TIDAL

Tidal Automation Adapter for Kubernetes®

Automate and optimize containerization initiatives

KEY BENEFITS:

Centralize management and control of Kubernetes processes

Apply advanced scheduling capabilities to improve container resource utilization

**Integrate** container activities within overall business processes

Maintain comprehensive history and logs for audit requirements

PRODUCT OVERVIEW

Tidal's adapter for Kubernetes (also known as K8s) enables you to centralize automation for containerization initiatives. Our adapter works through the Kubernetes API to take control of the embedded scheduler activities and integrate them within overall business processes. The Tidal platform brings the capabilities of an enterprise scheduler that far outnumber what is available in the Kubernetes scheduler.

As you operationalize new applications and microservices with Kubernetes, our adapter provides the mechanism for initiating application processes embedded in containers and pods and automating Kubernetes jobs. For example, use Tidal to spin up containers and pods and take them down so they are running when – and only when – they are needed. You can centralize the management and monitoring of Kubernetes activities within your enterprise automation – no scripting required.

ARCHITECTURE DIAGRAM
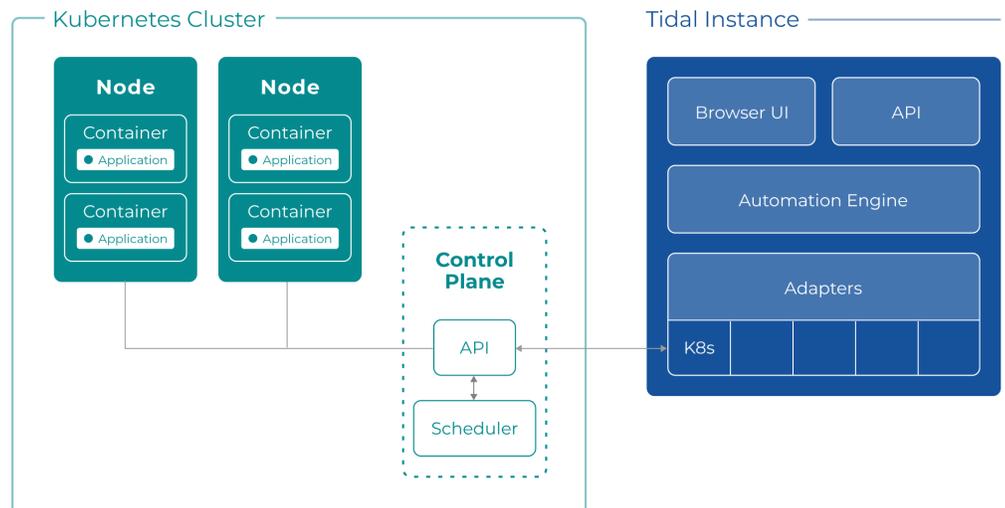
The Tidal Automation Adapter for Kubernetes supports the version available from Kubernetes.io as well as the following:

- **OpenShift**
- **OKE**
- **Azure**
- **AWS**
- **Google**

SCHEDULING KUBERNETES ACTIVITIES IN TIDAL WITH OUR ADAPTER

By integrating Tidal and Kubernetes, you can centralize management of Kubernetes activities within the Tidal Automation platform. Job definitions specific to Kubernetes are pre-populated in the Tidal UI for easy setup. Following are the job types in the Tidal platform for Kubernetes.

Managing Kubernetes

Kubernetes Job – This job type essentially reflects the jobs in the Kubernetes scheduler for managing elasticity. These jobs bring up a container, deploy an app inside it, perform the required processing and then destroy the container. By scheduling these jobs in the Tidal platform, Tidal triggers the job in Kubernetes, Kubernetes runs it and Tidal monitors the job for output and completion.

Container Attachment – This job is used to inject a command into a specified container.

Administering the Kubernetes Cluster

Kubernetes Objects – These objects are constructs used by Kubernetes for deploying applications in pods and containers. Within Tidal, you can schedule, create, update and delete operations for lifecycle management of objects inside Kubernetes:

- **Deployment** (deploying an application that's needed at a certain time)
- **Services** (redirecting traffic to endpoints and named spaces)
- **ReplicaSet** (replicating containers and the relationships between them)
- **Persistent Volume Claim** (creating storage to be used by Kubernetes microservices)
- **Config Map** (defining configuration options for Kubernetes microservices)

SCHEDULING KUBERNETES ACTIVITIES IN TIDAL WITH OUR AGENTS

In addition to our adapter for Kubernetes, Tidal also offers a couple of approaches with our agents.

> Use our Linux agent container to quickly build containers for your applications with a Tidal agent already embedded inside. When the container is created, the agent will auto-register with the Tidal Master and operate as a delegate to run jobs and report status back to the Master.

> Alternatively, place a Tidal agent in your container to operate as the delegate and execute the jobs locally on behalf of the Master.

BUSINESS VALUE

Kubernetes brings highly elastic architecture to your environment for optimized resource utilization. You can support a higher density of applications across your computing resources and leverage infinite elasticity by dynamically adding or reducing capacity.

Integrating Kubernetes scheduling activities into the Tidal platform brings greater business value than the embedded Kubernetes scheduler with:

- Improved scalability
- Alerting and notifications
- Ability to define the right level of controls and permissions
- Self-service for Kubernetes users
- Comprehensive logging to satisfy audit requirements
- Robust calendaring and scheduling functionality

Why Tidal Administrators Should Consider the Integration:	Why Kubernetes Users Should Consider Tidal for Scheduling:
> Avoid islands of automation and separate schedulers	> Free up time from 24/7 monitoring and management of Kubernetes jobs
> Save costs with more efficient management of dynamic container resources	> Take advantage of more advanced scheduling constructs and calendars
> Satisfy change management and audit requirements with Tidal's logging	> Ensure you can meet audit requirements for promoting activities to Production

TIDAL

tidalsoftware.com