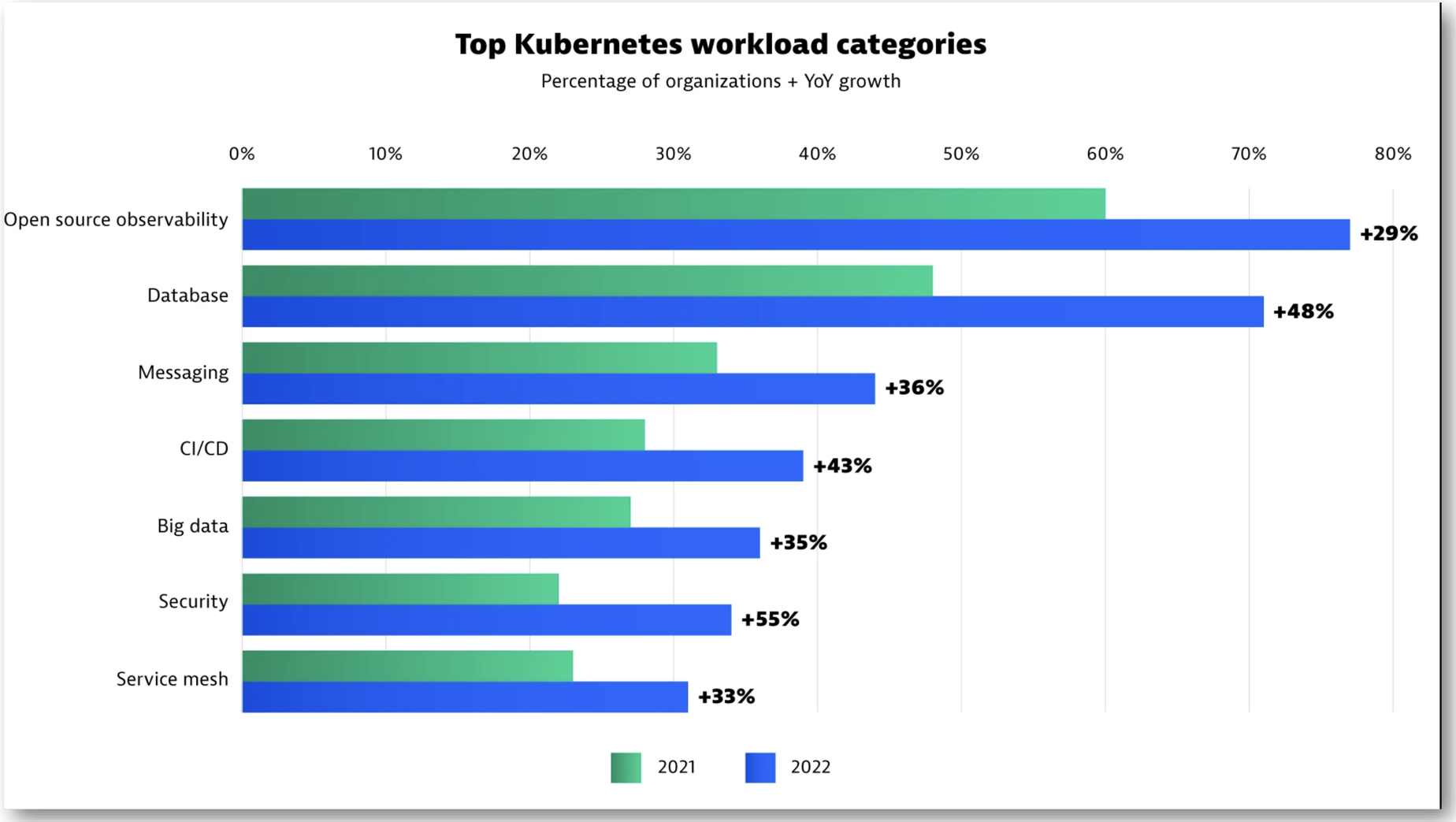
Avesha

Enabling Smart Application
Communications Everywhere

Data On Kubernetes

May 2023

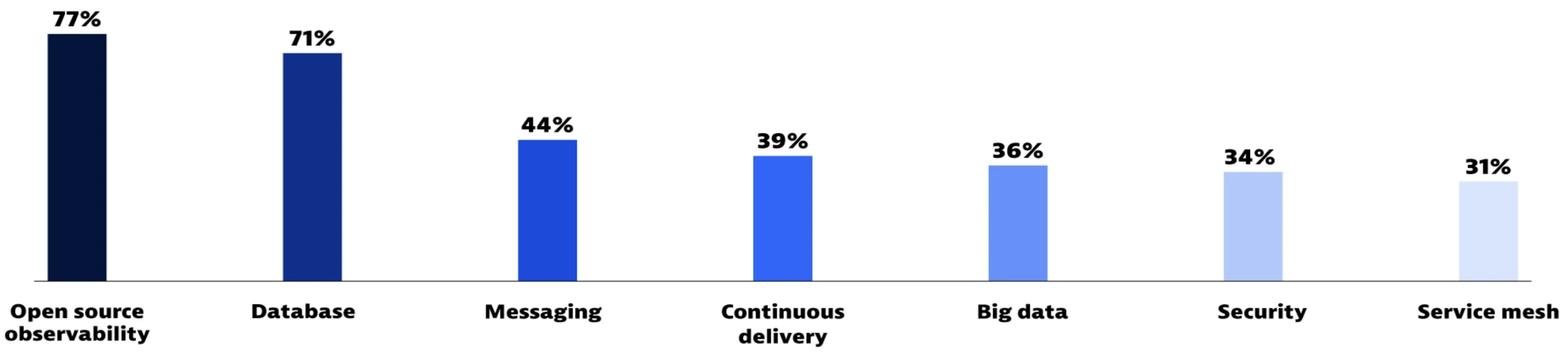
Data Services on the raise



Double clicking into survey

Technologies used in Kubernetes environments

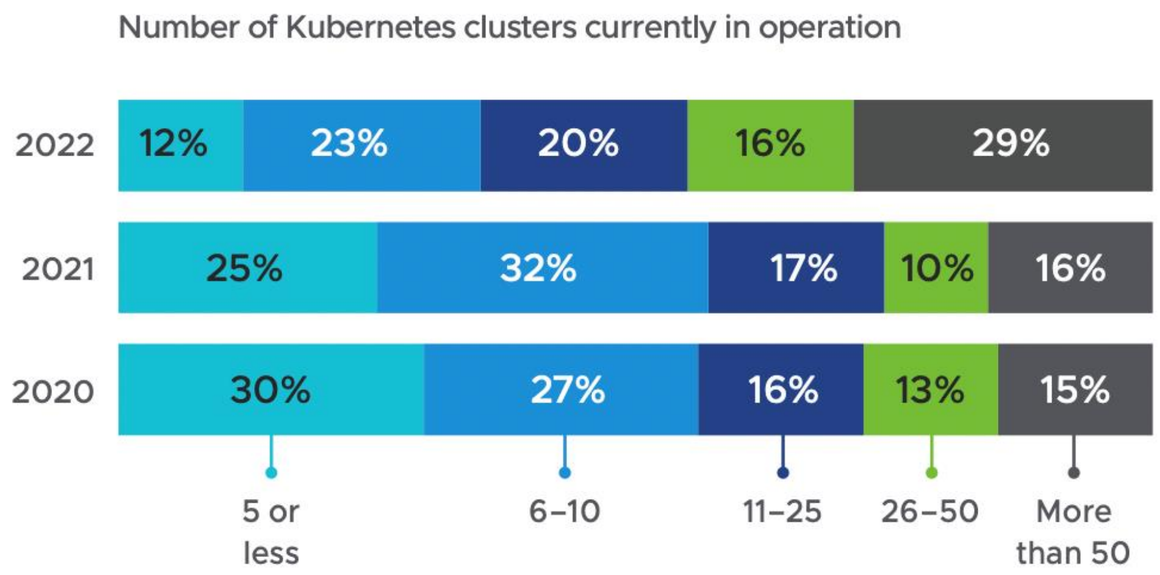
Percentage of organizations



Open source observability		Database		Messaging		Continuous delivery		Big data		Security		Service mesh	
Prometheus	65%	Redis	60%	Kafka	32%	ArgoCD	17%	Elasticsearch	32%	Gatekeeper	16%	Istio	24%
Kubestatemetrics	47%	PostgreSQL	29%	RabbitMQ	23%	Flux	15%	Solr	8%	Twistlock	11%	Kong Mesh	7%
Fluentd	31%	MongoDB	28%	ActiveMQ	6%	GitLab	15%	Spark	2%	Tigera	9%	Linkerd	3%
FluentBit	27%	MySQL	18%			Jenkins	8%			Aqua	4%	Anthos Service Mesh	1%
Thanos	26%	Cassandra	10%			Argo Rollouts	4%			Qualys	2%		
Jaeger	18%	Oracle	7%			GoCD	3%			CrowdStrike	2%		
Kiali	18%	MariaDB	6%			Keptn	2%			Sysdig	2%		
		Memcached	6%			Tekton	2%			CIS	2%		
		CouchDB	3%			GitHub Actions	1%			Snyk	1%		
		Liquibase	3%							NeuVector	1%		
		Couchbase	2%										

https://www.dynatrace.com/news/blog/kubernetes-in-the-wild-2023/

Multi Cluster is here & growing



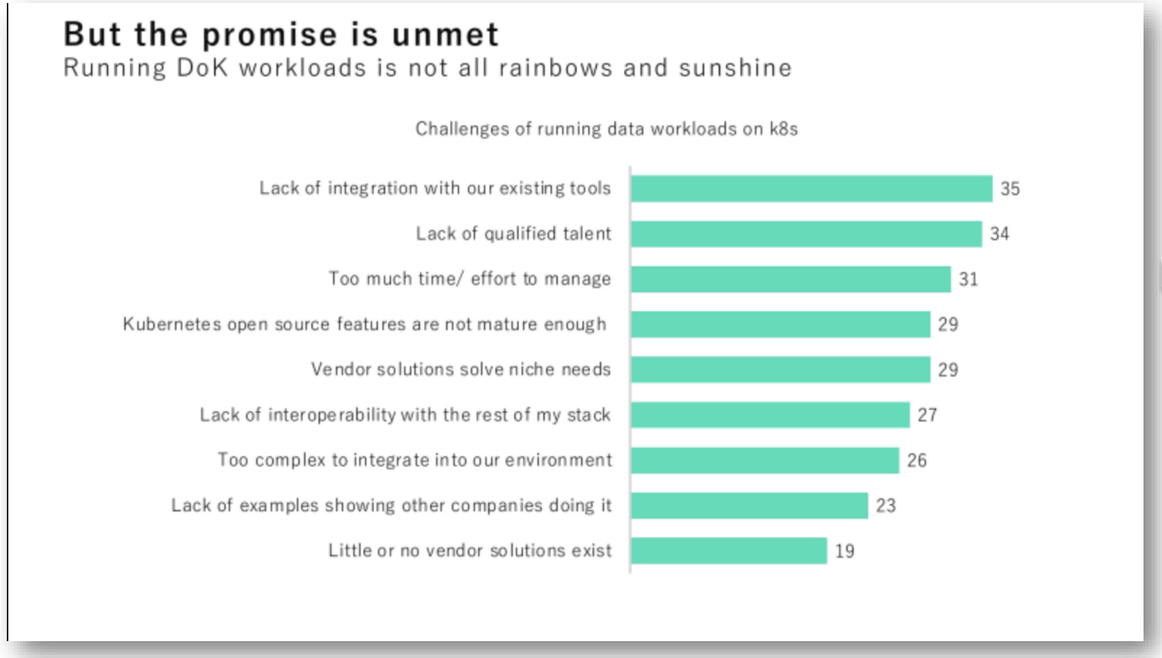
Source: VMWare, 2022

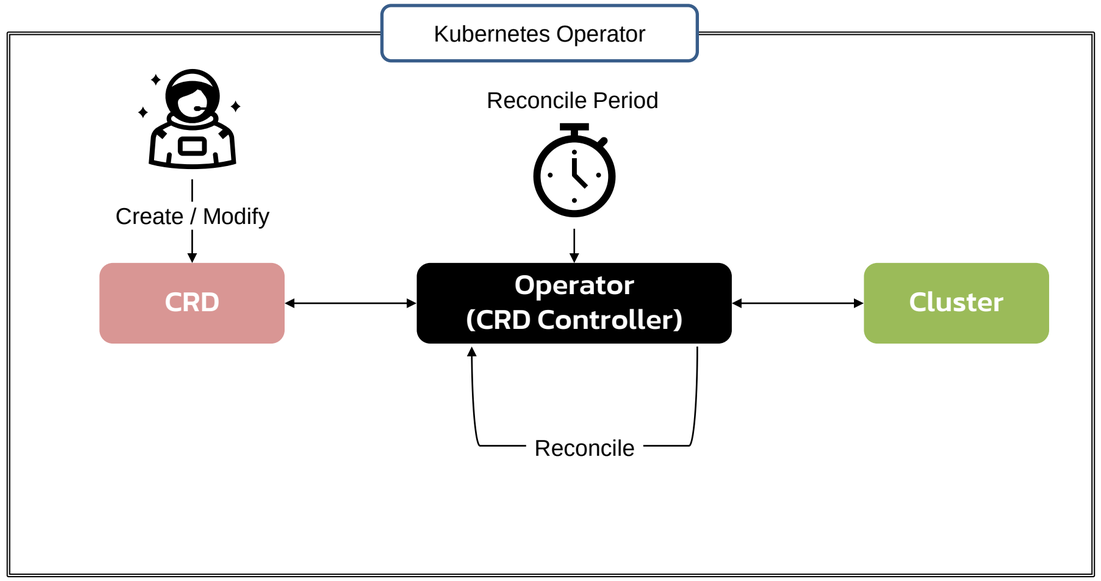
75% Enterprises use more than 1 cloud

Multi-cloud is needed for resiliency; moving workloads close to data results in better performance and security

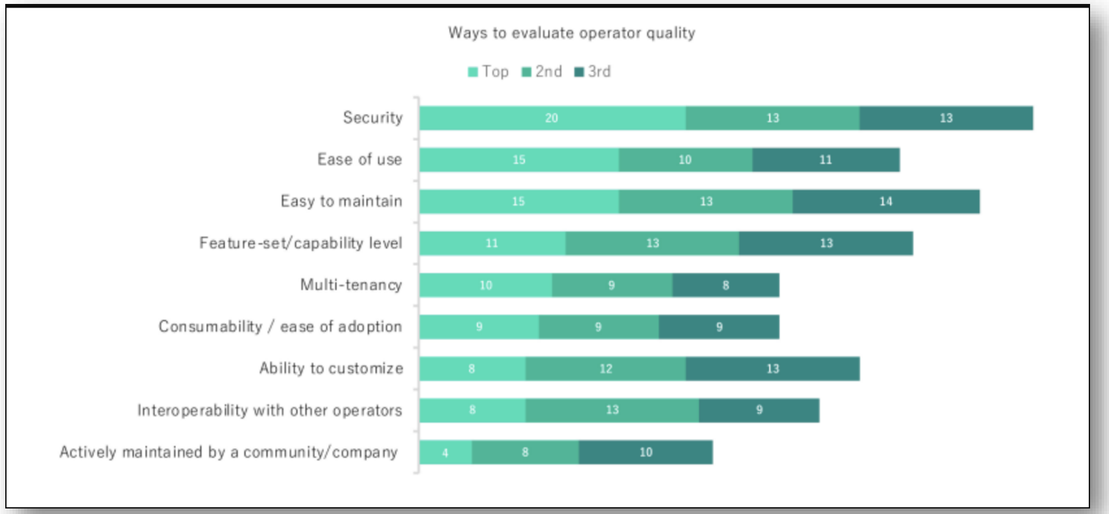
1. Multi region -- Availability
2. Closer to customers
3. Follow the sun model
4. Remove vendor dependency
5. Mergers and acquisitions
6. Multi cloud
7. Compliance reasons
   - GDPR
   - Data sovereignty / residency

Day 2 challenges → Operator pattern





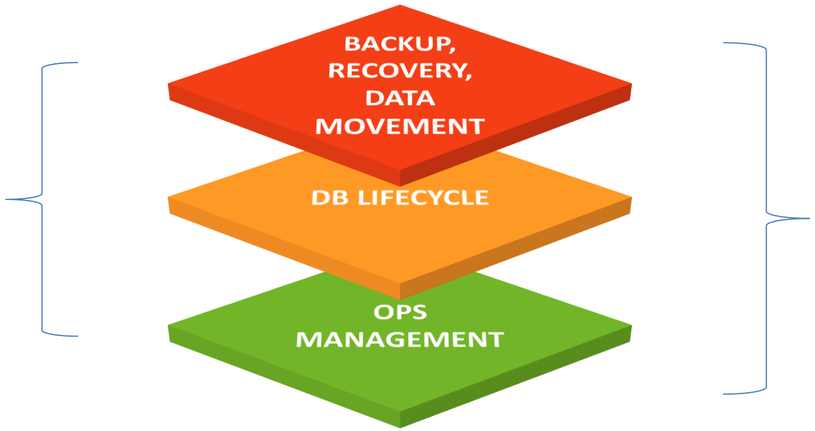
Operator Validation

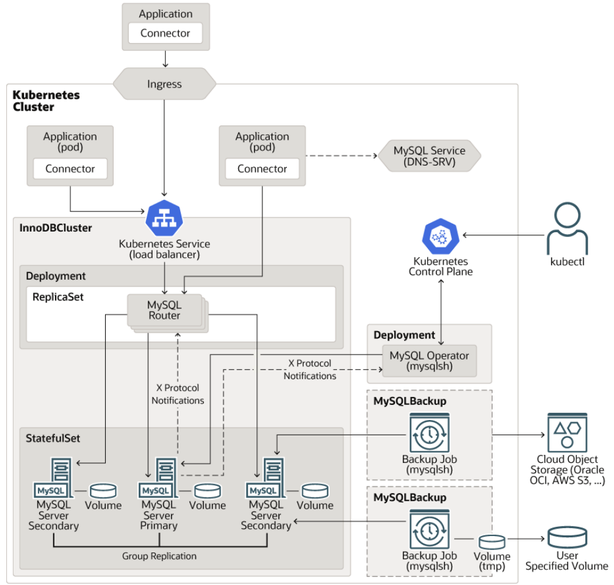


https://d2iq.com/blog/data-kubernetes-2022-survey

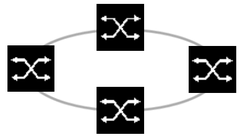
Data On Kubernetes – Operator Layers

Data Life Cycle Automation



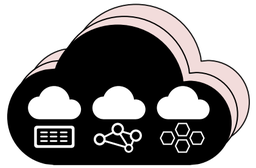


Network Resources Automation

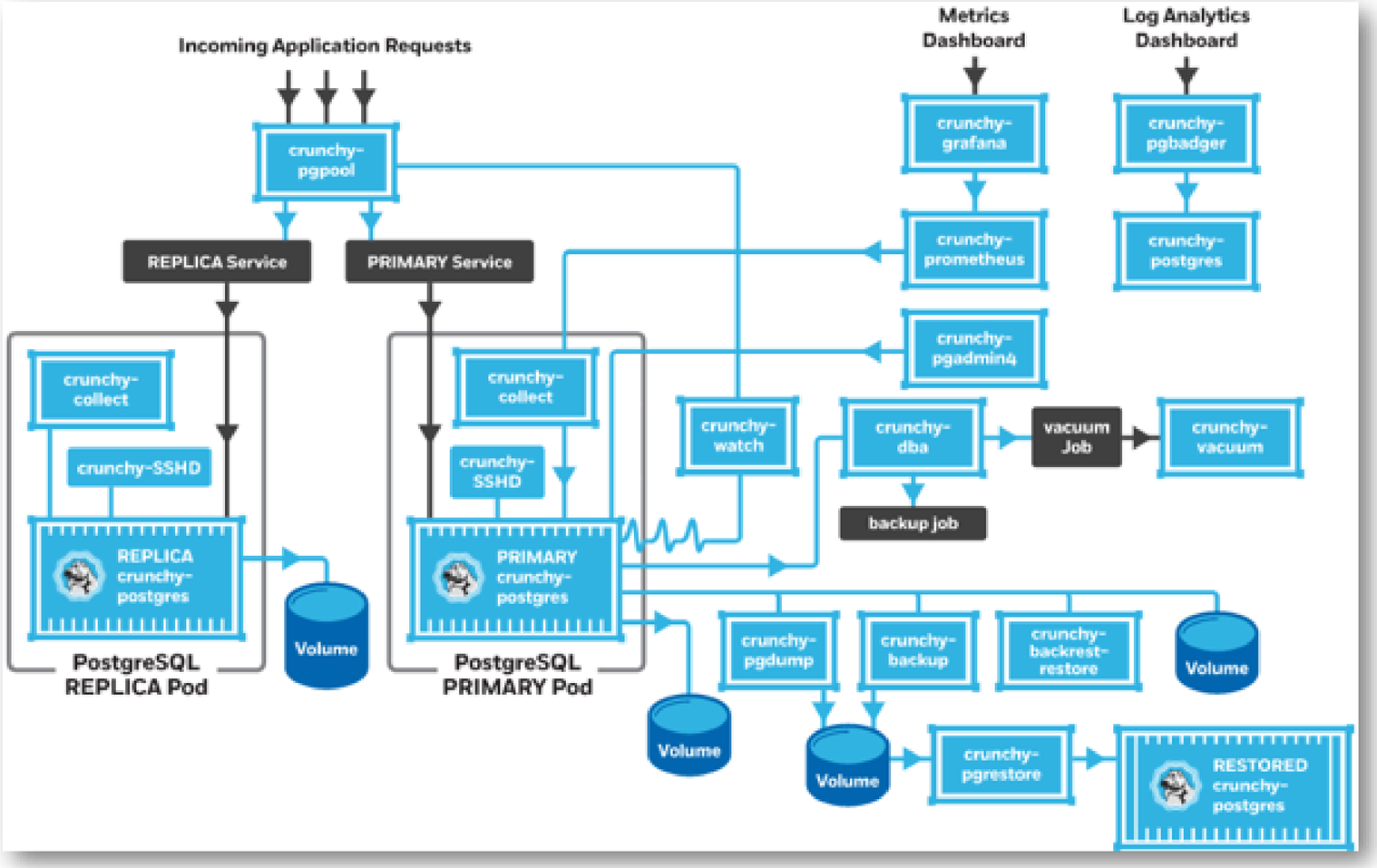


Virtual Clusters – Flat network, Service discovery

Physical Location



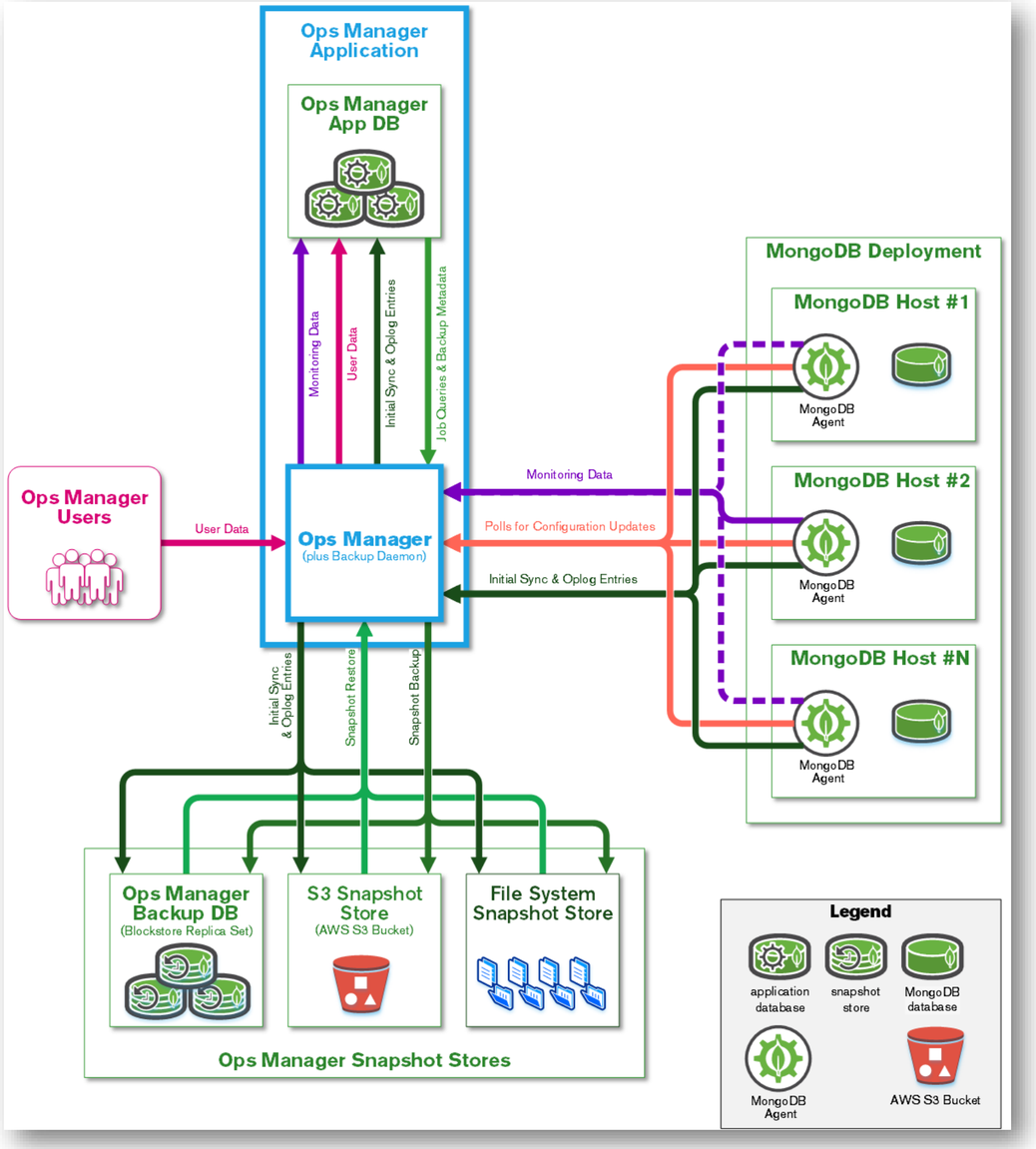
Crunchy Operator Pattern



MUST HAVE

1. Multi Cluster networking
2. Multi Cloud
3. Service Discovery
4. Kubernetes distribution agnostic

MongoDB Operator Pattern – Multi Region



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Drivers for Layered Operator Solution