

Red Hat
Summit

Connect

Dal DevOps al PlatformOps

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What is a Platform?

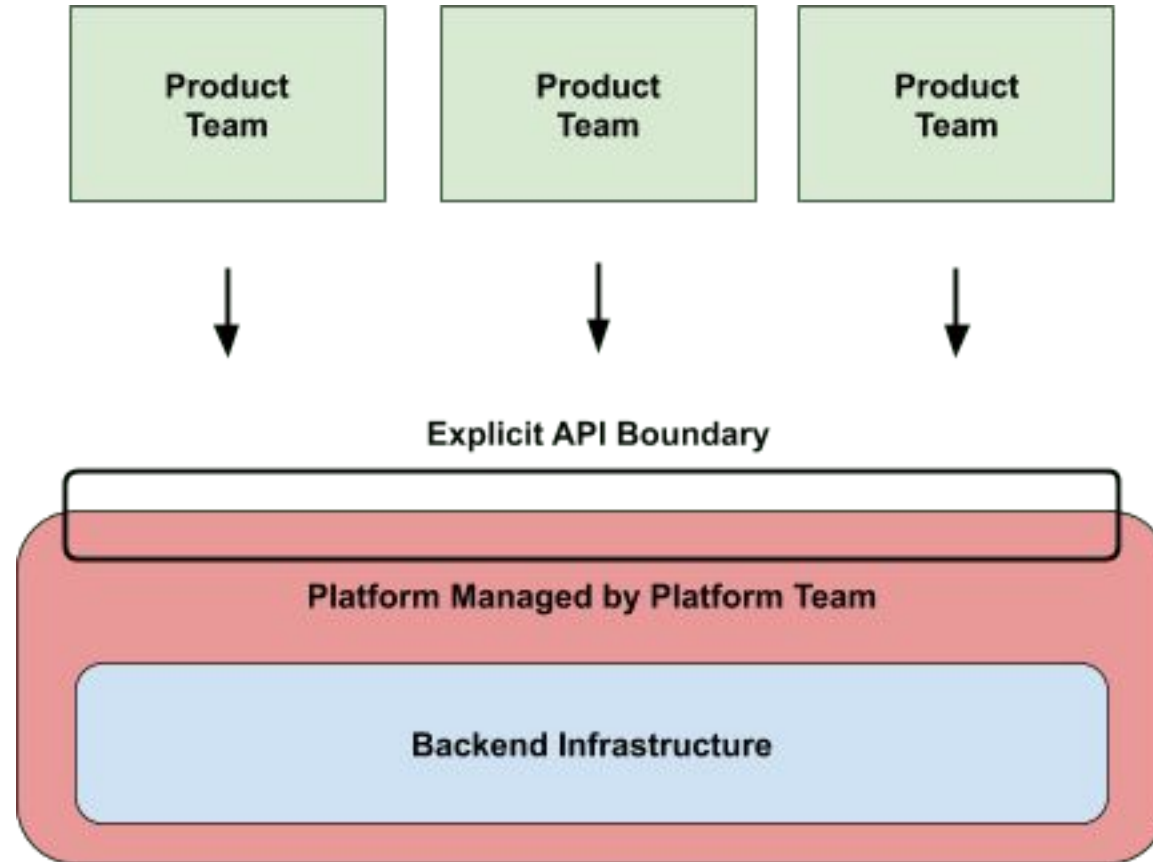
A platform encompasses a span of technologies touched by different engineering teams.

Platform can refer to physical or virtual infrastructure and networking.

A company's platform also includes telemetry, application delivery, container deployment and orchestration with a tool such as Kubernetes, content delivery networks (CDNs) and CI/CD tooling.

In the broadest sense, the platform is the environment and set of technologies upon which a company builds, deploys and delivers its applications.

Platform as a Product



What a Platform Team Does?

Platform teams craft and curate a portfolio of technologies to maximize the efficiency of their engineering and networking teams, and establish best practices so the organization can scale more easily and securely.

Platform Ops teams seek not to limit choices, but to drive consensus and ensure that everyone gets the tools and capabilities they need.

Platform Ops walks the fine line of crafting and evangelizing a well-honed menu of choices that can serve 95% of needs while remaining open to feedback on the choices.

Platform Team by Team Topologies

QRC Team Topologies

Based on Team Topologies, QRC by Henny Portman, May 2020

Conway's law: "Organizations which design systems ... are constrained to produce designs which are copies of the communication structures of these organizations."

Team first approach: start with the team for effective software delivery. There are multiple aspects to consider and nurture: team size, team lifespan, team relationships, and team cognition.

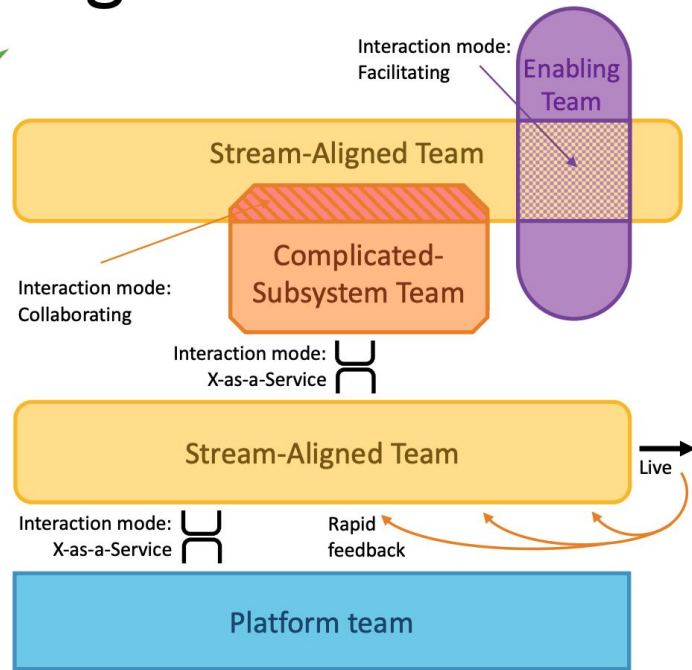
Organizational sensing: expect to adapt and evolve your organization structure.

Scaling teams: Organizational groupings should follow **Dunbar's number**, beginning with around 5-8 people, then increasing to around 15 people, then 50, then 150, then 500, and so on.

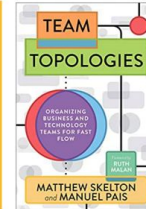
Brook's law: "Adding new people to a team doesn't immediately increase its capacity."

Cognitive load: "The total amount of mental effort being used in the working memory." Restrict team responsibilities to match the maximum team cognitive load.

- **Intrinsic cognitive load** – relates to aspects of the task fundamental to the problem space
- **Extraneous cognitive load** – relates to the environment in which the task is being done
- **Germane cognitive load** – relates to aspects of the task that need special attention for learning or high performance



Stream-Aligned Team: a team aligned to the main flow of business change, with cross-functional skills mix and the ability to deliver significant increments without waiting on another team.

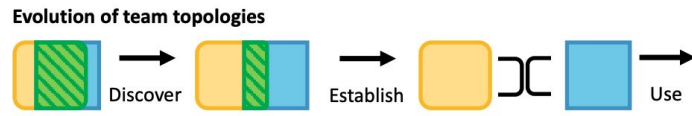


Platform team: a team that works on the underlying platform supporting stream-aligned teams in delivery. The platform simplifies otherwise complex technology and reduces cognitive load for teams that use it.

Enabling team: a team that assists other teams in adopting and modifying software as part of a transition or learning period.

Complicated-Subsystem Team: a team with a special remit for a subsystem that is too complicated to be dealt with by a normal stream-aligned team or platform team. Optional and only used when really necessary.

- Primary interaction modes for the 4 fundamental team topologies:**
- Collaboration:** working closely together with another team
 - X-as-a Service:** consuming or providing something with minimal collaboration
 - Facilitating:** helping (or being helped by) another team to clear impediments



The Platform Simplifies Complex Technology

The image displays a comprehensive grid of logos for various DevOps and PlatformOps tools, organized into several functional categories:

- App Definition and Development:** Database (Veeva, KV, etc.), Streaming & Messaging (cloudevents, NATS, etc.), Application Definition & Image Build (HELM, etc.), Continuous Integration & Delivery (argo, etc.).
- Orchestration & Management:** Scheduling & Orchestration (kubernetes), Coordination & Service Discovery (Consul, etcd), Remote Procedure Call (gRPC), Service Proxy (envoy, etc.), API Gateway (Kong, etc.), Service Mesh (LINKERD).
- Runtime:** Cloud Native Storage (ROCK, etc.), Container Runtime (cri-o), Cloud Native Network (CNI).
- Provisioning:** Automation & Configuration (Ansible, etc.), Container Registry (Harbor, etc.), Security & Compliance (falco, etc.), Key Management (spiffe, etc.).
- Platform:** Certified Kubernetes - Distribution, Certified Kubernetes - Hosted (aws, etc.), Certified Kubernetes - Installer, PaaS/Container Service (Flynn, etc.).
- Observability and Analysis:** Monitoring (Prometheus, etc.), Logging (fluentd, etc.), Tracing (Jaeger, etc.), Chaos Engineering (Chaos Mesh, etc.), Serverless (AWS Lambda, etc.).

Strategic Planning Assumption

By 2025, 95% of enterprises will fail to scale DevOps initiatives if shared self-service platform approaches are not adopted.

[Gartner]

Why DevOps Success Requires Platform Teams

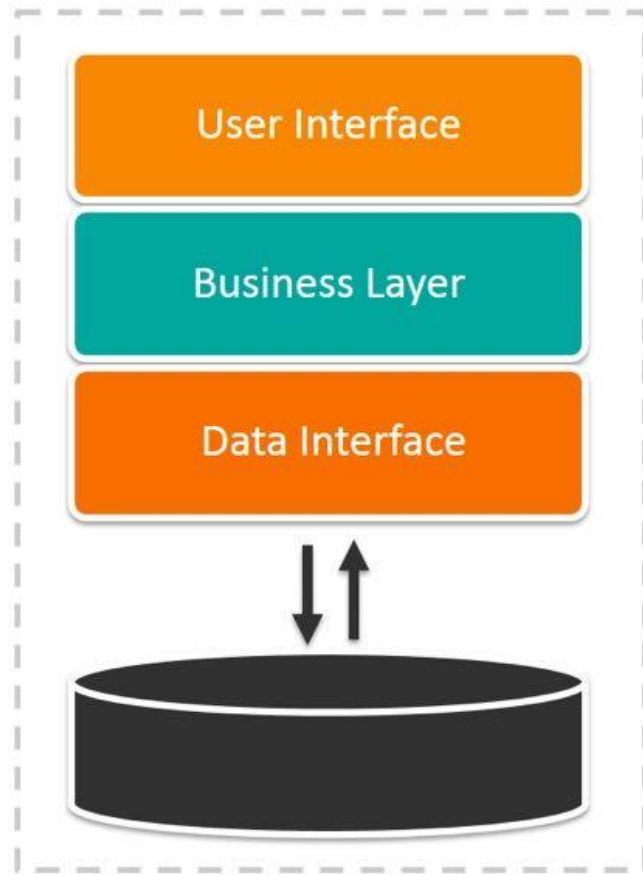
I&O leaders find it difficult to provide enough operations expertise in DevOps product teams as they scale, resulting in slower delivery cycles, software defects and frustration.

I&O leaders are unable to ensure high standards of governance and production efficiency when product teams recreate platforms' capabilities inconsistently from team to team.

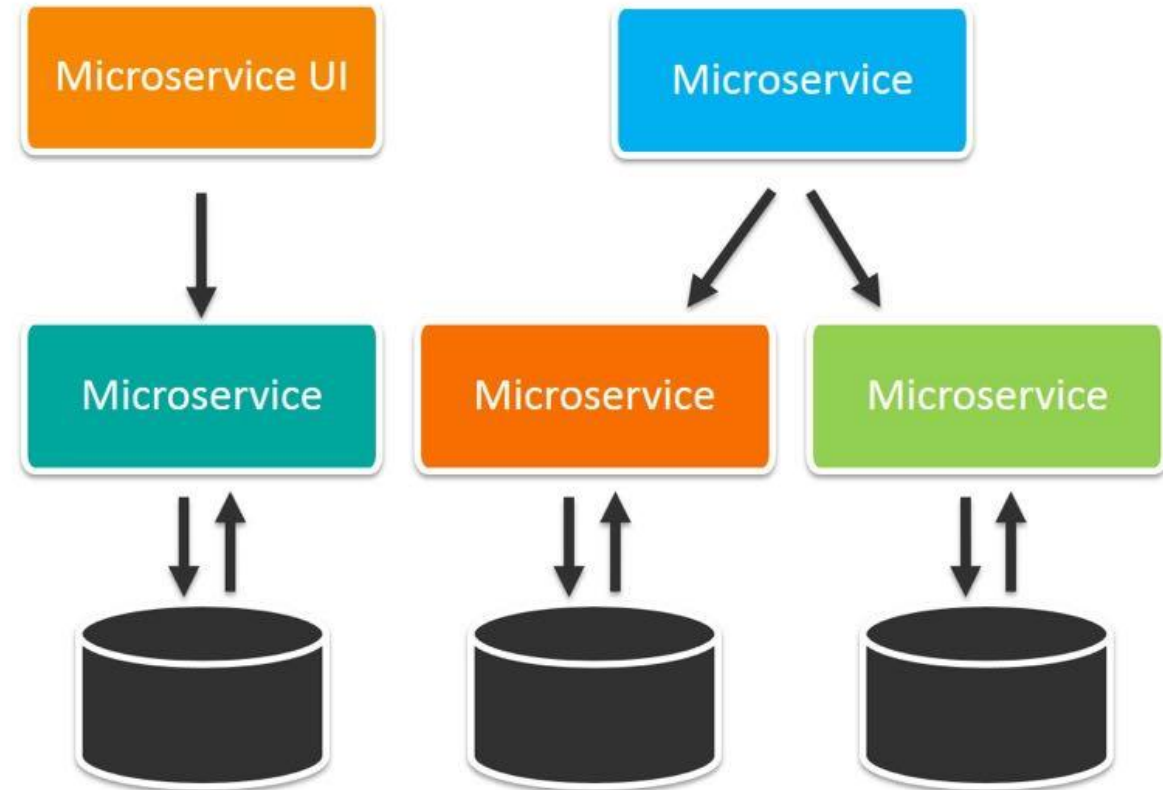
Adopt a scalable approach to DevOps by establishing dedicated platform teams to rapidly respond to product team needs.

[Gartner]

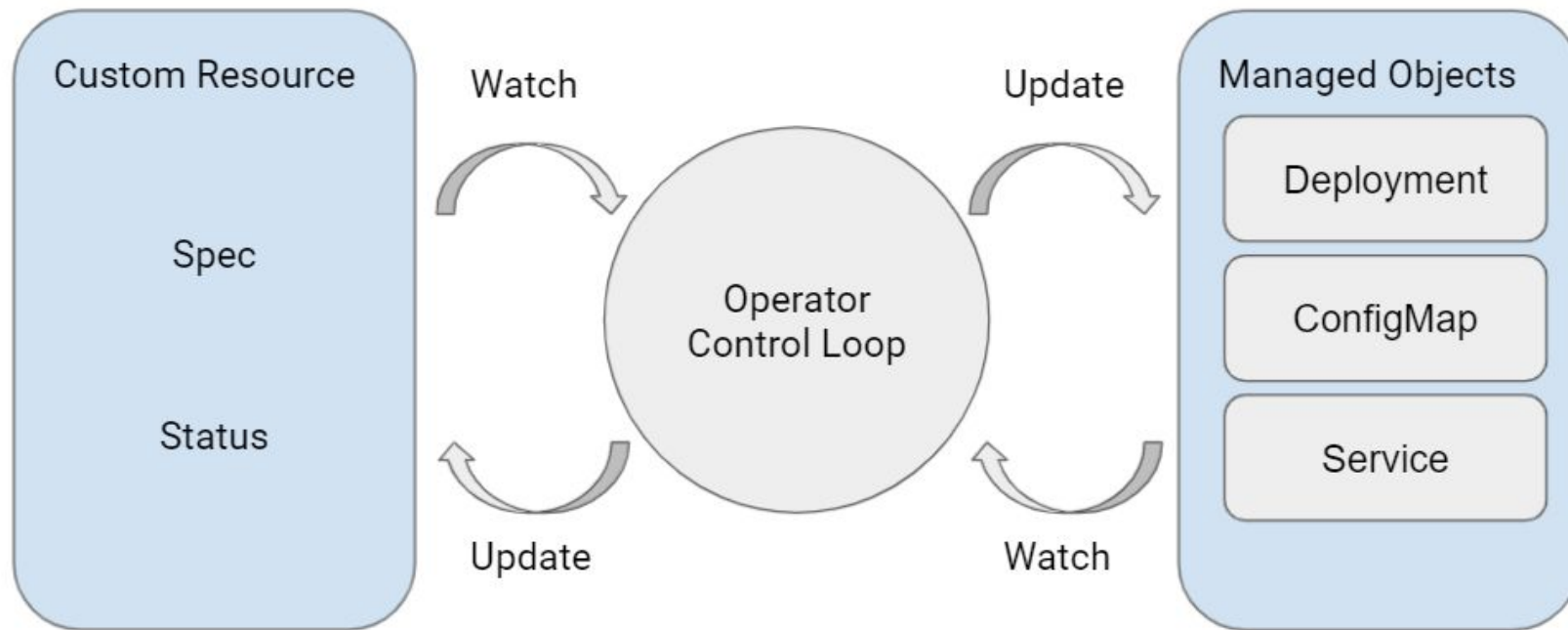
Monolithic Architecture



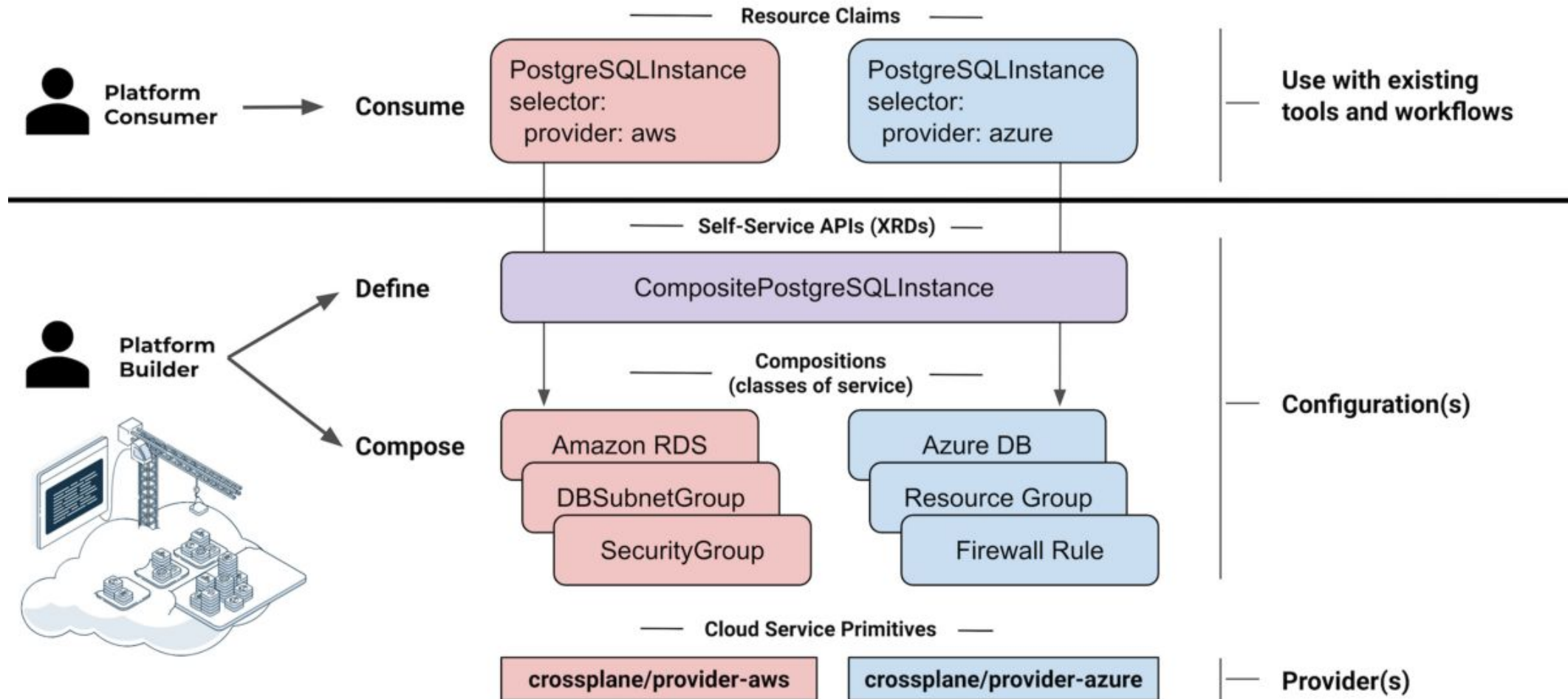
Microservices Architecture



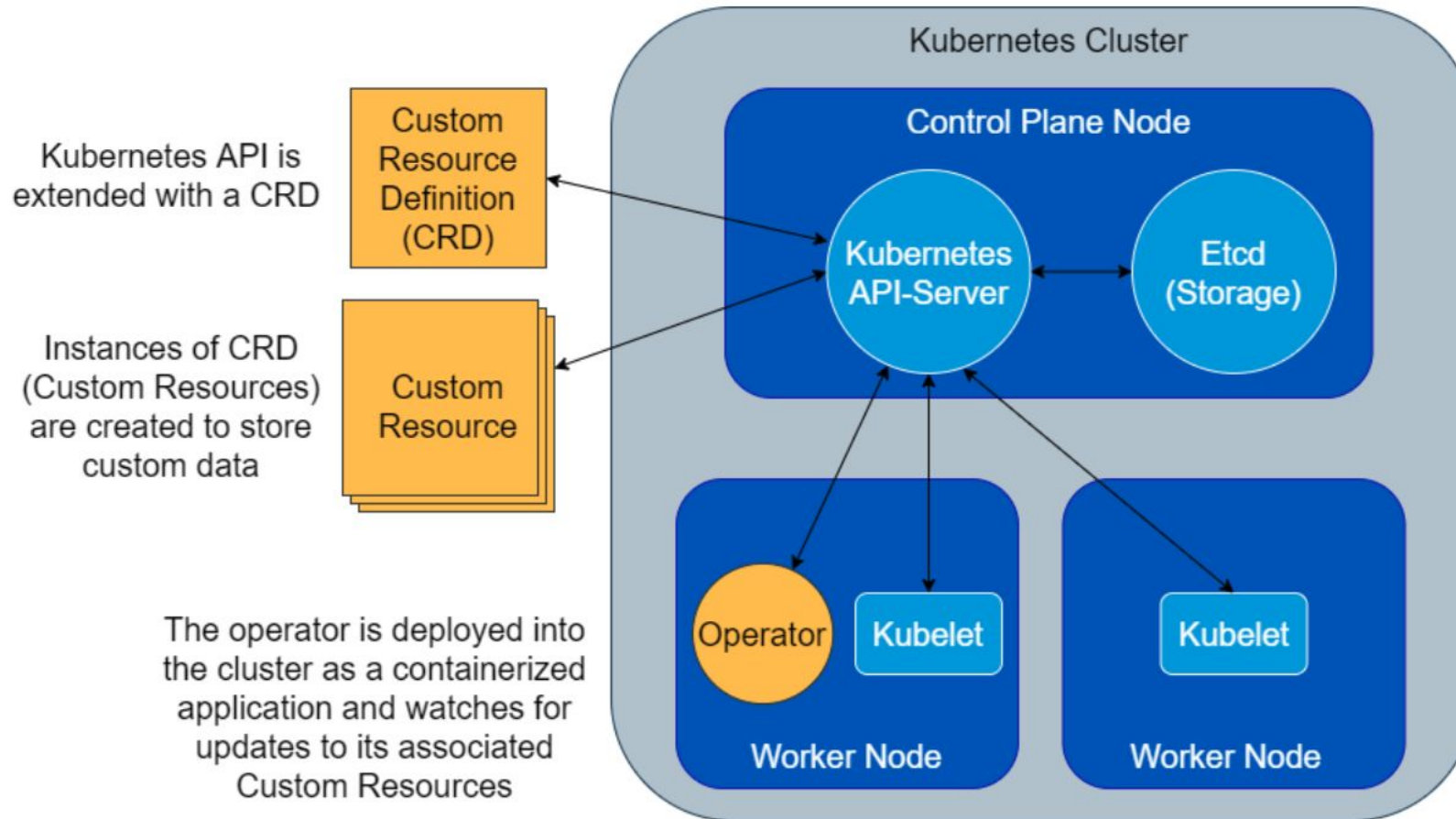
What are Kubernetes operators?



Composable operators



Custom Resource Definition as a data model



Krateo PlatformOps use cases



PlatformOps for Platform Team



Developer Portal for internal community

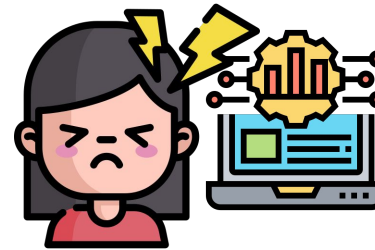


FinOps for C-level managers

PlatformOps for Platform Team

Platform Team provides services to internal consumers:

- ▶ Automation is required
- ▶ Self-service catalog which exposes internal services
- ▶ Services can be anything: infrastructure, software templates, machine learning models, etc
- ▶ Services can be anywhere: on premise, public cloud, hybrid cloud, multi cloud



BUT!

- ▶ Automation for each service is specialized for that service
- ▶ The Day-2 operation is still to automate
- ▶ What about legacy environments?

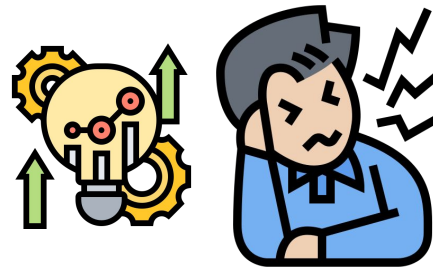
Which means:

- ▶ Diverging automation streams
- ▶ Multiple tools, multiple skill sets
- ▶ Increasing cost and risk for PlatformOps

Developer Portal for internal consumers

**Consuming internal services quickly,
safely and independently as
possible:**

- ▶ Self-service catalog which exposes internal services must be user friendly and reliable
- ▶ Every consumable service must require the minimal set of information that the end user could know
- ▶ All the lifecycle of the service and the relative data must be centralized



BUT!

- ▶ The common onboarding experience is more and more complex
- ▶ Understanding ownership of services and resources is complicated

Which means:

- ▶ Slower software lifecycles, duplicated services
- ▶ **Increasing costs and risks** for the business

FinOps for C-level managers



FinOps is shorthand for “Cloud Financial Operations” or “Cloud Financial Management” or “Cloud Cost Management”.

It defines an opportunity for everyone to take ownership of their cloud usage and manage their cloud costs.

However, the variable spend model of cloud is multi-dimensional, multi-layered, multi-service provider.

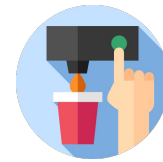
The opportunity was elusive – until Krato: now you can optimize Platform costs across multiple providers.

Why Krateo



Bring your own Kubernetes

Krateo can be installed on any Kubernetes certified distribution by creating a secure by default infrastructure stack – no lock-in



Self Service

Use the templates available or create new ad hoc ones to develop applications, models, databases, websites, microservices and everything you need – standardization enables quicker cycles



Universal

Create and deploy your resources on Kubernetes or any other on premise, public, hybrid and multi cloud platform – without adding complexity or new tools



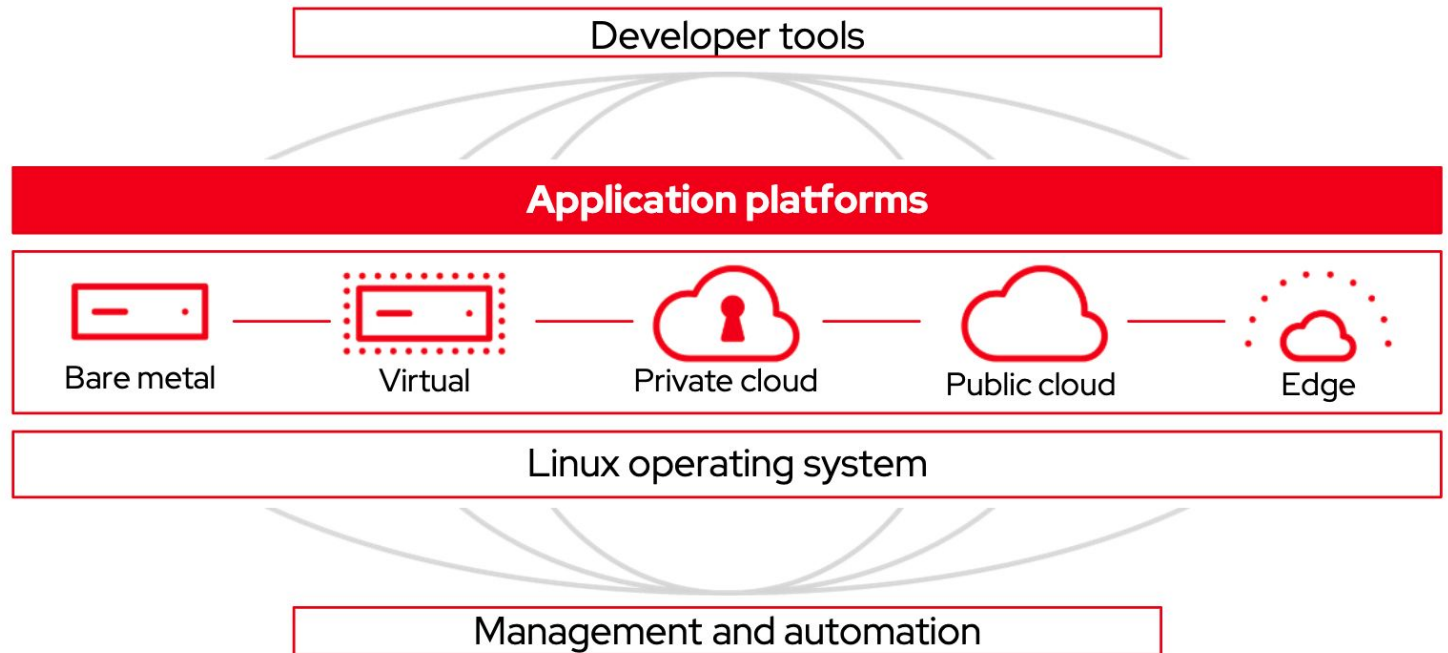
Flexible

Create any logical and physical component required by internal consumers with a composable approach – which means reuse and cost savings

Krateo follows the Red Hat vision:
Any workload, any footprint, any location



+



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