From 0 to a Full Kubernetes Ecosystem

Challenges

Organizations, whether Defense-focused Agencies, law enforcement, or enterprises, report that Kubernetes is deceptively simple to install yet tricky to fully adopt. Kubernetes projects frequently experience one or more of the following dead-end scenarios:

Forgot the dot-dot-dot

As the project progresses, more and more unresolved dependencies are uncovered, leading to a project with no definite end date.
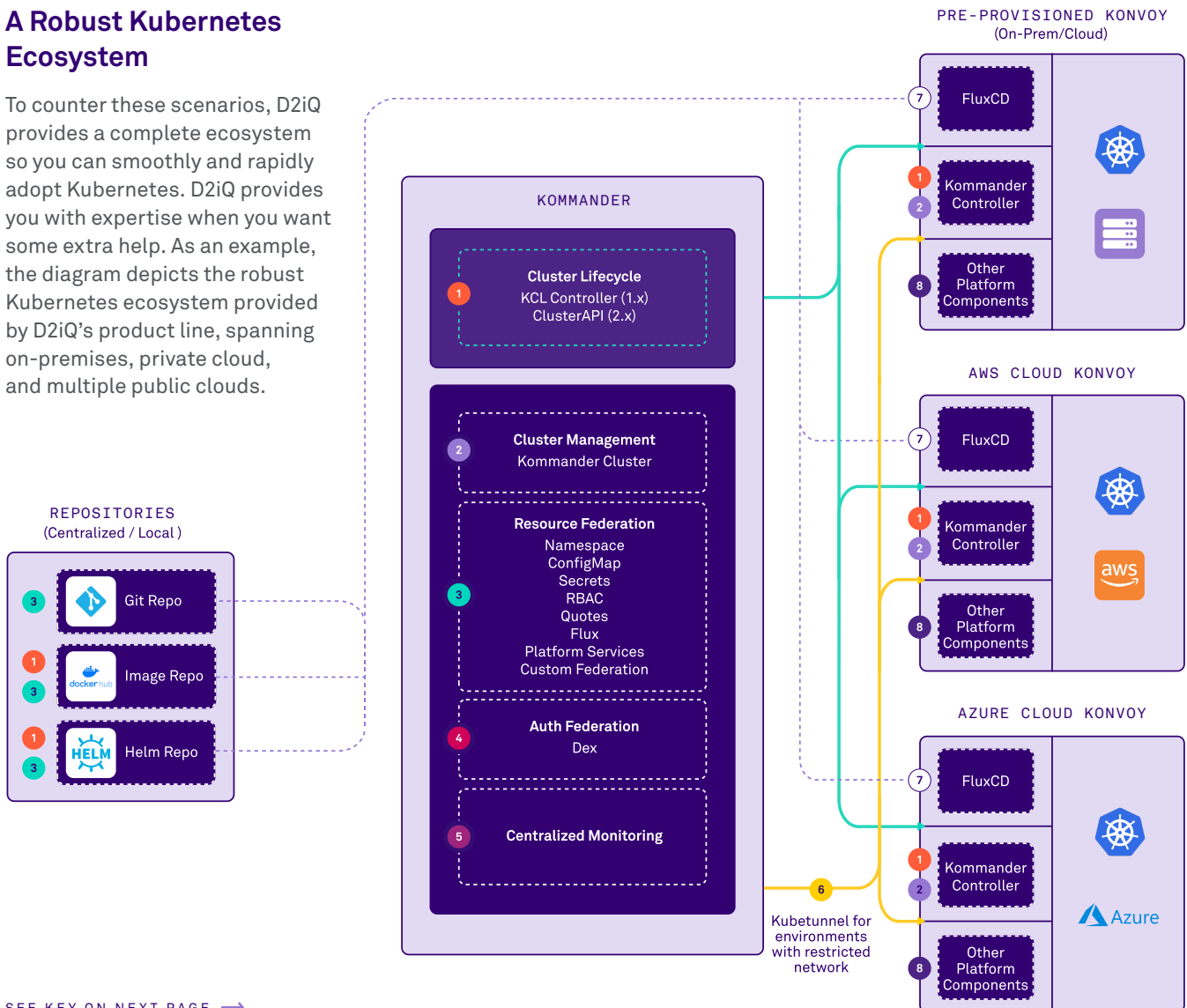
Too many moving parts

The project, even a year into development, is still working out the customizations required for typical Defense or enterprise environments.

Stand up, Fall over

The project passes tests in development and staging then fails in production due to lack of scalability.

A Robust Kubernetes Ecosystem

To counter these scenarios, D2iQ provides a complete ecosystem so you can smoothly and rapidly adopt Kubernetes. D2iQ provides you with expertise when you want some extra help. As an example, the diagram depicts the robust Kubernetes ecosystem provided by D2iQ's product line, spanning on-premises, private cloud, and multiple public clouds.

REPOSITORIES
(Centralized / Local)

- Git Repo
- Image Repo
- Helm Repo

KOMMANDER

Cluster Lifecycle
KCL Controller (1.x)
ClusterAPI (2.x)

Cluster Management
Kommander Cluster

Resource Federation
Namespace
ConfigMap
Secrets
RBAC
Quotes
Flux
Platform Services
Custom Federation

Auth Federation
Dex

Centralized Monitoring

Kubetunnel for environments with restricted network

PRE-PROVISIONED KONVOY
(On-Prem/Cloud)

- FluxCD
- Kommander Controller
- Other Platform Components

AWS CLOUD KONVOY

- FluxCD
- Kommander Controller
- Other Platform Components

AZURE CLOUD KONVOY

- FluxCD
- Kommander Controller
- Other Platform Components

Key

1 Build/deploy Kubernetes clusters to multiple clouds or on-prem with the click of a button or declaratively using Kubernetes resources via the cli.

- DKP 1.x: Kubernetes Cluster Lifecycle is managed by the KCL controller. The controller leverages Terraform & Ansible. AWS, Azure & pre-provisioned clusters are currently supported.

- DKP 2.x: Kubernetes Cluster Lifecycle is managed by ClusterAPI. AWS and pre-provisioned clusters are currently supported.

4 Authentication is federated via Kommander using Dex.

7 Declarative Application Lifecycle Management using FluxCD.

2 Attach and manage Kommander provisioned Kubernetes clusters (automatic) or externally provisioned Kubernetes clusters.

- DKP 1.x: kubeaddons-controller deploys Konvoy addons.

- DKP 2.x: Flux CD deploys Konvoy addons.

5 Centralized Monitoring and Alerting using Thanos and Karma.

8 Other Platform Components that run on top of Kubernetes to provide a production ready cluster to end users, deployed using Kubeaddons-controller in 1.x and Flux in 2.x.

- DKP Core, e.g.:Prometheus, Grafana, Fluentbit, Velero, Traefik, etc.

- Custom Platform Components, e.g.: Custom ingress controller, storage controller, load balancer controller, etc.

3 Federate resources (using the GUI or declaratively using Kubernetes resources via the CLI) to attached Kubernetes clusters to ensure that all clusters have the same building blocks deployed, e.g.:

- Namespace and RBAC for a tenant.

- Secrets & ConfigMaps used by apps.

- Platform Services via federated catalog items.

- GitOps projects by federating Flux objects.

6 Kubetunnel to proxy connections to the attached clusters via Kommander for environments with highly secure/restricted networks.

Robust Products and Integrations ➜ Robust Ecosystem

D2iQ's product line and built-in integrations provide a robust and flexible Kubernetes Ecosystem with only configurations not customizations:

D2iQ Kommander

D2iQ Kommander leverages Cluster API to provide multi-cluster, multi-tenant management of a wide range of Kubernetes distributions. With built-in GitOps capabilities provided by FluxCD, Kommader leverages the power of Kubernetes' declarative approach.

D2iQ Konvoy

D2iQ Konvoy is a complete, fully integrated and tested upstream open source solution with no lock-in. Konvoy provides a highly automated installation process for smooth implementation.

Services and Support

D2iQ provides expert training and professional services teams to instill best practices in your team. We support everything in our stack, lowering your operational burden.

In summary, D2iQ helps you craft a robust Kubernetes ecosystem across even the most complex hybrid environments. And, working with D2iQ helps you ideally avoid or at least rapidly resolve the **"Forgot the dot-dot-dot"**, **"Too many moving parts"**, and **"Stand up, Fall over"** scenarios.

Outcomes

Kubernetes Adoption with D2iQ helps government agency and business IT teams create unparalleled business outcomes.

Development Power

A Kubernetes ecosystem provides the power to create competitive advantage.

Investment Protection

A robust Kubernetes ecosystem evolves to fulfill future needs.

Growth Enablement

Kubernetes scalability can fully support the demands of the organization over time.