PLATFORM9

Cloud-Native Transformation with Managed Kubernetes as a Service

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Introduction

Enterprises today face the unique challenge of modernizing their digital infrastructure to support new business opportunities while meeting more stringent cost and ROI goals. The rationale for digital transformation is clear:

1. Creating new applications that engage customers in new and exciting ways
2. Improving operations via better delivery of products and services at lower cost points to the business
3. Generating new revenue streams by responding to changing market conditions and customer preferences

To be responsive to the needs of the business, applications must be built with an architecture and structure that enable more agile development, integration and deployment than ever before while still maintaining the performance, security and cost-effectiveness expectations of the enterprise. Containers can deliver exactly this needed structure to drive digital transformation.

Kubernetes provides an efficient way to schedule, manage and dynamically orchestrate containers, but comes with its own issues of complexity, scale and personnel training and retention. A prescriptive roadmap to success seems vital. Juniper Networks is a good example of an enterprise that has navigated the road to container deployment and digital agility via a managed Kubernetes solution.

Juniper Networks - Cloud Native Transformation Initiative

Juniper[1] has engineered some of the world's most sophisticated end-to-end advancements in network security, automation, performance, and scale. As with many enterprises, the company's Engineering Cloud Infrastructure team was facing increasing demands to deliver modern cloud-native technology stacks that would accelerate development life cycles, build automation for faster turnaround of software testing and increase engineering productivity.

Juniper's legacy technology infrastructure platforms were not up to date with modern cloud-native stacks and continued to build up technical debt, making it challenging to upgrade or take advantage of the latest capabilities in the market. Juniper was concerned about getting locked-in to proprietary technology stacks that don't keep up, don't evolve, cost too much and provide low performance.

The Engineering Cloud Infrastructure team embarked on a strategic transformation initiative to modernize their complex, legacy infrastructure landscape to a modern cloud-native technology stack and a services-based automated operational model.

Addressing Critical Project Needs

Juniper's initial investigation confirmed that Kubernetes is the go to platform for their requirements with its on-demand scaling, operational efficiency, automation and lower cost investment profile compared to traditional solutions. They wanted to ensure, however, they addressed **5 particular critical requirements** that are common across many enterprises:

1. **Automation:** The team wanted to make sure they could deploy automated Kubernetes.
2. **Enterprise level reliability, availability, and scalability** to meet SLAs 24x7 with a follow-the-sun, global cloud operational model.
3. **Easy integration** with existing data center storage, networking, and security solutions.
4. **Seamless Upgrades:** Juniper was concerned about their ability to keep up with the volume of Kubernetes upgrades that happen regularly. Given their prior experience with a number of other platforms, they didn't want to be left with hard-to-upgrade technologies and lost time.
5. **Leveraging innovation** without a large staff: Juniper wanted to leverage the innovation and flexibility of open source projects and communities without the pain of managing the software life cycle themselves. At the scale that Juniper was looking to implement Kubernetes, this would mean hiring a fairly large team with the requisite skills and expertise. But they realized Kubernetes expertise is hard to come by and retain.

[1] Juniper Corporate website

The Managed Kubernetes Solution

As with many enterprises, Juniper studied several approaches, including DIY, commercial Kubernetes distributions, and Managed Kubernetes as a service. Only the Managed Kubernetes solution could meet the joint requirements for:

1. Scale
2. Efficient End to End Solution Management
3. Automation
4. Performance
5. Lower TCO via personnel and software cost decreases
6. Open source project innovation support

A managed Kubernetes solution provides **5 top benefits** that are representative of what a variety of enterprises can expect:

1. **Faster Time to Market:** Managed Kubernetes enables Juniper to drive digital transformation and faster time to market by providing a flexible, scalable, on-demand infrastructure for the DevOps and CI/CD pipeline.
2. **Smoother Upgrades and Open Source Innovation:** Taking a maintenance window for a nonstop Kubernetes offering would be very disruptive for Juniper. Managed Kubernetes' rolling upgrades capability avoids disruption and down-time. This also enables Juniper to enjoy all the benefits of open source innovation on a continuous basis.
3. **Lower TCO**: Lower Kubernetes engineering personnel costs, strategic personnel redeployment and enhanced operational simplicity helps enterprises like Juniper achieve significant TCO savings when compared to competitive solutions.
4. **Day-2 Operations Simplification:** Managed Kubernetes, with its SLA-backed service, addresses Juniper's focus on running managed Kubernetes 24x7 in an efficient way.
5. **Time to Value:** Had Juniper attempted to implement Kubernetes by itself, it would have taken 6 to 12 months to reach production stage with global deployments. A managed Kubernetes solution achieved this in just a few weeks.

Cloud-Native Transformation – The Road Ahead

Managed Kubernetes enables the enterprise to drive digital transformation via improved availability, seamless upgrades, and lower TCO, and provides a stable platform for innovation. Whether an enterprise's mission-critical Enterprise Kubernetes initiatives are in production or the containerization journey is just starting, planning is critical to success.

When they plan for the future, Enterprises should ensure their Kubernetes solution provides these key attributes:

1. Operational simplicity
2. Zero lock-in
3. End to end ease of management
4. Lowest possible TCO
5. A track record of large scale production operations

Platform9's SaaS Architecture - The Next Generation Standard for Managed Kubernetes

Platform9 pioneered a next generation SaaS management plane architecture that provides the operational simplicity and ease-of-use of public clouds while simultaneously delivering the most open environment using upstream Open Source cloud-native stacks, e.g., Kubernetes, Prometheus, Istio, and OpenStack.

As the Kubernetes market consolidates, enterprises will need to choose wisely to contend with their environment sprawl and its resulting operational costs and management complexity. This problem can be solved efficiently only by a centralized SaaS control plane like that offered by Platform9. This innovative control plane abstracts the differences amongst these environments and makes it easy to standardize and scale operations across the infrastructure.

The SaaS-based management provides a central operational console and a single pane of glass for all Kubernetes clusters no matter their location. Enterprises no longer have to worry about the operational burden of up-time/SLA management, upgrades, security patches, and production outages. This approach will be the next-generation de-facto standard for distributed cloud-native infrastructure management because of its ability to address large-scale operational complexity and avoiding lock-in. Juniper networks has leveraged the Platform9 Managed Kubernetes (PMK) solution to accelerate their cloud-native digital transformation and enjoy the benefits of SaaS management of Kubernetes as outlined in this white paper.

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About Platform9: Platform9 enables freedom in cloud computing for enterprises that need the ability to run private, edge or hybrid clouds. Our SaaS-managed cloud platform makes it easy to operate and scale clouds based on open-source standards such as Kubernetes and OpenStack; while supporting any infrastructure running on-premises or at the edge. Enterprises such as S&P Global, Kingfisher Retail, Cadence Design, Juniper Networks and Autodesk are using Platform9 to easily manage large scale private and edge clouds. The company is headquartered in Mountain View, CA and is backed by Redpoint Ventures, Menlo Ventures, Canvas Ventures, NGP Capital, Mubadala Capital and HPE Pathfinder.