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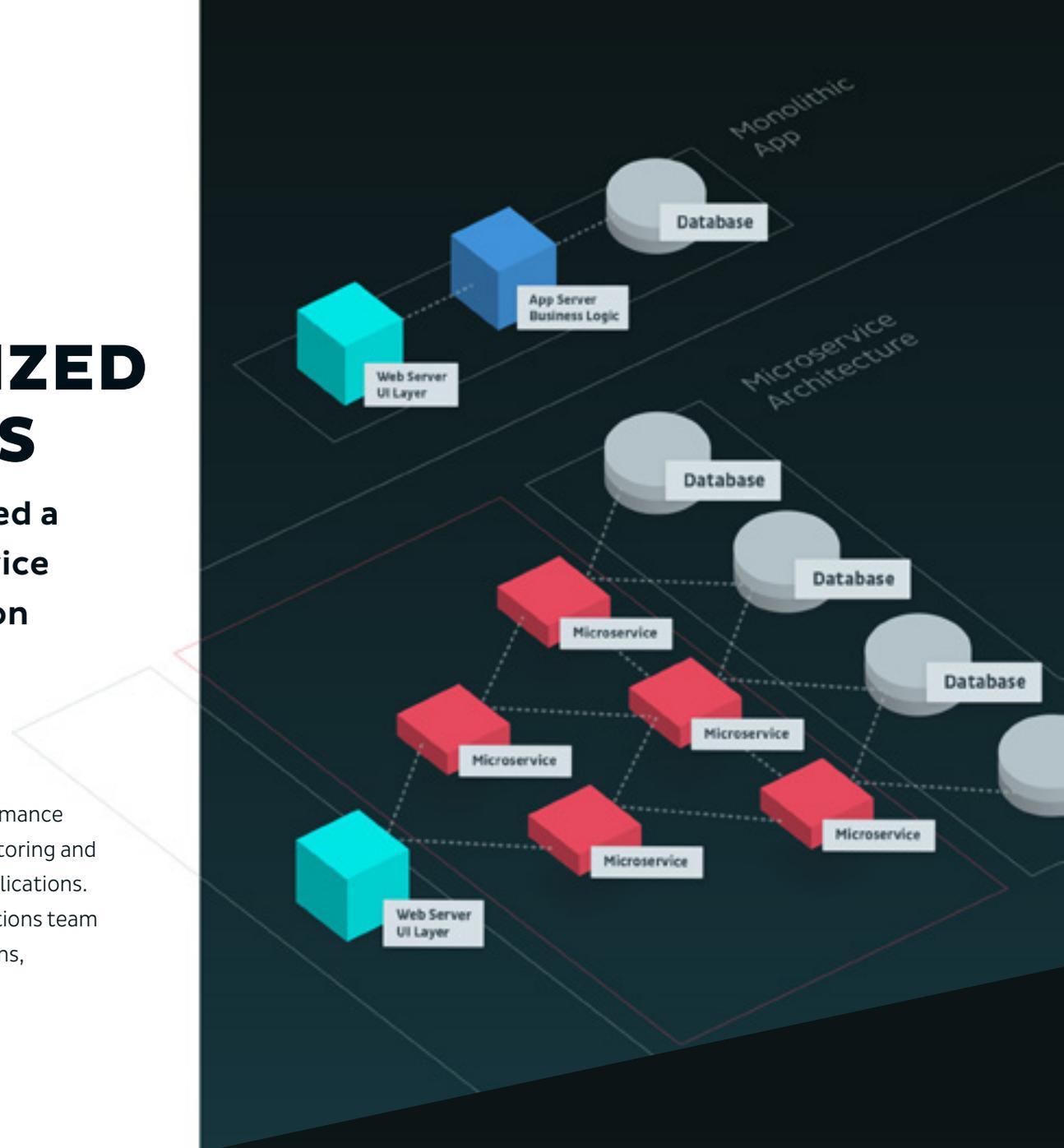


The **Six Pillars**
of Modern Dynamic
Application Management

IN THE BRAVE NEW WORLD OF CONTAINERIZED MICROSERVICES

IT organizations like DevOps need a modern way of monitoring service quality and managing application performance.

There are actually 6 pillars of Modern Application Performance Management that lay the foundation for effective monitoring and management of microservices and container-based applications. These critical capabilities are necessary for any IT Operations team to deliver proper performance across all their applications, all the time.



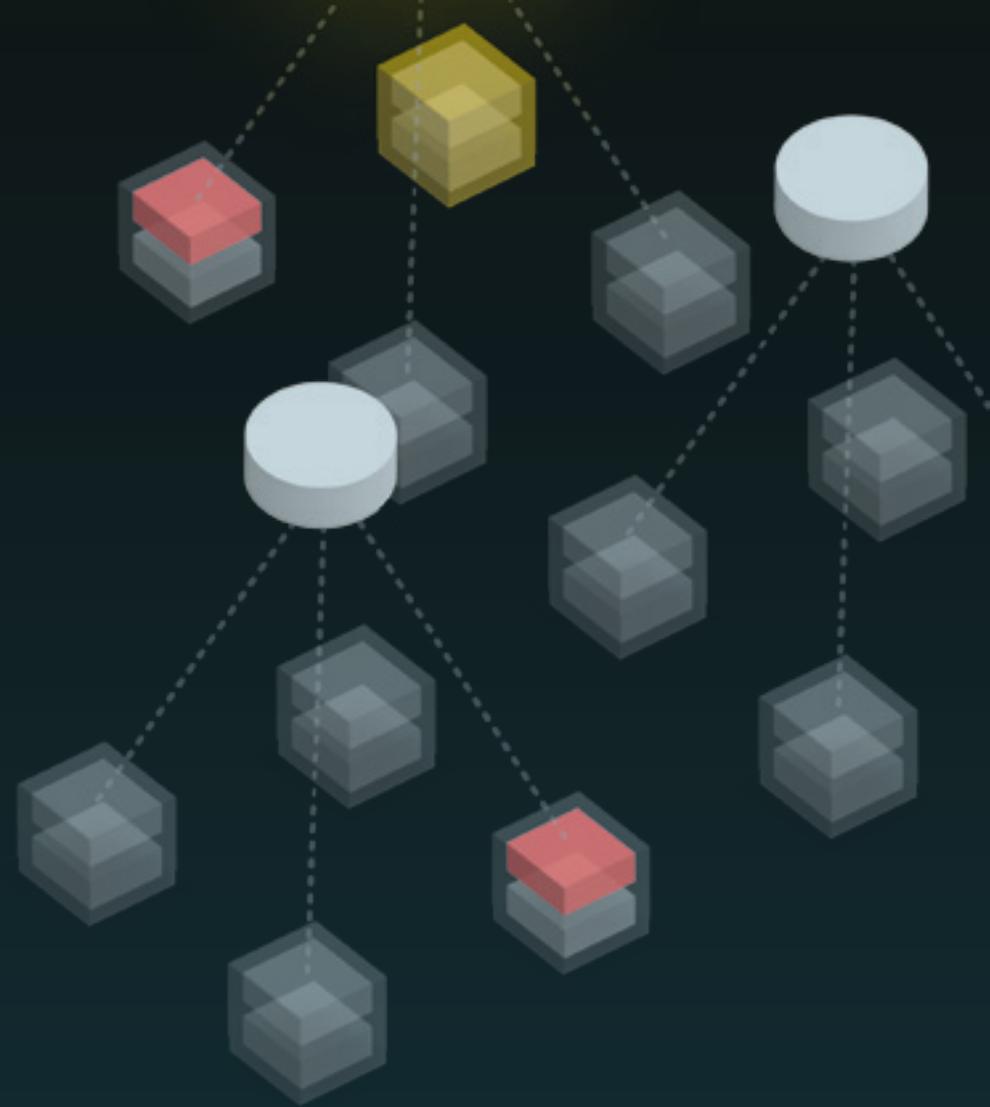
The recent eBook

Service Quality Management in the Microservices Age

discusses what's needed to “thrive in the brave new world of Microservices”. The concepts are a good start, but they inspired us to think about what you **MUST** have to manage modern applications (microservices, containerized, cloud, etc.).

What we came up with are **pillars of application management** – six fundamental items that are required to effectively manage today's modern dynamic applications.

Understanding how to manage service quality in this new age of microservices applications takes more than just re-purposing APM or Transaction monitoring software.



WHY ARE MODERN APPLICATIONS MORE DIFFICULT TO MONITOR AND MANAGE?

Like the number of components in a modern app, the reasons are varied and numerous. Let's start with the idea of loosely coupled application components. We saw some of this as SOA emerged as a primary application architecture, but never to this extent. What started as a few calls in the middle of a SOA App has ballooned into an all out blitz of constant change.

Whether you're talking about the sheer scale of components, the rate of change, or the ever-growing list of various microservice / container technologies, automation is required. Why? Because any individual (or team) cannot glean all the necessary data to make every correct decision.

From automation to service level management, everything has to change for DevOps to effectively manage the modern application. In fact, six distinct things must be considered.



SIX PILLARS OF MODERN DYNAMIC APPLICATION MANAGEMENT

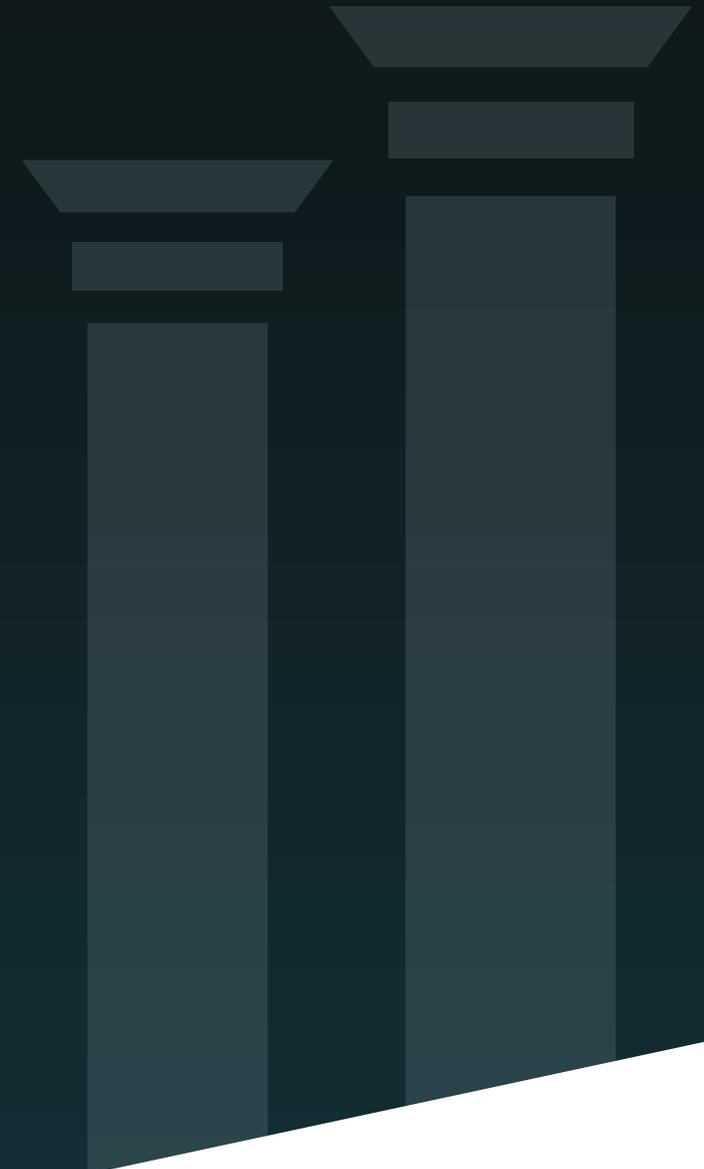
1. Automatic and Continuous Discovery

The only constant in modern applications is change, whether due to microservice architecture, containerized app components, or simply more agile delivery execution. To effectively manage these applications, DevOps needs an up-to-date and accurate picture of application components and their dependencies.

Just as important, that picture must update continuously as changes occur in applications.

2. 1 second granularity of metrics

60-second timeframes for measurements just won't get the job done. In traditional applications, Ops teams could get away with missing short time spikes, but modern applications operate at a different level of speed, scale and dynamism. It's important to know when any performance spike occurs, even if only for a few seconds.



3. 3 seconds to visualization

As discussed, modern applications change all the time. Microservices are deployed, updated and discarded. Containers are spun up and destroyed quickly. In this world, the only way to keep the map (and understanding) of the application architecture accurate is to update within a few seconds.

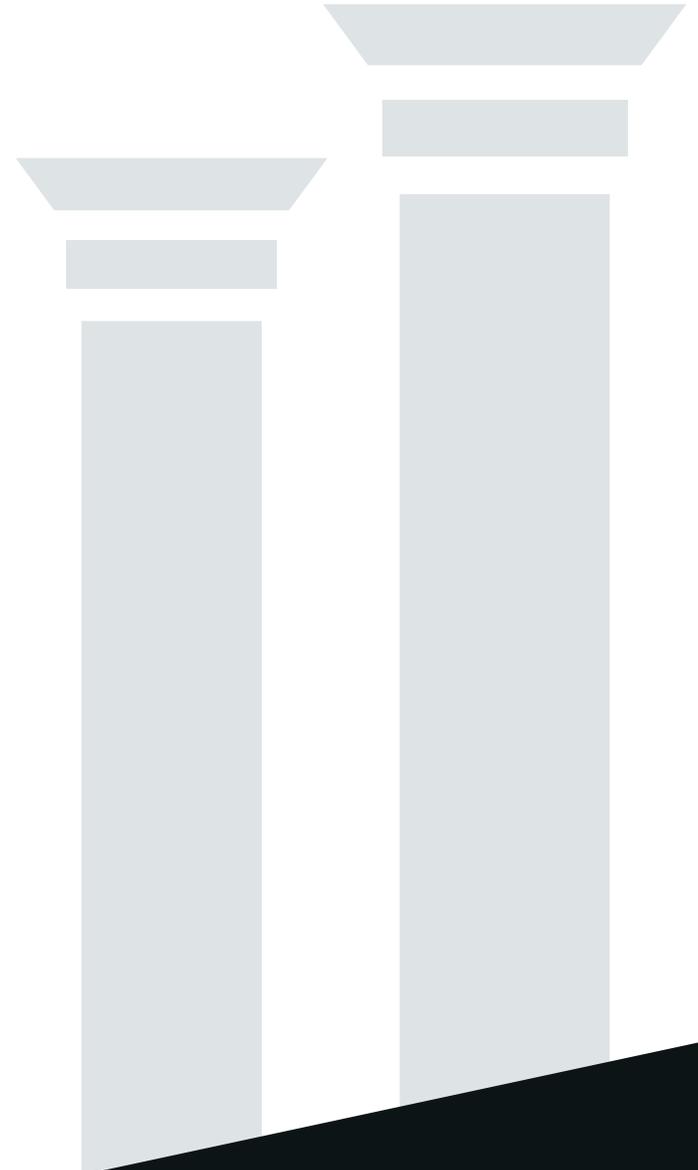
Building on the ideal of 1-second metric granularity, your tools must be able to reflect any changes to the application environment within 3 seconds of the change. Not only does this keep the tooling aligned with reality, it also allows the DevOps team to know almost instantly when an update is satisfactory or if it's problematic.

4. Capture Details of EVERY Request

One tenet of modern applications is that every request is delivered independent of other requests. That means that each request has a unique path through the mesh of microservices and containers that make up the app.

Since presumably the application is critical to the business, and each request is processed uniquely, this demands that the details of every request are captured in a way that you can identify and analyze any unique request.

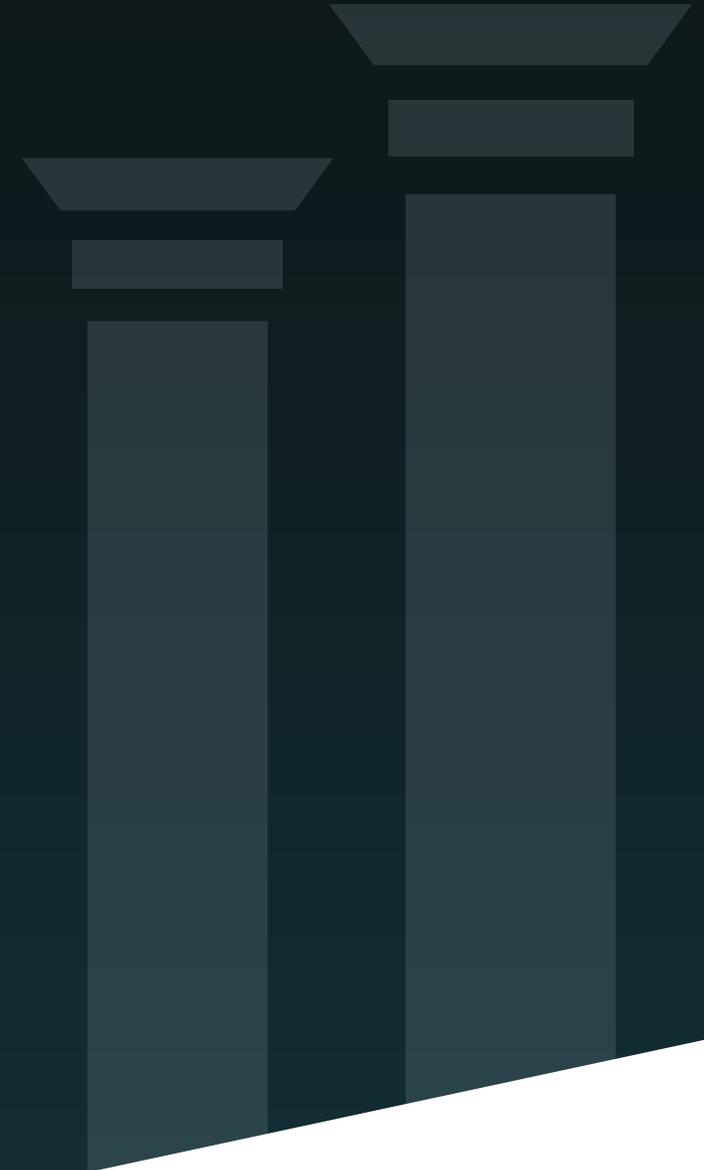
In this environment, the only way to manage overarching service quality is capture every request as a Trace. This also helps when constructing all possible paths through the application infrastructure for similar requests.



5. Focus on What Matters

By design, modern applications have extreme complexity built into the system. The scale and dynamic nature of hybrid cloud environments and containerized microservices applications make it difficult to see which components make up a given application or service, making it especially hard to troubleshoot any problems. Focus is critical in this dynamic environment – whether it's filtering out systems that aren't part of a specific application or correlating performance and change events to a specific service incident.

And this ability to focus should be intuitive, not a set of scripts and complex regular expression programming to filter out things. Only then can everyone on the Ops team get the data they need when they need it.



6. Leverage Artificial Intelligence

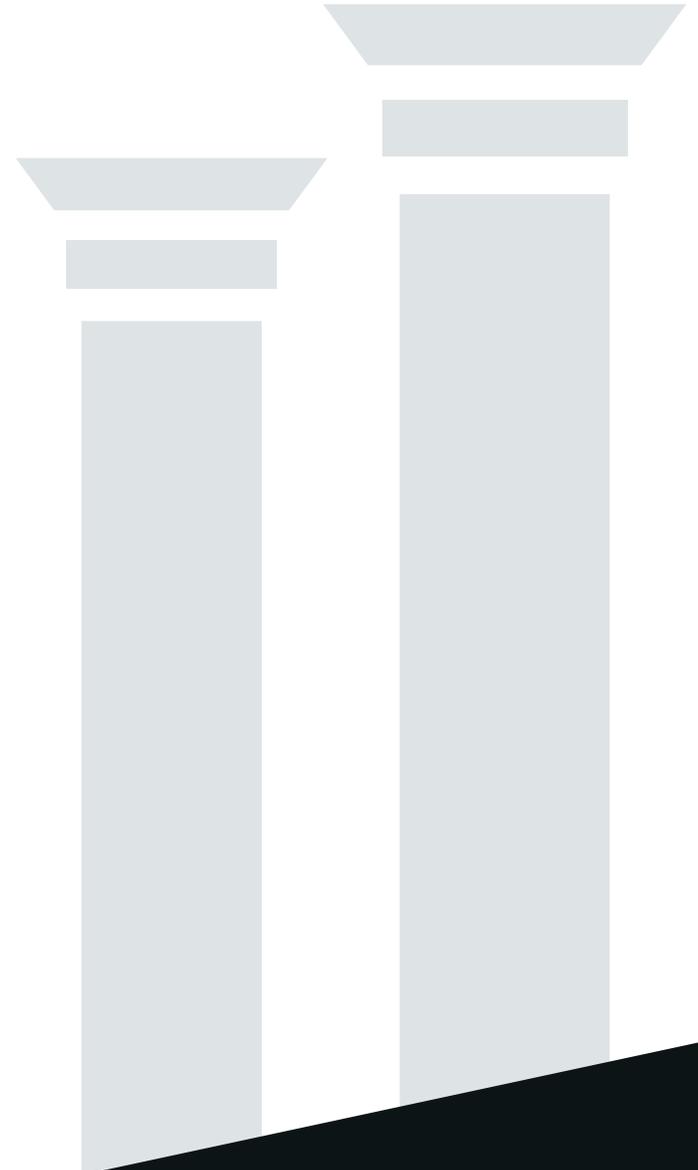
Modern applications simply have too much going on to manually manage them. From growing complexity to extreme structural dynamism, the complex dependencies and the sheer scale are hard enough to handle. Throw in the need to deliver high application service quality, and that's where AI-powered functionality becomes critical.

Where should Artificial Intelligence be applied?

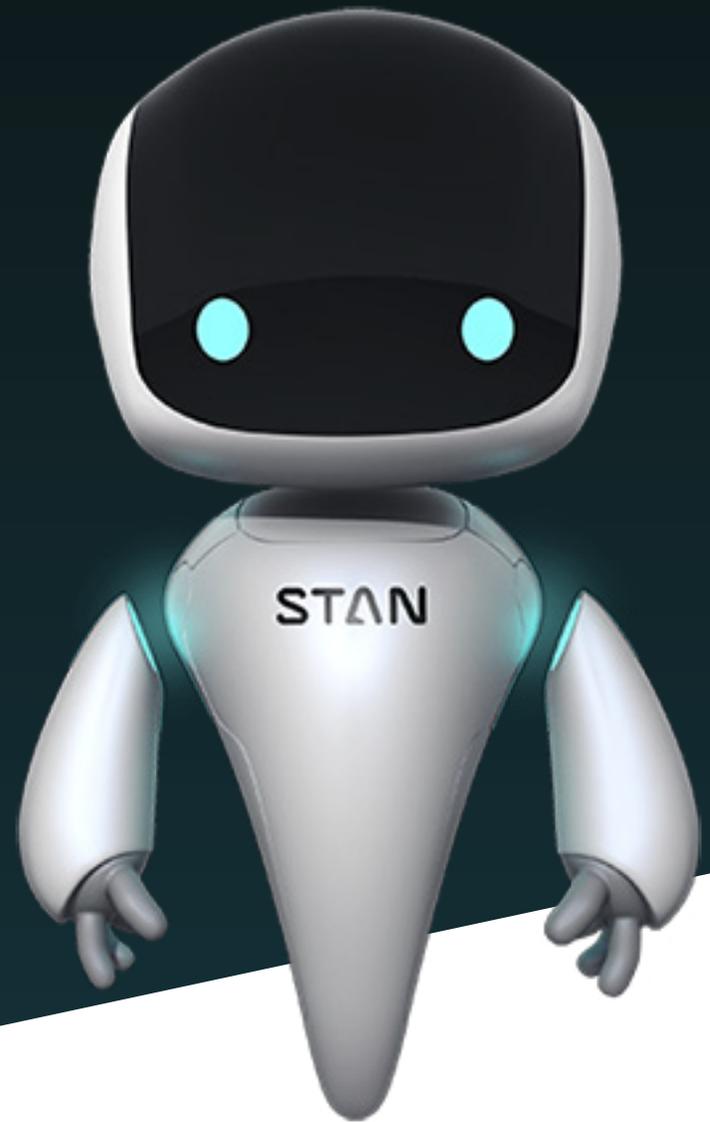
- Selecting which Key Performance Indicators (KPIs) are used to measure service quality
- Understanding the difference between noisy IT events and service-impacting incidents
- Determining the triggering event of a service incident
- Identifying the most likely root cause of a problem

As operations scales, the need to leverage machine assistance becomes larger: more applications, a much larger number of technologies, the use of microservices and containers, dynamic components constantly spinning up and down, and user load exponentially growing.

Humans simply can't physically handle the analysis and monitoring needed to stay on top of application service quality with these complexities.



One more thing - each of the six is critical to maintaining high performance modern applications. Missing even just one of these capabilities puts your team's ability to maintain that high performance environment at severe risk. To find out more about how Instana can help you achieve all six and effectively monitor all your applications, check out instana.com.



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