you hit a threshold of 90%. If you've already determined that processes will not slow down until CPU usage reaches 95%, this warning gives you time to remedy the situation. Of course, you need to be able to customize thresholds to your needs.

#### **5. Is a Cloud-Based SaaS Solution**

Today's IT infrastructures may be on-premise, hybrid or in the cloud. With cloud migration gaining momentum, companies with an eye on the future need to use tools that enable them to monitor performance in all these environments. With a cloud-based solution, you can oversee all data centers whether on-premises, cloud or hybrid.

Not only is this global vision useful for company associates who are responsible for specific technologies, but it can also be beneficial to a company's technology vendors. For example, a supplier may want to look at your performance metrics to assess how their new application is impacting them and whether it's running fast enough.

The benefits of a cloud-based SaaS solution also include lower cost. The initial investment will be a fraction of the price of an on-premise enterprise-wide solution. Also, there's no need to hire full-time employees to manage the technology infrastructure that's required to support the monitoring tool. So even if you plan to keep your current applications on-premise, you save money by monitoring them from the cloud.

Last but not least, an SaaS solution can be up and running in about an hour instead of days and weeks.

**With a cloud-based solution, you can oversee all data centers, whether on-premises, cloud or hybrid.**

# Galileo Infrastructure Performance Management Suite

Galileo Suite is a cloud-based IPM solution that enables you to monitor servers, storage, and SAN from a single pane of glass—a workstation or smartphone. It offers operational intelligence about the performance of your IT environment.

User-friendly, visually engaging dashboards distill data to provide **at-a-glance insights** and enable you to **drill down and pinpoint threatening issues** in minutes. Plus, you can shape how you view information according to your needs.

**Thresholds provide advanced warnings** on when you need to take action to optimize performance, so you never have to fight fires again. Galileo stores historical data, enabling you to **view trends and deviations that may signal a need to take action**.

It's like having a crystal ball for your entire enterprise infrastructure that empowers you to keep operations running without a hitch.

What's more, the monthly subscription pricing is a fraction of what you would invest in an enterprise-wide solution, and a modular approach allows you to customize your subscription to your needs.

*Find out how to keep your servers running efficiently, make your job easier, and put your mind at ease with Galileo Suite.*

[Get Your FREE Demo Now](#)

## About the Author

Tim Conley brings over 27 years of IT experience in enterprise open systems and storage products supporting banking, insurance, public, and private sectors—with emphasis on power systems, IBM storage, SAN, and enterprise-wide backup and recovery. Tim is also an IBM Certified Specialist and subject matter expert in AIX, TSM, SAN, and IBM tape/disk storage solutions. Tim provides technical consulting services to IBM, IBM Business Partners, and customers in IT architecture, AIX, performance/tuning, storage solutions, and technical project management areas. Tim also conducts storage assessments for IBM as an independent Regional Systems Integrator.

## About Galileo

Tim Conley and Chris Churchey, former IBM systems architects and engineers, are co-founders of Galileo Performance Explorer®. Conley specializes in storage performance and Churchey in server performance. Together, they have more than six decades of experience in system implementations, upgrades/migrations, backup/recoveries, performance analysis, and capacity planning. With a thorough understanding of user needs, Conley and Churchey originally developed Galileo as a proprietary tool to help clients of the ATS Group, a systems integration firm that they founded in 2001. Now available to everyone, Galileo was the industry's first integrated and cloud-based IPM suite. It has gained wide popularity with SMBs, Fortune 500 companies, government agencies and everything in between.



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