



# Cisco Partners with OpsMx to Transform Software Delivery



**22**  
Deployments per day

Cisco's most active applications are updated more than 22 times per day



**2000**  
Developers

Nearly 2000 Cisco developers across 12 groups use OpsMx Enterprise for Spinnaker



**1**  
Month

Cisco started capturing value from their OpsMx deployment in less than 30 days

Cisco Systems is the worldwide leader in networking and IT technologies, dedicated to helping people connect, communicate, and collaborate. Cisco's IT manages one of the industry's largest and most diverse software development organizations.

## Executive Overview

In 2018, Cisco launched an ambitious initiative to transform their IT from a traditional “on-prem first” model to a modern, agile, cloud-native architecture. The goals were to improve their ability to react quickly to market demands and to further their competitive advantage.

Achieving speed in software delivery was critical for Cisco to be able to build and enhance cloud native applications quickly and to meet their innovation goals. The previous software delivery practices were not able to keep up with the scale, speed, or flexibility requirements of the new model.

Over the course of just a few quarters, Cisco successfully modernized their organization, tools, and

**“Spinnaker is a powerful solution, and OpsMx helps make it simple for us to use.”**

processes, and have mastered a new Continuous Delivery (CD) approach to automate application deployments and empower developers.

Cisco has achieved their speed and scale goals and simultaneously slashed costs, reduced failures in production, and maintained strong governance over the entire process. Spinnaker is now deeply embedded into the Cisco Developer Experience, which is designed to improve overall productivity and production reliability. Cisco chose OpsMx early in their journey, and OpsMx has been an integral part of Cisco’s CD transformation journey.



## Challenge: Transform Continuous Delivery to Speed the Shift to the Cloud

Cisco has a large and diverse application landscape, including multiple on-premise and public cloud environments, supported by thousands of software engineers. Cisco chose to expand their use of cloud environments and move to a container platform based on Kubernetes, using Red Hat OpenShift on-prem and in AWS and GCP.

At the same time, they have more than 13 other major platforms, such as Workday, Snowflake, Oracle, and Teradata, as well as extensive traditional virtual machine based systems, and all those environments continue to operate.

Cisco needed to move away from their existing legacy deployment tools, and move to a system which supported all their existing and planned target environments and applications – monoliths, microservices, and hybrid applications.

Additionally, Cisco, like many companies, has extensive security, regulatory, and policy compliance requirements that must be met. In other words, Cisco needed to transform software delivery across their enterprise.

To guide strategy, the team identified the core goals for software delivery:

- Increase deployment frequency from monthly to on-demand
- Reduce average time to deploy applications from multiple days to minutes
- Reduce time to onboard new applications from hours to minutes
- Improve productivity and efficiency by enabling developer teams to create, modify, and manage their own pipelines



## Cisco Selects Spinnaker for Modern Continuous Delivery and OpsMx to Lead the Way

Cisco conducted a thorough evaluation of the potential Continuous Delivery solutions, both open source and proprietary, as well as considering extending the use of Jenkins into the “delivery” segment of the SDLC.

They enthusiastically chose Spinnaker due to multiple factors. The factors that were most compelling to Cisco in choosing Spinnaker are:

- Spinnaker’s strong support for multi-cloud and on-prem targets,
- Open source roots and the fact that it has a vibrant community driving continuing innovation,
- The promise of scalability and integration with their existing and future environments, and
- Extensibility to support Cisco’s complex requirements for policy conformance.



Because Spinnaker is open source, Cisco next evaluated available partners to provide the skill and staffing needed to ensure a successful Spinnaker rollout.

This was especially important because at the time, Spinnaker had a reputation for being difficult to implement correctly, and Cisco knew that they would need help simplifying Spinnaker and making it accessible to the wide array of Cisco development teams.

Cisco chose to work with OpsMx for both implementation of Spinnaker and the transformation of the SDLC. OpsMx was clearly the organization which would be the best partner in the short and long run. Cisco chose OpsMx due to their

- Extensive experience with Spinnaker deployments,
- Leadership of the Spinnaker open source community,
- Flexibility in providing mission critical support, and,
- The OpsMx Enterprise for Spinnaker (OES) extensions that are pluggable directly onto the open source distribution of Spinnaker.

Choosing a tool, even one as strong as Spinnaker, is just one part of a successful organizational change as important as this one. Cisco and OpsMx chose an iterative approach, with three major stages:

- Deploying the first 10 applications,
- Scaling to the first 100 applications,
- Achieving CD transformation across 1000 applications and more.



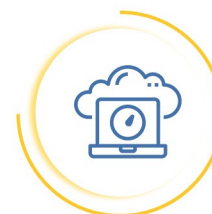
## Phase 1

Drive quick value



## Phase 2

Expand production applications



## Phase 3

Standardize across apps

### Cisco Drives Large-Scale Spinnaker Adoption with OpsMx

From the beginning, Cisco partnered with OpsMx, leveraging the company's expertise and experience deploying and scaling Spinnaker in large scale enterprise environments. With the help of OpsMx, Cisco created a multi-quarter adoption plan and began implementation.

#### Phase 1 - Quickly move to deployment

In the spirit of deploying changes quickly, the OpsMx rollout strategy concentrates on very rapidly onboarding initial applications into Spinnaker, driving the business value that comes with frequent and safe releases. This starts the virtuous flywheel of success attracting other interested teams that see value, become successful, and attract still more teams.

**"We started to see the value of faster deployments within 30 days of starting the project."**

This fit very well with the culture and strategy of the Cisco IT team. Cisco IT prides itself on providing value rather than issuing directives; they believe that successful adoption and organizational change comes when teams choose to use the new tools because they help the teams' productivity. These initial teams are happy to work with the central IT team due to their ability to get extra assistance in rolling out their projects.

Cisco chose a combination of simple and complex applications for initial onboarding. The simpler initial applications assured some initial success as well as gaining important experience. At the same time, four essential business applications were part of the initial

mix to ensure that Spinnaker would work across the board. In less than a month, OpsMx and Cisco were able to transform the delivery process for ten initial applications and make great progress on the four business critical apps. The key first tasks that Cisco completed included:

- **Key integrations of Spinnaker.**  
CD by its very nature is deeply embedded into the overall development tool chain, and open source Spinnaker needs to be integrated into the tools in use. In Cisco's case, this included quick configuration of the integrations with Bitbucket, Jenkins, the Docker repository, Kubernetes, and others.
- **Early Pipeline Development.**  
Once Spinnaker was installed and integrated into

the Cisco DevOps tool chain, OpsMx worked closely with Cisco to develop the first few pipelines. Cisco leveraged Spinnaker's ability to automatically start a pipeline based on the successful build of a system, leading to automatic production deployment of new releases once they had been approved.

- **Security.**  
Even in the first few applications, security must be handled appropriately. In addition to the basic tool chain integrations, OpsMx integrated Spinnaker into the Cisco Active Directory (AD) system to ensure proper authorization for all deployments.



## Phase 2 – Expand to a broader application set in production

Once the first few applications were live, Cisco moved into the “From Pilot to Production” phase of its rollout of OpsMx Enterprise for Spinnaker. This phase saw the number of applications increase to about 100, and the number of developers served by Spinnaker grow to more than 1000.

Since one of the key goals of the overall business initiative was to migrate applications onto Red Hat OpenShift, Cisco and OpsMx concentrated on ensuring that, in addition to handling cloud-based applications, Spinnaker would be effective in on-premise deployments. Although open source Spinnaker did not support OpenShift, OpsMx Enterprise for Spinnaker includes custom stages that support Red Hat on-prem environments.

**“We have found OpsMx to be a great partner in transforming our continuous delivery.”**

The second key element of Phase 2 was to ensure that the majority of application types used Spinnaker in their deployment strategy. This certainly included OpenShift, but also included applications built with Teradata, Snowflake, and others. For Cisco, with their vast catalog of application types and targets, it was critical to prove that Spinnaker was able to support a very wide range of applications, databases, and deployment targets.

As the number of applications grew, a few challenges presented themselves. Spinnaker was becoming mission critical for the teams that used it. With that came the need for Spinnaker to be always available, so that teams were not prevented from deploying their changes. This forced the creation of a High Availability (HA) architecture for the Spinnaker deployment itself.

Cisco built a multi-datacenter Spinnaker architecture using OES that includes full monitoring using Prometheus and other systems. Spinnaker deploys new instances of Spinnaker to assist in the deployment of the frequent new versions of Spinnaker.

Cisco now has more than 15 separate Spinnaker instances which handle deployment across dev, test, staging, and production in all of Cisco’s major geographies.

In some of these instances, open source Spinnaker began to suffer from latency and performance issues, especially when deploying to OpenShift. OpsMx diagnosed the underlying design problems in the base Spinnaker code. The fix was complex across a number of Spinnaker components, but because of the strong relationship with the open source community, OpsMx was able to deploy

the changes into Spinnaker and help Cisco achieve their performance SLAs.

Additionally, Cisco used OES to prove out a key security requirement: secrets management, which is an important element of security at Cisco.

OpsMx Enterprise for Spinnaker contains a specific secrets management implementation that helps ensure developers can access passwords and other important information without breaking security protocols.

In Cisco’s case, Cisco configured OES to integrate with Cisco’s implementation of HashiCorp Vault, which is used to manage their account secrets.

## Phase 3 – Standardize on Spinnaker across all apps and services

Cisco was now seeing significant benefits from its use of Spinnaker, and initial production rollout continued to grow. Cisco's Spinnaker implementation currently supports more than 1000 applications supported by nearly 2,000 developers. Their most active applications are deployed into production nearly 2,000 times per quarter, a rate of more than 20 per day.

In this phase, OpsMx again deployed their deep knowledge of Spinnaker internals by identifying a design flaw in OSS Spinnaker that limits the number of applications when RBAC is enabled. OpsMx was able to identify the source of the issue and implement a workaround to support the scale that Cisco requires.

Spinnaker is known for being powerful. It also has a reputation among companies who are not OpsMx clients of being complex and difficult to learn. To move from 100 to 1000 applications, the application onboarding process needed to be simplified, as developers did not want to become Spinnaker experts to enjoy the benefits of automated deployments.

Cisco has now scaled to thousands of pipelines and uses a self-service simplified on-boarding to dramatically reduce the amount of time and effort required by the individual teams. In more than 80% of the cases, Cisco teams are able to on-board their applications using a completely self-service model, speeding the overall process and removing effort for the central IT team.

For Cisco's database-centric applications, Cisco takes advantage of OES integrations with Teradata, Snowflake, and others. When changes to a database schema are required as part of an application change, the two are deployed simultaneously. This ensures that updates are made automatically and synchronously to the database and the application. This means that either both succeed or both are rolled back, which reduces the risk of production downtime.

In order to ensure that Cisco easily achieves their goals and realizes all the potential value from Spinnaker, OpsMx provides "no excuses" support to Cisco on a round-the-clock, round-the-world basis. Of course, this support includes basic break-fix for Spinnaker, but OpsMx goes much further, providing best practice delivery, integration and tool stack troubleshooting, operational monitoring, capacity planning, and training.



## The Future of Spinnaker at Cisco

The use of Spinnaker at Cisco is now widespread and continues to grow. Cisco views the adoption of Spinnaker as a case study in how to successfully transform a key IT process – in this case, software delivery. With the success achieved with OpsMx in the first three phases of rollout – from initial deployment in a month to adoption by nearly 2,000 developers, Spinnaker is now simply a part of Cisco's continuing innovation engine.



One of the next steps is the addition of automatic policy checking. As Spinnaker went mainstream and the number of applications skyrocketed, Cisco realized how helpful it would be to automate the validation of Cisco's governance rules. OpsMx Enterprise for Spinnaker includes an Audit and Policy Management module that leverages OPA (the Open Policy Agent framework). Cisco is planning to use this simple-to-use but powerful OES module to extend the self-service on-boarding and ensure automatic policy compliance of more than 1000 Cisco deployment policies.

In addition to the millions of dollars that Cisco has saved working with Spinnaker and OpsMx, Cisco feels they have achieved their success of "on-demand" deployments for applications and will be able to extend the benefits of faster innovation to all Cisco teams.

