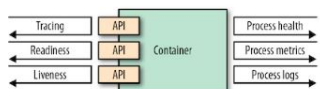


K8s deployment

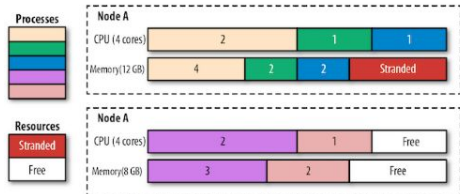
bonniek@fnal.gov

Top 10 Must-Know Design Patterns for Kubernetes Beginners

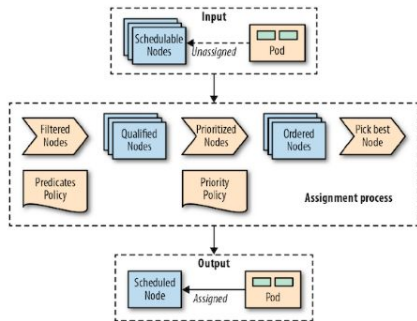
Foundational



Health Probe

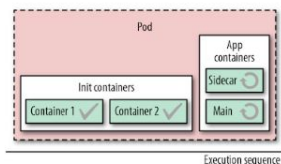


Predictable Demands



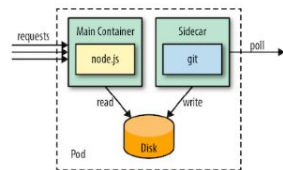
Automated Placement

Structural



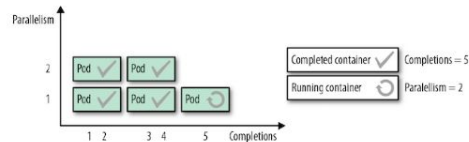
Execution sequence

Init Container

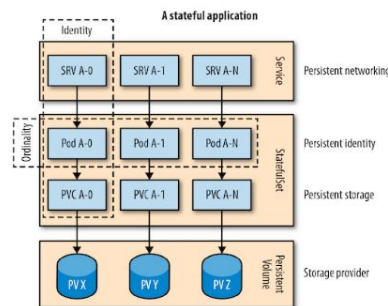


Sidecar

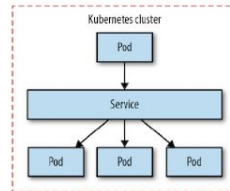
Behavioural



Batch Job

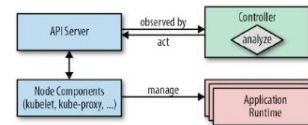


Stateful Service

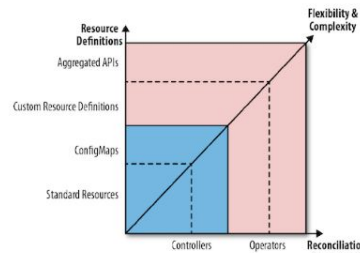


Service Discovery

Higher-level



Controller



Operator

7/20

k8s patterns

- Kubernetes patterns are for application development as much as they are infrastructure/deployment (devops)
- Some patterns are related to good cloud citizenry and dynamic scaling and may not apply, but many do
- k8s system design is inextricable from configuration and from application development and is a discipline in itself, for example apps should be observable by the k8s runtime
- Most of the DAQ is stateful and tied to hardware and so would use the StatefulSet operator. There is an Operator framework to extend StatefulSet. Theoretically the run control could be here.

Configuration patterns

- Via environment variables
- Via resource (ConfigMaps and Secrets)
- **Immutable Configuration:**
 - All config data is built into an init container which writes its data to an emptyDir in the Pod for other containers to mount and read
 - Configuration is versioned and distributed via a container registry
- **Configuration Templates**

Pattern: Declarative deployments

- Rolling updates vs. fixed deployments
 - Update strategy can be defined in the manifest
- uptime advantages