

E-BOOK

A proactive approach to application observability in the public sector

Application monitoring and observability enables public sector organizations to deliver the high-performing digital experiences that modern citizens expect from their government.



A better citizen experience starts with application observability

Government agencies provide many essential services, from collecting taxes and issuing permits to enrolling citizens in benefits programs. Amid heightened demand for public services, agencies at all levels — federal, state and local — are looking for new ways to meet public expectations.

Today, people buy groceries, watch shows and even find love online — and they expect the same digital conveniences when interacting with their government. To deliver experiences people expect, public services and transactions are increasingly moving online.



“The potential that digital government can bring is huge: transforming the relationship between the citizen and the state, saving money and making public services more efficient and agile.”

Norman Lamb, Former Chair of the Science and Technology Committee, UK

[/source/](#)

Despite significant progress across digital government, many agencies still struggle to meet digital demands. A [recent global survey](#) reveals a 10% jump in citizen demand for more digital interaction with governments since 2019. However, more than half (53%) said accessing public services is frustrating, and 46% say they would be more likely to use digital technology to access government services — if the technology was easier to use.

Public demand for services can shift wildly and unpredictably, and IT environments are increasingly complex and distributed. As public sector organizations embrace digital transformation to improve the delivery of government services, they face a significant hurdle: ensuring applications perform optimally, which is difficult even for the most digitally advanced agencies. What’s needed is a proactive approach to delivering seamless digital experiences that mirror what citizens have in the private sector. To get ahead of performance issues, public bodies benefit from automated application monitoring tools that enable observability for detection and mitigation of glitches — before service degradation impacts users.



Managing application performance in the public sector

Application performance monitoring (APM) is the act of monitoring performance of applications in real-time to detect, diagnose and fix issues. With APM, agencies can continuously monitor, analyze and adapt their IT environments in a way that aligns with program goals — rather than reactively fighting fires or solving one-off or difficult to find performance problems.

APM is critical in helping government technologists understand what's normal and what's not when it comes to application behavior. When government agencies can proactively identify the root cause of application performance issues, they are better equipped to rapidly fix problems that impact the citizen experience. An application monitoring and observability tool provides the automated, end-to-end visibility across app performance that provides agencies with real-time insights needed to easily and continually optimize performance.

Monitoring vs. observability: What's the difference?

At a high level, monitoring solves application performance and security glitches in real-time while observability assists with issue resolution before a glitch ever happens. Both are important for delivering outstanding digital experiences for citizens — and government staff — while bolstering resilience across public sector IT ecosystems.

[/learn more/](#)

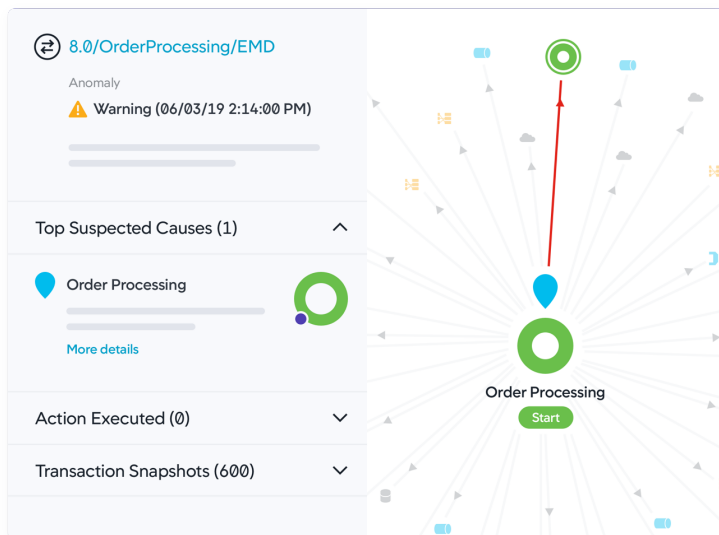
How government agencies benefit from optimizing application performance

In the private sector, poor application experiences cause many users to jump ship and seek comparable services from a competitor. But it's a bit different in the public sector where there isn't a competing agency waiting to scoop up constituents and process their affordable housing application or issue the vehicle registration they need. By enhancing the digital citizen experience, public bodies can streamline delivery of government programs and services and more efficiently allocate resources that help employees be more productive. And the benefits are quick to materialize: [77% of government agencies](#) say that digital transformation initiatives pushed during the pandemic — when agencies were forced to accelerate digitalization — are already positively impacting their organization.

In addition to improving the citizen experience, here are three more ways government agencies benefit from optimized application performance monitoring:

Reduce mean time to resolution (MTTR)

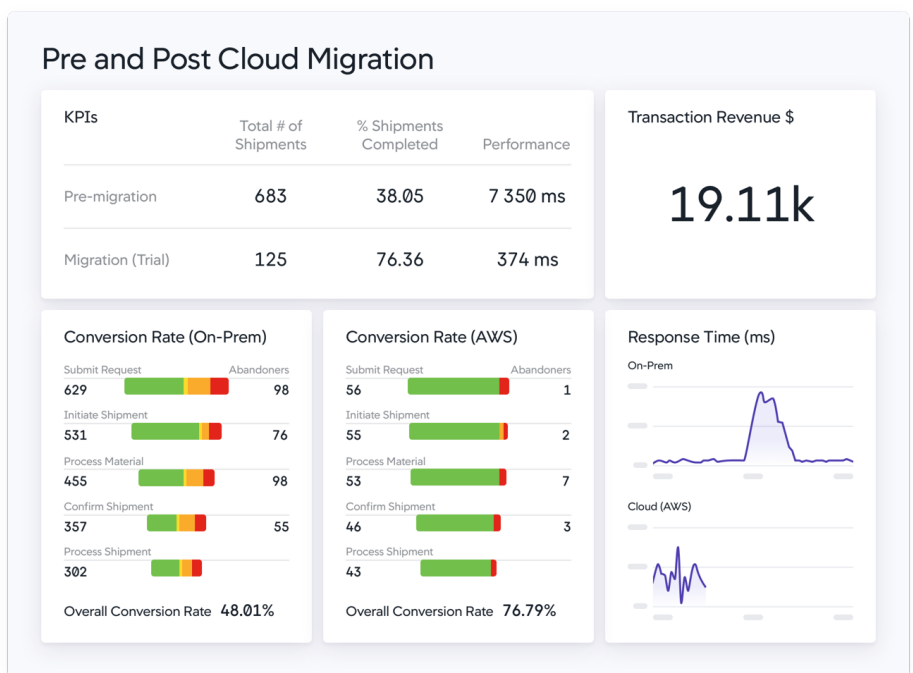
Application monitoring and observability enable government agencies to quickly find the root cause of a performance issue at any stage of the application lifecycle, from development through testing and production. Cisco AppDynamics with AI-enabled anomaly detection alerts agencies immediately when abnormal behavior surfaces and pinpoints where it's occurring. With deep visibility into application performance, government technologists can quickly mitigate performance issues to reduce MTTR, minimize impact on citizens, accelerate troubleshooting and eliminate resource-intensive war-room scenarios.





Streamline cloud or data center migration

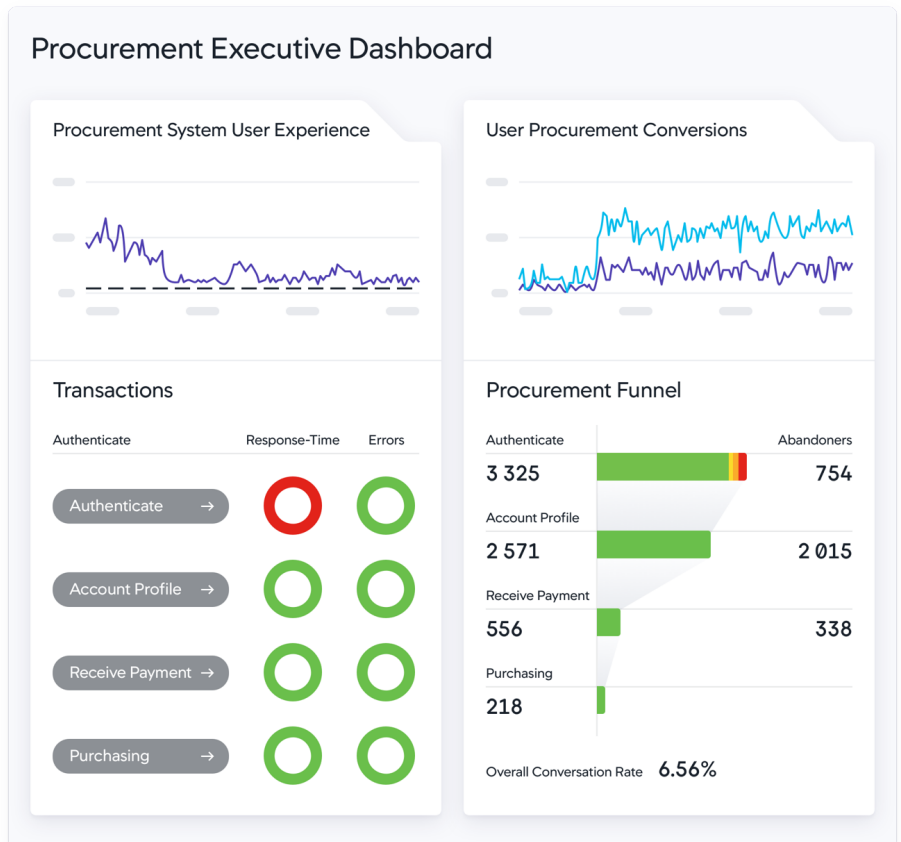
Many agencies and government bodies have data center or cloud migration initiatives. When migrating to the cloud, Cisco AppDynamics can help ensure applications are optimized to run in a complex cloud environment. With before-and-after application performance baselines, it can also minimize the risks associated with migration efforts. Since performance gaps can be swiftly identified and fixed, public bodies can ensure they adhere to application availability and performance service level agreements (SLAs) when moving applications to the cloud or a new data center.



Improve alignment to mission objectives

Application monitoring and observability tools help agencies connect the dots between application performance, the citizen experience and agency outcomes.

Cisco AppDynamics automatically detects when applications deviate from the norm to help with tracking objectives like fee-generated revenues or the number of permits issued. The platform then correlates that data with any anomalous activity that may be occurring in the application and determines how performance issues could be impacting agency goals. Thus providing confirmation for how technical changes in the environment impact objectives. By measuring the impact of application performance issues, orgs can more easily assign IT and other resources and investments to better support organizational value.



Key capabilities of an application monitoring and observability tool

Government agencies need full application monitoring and observability with mission context to advance critical agency objectives. With a modern APM solution that monitors end-to-end performance of applications in real-time (down to the code level), agencies can effectively manage and optimize performance.

Let's take a look at three critical capabilities an application monitoring and observability tool should have:

01

Proactive application performance monitoring with AI/ML

According to our research, [74% of IT professionals](#) want to use monitoring and analytics tools proactively to detect emerging performance issues. Unfortunately, 42% are still using these tools reactively to find and resolve technical issues.

A key advantage of Cisco AppDynamics is its ability to move agencies from a reactive, firefighting mode to a more proactive approach to resolving application issues. By leveraging data about the application environment using artificial intelligence (AI) and machine learning (ML), instead of merely ingesting data from the application environment, our solution actually helps technologists execute a more proactive approach to APM.

Building AI/ML into an APM strategy can enable agencies to view application performance on a daily, weekly and monthly basis, establishing a dynamic baseline used to accurately flag performance deviations. That way when an application strays from the baseline, the agency is alerted and can identify and resolve potential problems before they negatively impact users or the mission.

AI/ML also helps prevent unnecessary alert storms that can overwhelm IT teams and slow root cause analysis — [a challenge the City of Munich knows all too well](#). Before implementing Cisco AppDynamics, the city's monitoring team sometimes combed through several hundred messages per day — very few of which related to actual problems. Now, with AI-based error detection and dynamic thresholds that continuously compare application behavior with historical data, the team can avoid false alert storms and more easily prioritize issue resolution.

The expanded and powerful monitoring with Cisco AppDynamics helps us gain deeper insights into the overall application environment. This allows us to carry out better error analyses and, thus, offer increased digital service quality for our employees of the City of Munich and, in particular, for our citizens.

— Bernhard Leicht, Leader for Middleware and Monitoring, City of Munich

[/Read the case study/](#)



02

End-to-end visibility beyond the application

Government agencies, just like businesses, are often hampered by siloed IT teams and disparate management tools. But citizens having poor application experiences don't know (or care) what's causing the substandard performance — they just want the app to work as it should.

To keep applications running optimally, all teams involved with application delivery — from developers and database administrators to application and network teams — need to speak the same language. And the only way to achieve this is to ensure every team has access to the same information. With equal visibility into applications, IT infrastructure and data teams can forego any “it must be the network” blame games and rapidly identify the root cause of application performance issues.

Cisco AppDynamics enables agencies to extend visibility beyond the application layer to include **the entire** application ecosystem. By centralizing and correlating performance metrics spanning application, infrastructure, network and end-user experience, IT teams have end-to-end visibility across the full stack of the app environment — including all application components, dependencies and performance metrics. As such, IT teams can reduce downtime, collaborate more effectively, isolate problems and triage issues faster.

Code-level diagnostics

More than [a third \(38%\) of developers](#) report spending up to a quarter of their time debugging and fixing bad code. That's why code-level performance data is a must-have for application monitoring and observability tools. Automated code-level diagnostics can discover the exact line of code that's causing an application performance issue. This code-level visibility helps technologists avoid manually sifting through log files, helping reclaim valuable developer time that is better spent building new features. With a tool that drills down from high-level performance data to a granular code level, developers can access actionable information that accelerates triaging and remediation. And when code-level blind spots, as well as the guesswork from what needs to be fixed and by which team are removed, troubleshooting takes minutes instead of hours or days.

38% of developers spend up to a quarter of their time debugging and fixing bad code

An application performance issue is the proverbial needle in the haystack, and IT's job is to find and remove that needle before it hurts the user experience. But here's the dilemma: the haystack has over half a million pieces of hay — and each piece represents a line of code in an application. A tool like Cisco AppDynamics essentially gives IT teams a metal detector and X-ray vision to help them find the needle in the haystack before the application user does.



Six ways to enable proactive APM

Cisco AppDynamics gives government agencies critical visibility and insights into their applications. With its robust monitoring and observability capabilities, public bodies can ensure application performance is always visible and optimized, which improves citizen experiences and helps advance agency missions.

From custom dashboards to dynamic baselines and flow maps, here are six ways Cisco AppDynamics facilitates a proactive approach to application performance management:

01

Custom dashboards

Comprehensive dashboards bring together data points from across the entire stack — including application, server and database metrics — giving unparalleled visibility into the health of an application. But it's not just application teams that need access to real-time performance data. While technical teams need to be able to dig into the nitty gritty of how an application is performing, leaders want to understand how application performance impacts program metrics.

With Cisco AppDynamics, agencies can build custom, easy-to-read dashboards that are of interest to different teams, ensuring everyone has instant access to the information they care about most. For example, executive dashboards can automatically correlate application performance to mission outcomes, giving agency leaders an in-depth understanding of the impact of technical issues on objectives and SLAs. With this insight, remediation can be prioritized most effectively.

[/Learn more/](#)

We've built 15-20 custom dashboards. The common thread is response time. Response time is our most important metric, and it's on everyone's radar, from developers to management. Cisco AppDynamics has given us a common language and visibility that helps us communicate better with each other, as well as external stakeholders.

— Hesham Ebrahim Al-Hashemi,
Acting Director for Government Systems Support & Maintenance Directorate,
Bahrain Information & eGovernment Authority

[/Read the case study/](#)

02

Program indicators

Correlating agency and performance insights across complex application architectures has long been challenging for IT teams. With Cisco AppDynamics, agencies can monitor the impact that application performance has on key program indicators such as citizens served, tax refunds issued and student loan applications approved. It also discovers every transaction and creates a detailed

What is a transaction?

A transaction represents an end-to-end, cross-tier processing path used to fulfill a request for a service provided by an application. Key for effective application monitoring, a transaction consists of all required services within an app environment that executes a user-initiated request.

topology map of how traffic flows within the application. This provides mission context for what matters most, allowing agencies to address critical application performance issues — before they impact key program indicators. With the ability to identify when application issues affect important program indicators, IT teams can also prioritize the transactions most essential to program success.

[/Learn more/](#)

03

Application health

To keep the application environment tuned for high performance, agencies need to continually monitor and analyze application health. With Cisco AppDynamics, IT teams gain an at-a-glance view of application health in real-time. By measuring the health of every component in the application and displaying it using a color-coded status, teams can see instantly if any application services are deviating from the norm. If the status light is red, for example, teams know it's a pressing performance concern to be addressed immediately.

Cisco AppDynamics effectively measures the health status of applications by defining a set of health rules, where each rule contains certain conditions that map to key performance indicators. It then proactively monitors application performance, alerting teams when a health rule violation occurs — before it becomes a critical issue or outage that has a wide-spread impact on users.

[/Learn more/](#)

04

Dynamic baselines

Cisco AppDynamics automatically calculates baselines to benchmark normal application behavior. This baselining is also dynamic, meaning it is ongoing and can update itself over time as “normal” changes. Alerts are sent when performance wavers from the baseline and an anomaly exceeds the defined threshold thus, preventing unnecessary alert storms while supporting proactive troubleshooting.

Today, many government agencies have mission initiatives around modernizing applications. Often, that means changes to the application architecture — like refactoring traditional applications to run in containers or deploying applications with newer cloud-based infrastructure. With Cisco AppDynamics, agencies can see a real-time view of the application ecosystem and historical information — all the way back to when a legacy service was decommissioned.

Performance baselines allow agencies to compare metrics before and after making major changes such as adding new functionality, completing upgrades or migrating an application to the cloud — to help prevent degradation.

[/Learn more/](#)

05

Flow maps



Flow mapping is a powerful feature that enables proactive application performance management through a graphical representation of the interactions between different application components, including user requests, external services and back-end systems.

Since flow maps visualize the entire ecosystem of a complex, distributed application they aid technologists to gain a clear sense of dependencies. The dynamic visual topology enables teams to understand application flow and where within the application environment issues are occurring. As a result, agencies can quickly identify and drill into bottlenecks, dependencies and other problems impacting application performance.

[/Learn more/](#)



06 End user monitoring

By closely following the digital user experience, agencies can get ahead of potential application performance problems. Monitoring critical metrics across devices, browsers and third-party services — and understanding how network and browser rendering time impact the application experience — are vital to providing high-performing digital experiences.

With [AppDynamics End User Monitoring \(EUM\)](#), agencies can gain complete visibility into application performance from a user viewpoint. Instead of only measuring user interaction at the web server or application server entry point, EUM extends visibility to the browser, mobile or IoT application. It provides metrics on application performance and user activity, such as:

- How server performance impacts the performance of web and mobile traffic.
- How third-party APIs and content services affect web, mobile and device performance.
- Where geographically your heaviest application loads originate.
- How users connect to and navigate an application.
- How application performance varies by location, browser, device, OS and more.

Automatically capturing errors, crashes, network requests, page load details and other metrics, Cisco AppDynamics gives agencies the information needed to create a superior citizen experience. By tracking every transaction along the citizen journey, IT teams can quickly identify application issues and significantly reduce MTTR, while avoiding scenarios where issues are discovered and reported by citizens.

[/Learn more/](#)

Resolve performance issues fast — without war rooms and finger-pointing

With end-to-end visibility of application performance, an application monitoring and observability tool like Cisco AppDynamics can head off problems before they start. And when problems do arise and impact users, it can help expedite root cause analysis and accelerate resolution.

Proactive alerting when performance violates baselines — along with code-level diagnostics that pinpoint where in the code the issue is occurring — minimizes the disruption to users. They also work to significantly reduce time spent diagnosing and fixing problems, which saves time, money and frustration.

Agencies focused on improving citizen experience need teams that work together across functions and domains. Cisco AppDynamics can help prevent overloading already-lean government resources by delivering a shared-view in one tool to bring everyone together for more efficient triage and remediation escalation.

Fueling the citizen experience with application monitoring and observability

Digital government processes can help build trust and citizen engagement while also helping staff work more productively. But to deliver an application experience that meets citizen expectations, government agencies need complete, end-to-end visibility across the entire application environment. With application monitoring and observability from Cisco AppDynamics, public sector organizations can deliver a digital experience that allows citizens to seamlessly connect, engage and transact with their government.

Ready to improve the digital experience for your citizens?

Cisco AppDynamics gives government agencies the application visibility they need to deliver a digital experience that meets the needs of both citizens and staff. [Talk to us](#) to learn more.