OpenSDS mini summit

COPENHAGEN

OpenSDS Interplay

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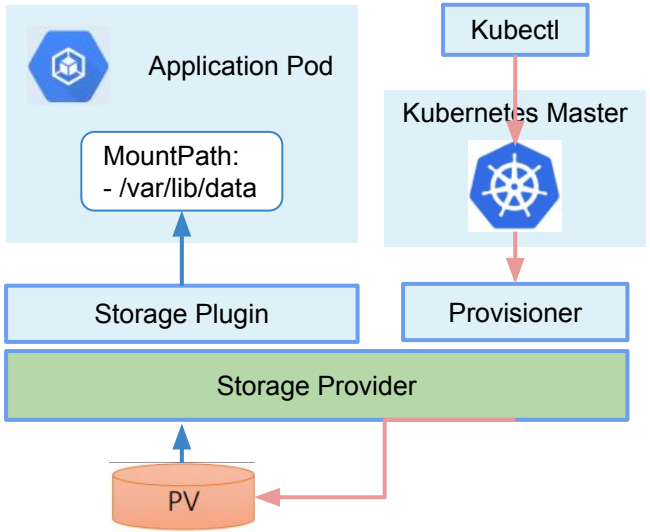
Caution: The ideas presented here have not been approved by OpenSDS TSC yet

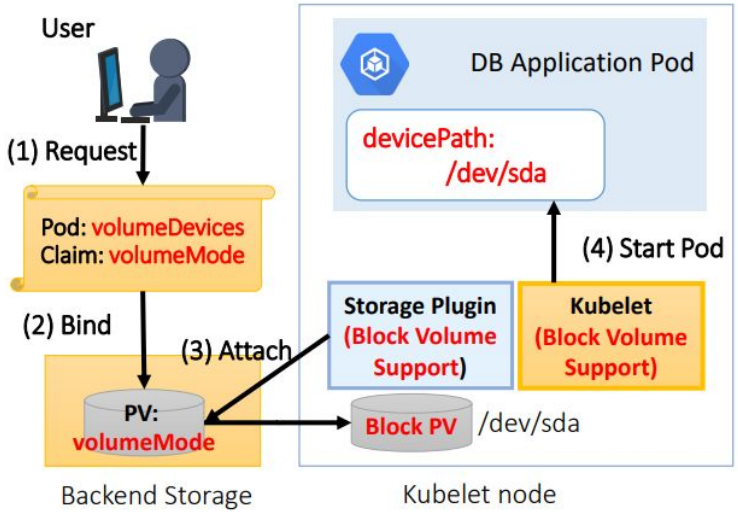
Open Service Broker API

- By using storage orchestration feature in Kubernetes, user can create/delete/attach/detach persistent volume to/from their pod
- Currently the logic of volume scheduling is closely coupled with pod, causing issues below:
  - Long synchronization when creating application pod with persistent volume
  - Difficult to add new storage features, such as replication, migration, etc

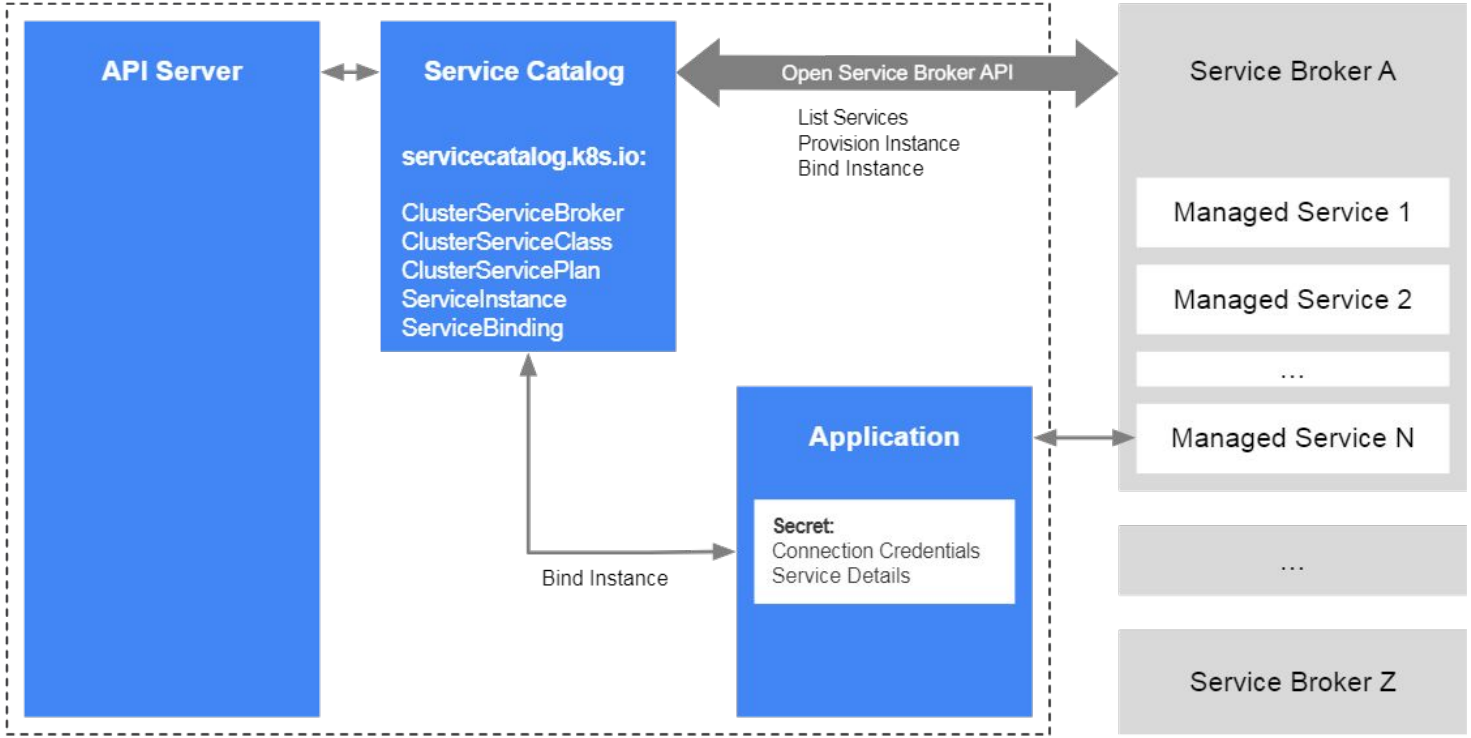


Open Service Broker API

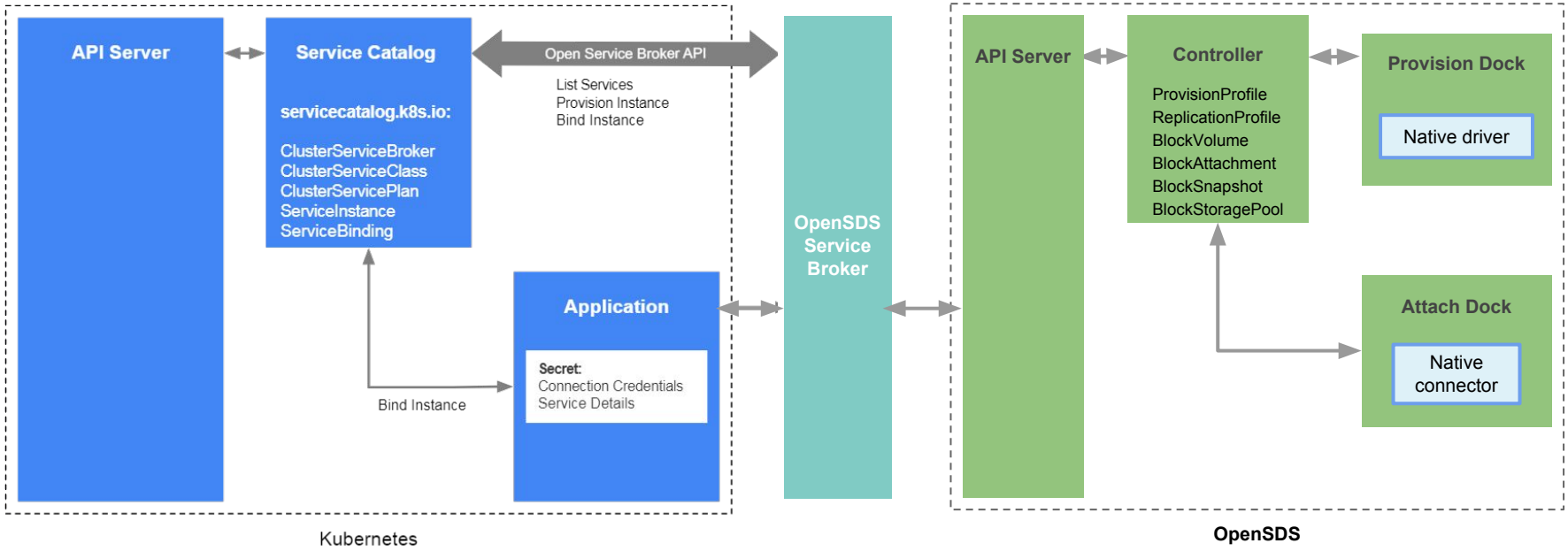
- User can enable raw block volumes feature to choose appropriate type of volume for their applications (such as ‘MariaDB’, ‘Mysql’, etc) for performance improvement
- Static provisioning support for Raw Block Volumes is included as an alpha feature for v1.9, Kubernetes v1.10 supports only Fibre Channel and Local Volume plugins for this feature
- It’s difficult for all storage drivers to support this feature without affecting their current framework



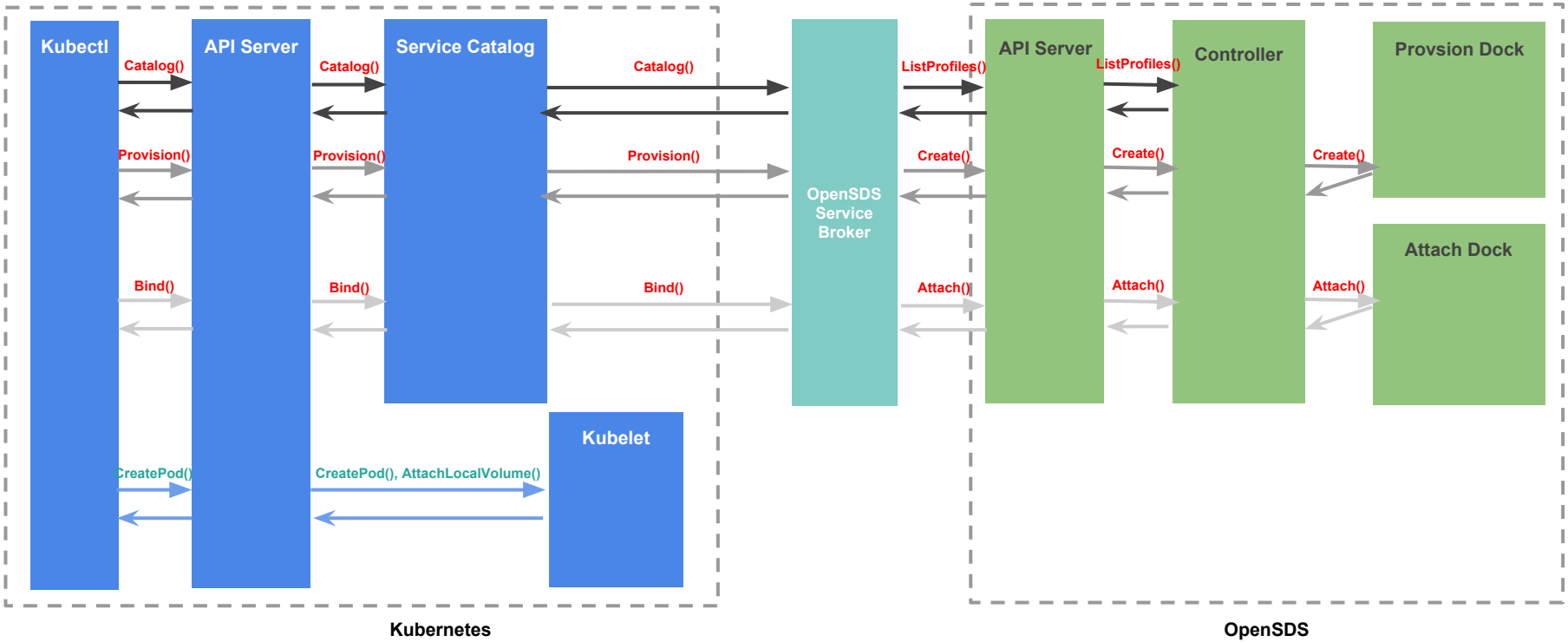
Open Service Broker API



Open Service Broker API



Open Service Broker API



Open Service Broker API

- By decoupling volume scheduling feature for the external storage from pod life-cycle management, users can benefit a lot in these scenarios:
  - High performance requirement when provisioning application pod with persistent volume provided by storage providers in product-level environment
  - Want to utilize differentiate features (such as replication, migration, etc) of storage systems to prevent the data in persistent volume from loss
- In Raw Block Volume scenario, all storage providers can support this feature without affecting the current framework of storage plugins, as long as they develop a simple storage driver in OpenSDS

Open Service Broker API

- Short term
  - Currently we have only tested ‘hostPath’ storage plugin in raw block volume scenario, but we will finish ‘local’ storage plugin supported right now
  - Support more storage drivers in OpenSDS
- Long term
  - Assumption: What if we create a new resource (like ‘PodPreSet’) that can directly bind the service instance at the same time of starting application pod?

Open Service Broker API

- Demo: https://youtu.be/FPCHd0NlHQs
- Spec changes:

Change accordingly

Volume Mounts Object

Response Field	Type	Description
driver*	string	Name of the volume driver plugin which manages the device.
container_dir*	string	The path in the application container onto which the volume will be mounted. This specification does not mandate what action the platform is to take if the path specified already exists in the container.
mode*	string	"r" to mount the volume read-only or "rw" to mount it read-write.
device_type*	string	A string specifying the type of device to mount. Currently the only supported value is "shared".
device*	device-object	Device object containing device_type specific details. Currently only shared devices are supported.

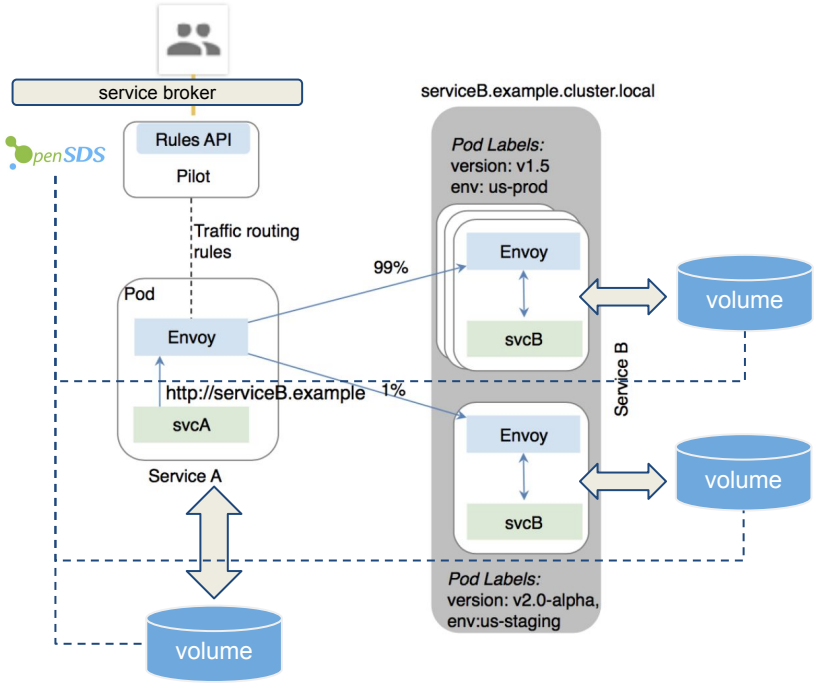
Add raw_block_device to device object

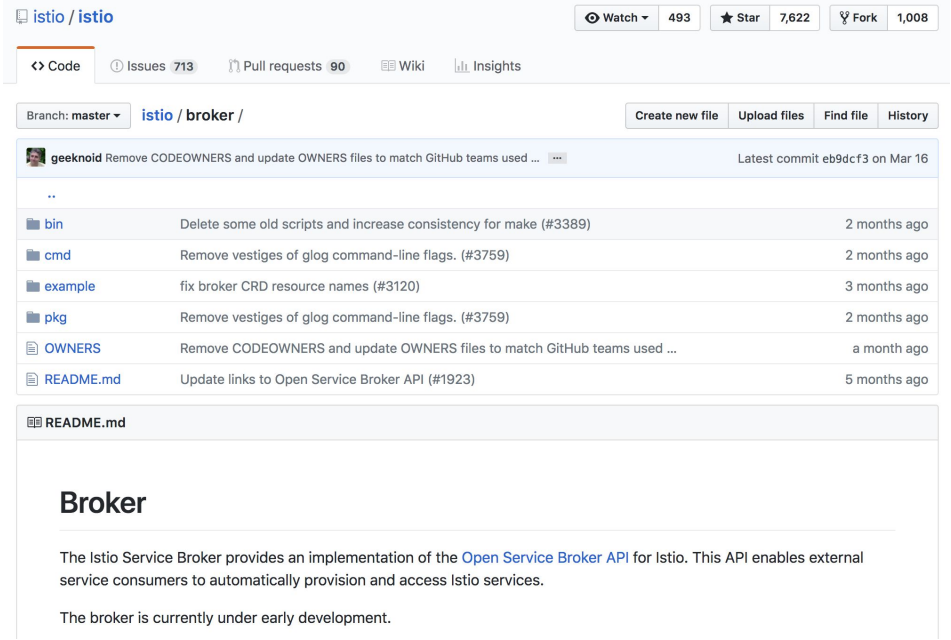
Device Object

Currently only shared devices are supported; a distributed file system which can be mounted on all app instances simultaneously.

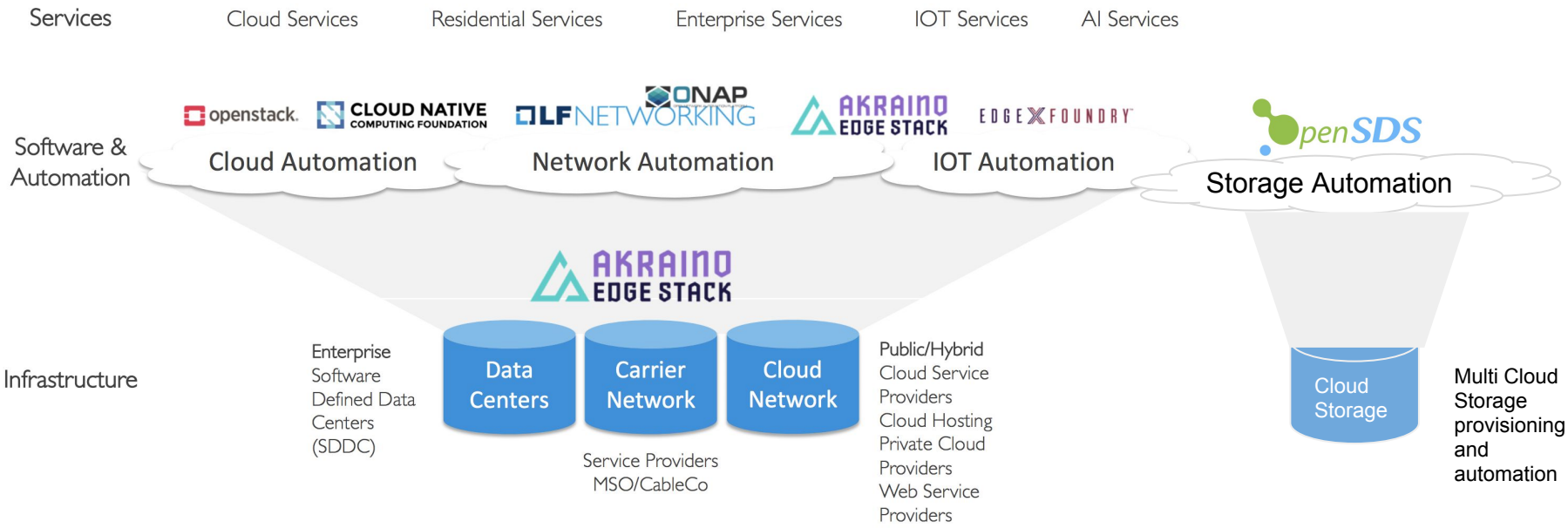
Field	Type	Description
volume_id*	string	ID of the shared volume to mount on every app instance.
mount_config	object	Configuration object to be passed to the driver when the volume is mounted.

Istio - microservice storage enablement

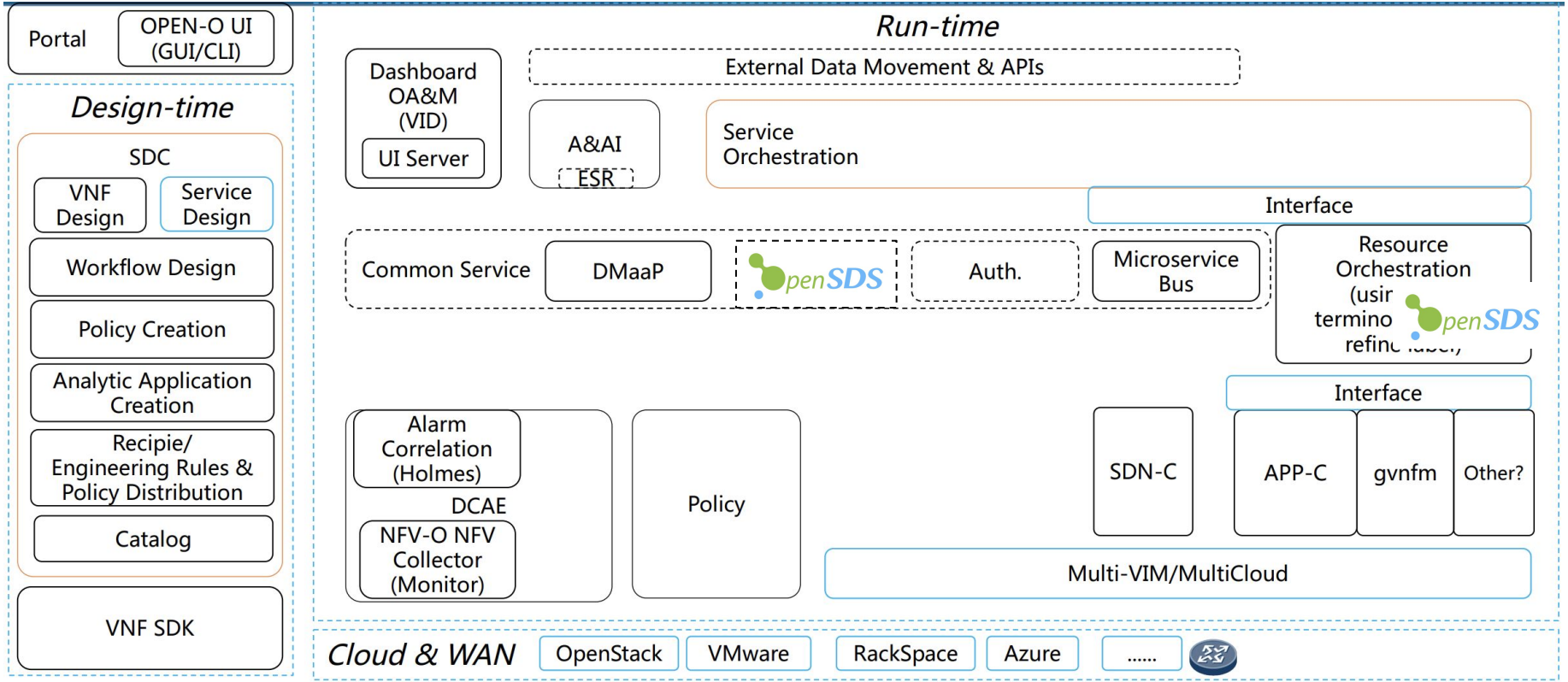




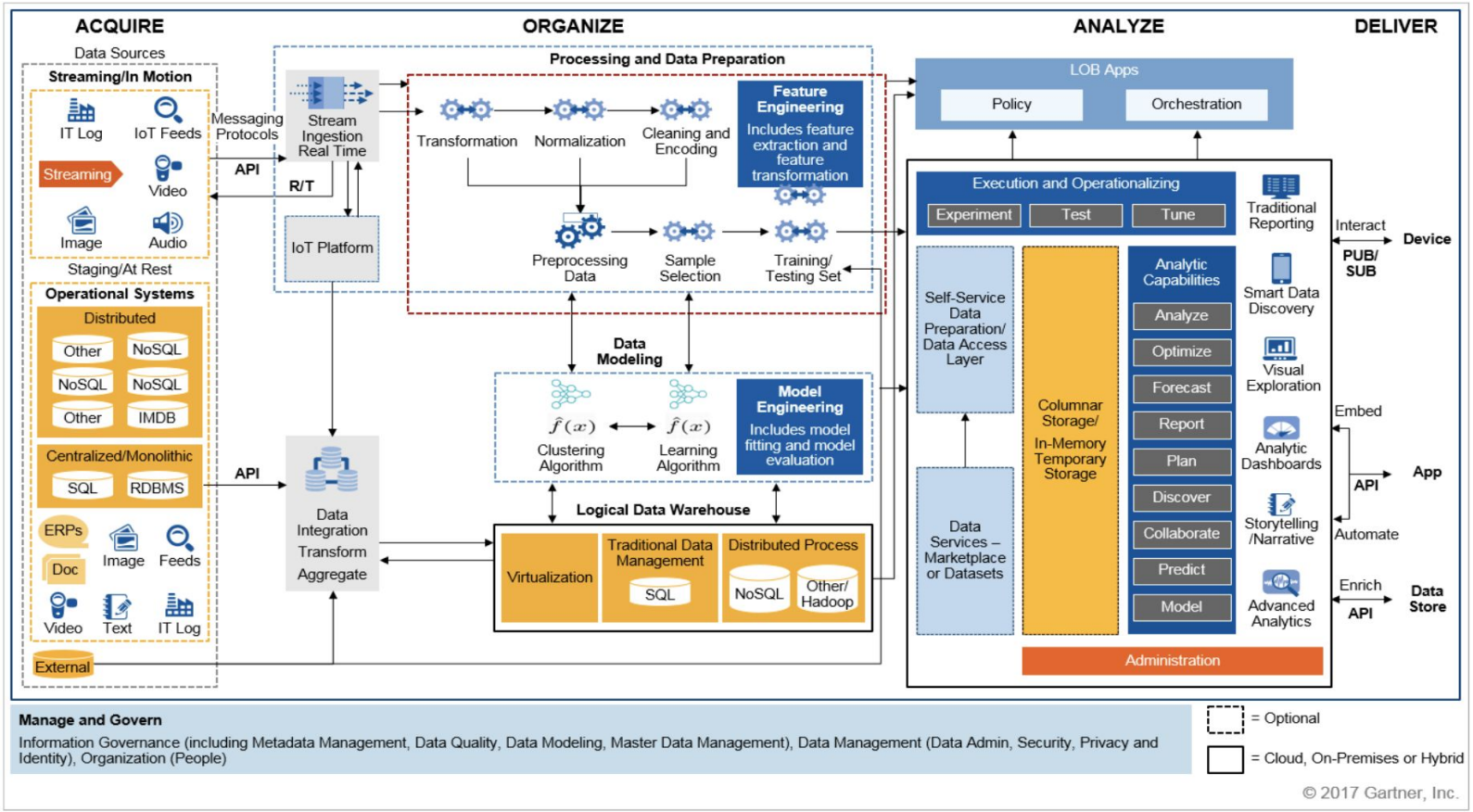
Akraino - Edge Storage Provisioning



ONAP - Telco Grade Storage



AI - Storage Offering For The Smart



AI - Storage Offering For The Smart

- AI requirement for storage:
  - model storage (object storage)
  - intermediate storage for back propagation (memory)
  - data set storage (sata disk)
  - data analytics storage (databases)
- Proposal for OpenSDS AI initiative
  - Establish OpenSDS AI Lab to:
    - study how opensds could help with AI related storage offering
    - build test environment for model training and serving
    - EAUC should sponsor the lab together with participating companies

Q & A

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