

DevOps guide to accelerate your CI/CD deployment across your Kubernetes environment

No-code. Drag and drop. Scale-up.

Build, migrate and integrate security with ease



of global business will be running containers in production environments

In the cloud world, containers are the centerpoint of a growing majority of deployments. By providing compartmentalization of workloads and the ability to run "serverless", containers can speed up and secure deployments and create flexibility unreachable by old style application servers. While a variety of tools have been developed to meet this need, none are as impactful to the industry as Kubernetes. It has emerged as the de facto container orchestration tool for many companies.

Kubernetes alone is a powerful framework, but relies entirely on proper configurations to achieve the desired results. Kubernetes facilitates the ability to automate the DevOps CI/CD pipeline but alone can be unwieldy.

¹Gartner Forecast Analysis: Container Management (Software and Services), Worldwide, 2020 ²Sunburst: Supply Chain Attack Targets SolarWinds Users (link to: https://symantec-enterprise-blogs.security.com/ blogs/threat-intelligence/sunburst-supply-chain-attack-solarwinds)

Key Challenges

With Kuberenetes

- No native containerization framework support to easily migrate existing workloads from VMs to Kubernetes
- High dependency on the underlying platforms and architecture slows down deployments on on-premises and hybrid clouds
- Security is an afterthought making the deployment vulnerable to supply chain attacks (for example, Sunburst²)

Opsera Continuous Orchestration and Kubernetes together to create a fully-managed Infrastructure-as-Code CI/CD (Continuous Integration and Continuous deployment) pipelines for containerbased applications.

This approach provides the best of the both worlds, taking advantage of Kubernetes' open-source system to manage your containerized applications, while Opsera Toolchain Automation, Declarative Pipelines, and Unified Insights enable developers and engineers to build, secure, validate, and deploy applications using drag-and-drop tools and build a no-code pipeline in minutes.

Key Benefits

- Simplify containerization efforts when adopting the Kubernetes framework
- Achieve no-code continuous orchestration across onpremises or hybrid clouds
- Accelerate CI/CD with automated quality and security checkpoints even in multi-vendor deployments
- Identify gaps and improve observability with unified visibility across the entire CI/CD pipeline

Define and Deploy Infrastructure as Code

As we discussed previously, a big advantage of Kubernetes framework is that anything that can be defined, can be automated. But this must all be built and configured before Kubernetes can take over stateful control. This can present a challenge for users, depending on their skills and knowledge of Kubernetes. For example, in order to automate code deployments, a load balancer must be configured. As well, a successful automation must contain security gates and quality checkpoints that halt the deployment and rollback if unmet.

Building this by hand in Kubernetes can be a daunting task, however Opsera's orchestration tools make this go from challenging to straightforward. Across any cloud or hybrid platform, you can easily define your clusters, nodes, pods, and containers while implementing security groups and checks/scans using continuous orchestration and Terraform templates.

The continuous orchestration framework enables DevOps and Cloud engineers to add validation, thresholds, gates, approvals and add additional steps in the workflow without writing custom code. Thanks to Unified Insights, they can also see the activity logs across various steps in one "single pane of glass" console (including console logs) and get end to end visibility across the entire CI/CD pipeline.



Infrastructure as a code (IaC) CI/CD pipeline flow



From Old to New Migrating VM Workloads to Containers

As we previously discussed, many critical enterprise workloads are still running in VMs or on dedicated physical servers and can be difficult to migrate into containerized infrastructure due to operating system dependencies and lack of native container support.

However, using Opsera for Continuous Orchestration solution greatly simplifies the migration process of SDLC applications down to three easy steps:

- Leverage the Opsera Continuous Orchestration framework and connect the existing VM code base to a Continuous Integration (CI) system.
- 2. Create a Docker image as part of the build process.
- 3. Place the container in the repository management system (Artifactory, ECR, Nexus, etc.).
- 4. Scan the image using native K8 security scans and upon validation, deploy the container with the respective microservices code into the K8 cluster.

5. Upon validation, promote the docker image from QA to production.

The following CI/CD pipeline depicts the ways you can convert the VM images into Docker images and deploy them into Kubernetes clusters:





From Old to New Migrating VM Workloads to Containers

Notification via Jira/Slack/Teams

DevOps Meets SecOps Building Security & Quality Gate Automations

Leveraging Opsera Continuous Orchestration and declarative CI/CD pipelines enables DevOps and Cloud engineers to automatically take code from repository to production in a Kubernetes cluster with minimal user intervention. To achieve this, create a pipeline that will build and deploy committed code changes as long as they meet the security and quality thresholds and gates in the pipelines. Using the following steps, you can easily create a native K8 pipeline with security and quality gates without writing any custom code and also in just a matter of minutes.

With Opsera Continuous Orchestration, we help you manage your collection of DevOps tools, integrate them seamlessly with plug-and-play architecture, automate your workflows with drag-and-drop options, aggregate and contextualize logs to provide continuous insights across your entire DevOps environment.

Using drag-and-drop options, you can easily build the pipelines and workflows across various DevOps stages: code commit, software builds, security scans, vault integration,

approvals, notifications, thresholds and gates, quality testing integrations, validation, integration with change control and monitoring tools, and deployment while maintaining insights and logs for each step along the way.

Kubernetes, while powerful and capable straight out of the box, is also complex and presents numerous challenges. Thanks to Opsera there is a simple way to address and remove those barriers. Configurations are straightforward to design, logging is covered at every step and pulled into unified views, and security and quality are easy to gate check.



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Accelerate the Migration to Kubernetes with Opsera

Kubernetes provides the mechanisms and the environment for organizations to deploy applications and services to customers fast. However, migrating existing workloads to Kubernetes, and implementing security and quality can still be daunting. The New Stack Analysis of Cloud Native Computing Foundation survey indicates that 46% of devops respondents feel security is a top challenge. A recent report from D2iQ finds that 38% of the developers and architects have indicated that working with Kubernetes is a source of extreme burn out.

With Opsera Continuous Orchestration, you can create fullymanaged Infrastructure-as-Code CI/CD pipelines for containerbased applications. Accelerate the migration to Kubernetes with Opesera, bringing in significant agility, automation, and optimization to the DevOps environment. It also means that teams don't have to build resiliency and scalability into the application – they can trust that Kubernetes services will take care of that for them - enabling devops teams to effectively leverage the advantages of Kubernetes, without security, quality or operational woes.





About Opsera

Opsera's platform allows you the freedom to choose your own DevOps stack with zero scripting involved. With Opsera, you can automate any stack, build pipelines forany app, and deploy anywhere.

Opsera accelerates best-practice Cl/CD adoption sosoftware teams can deliver software faster, safer, and smarter.

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Schedule A Demo



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