SaaS Managed Kubernetes: the Effective DIY Alternative

Joep Piscaer

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Kubernetes is here to stay. But its operational complexity is a major hurdle for many organizations, creating a barrier to entry that's hard to solve: qualified engineers are expensive, and DIY solutions have a long lead time and are very complex.

This means organizations are missing out on the advantages that Kubernetes provides for development teams, like accelerating software releases with more control over the infrastructure to optimize performance and cost.

This tech brief from Platform9 helps you understand how to remove complexity and decrease lead time for Kubernetes using a cloud-agnostic, managed solution approach.

Kubernetes is a powerful infrastructure platform for developers. Its self-service nature allows developers to take control of releasing software to production without the direct involvement of Ops teams. This helps development teams increase their velocity, enabling them to release more often and more quickly, with more control over the infrastructure than ever to optimize cost, performance, and resilience.

The downside is increased complexity. With all of its advantages when it's up and running, Kubernetes is notoriously hard to deploy and manage. Its open, pluggable architecture is complicated and can be overwhelming for those new to Kubernetes.

This creates high barriers to entry for Ops teams wanting to design and implement production-grade clusters that provide high resilience and good performance at a reasonable cost.

In the architecture diagram in **Figure 1**, it becomes clear that Kubernetes is a complex solution with many moving and interchangeable parts.

Even after the initial learning curve is conquered, new challenges await. Kubernetes clusters tend to have a shorter lifespan than virtual infrastructure clusters, and are often built for a very specific function, such as a single application. This is especially true in environments with ephemeral compute needs, like cloud computing. Here,

clusters here are constantly spun down, recycled, and replaced by new clusters.

This poses major challenges in the way Ops teams work, requiring new operational processes. It also requires new technical skills, which use up team resources that could have been better spent on other, more business-focused initiatives.

> ## Kubernetes is, by design, a complex solution with many moving and interchangeable parts.

Indeed, chances are that Ops teams are already stretched thin, and putting in the time to master the day-to-day chores of managing a cluster's lifecycle is simply another added burden. Ops is already busy maintaining existing infrastructure, from WAN and LAN networking, to virtual compute infrastructure, client management systems, and many others.

Outsourcing Makes Sense—on the Surface

It is therefore logical to outsource Kubernetes to a managed services provider. Luckily, there are many options to choose from, across a spectrum of different types of solutions.

On one end of this spectrum are software distributions that provide a framework, but leave you alone to figure out how it works. While better than rolling out your own Kubernetes distribution, these options still require you to do all of the heavy lifting yourself, and don't actually solve the problems outlined earlier.

The hyperscale public cloud vendors go one step further, by offering these software distributions as an easy-to-consume service. These services take care of initial cluster deployment, using their own design best practices and implementation tooling.

While saving massively on initial deployment lead time, these solutions have a number of downsides. Public cloud
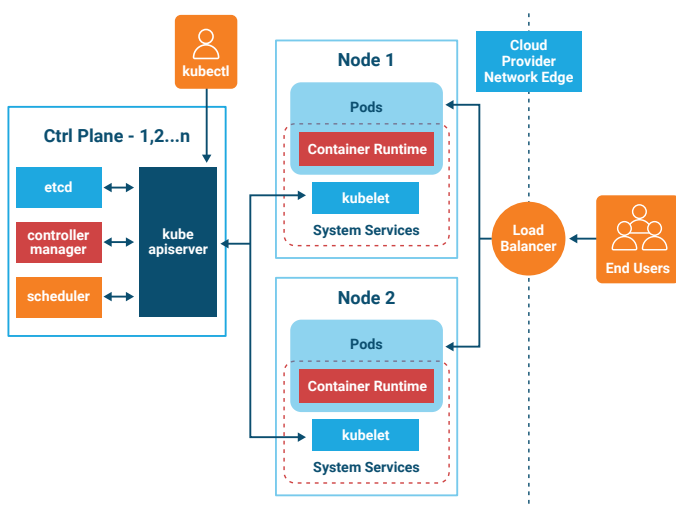
Figure 1: Kubernetes architecture is difficult to understand and master

vendors' service portfolios are designed to lower the barriers for developers to start using additional services, often without an upfront cost. It's an elegant, integrated portfolio of services that developers love.

LOCK-IN BLUES

It's not without its drawbacks, though—the biggest one being vendor lock-in. These hyperscale public cloud vendors have many services, and they'll try to persuade you to use their other services, as well. Lock-in increases steadily, drawing you in as a customer with each step.

While, operationally, the level of integration between services and products is naturally very high, the cost and the operational and strategic risk increase exponentially.

The public cloud provider may lock you into using their authentication, monitoring, or data services (like databases and object storage). For instance, to use their managed Kubernetes services, you have no alternative but to use *their* compute instances, block storage service, and monitoring services, as well as their authentication service. This lack of choice increases the lock-in.

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In the Kubernetes realm, another lock-in is more obvious: the managed Kubernetes service often dictates what compute instances can be used, in the sense that you can only use their compute nodes. This can prevent you from using a third-party service or bringing your own compute.

And while technically there's nothing wrong with using their compute nodes as Kubernetes worker nodes, they do make up the vast majority of cloud costs. And what happens if they alter their terms or hike prices? If you're locked in, you may feel you have to accept these unwanted changes.

But maybe not. And that leads to an often-hidden, but frustrating and expensive, issue—breaking the lock and

finding another provider can be incredibly frustrating. The time it takes to move away from a specific public cloud service when locked into that ecosystem can take many months, and may have a significant impact on your projects and budgets. Sometimes providing your own infrastructure is cheaper and offers more agility.

While lock-in is often associated with the risk of cost increases, the strategic risk of not being able to move and adapt to changing circumstances in your business could also be crippling, especially when the services are used for customer-facing digital transformation projects.

This means a loss of agility in the marketplace, since you're no longer able to adjust requirements in response to changing circumstances. That increases your Total Cost of Ownership, or TCO, when using the public cloud vendor's entire service landscape.

MITIGATING RISK

Intelligent planning demands that organizations consider solutions that don't have economic and operational lock-in, while still offering Kubernetes as a service. The value proposition is clear: the enterprise receives all the benefits, without the downside.

With SaaS, you're essentially hiring the best consultants to assist with the architecture design, configuration, and operational processes to optimize your Kubernetes environments for availability, resilience, security, and cost. But you don't pay the high price of a specialized consultant. Instead, the SaaS provider creates the automated workflows and the back-end automation that allow hands-off initial deployment, upgrades, monitoring, alerting and more. Since it's all done with software instead of labor-intensive manual processes, it scales elegantly.

Smaller organizations simply can't justify the cost of a dedicated Operations team with the appropriate Kubernetes knowledge and experience, which requires expensive staff—nor can they run the risk of being dependent on a single worker or a small number of employees for their specific knowledge.

Instead, cloud-agnostic, managed Kubernetes services, like Platform9 SaaS Managed Kubernetes service (PMK), are indifferent to the location of your Kubernetes cluster:

on-premises, in a private or hosted cloud, across any of the public clouds, or in a combination of all of these.

Workloads are moving increasingly to the network edge. This dynamic creates hundreds or even thousands of new locations. In that scenario, operational overhead ramps up massively, leading to huge management nightmares. But SaaS provides central management of those widely distributed clusters with the simplicity of a single pane of glass console. That means formerly labor-intensive operations like software updates are as easy as the click of a button.

PMK offers quick onboarding to Kubernetes for developers, allowing them to use the service without any re-training, and includes many of the moving parts that usually accompany Kubernetes for monitoring, logging, networking, and storage.

Focus on Business Outcomes

Managed Kubernetes services are invaluable in other ways, too. Not only do they remove the operational complexity of designing, implementing, and operating Kubernetes, they allow organizations to focus their staff's time on things that directly impact their bottom line.

Instead of ITOps staff focusing on daily IT operations, they will have time to spend on business projects, which increasingly have an IT or tech component.

Thus, a managed Kubernetes platform has two key advantages. First, your organization will have a proper Kubernetes infrastructure, which is a driver for many digital transformation, digitization, and e-commerce projects. It allows organizations to quickly develop, release, and iteratively improve customer-facing applications.

Second, freeing up IT staff from their day-to-day task will accelerate those projects by adding invaluable tech skills and experience into the mix, without having to risk being pulled back into yet another operational fire that needs their immediate and undivided attention.

Many companies underestimate this latter aspect of using a managed Kubernetes service. Freeing up technical staff that know the organization's technology stack and all of its subtleties, technical debt, and quirks can have a massive impact on the quality of the software delivered as part of those innovative projects.

IMPROVING TIME-TO-VALUE

In addition, using a managed Kubernetes service allows organizations to hit the ground running. Instead of slowing down a transformation project to hire the right staff, design, install, and configure a Kubernetes environment, a managed Kubernetes service helps speed up projects by decreasing lead time for the technical aspects of building a Kubernetes environment.

This newly unencumbered IT staff can be the difference between a successful digital transformation and a failed one. IT staff have a crucial role in non-functional aspects. While *functional* characteristics define specific behavior and functionality, non-functional aspects define qualitative aspects of a system, including stability, availability, resilience, security, performance, manageability, upgradeability, cost, and more. With IT staff safeguarding those attributes, these projects will deliver a better end result, and more quickly.

NO-COMPROMISE KUBERNETES

The Platform9 SaaS Managed Kubernetes service delivers what customers need most: decreased lead time for getting started with Kubernetes, with the certainty of a well-designed Kubernetes platform, and guaranteed 99.9% uptime without any of the lock-in or compromising on flexibility or control.

Get more information about the Platform9 SaaS Managed Kubernetes service offerings; or, if you're ready to try it out now, Platform9 offers a free trial in a sandboxed environment.