

E-BOOK

# Infrastructure Monitoring Software: Can You Afford It?

How to choose a monitoring tool that meets your needs —  
and your budget.



[netapp.com/hybridcloud](https://netapp.com/hybridcloud)

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# 1. The Problem

When you're considering infrastructure monitoring, you certainly have plenty of options to choose from. From free to expensive, from targeted to comprehensive, today's monitoring software presents a confusing assortment of features and claims.

How do you make sense of it all and choose a solution that meets your needs and is within your budget? The question "Can you afford it?" might quickly become "Can you afford not to have it?," especially when you consider the cost of poor performance and downtime.

Let's look at ways to frame the problem and decide what's right for you. We start by looking at cloud infrastructure monitoring tools and why they need to be specifically designed to handle new cloud-based applications.

Then we'll consider how to measure the value of a monitoring tool and what it's worth to your organization.

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## 2. Why Dynamic, Scalable Cloud Infrastructure is Hard to Monitor Effectively

Cloud applications are written to consider infrastructure as code. [1] This essentially means that infrastructure is provisioned and deprovisioned dynamically through APIs. It also requires that applications must know about their state as they run to be able to make real-time adjustments.

Most cloud applications make extensive use of cloud-based provisioning and control services like Puppet, Chef, containers, and Kubernetes, which means that they can expand and contract the infrastructure they use at the speed and scale of the cloud.

This quote from *Practical Monitoring: Effective Strategies for the Real World*, by Mike Julian, [2] highlights the problems with today's tools:

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“The rise in popularity of microservices has especially stretched how we think about monitoring. Since there is no longer a monolithic app server, how do we monitor interactions between the dozens, or even hundreds, of small app servers that communicate constantly? A common pattern in microservice architecture is that a server may exist for only hours or even minutes, which has wreaked havoc on the age-old tactics and monitoring tools we once relied on.”

– Mike Julian: *Practical Monitoring: Effective Strategies for the Real World*

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This means that cloud monitoring tools need to be able to capture data in milliseconds, not minutes or hours, and they need to understand not just the state of each component but their relationships.

Good monitoring tools can give you the confidence that your automated provisioning tools are consistent and reliable enough to break what Kief Morris describes as the “cycle of fear” (Figure 1).

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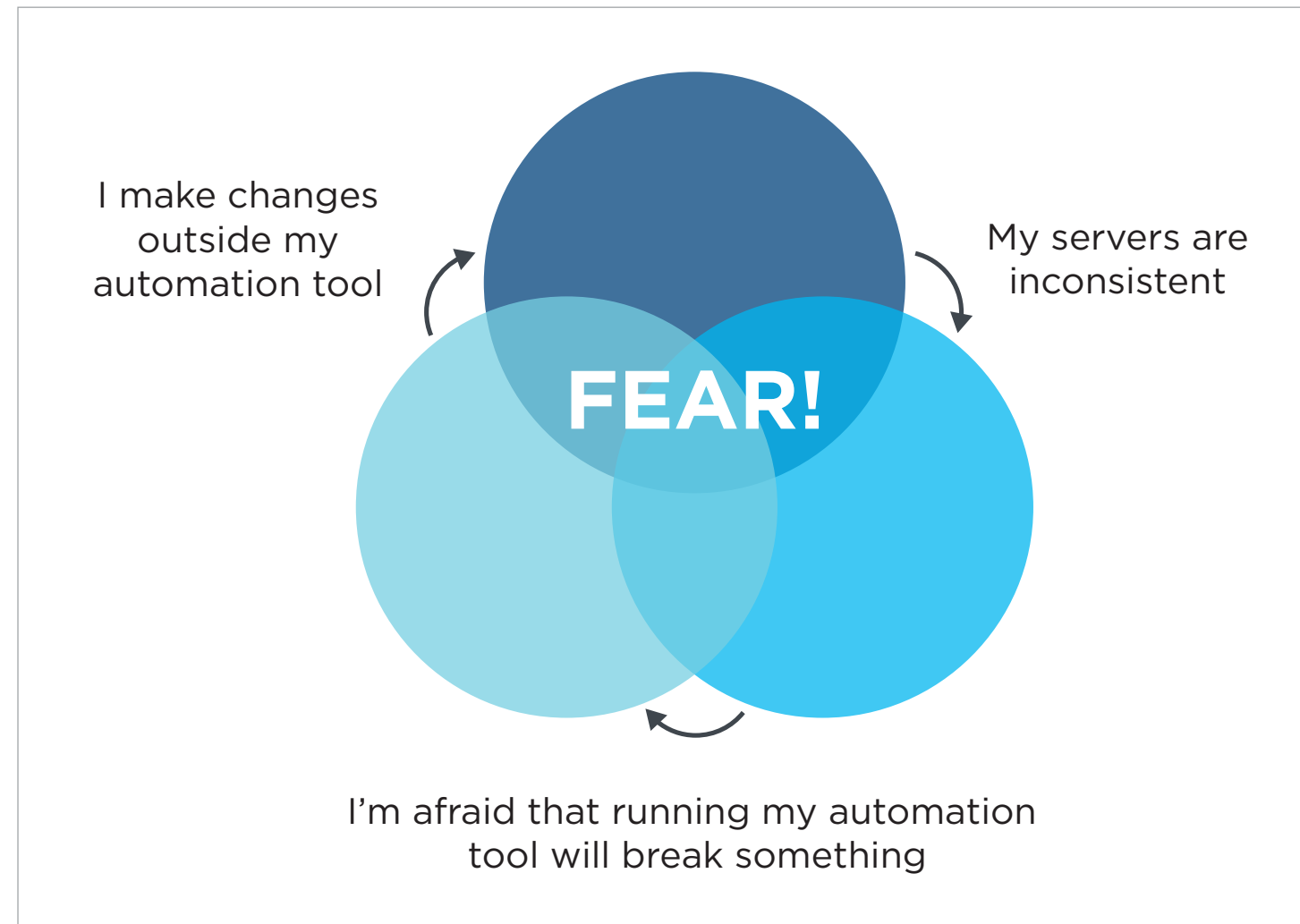
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## 2. Why Dynamic, Scalable Cloud Infrastructure is Hard to Monitor Effectively



Finding problems in this self-healing dynamic infrastructure means that monitoring must become the forensic tool that can explain that transient spike in latency or that fleeting failure that is visible for only an instant. Problems left uncorrected lead to overprovisioning, higher costs, and eventually customer impacts that affect your business.

Figure 1. The Cycle of Fear, from Infrastructure as Code, by Kief Morris.

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## 3. The Value of Comprehensive Monitoring

The roads and freeways in a busy metropolis are a system of interconnected components that affect each other. If there's an accident on a major artery, traffic is affected on every access road. Knowing how the roads connect and where all the problems are is crucial to optimizing your trip from point A to point B. Many commuters rely on the Waze application [3], which uses crowdsourcing to deliver up-to-the-minute information about all manner of problems along your route. Waze also offers alternative faster routes, when appropriate.

That's the power of comprehensive monitoring.

Similarly, your infrastructure is a complex system of interconnected components. If you monitor servers, storage, and networks separately, you're asking for trouble. You need monitoring software like Waze that gives you real-time updates on all the problem areas and how they are affecting the overall performance of your systems. Without that information, you'll be stuck searching for problems while your users complain.



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# 4. The Value of Proactive Analytics and Optimization

Continuing with the Waze analogy: During your commute, Waze knows which routes are jammed because it learns from all the historical data. Using that knowledge, it can pick the optimal route to help you avoid sitting in stop-and-go traffic.

That's the power of proactive predictive analytics.

With a comprehensive monitoring tool, you can use the knowledge of performance patterns to alert you to possible problems before they have a serious impact on your users and your business.

Machine learning and complex pattern recognition are essential capabilities of a monitoring tool. They learn what patterns are normal and alert to events that fall outside of normal. Without this information, you have to guess the right threshold to trigger an alert. Set it too low and you're inundated; set it too high and you miss the critical failure.

The RightScale 2018 State of the Cloud Report [4] found that significant wasted cloud spending has driven users to become cost focused (Figure 2).

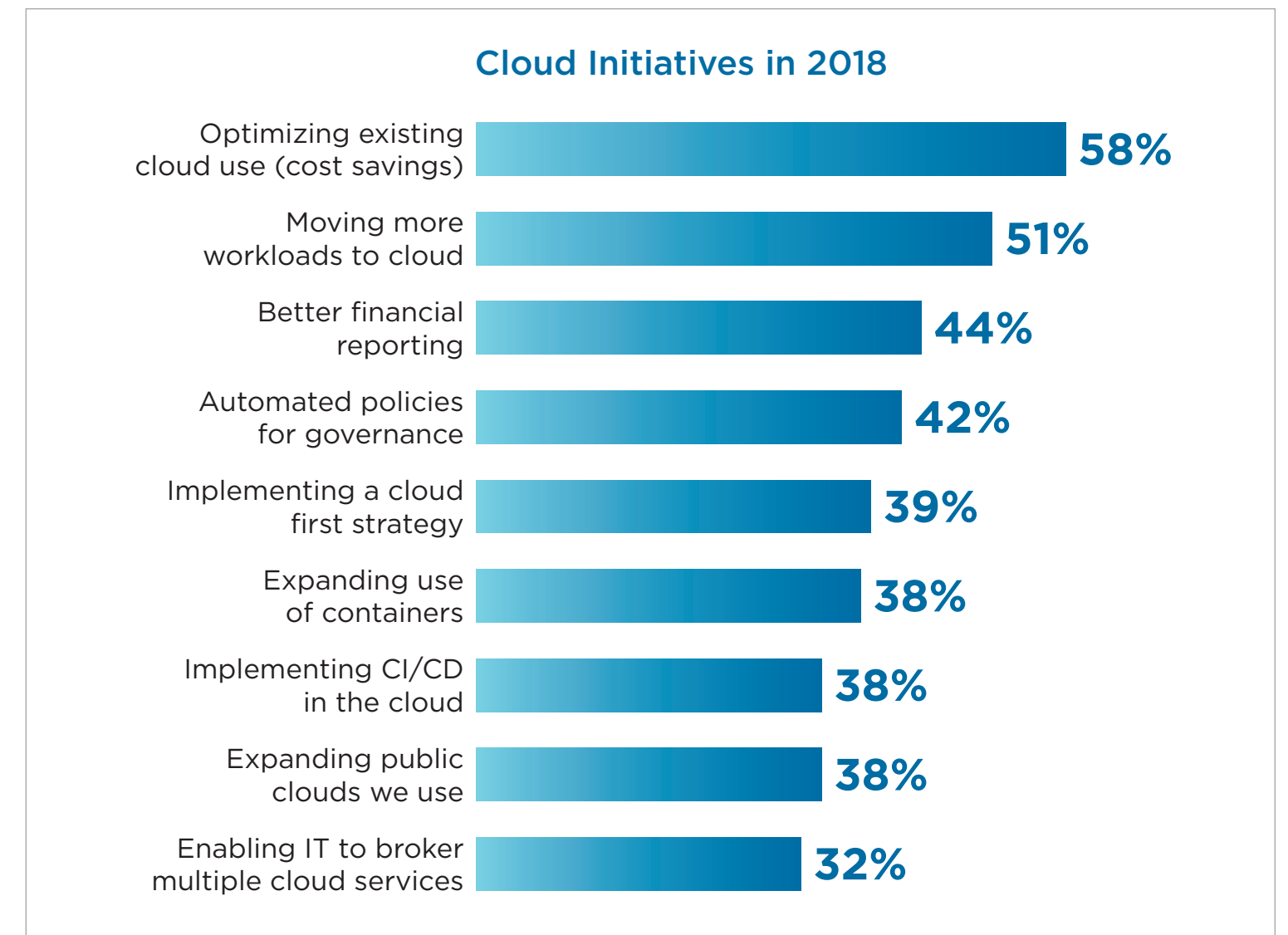


Figure 2. Cloud Initiatives in 2018, RightScale State of the Cloud Report.

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# 4. The Value of Proactive Analytics and Optimization

## Here are some key points about cloud initiatives from the RightScale survey:

- Cloud users estimated that about 30% of their cloud spending was wasted.
- In 2018, optimizing cloud costs is again the top initiative for all cloud users, increasing to 58% from 53% in 2017.
- The number of users focusing on optimizing expenditures is even higher among intermediate and advanced cloud users, at 65% and 69%, respectively.
- Despite an increased focus on cloud cost management, only a minority of companies have implemented automated policies to optimize cloud costs. Such policies might include shutting down unused workloads or selecting lower-cost clouds or regions.

You may be feeling some loss of control over your cloud projects. The bills are coming in and costs are growing, but finding where to cut isn't so easy. That's where a monitoring tool can answer questions like:

- Are your applications running on the right performance tier?
- Are you overprovisioned?
- Do you have unused virtual machines and storage?

When you're getting insights from comprehensive, proactive analytics, you're able to make intelligent decisions. Knowing your performance and resource needs helps you find unused resources. You can make informed decisions about what to free up and what to move to a more cost-effective tier.

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## 5. The Value of Preventing Downtime

When you're in the line of fire and it all goes bad, you're the one who pays the price. Knowing that your systems are performing at optimal cost and being aware when they aren't is worth something. But what?

According to Gartner [5] the average cost of IT downtime is \$5,600 per minute. Because there are so many differences in how businesses operate, the Gartner analyst, Andrew Lerner, states that downtime at the low end can be around \$140,000 per hour; \$300,000 per hour on average; and as much as \$540,000 per hour at the high end.

With corporate fear of downtime, you would think that the sky's the limit for spending on prevention tools. Especially with high-profile outages making news, anything that keeps your systems up and running is worth it, right? Unfortunately, with today's tight budgets, your boss is likely to ask, "Why invest in expensive solutions when there are free or open-source tools on the market?"

The value of keeping your systems running is peace of mind. And what is that worth?



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## 6. A Framework for Choosing the Right Tool

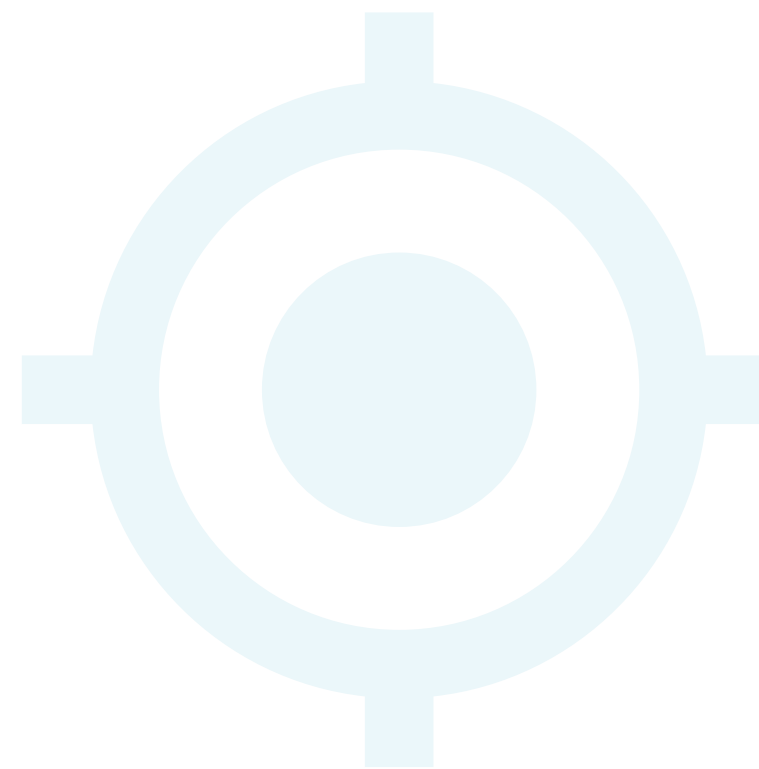
A return-on-investment (ROI) analysis can be an effective way to justify your investment and to compare different monitoring tools. In looking at the benefit of deploying your monitoring tool, you'll want to consider operational efficiency savings, reduced time to find and fix problems, and reduced downtime and outages. On the expense side of the ledger, consider the costs you'll incur from initial purchase to installation, support, and training. Finally, consider your window of opportunity. Can your ROI be positive in days, or will it take months or even years?

Consider a software-as-a-service (SaaS) tool, which can quickly inventory what resources you have, figure out the interdependencies across them, and assemble a topology of your environment. You'll want end-to-end visibility into which resources are supporting which applications. With that data, you'll be able to proactively monitor your infrastructure.

What you're looking for is immediate positive returns in days.

Most monitoring tools charge by the size of the infrastructure estate to be monitored. This model makes sense, because the more systems and components you have, the more value you'll get, and the more you'll have to pay. Where most tools differ is in how they count the size of your environment. Some count the amount of storage, some count the number of servers or virtual machines. The difference depends mostly on the history of the tool. If it got its start monitoring storage, then that's what it counts. If it got its start monitoring servers, then that's what it counts.

Consider a tool that takes into account the complete infrastructure stack as the basis for measuring what is being monitored.



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As you consider monitoring tools for your cloud-based infrastructure, you need to understand the cost benefit of their deployment.

NetApp offers a monitoring tool called NetApp® Cloud Insights that offers exceptional value for cost. Cloud Insights is designed specifically for today's cloud-based infrastructure and deployment technologies and provides advanced analysis of the connections between resources in the environment.

Cloud Insights is simple to use. Because it's hosted in the cloud, it's easy to get it up and running fast. You'll soon have real-time data visualization of the topology, availability, performance, and utilization of all your infrastructure, including both cloud and on-premises multivendor resources. Of course, it also includes support for NetApp Cloud Volumes, HCI, and AFF.

Cloud Insights gives you the ability to connect traditional service and software-defined infrastructure layers. This means that you have visibility into both traditional and modern application architectures.

Cloud Insights quickly inventories your resources, figures out the interdependencies across them, and assembles a topology of your environment. You'll have end-to-end visibility into what resources are supporting which applications.

Unlike traditional monitoring tools, Cloud Insights is designed to handle the transient nature of modern cloud infrastructure and its connectivity to sets of services. This means that you get a complete understanding of demand, latency, errors, and saturation points of all your services.



Interested?

**TRY THE FREE TRIAL TODAY**

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NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation, and optimize their operations. For more information, visit [www.netapp.com](http://www.netapp.com). #DataDriven

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### References

- [1] *Infrastructure as Code: Managing Servers in the Cloud* by Kief Morris  
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