



DECISION MAKERS GUIDE



Nomad Vs Kubernetes

RISHIDOT RESEARCH BRIEFS



About Decision Makers Guide

Rishidot Research's Decision Makers' Guides are research briefs made to help decision makers gain quick understanding of a technology or compare two or more technologies. The guides are designed to help modern enterprise decision makers quickly understand the pros and cons of specific technologies or scenarios to plan their strategy. Unlike Rishidot Research's long form reports, these guides are purposed to inform decision makers about the strengths and weaknesses of specific technologies. This understanding will empower them and their teams to make objective strategic decisions without depending on vendor marketing materials. When decision makers want a deep dive into specific technologies or need to evaluate various scenarios as part of their planning process, Rishidot Research can aid that process through consulting engagements.

Table of Contents

- Introduction
- Scheduling and Orchestrating workloads
- Nomad
- Kubernetes
- Our Recommendations



Introduction

As container technologies mature, more and more enterprise applications are deployed using containers. This brings into focus the need to have a robust container orchestration and management tools like schedulers, cluster management, service discovery, secrets management, monitoring, etc.. Kubernetes and Nomad are two prominent orchestration tools in the space and this research brief will help you understand how they fit into cloud native landscape;

- Nomad is the workload scheduler and orchestrator from Hashicorp to manage containerized and non containerized workloads
- Kubernetes is the container orchestration platform from Cloud Native Computing Foundation to orchestrate and manage containerized workloads



Scheduling and Orchestration Workloads

Deploying code and running it at scale is a problem faced by most enterprises. Orchestration and scheduling tools solve these problems for organizations independent of whether they are web scale or a startup with fewer operations people.

Why scheduling and orchestration tools are important?

- Modern schedulers and orchestration tools support declarative models, taking the pain out of operations. You define the desired state and the platform takes care of it
- Makes repeatable deployments seamless. This is especially critical in deploying microservices and for two pizza DevOps teams
- Schedulers and orchestration tools takes the pain out of scaling workloads, a major problem for large-scale computing and at web scale. They make deploying workloads to clusters and managing it across multiple nodes easy with no human intervention
- Efficient use of resources making cloud native deployments more cost effective

Nomad

Nomad is a simple but powerful workload scheduler and orchestrator from Hashicorp to deploy your containerized and non containerized workloads.

- Nomad is lightweight requiring one binary for the server and the client without requiring additional services or storage
 - Nomad is only a workload scheduler and orchestrator. If you need service discovery or secrets management, you need to use Hashicorp Consul or Vault
 - Support for hybrid cloud and multi cloud
 - Support for containerized, virtualized and standalone workloads (like Java applications)
-

Nomad Advantage

- Nomad's advantage lies in its ease of use and ease of operations
- Integrates with Terraform to simplify the entire lifecycle of workloads starting with the underlying infrastructure
- Supports multiple types of workloads including virtual machines, containers or other standalone applications
- Declarative model makes it easy for developers to manage operations without a steep learning curve
- Supports cluster federation seamlessly
- Suitable for High Performance Computing
- Empowers small operations team to operate with little overhead or complexity

Kubernetes

Kubernetes is a more sophisticated end to end container platform. Kubernetes is an open source project under Cloud Native Computing Foundation with Apache 2 license

- Kubernetes has a scheduler, cluster management, secrets management, service discovery, monitoring, etc.. It is a complete container platform and much more powerful than Nomad
 - Support for only containerized workloads
 - Hybrid and multi cloud support. Most cloud providers offer a managed Kubernetes service
 - High operational overhead
-

Kubernetes Advantage

- Backed by a strong open source community with participation from multiple enterprise vendors
- Declarative model makes deployment and management of containerized workloads at scale seamless and repeatable. Being an original Google project has put the focus on scale
- Self healing aspect of the orchestration engine makes Kubernetes robust enough to support production workloads
- Powerful API makes extensibility easy by allowing support for a wide range of storage and networking stacks
- Easy to run both stateless and stateful workloads



Rishidot Research Recommendations

Keep in mind that this is not Apples to Apples comparison as Nomad is a scheduler and resource manager while Kubernetes is an end to end container platform. Our recommendations are:

- If you are a Terraform user and use both containerized and non containerized workloads, Nomad is the right choice
- If you are a startup with a small Ops team, Nomad is the right start
- If you use containers extensively and at scale, Kubernetes is the right platform
- Kubernetes requires a large operations team and it is well suited for mid-sized and large enterprises
- If you are a Terraform user and want to use Kubernetes for container orchestration, the integration is very poor. Avoid it



Rishidot Research

quality research for anyone and anything

Rishidot Research	www.rishidot.com
Rishidot TV	www.rishidot.tv
StackSense	www.stackSense.io
Podcast	www.anchor.fm/modernenterprise

DECISION MAKERS GUIDE: NOMAD VS KUBERNETES