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LEADERSHIP GUIDE

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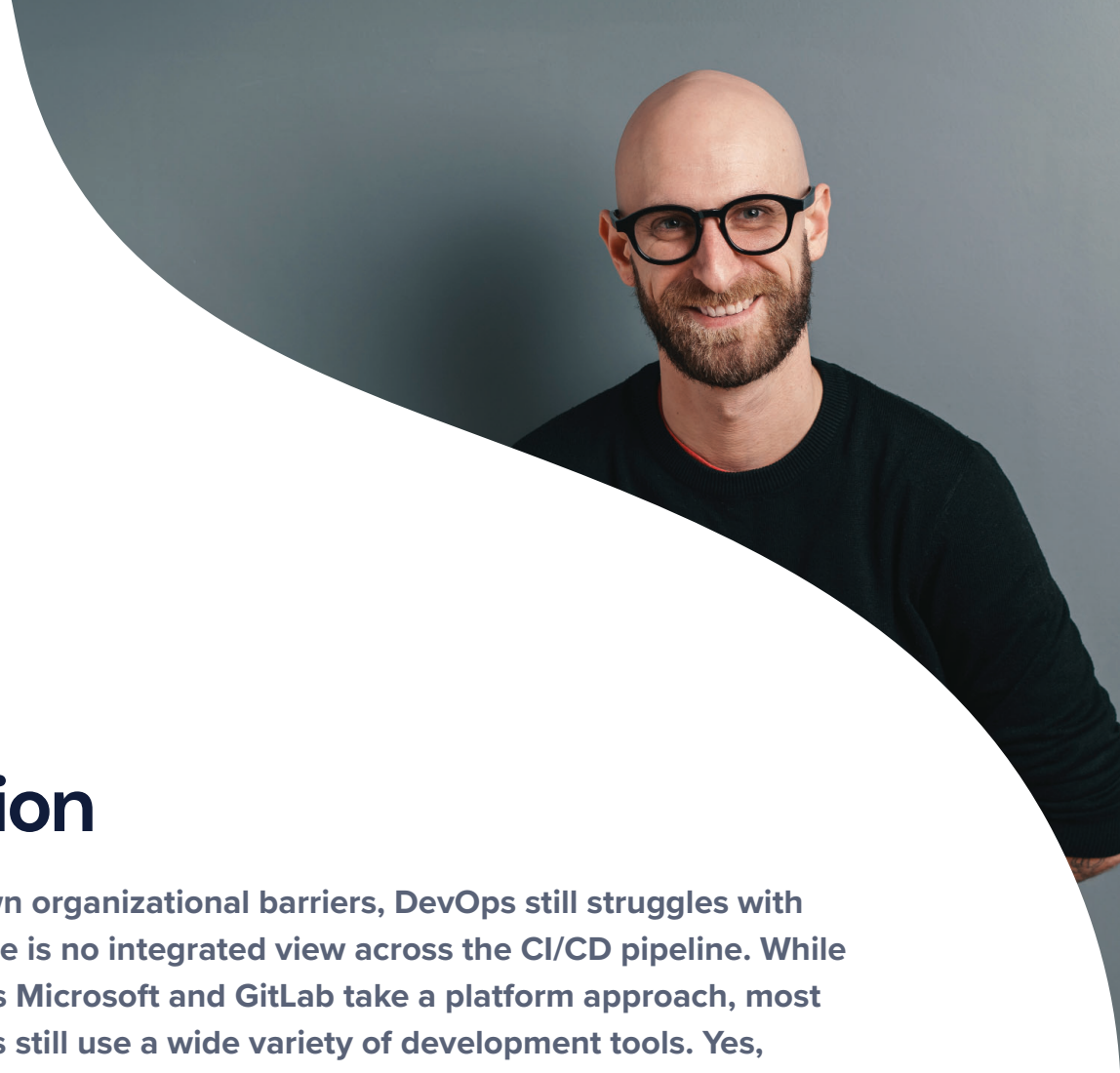
Why ServiceNow is critical for DevOps success

Improve pipeline performance, increase service availability, and accelerate innovation



Introduction

Despite breaking down organizational barriers, DevOps still struggles with data silos. Today, there is no integrated view across the CI/CD pipeline. While some vendors such as Microsoft and GitLab take a platform approach, most DevOps organizations still use a wide variety of development tools. Yes, the end-to-end pipeline is orchestrated using an automation server such as Jenkins, but process metadata remains locked away in individual tools.

Creating an end-to-end view across development and operations is an even bigger challenge. While IT operations platforms provide an integrated view of the production environment, they haven't bridged the operations/development divide.

Until now.

In this white paper, we'll discuss why a unified real-time view across development and production is critical in cloud-native environments. And we'll explain how ServiceNow provides this view—helping you to improve pipeline performance, increase service availability, and accelerate innovation.

Why is an integrated view across development and production critical?

Let's start with the DevOps operating model: both integrated and distributed. This isn't a paradox. On the one hand, a DevOps team takes an integrated approach to development, test, deployment, and operations. This is by design—it's a fundamental pillar of DevOps. On the other hand, now there are many DevOps teams instead of a few centralized groups. This allows DevOps to scale organizationally and is enabled by microservice-based functional decomposition within cloud-native architectures.

Both factors demand a unified real-time view across the CI/CD pipeline and production environment.

Here's why:

- Unless you have a unified real-time view, DevOps teams will continue to struggle with disconnected data. A DevOps team wears multiple hats, but it doesn't have the correlated information it needs to work smarter and faster. Instead, the team either reverts to siloed processes or wastes time trying to join up data manually. In either case, velocity drops and risk goes up.
- A DevOps team still needs to follow enterprise processes. For example, managing risk is as important as ever. This requires a consistent and integrated data and process foundation across the CI/CD pipeline, production environment, and beyond. Consistent, integrated data is also critical for DevOps performance, allowing you to benchmark and compare individual teams, set objectives, and measure results.

DevOps is at the forefront of an enterprise software revolution.

By industrializing the software lifecycle, DevOps makes the software development and delivery process more connected, iterative, and efficient. This allows IT organizations to deliver value faster and accelerate innovation. The convergence of agile methodologies, continuous integration and continuous delivery (CI/CD), cloud-native architectures, and disciplines such as site reliability engineering (SRE) lie at the heart of this transformation, creating an environment where change is measured in minutes instead of months.

DevOps breaks down traditional barriers between development and IT operations. Rather than developers passing software over the fence to a siloed operations team—with the inherent tension between velocity and risk that this creates—DevOps is a cultural shift. It builds understanding between development and operations and makes deployed software a joint responsibility. SRE can be viewed as a concrete instantiation of this DevOps mindset, treating operations as a software issue and bringing software engineering skills to IT operations.

Let's put this in concrete terms by looking at some key examples:

- Restoring service faster

Most service outages in a cloud-native environment are due to software or configuration changes. To restore service quickly, DevOps/SRE teams typically revert to the previous release and then investigate the underlying issue. However, to revert, an SRE needs to correlate failures in the production environment with recent changes pushed out of the CI/CD pipeline. By automatically connecting pipeline and production data in a unified realtime view, you simplify this correlation process and accelerate service restoration.

- Accelerating service issue diagnosis and remediation

While reverting restores service, it doesn't remediate the root cause of the problem—or even identify which software or infrastructure change is responsible. For example, a change in an upstream service can cause downstream microservices to fail. To diagnose and fix the problem, you need to understand how microservices interact to deliver a service, mapping both monitoring data and software changes to this service topology. The topology isn't readily available in the CI/CD pipeline and needs to be discovered in the production environment. And, until you have resolved the issue, your CI/CD pipeline is impacted. By creating a unified real-time view across your pipeline and production environment, you accelerate remediation and reduce deployment delays.

Creating a unified view across your pipeline and production environment has many other advantages.

For instance, audits are simplified because all your evidence is now in one place, and most of it is automatically gathered and linked. A unified view also allows you to understand the total cost of ownership across development and operations for the services you deliver. And by consolidating all this data in one place, you have the information you need to optimize your services, increasing ROI and reducing technical debt.

- Reducing the risk of software changes

By using operational data to make decisions about your CI/CD pipeline, you manage your value stream and reduce risk. For example, error budgets and service level objectives (SLOs) are measured in your production environment. Understanding how you are performing against these helps you to make better decisions about your pipeline. For instance, if a specific DevOps team is consuming a large part of the error budget for a service, you can place the team under additional controls to avoid further failures. You can also identify trusted teams with low failure rates and relax their controls to accelerate change delivery.

- Driving continuous pipeline performance improvement

By creating a unified view of your CI/CD pipeline and linking this to operational data, you make your pipeline measurable. This allows you to identify bottle-necks and issues that are negatively impacting pipeline performance. For instance, you can now see how long it takes agile stories to make it into production and identify which pipeline stages are causing delays. You can use your operational history (for example, resolved outages) to identify gaps in your testing strategy. And you can also measure and improve your organizational performance by identifying skill gaps that manifest themselves in your pipeline.

In other words, by creating a unified real-time view across your CI/CD pipelineand production environment, you directly influence the key metrics that DevOps cares about most, including deployment frequency, change failure rate, mean time to restore, and lead time for changes—improving pipeline performance, increasing service availability, and accelerating innovation.

How does ServiceNow help you to improve pipeline performance, increase service availability, and accelerate innovation?

Start with ServiceNow® Service Graph, ServiceNow's next-generation system of record.

Unlike traditional CMDBs, which focus primarily on infrastructure and relationships, Service Graph provides a consistent data model that spans the entire lifecycle of digital services. This includes infrastructure, but it also extends into areas such as planning, application development, deployment, performance, cost, portfolio optimization, and other business processes. It's also designed for real time, allowing it to keep up with continuous service changes. Service Graph underpins all ServiceNow capabilities, creating unified visibility and allowing ServiceNow applications to easily share digital lifecycle data. Combined with the workflow capabilities of the Now Platform®, this breaks down data and process silos, powering integrated end-to-end workflows.

Integrate metadata from all your pipeline tools into a single unified view.

ServiceNow provides unified visibility across your DevOps toolchain. It integrates with your CI/CD toolsets, collecting and synthesizing metadata into an end-to-end view of your pipeline. This allows you to track apps and configuration changes as they flow through your pipeline, and it also provides technology, performance, and culture KPIs, along with supporting data and analytics tools that you can use to pinpoint issues and insights.

Lower the risk of software changes with non-intrusive policy guardrails.

ServiceNow integrates into your pipeline to provide policy-based change management. It tracks changes as apps move from stage to stage in your pipeline, instantly auto-approving changes unless there is a policy exception. This provides effective governance without slowing down your pipeline. Policies can also leverage operational data held in Service Graph—for instance, requiring additional approvals if an application has open incidents.

You can also apply policy-based change management when developers provision cloud infrastructure with IaC tools such as Terraform, CloudFormation or ARM. This is completely transparent—developers never have to leave their cloud provisioning toolsets.

Create a complete history of application changes in your production environment.

Crucially, these change records are attached to Service Graph CIs. This means that an SRE can instantly see if a failed CI—for example, a production microservice—was updated recently. The change record also contains comprehensive information that helps them to resolve the issue faster—including the associated story, developer, test results, and other information collected from the CI/CD toolchain.

Understand the service context of apps and underlying infrastructure.

As microservices are pushed into production from your CI/CD pipeline, ServiceNow discovers their service context in real time. This makes it easy to identify the business and service impact of microservice failures and accelerates root cause analysis of service outages. ServiceNow can automatically build service maps using your cloud resource and container tags, and it can also use data from Istio if you are running a service mash. Tag-based mapping identifies the collection of microservices that make up the service, whereas service mesh data identifies the micro-services and adds dependency relationships, creating a complete service topology.

Accelerate service restoration with AIOps.

ServiceNow helps you to quickly identify and resolve service outages. It integrates and correlates observability data from multiple monitoring systems such as Prometheus, Dynatrace, and others, using artificial intelligence to turn a flood of events into a small number of actionable alerts. It does this by learning from historical event data and correlating events based on temporal patterns and service topologies.

This allows SREs to quickly identify which components are responsible for a service outage, rather than having to wade through huge volumes of event noise. ServiceNow is also able to automatically identify which change is most likely to have caused an outage and needs to be reverted. It can even automatically trigger the code rollback, further accelerating time to restore.

Leverage operational data to reduce risk and improve pipeline performance.

ServiceNow provides the operational data you need to improve pipeline performance. This includes monitoring SLOs, feeding back detailed incident records, and providing cloud resource costs for application services. This helps you to identify pipeline issues, improve test coverage, fix code faster and more accurately, and manage organizational risk more effectively.

The bottom line

DevOps is driving an enterprise software revolution, helping IT to accelerate innovation and deliver business value faster. However, DevOps organizations face a major data challenge. While DevOps is supposed to break down organizational areas between development and operations—and within development itself—the data needed to drive this transformation still exists in silos. There's no unified view of the CI/CD pipeline, let alone a unified realtime view spanning development and production environments.

ServiceNow delivers this critical unified view, no matter what your chosen DevOps toolset. For instance, it delivers DevOps metrics out of the box, including the four key metrics identified in Accelerate: The Science of Lean Software and DevOps2: Code Deployment Frequency, Lead Time for Change, Percentage of Successful Changes, and MTTR Changes. Similarly, it works seamlessly with your existing monitoring tools, using the power of AIOps to create unprecedented observability for SREs. And, it breaks down barriers between your development pipeline and production environment, helping you to:

- Restore service faster
- Accelerate service issue diagnosis and remediation
- Reduce the risk of software changes
- Drive continuous pipeline improvement

LET'S TALK

Ready to find flow?

Windward helps companies create an IT operations strategy that connects your vision to a roadmap for success. If you'd like to learn more and discuss a strategic IT Ops plan for your organization, feel free to email us at info@windward.com or go to www.windward.com.