

Realize your vision

Implementing automated managed K8s service

자동화된 관리형 K8s 서비스 구현

2020.12.15

SAMSUNG SDS

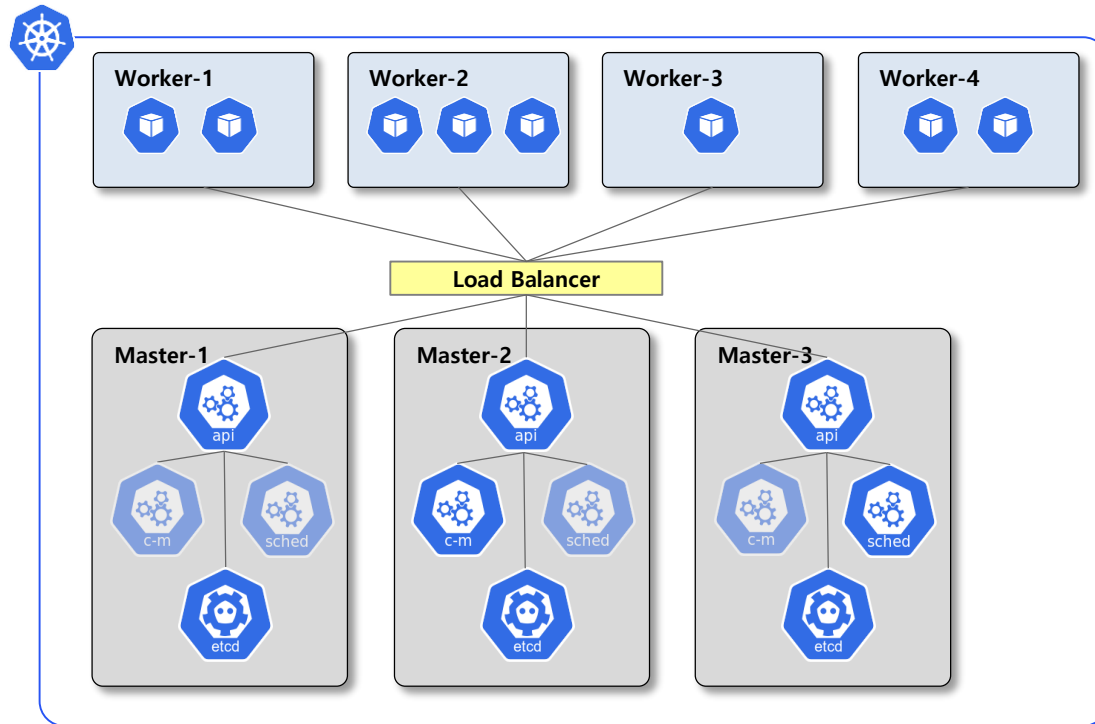
SAMSUNG SDS

Agenda

- I. Multi Cluster
- II. Control Plane as a Service
- III. Cluster API Integration
- IV. Demo
- V. Q & A

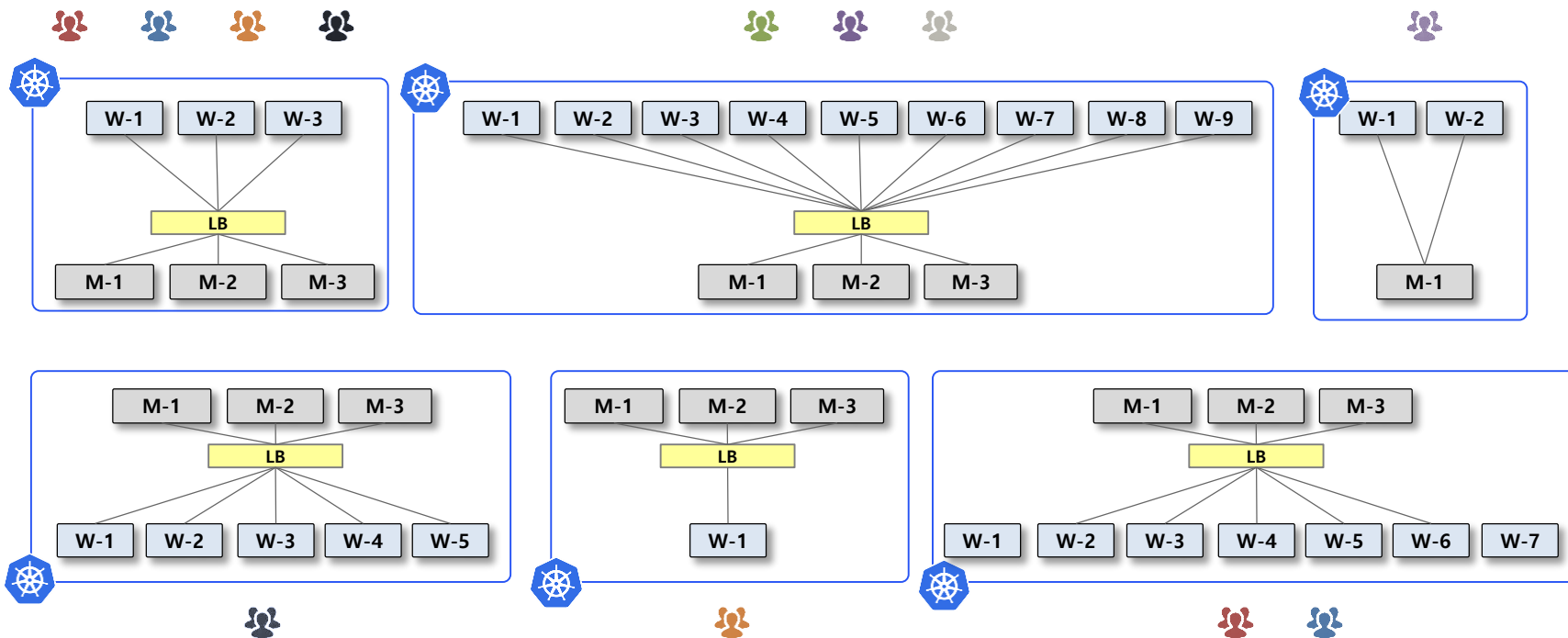
Single K8S Architecture

- Master is composed at least 3EA(for etcd cluster), and needed LB service



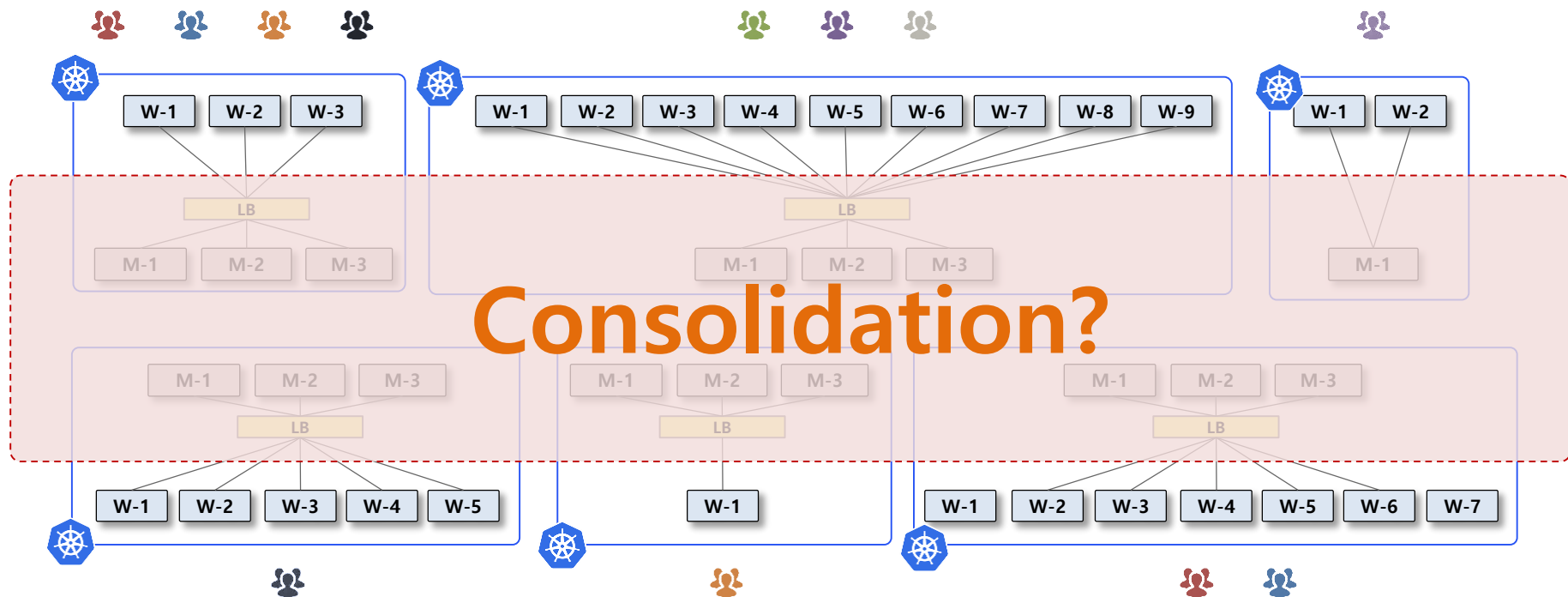
We need Kubernetes Cluster !

- Management points increase as the number of masters increases.
- When we need only one worker node



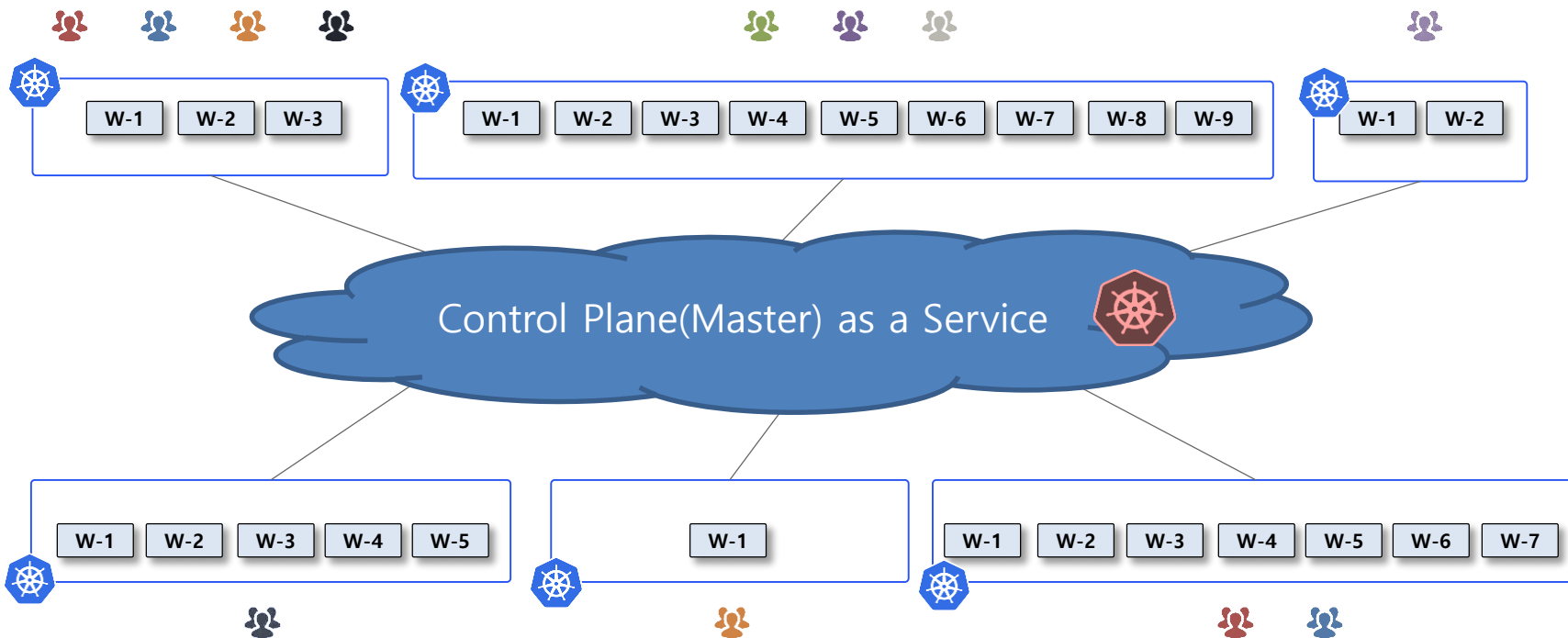
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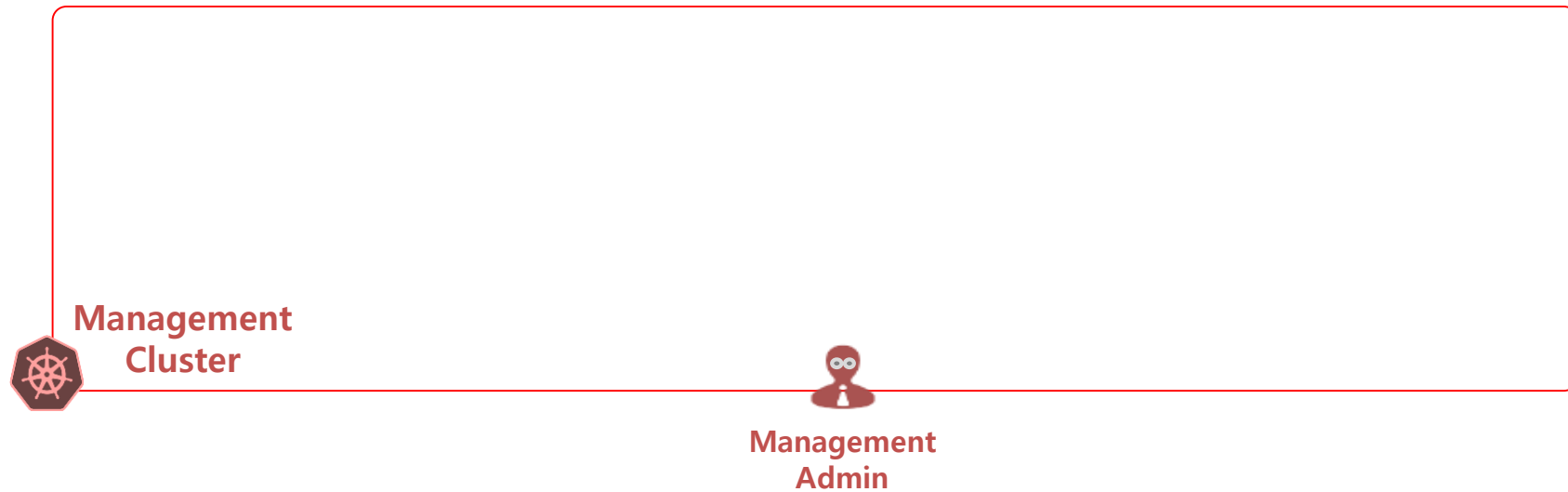


Control Plane as a Service

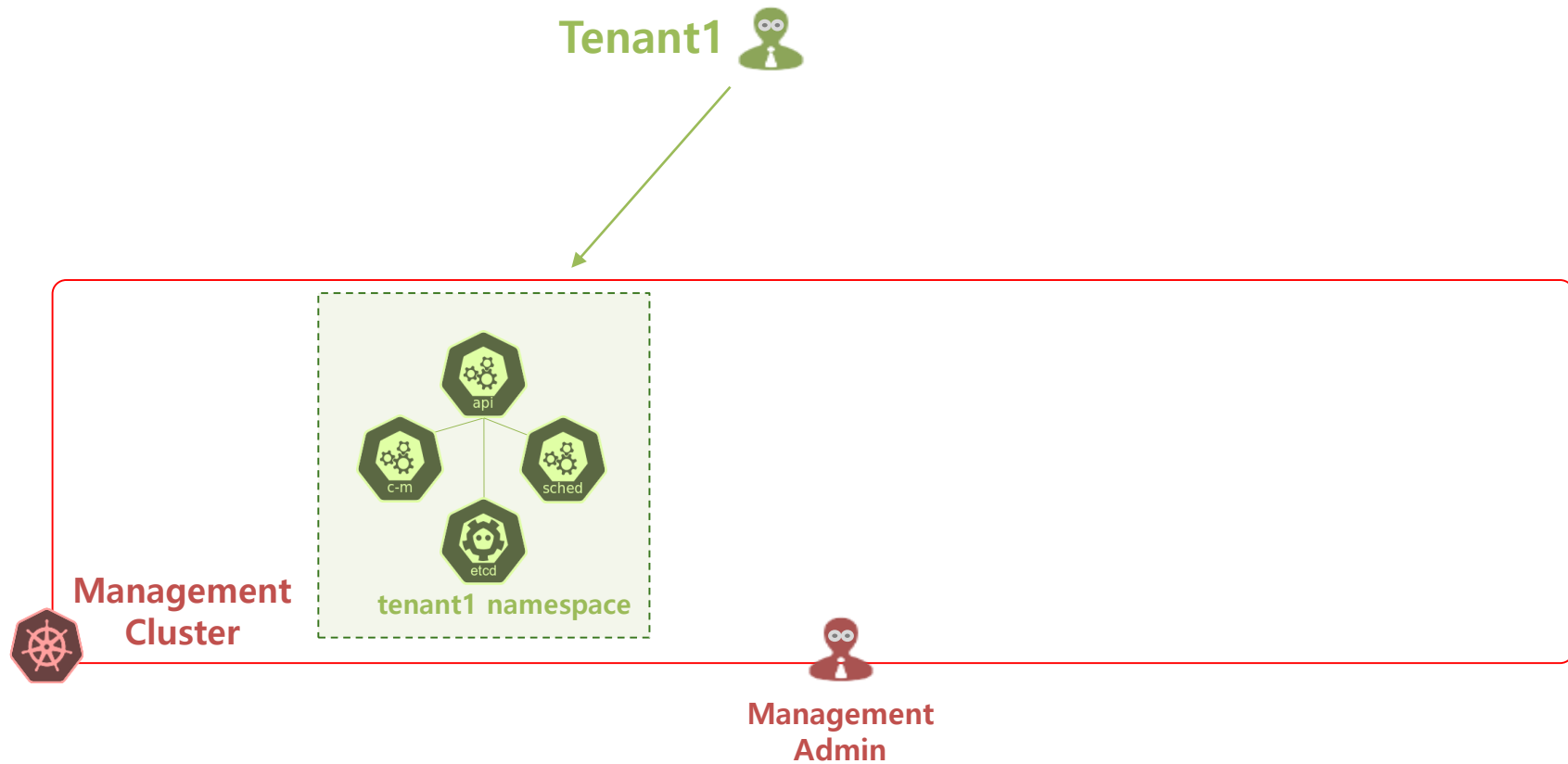
- How about managing controlplanes of other clusters in one cluster?
- Let's call it "Control Plane as a Service" !



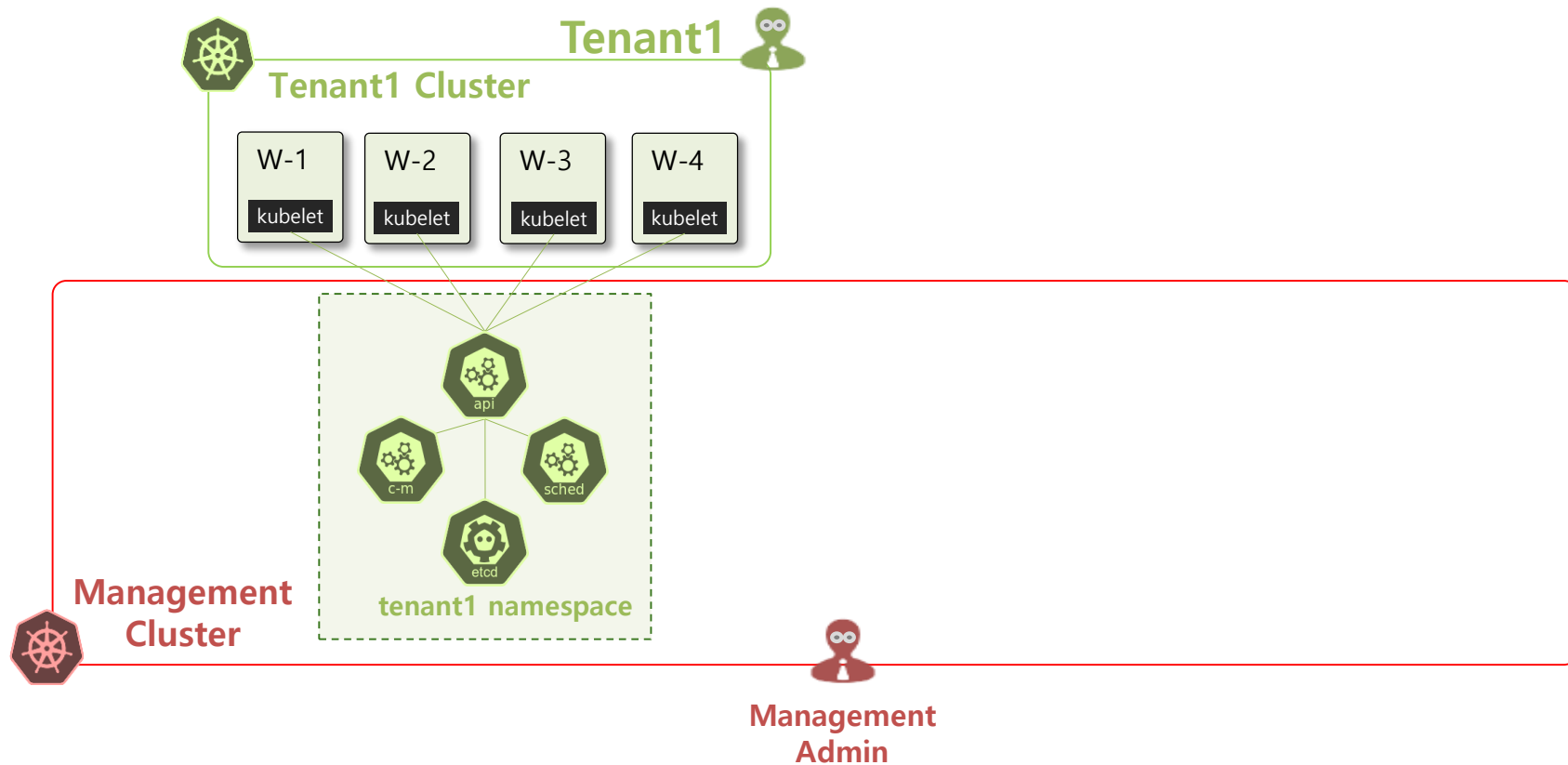
Control Plane as a Service



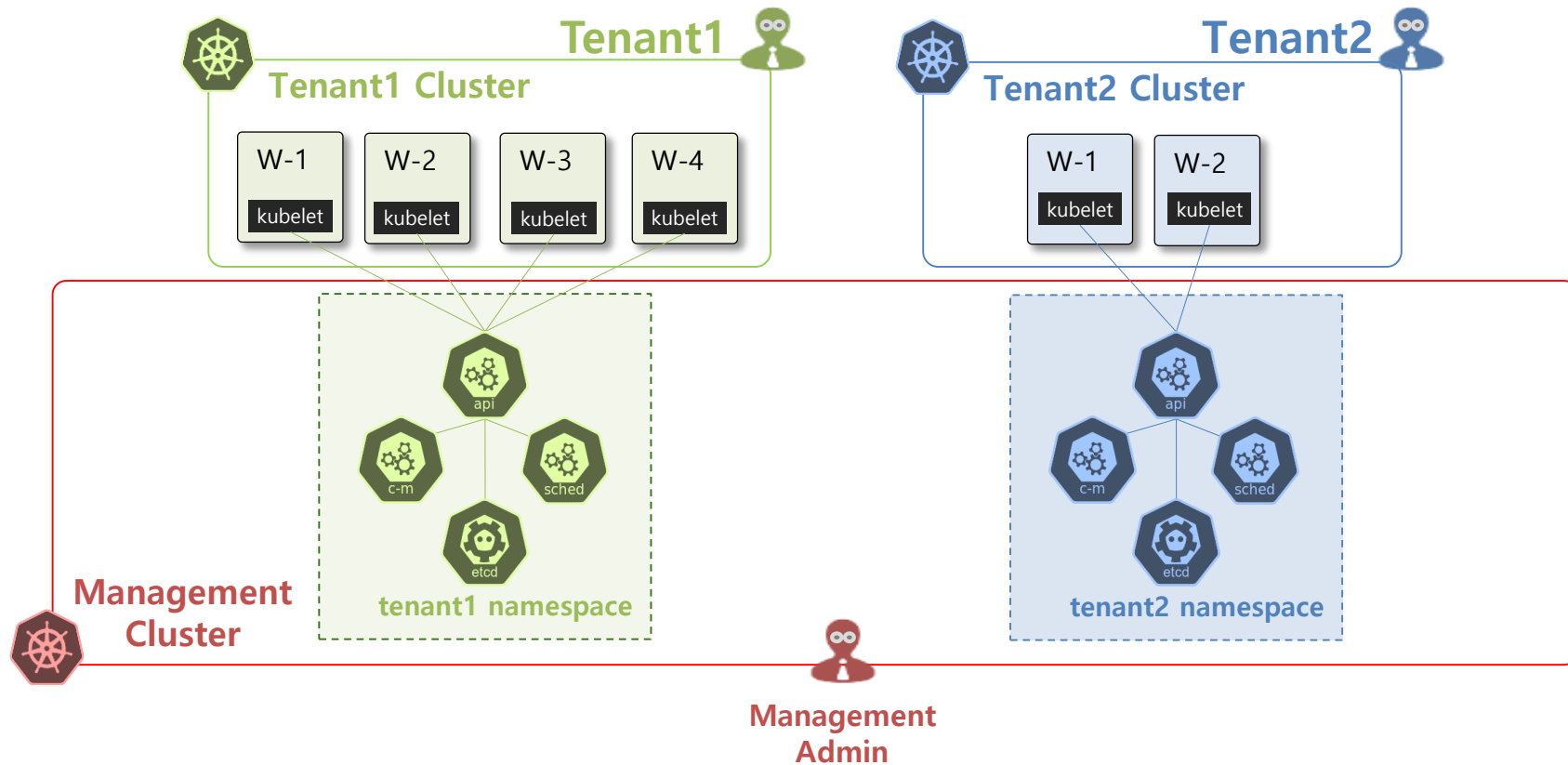
Control Plane as a Service



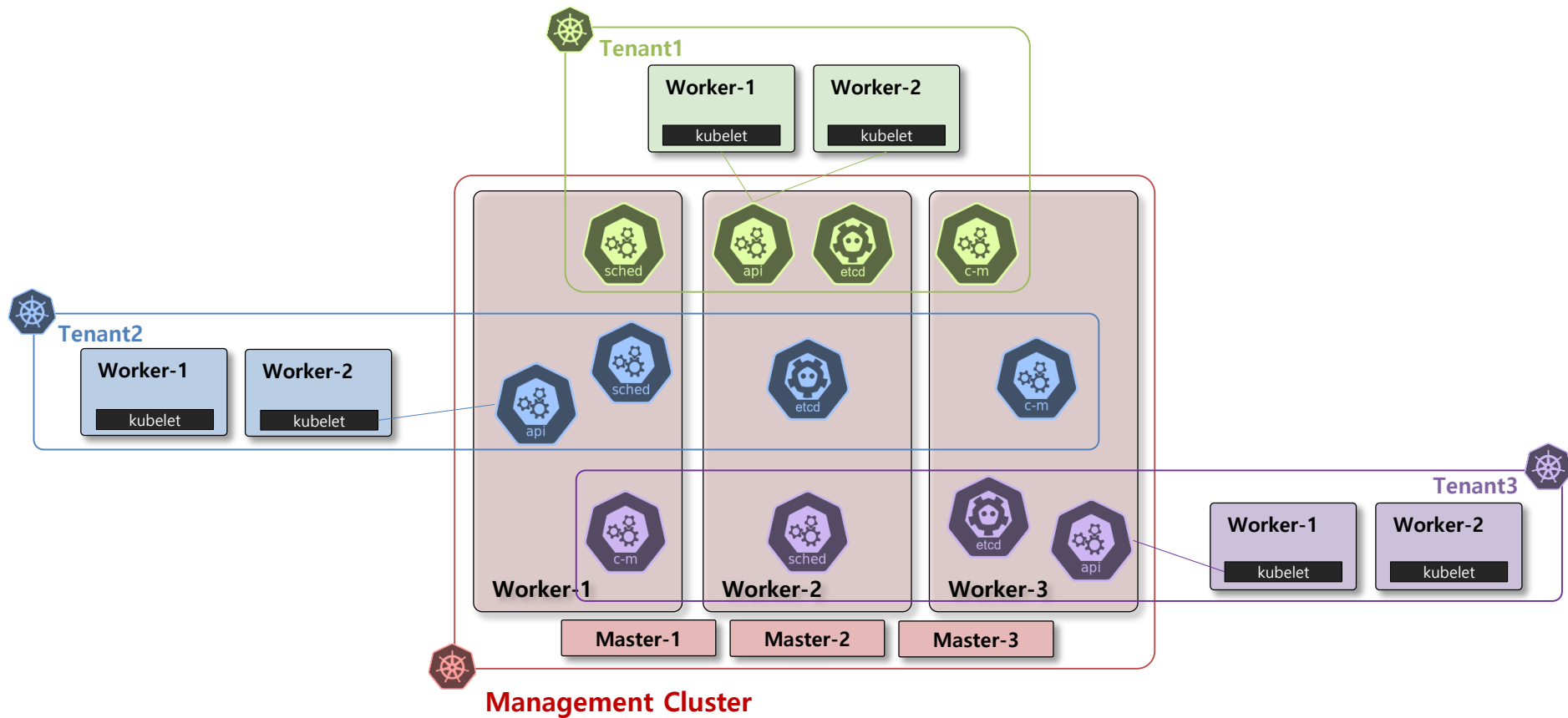
Control Plane as a Service



Control Plane as a Service

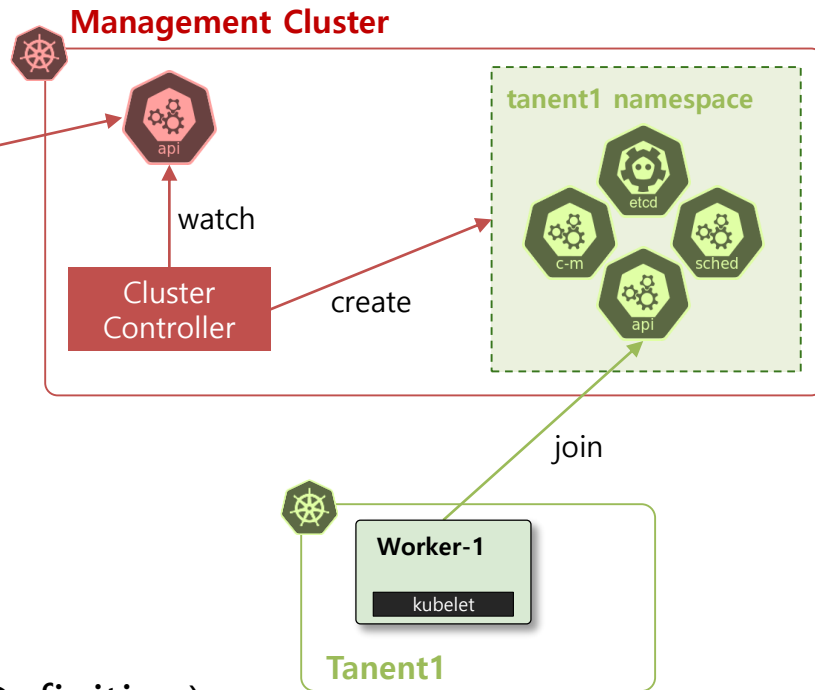


Control Plane as a Service



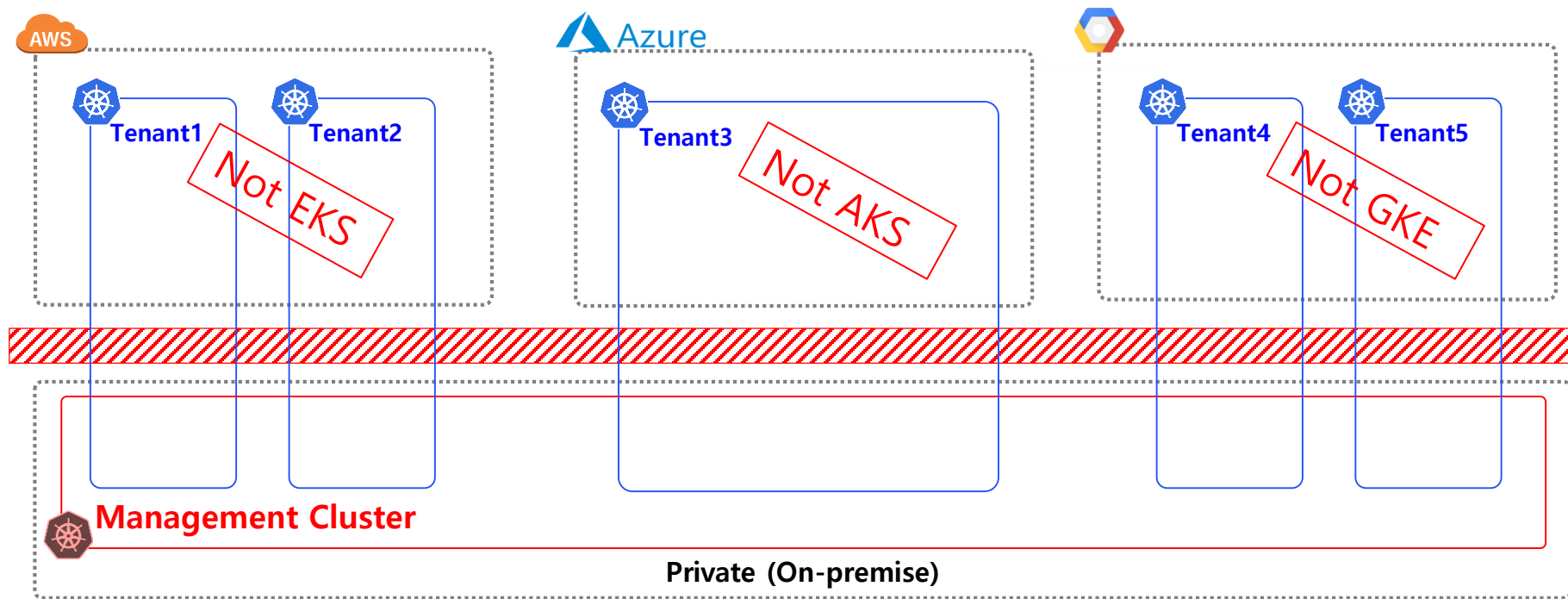
Control Plane as a Service

```
apiVersion: sdspaas.io/v1alpha1
kind: Cluster
metadata:
  name: tenant1
  namespace: tenant1
spec:
  name: tenant1
  version: v1.17.3
  podCidr: 10.32.0.0/12
  serviceCidr: 10.96.0.0/12
status:
  message:
  state:
```



- Created By CRD (Custom Resource Definition)

Use Case – Hybrid Cloud

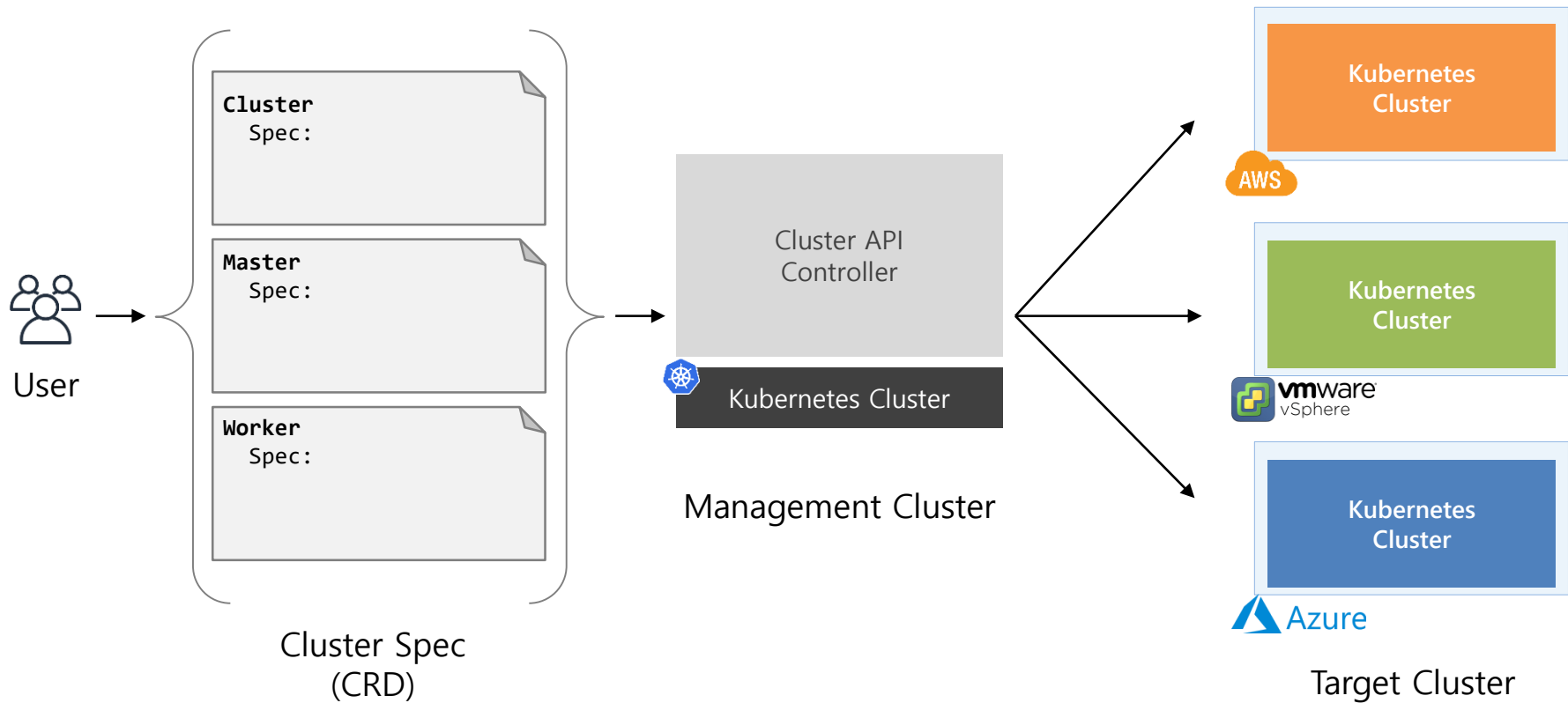


- Higher Resource Utilization
- Shorter Lead Time for Tenants
- Managing Multiple Clusters is a easy (all tenant's controlplanes placed Management Cluster !)

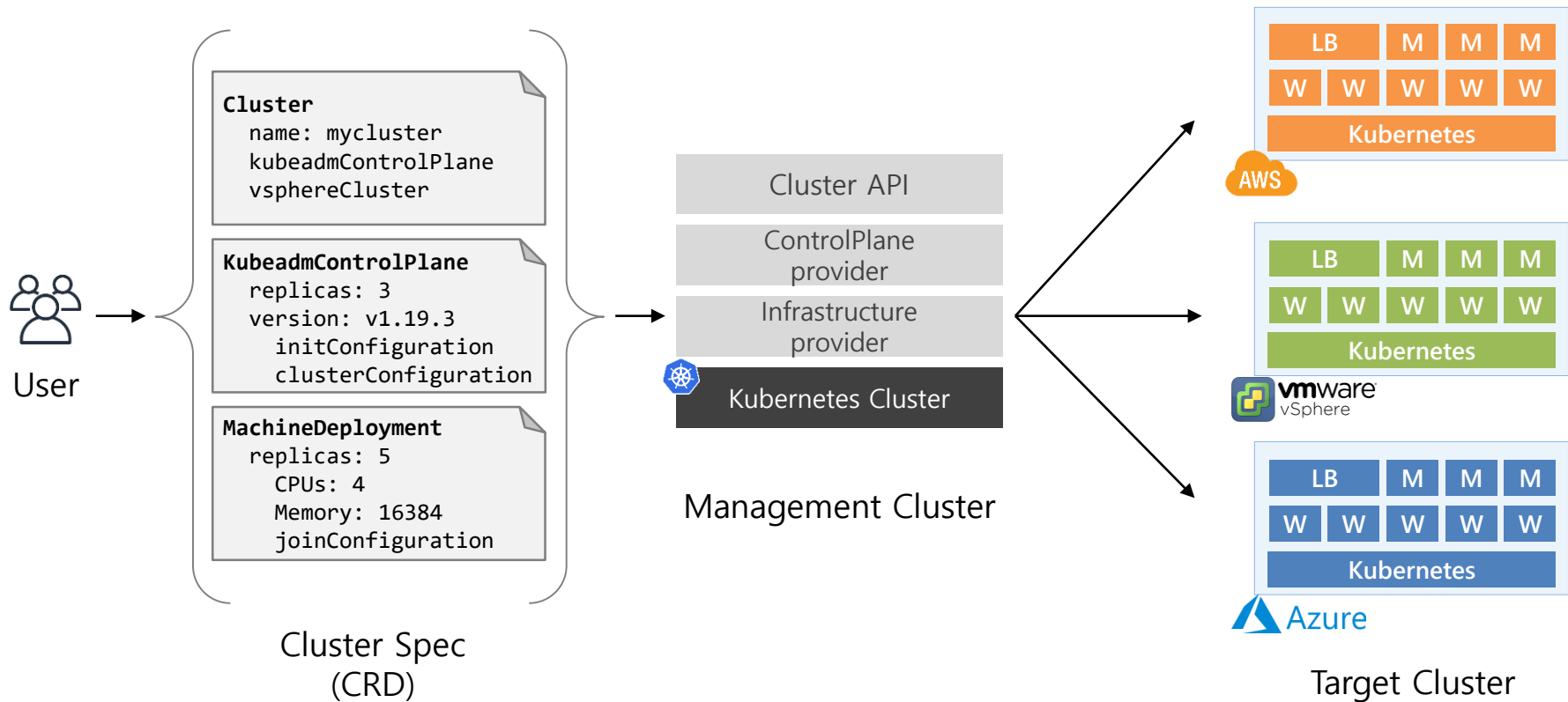
Full Automation?

Looks Familiar?

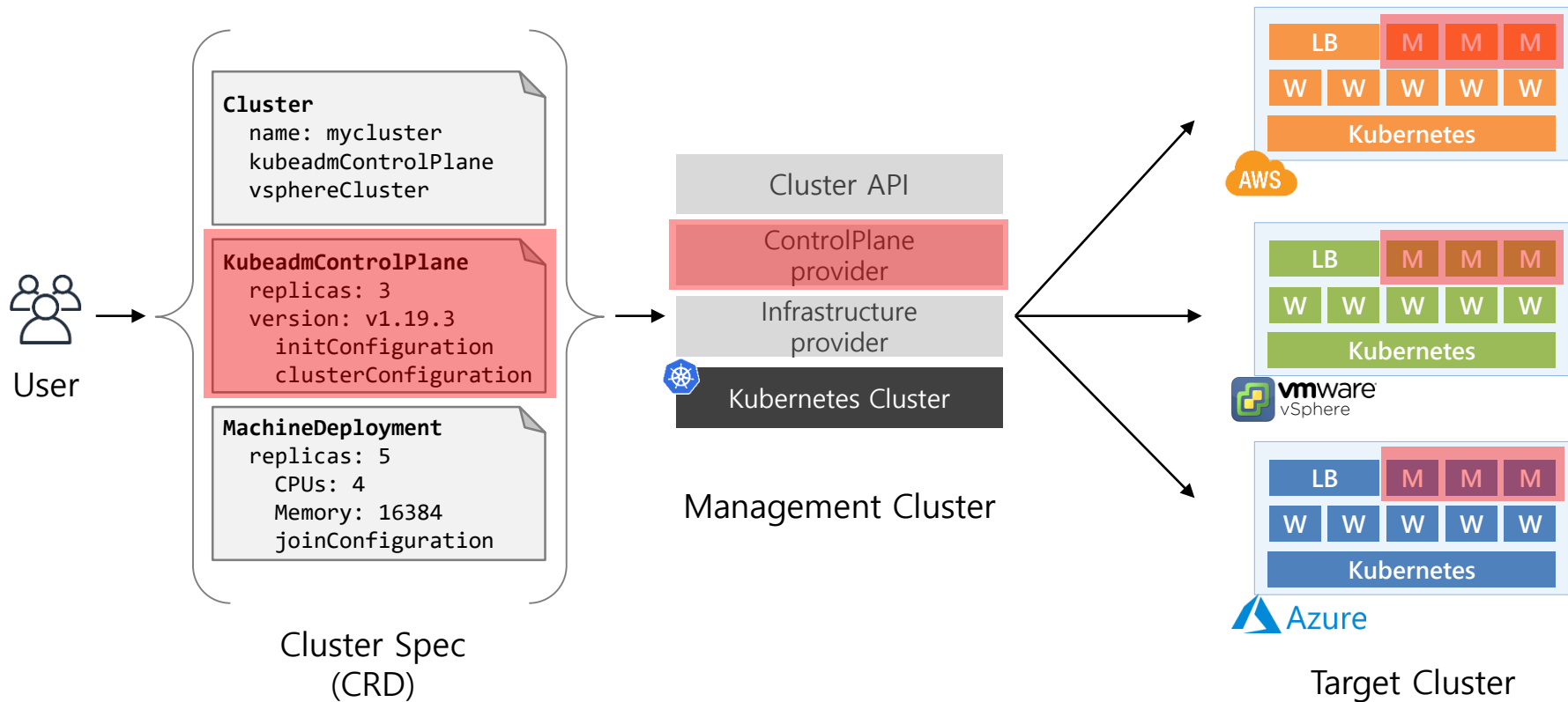
Cluster API?



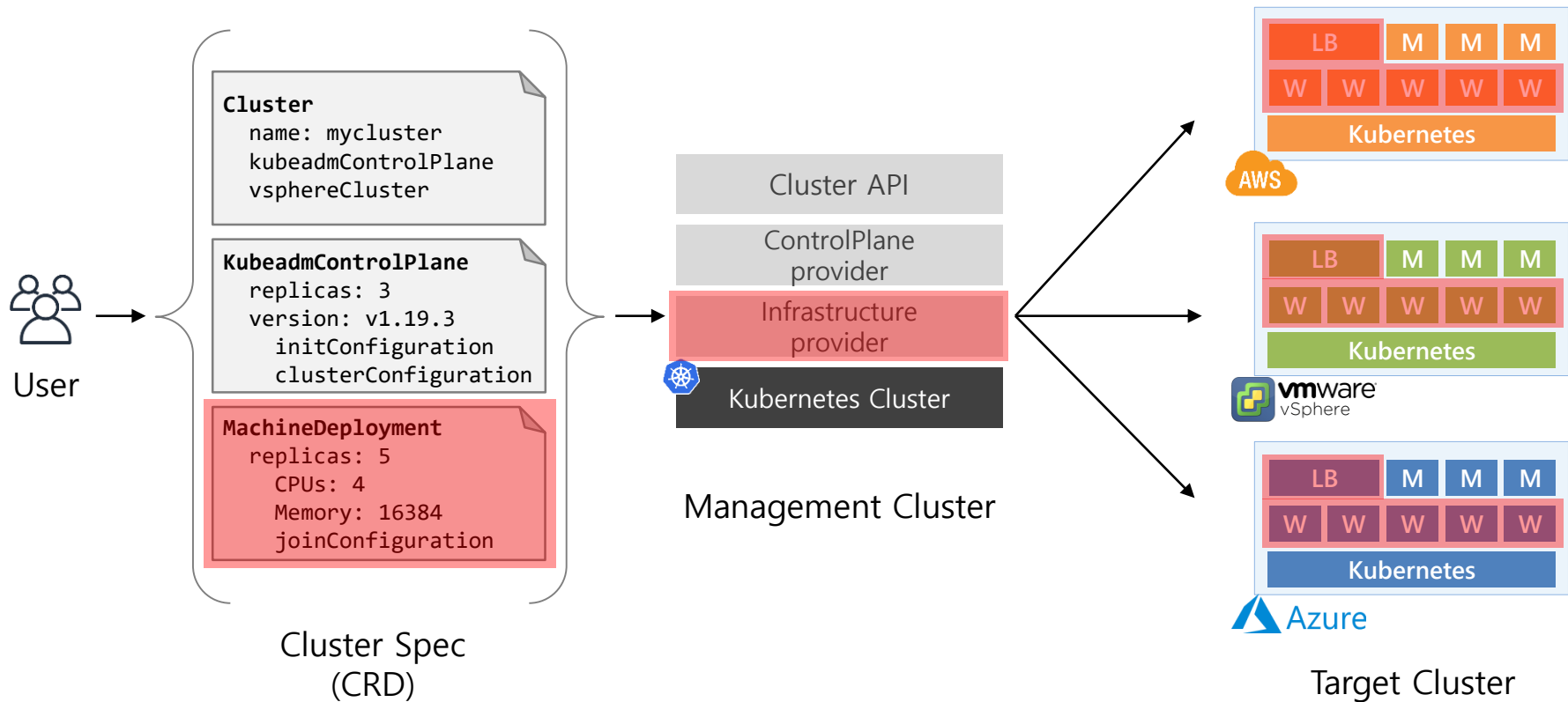
Cluster API?



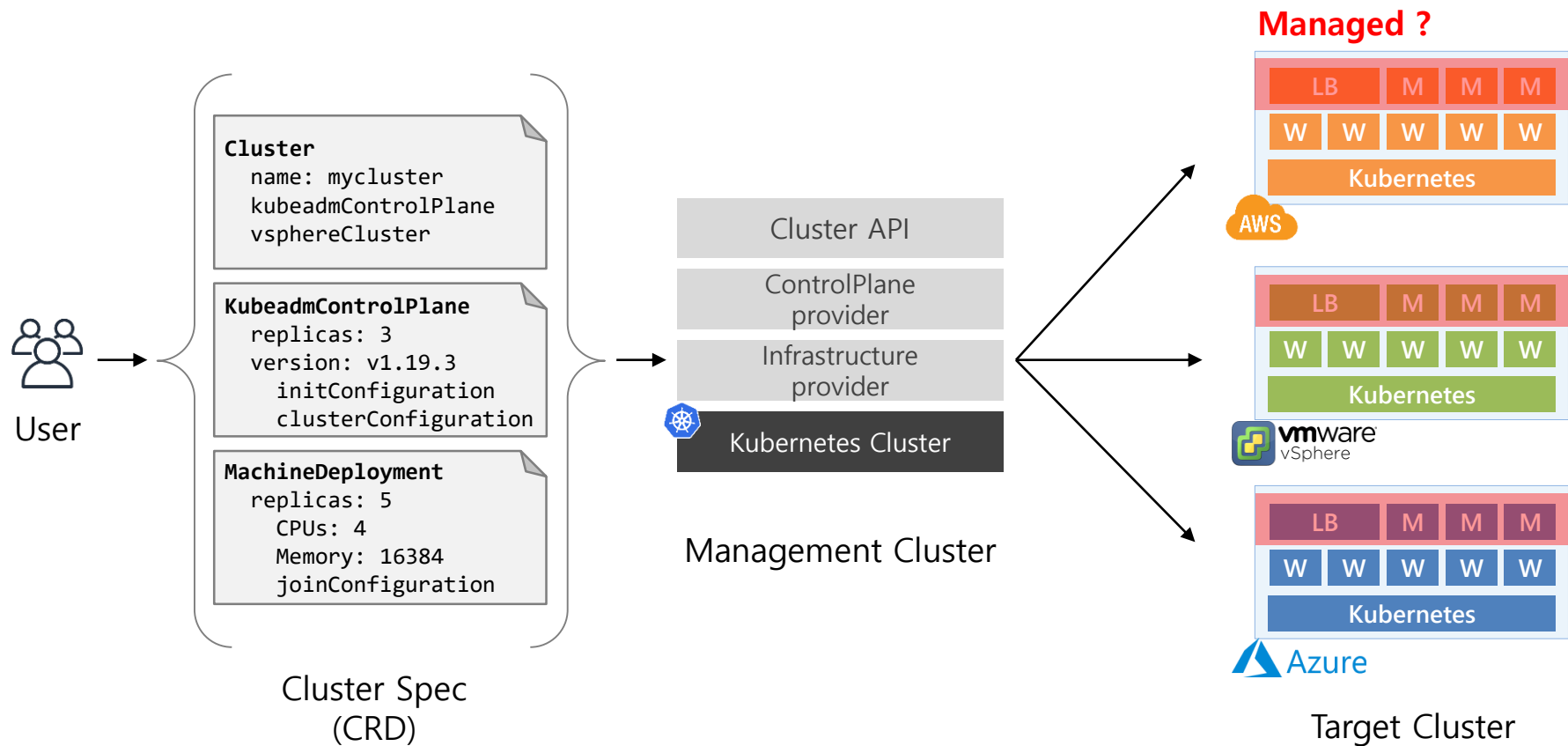
Cluster API?



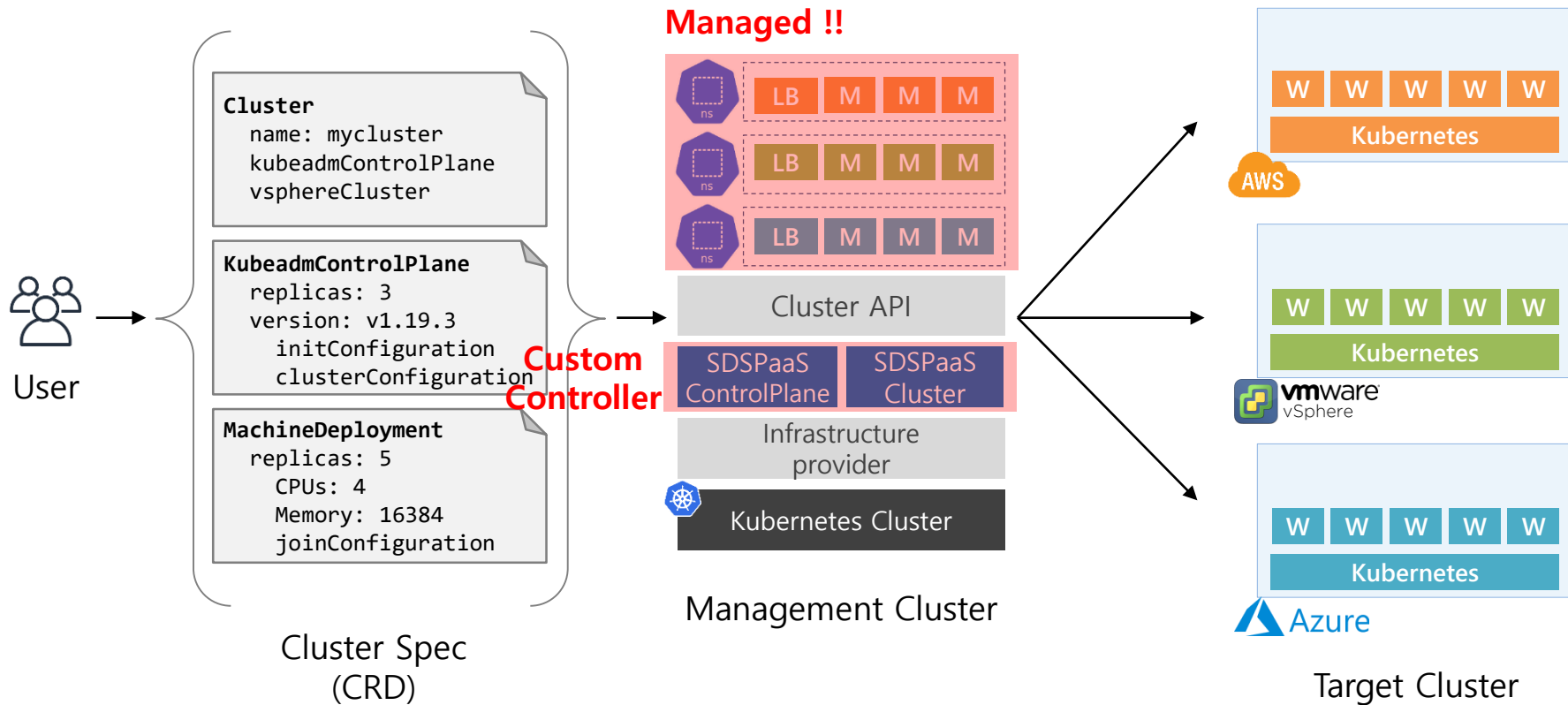
Cluster API?



Cluster API?



Cluster API Integration (+ Control Plane as a Service)



Cluster API Integration (+ Control Plane as a Service)

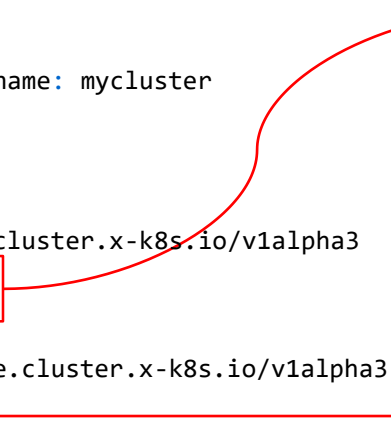
```
apiVersion: cluster.x-k8s.io/v1alpha3
kind: Cluster
metadata:
  labels:
    cluster.x-k8s.io/cluster-name: mycluster
  name: mycluster
  namespace: capsds-system
spec:
  controlPlaneRef:
    apiVersion: controlplane.cluster.x-k8s.io/v1alpha3
    kind: KubeadmControlPlane
    name: mycluster
  infrastructureRef:
    apiVersion: infrastructure.cluster.x-k8s.io/v1alpha3
    kind: VSphereCluster
    name: mycluster
```



```
apiVersion: cluster.x-k8s.io/v1alpha3
kind: Cluster
metadata:
  labels:
    cluster.x-k8s.io/cluster-name: mycluster
  name: mycluster
  namespace: capsds-system
spec:
  controlPlaneRef:
    apiVersion: controlplane.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSControlPlane
    name: mycluster
  infrastructureRef:
    apiVersion: infrastructure.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSCluster
    name: mycluster
```

Cluster API Integration (+ Control Plane as a Service)

```
apiVersion: cluster.x-k8s.io/v1alpha3
kind: Cluster
metadata:
  labels:
    cluster.x-k8s.io/cluster-name: mycluster
  name: mycluster
  namespace: capsds-system
spec:
  controlPlaneRef:
    apiVersion: controlplane.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSControlPlane
    name: mycluster
  infrastructureRef:
    apiVersion: infrastructure.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSCluster
    name: mycluster
```



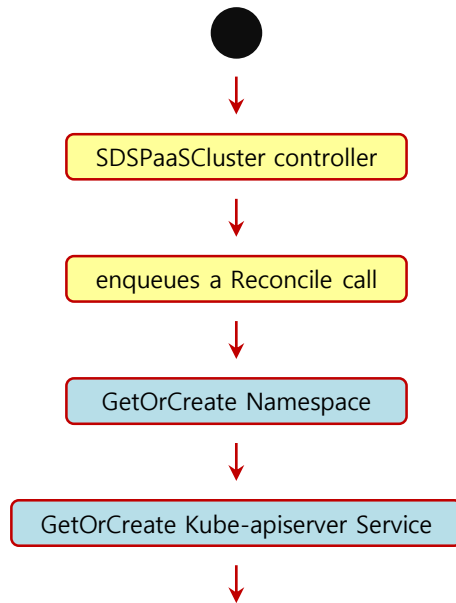
The diagram shows two red arrows originating from the main Cluster object. One arrow points from the `controlPlaneRef` field to the `SDSPaaSControlPlane` object. The other arrow points from the `infrastructureRef` field to the `SDSPaaSCluster` object.

```
apiVersion: controlplane.cluster.x-k8s.io/v1alpha3
kind: SDSPaaSControlPlane
metadata:
  name: mycluster
  namespace: capsds-system
spec:
  version: v1.19.3
  podCidr: 10.32.0.0/12
  serviceCidr: 10.96.0.0/12
```

```
apiVersion: infrastructure.cluster.x-k8s.io/v1alpha3
kind: SDSPaaSCluster
metadata:
  name: mycluster
  namespace: capsds-system
spec:
  clusterProviderRef:
    apiVersion: infrastructure.cluster.x-k8s.io/v1alpha3
    kind: VSphereCluster # or AWSCluster, AzureCluster
    name: mycluster
```

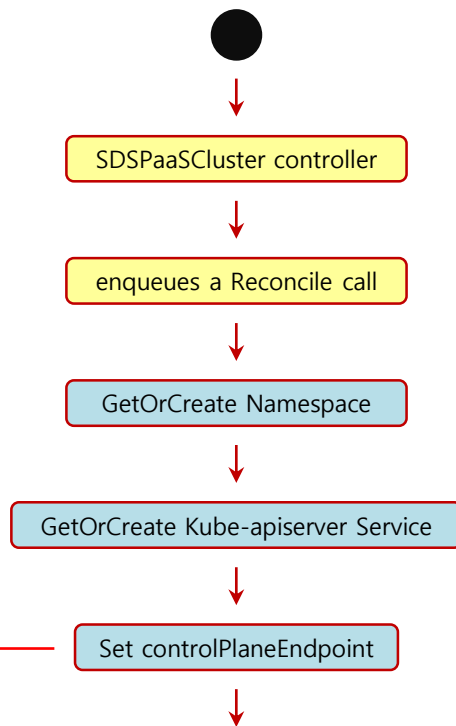
Cluster API Controller Workflow

```
apiVersion: cluster.x-k8s.io/v1alpha3
kind: Cluster
metadata:
  labels:
    cluster.x-k8s.io/cluster-name: mycluster
  name: mycluster
  namespace: capsds-system
spec:
  controlPlaneRef:
    apiVersion: controlplane.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSControlPlane
    name: mycluster
  infrastructureRef:
    apiVersion: infrastructure.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSCluster
    name: mycluster
```



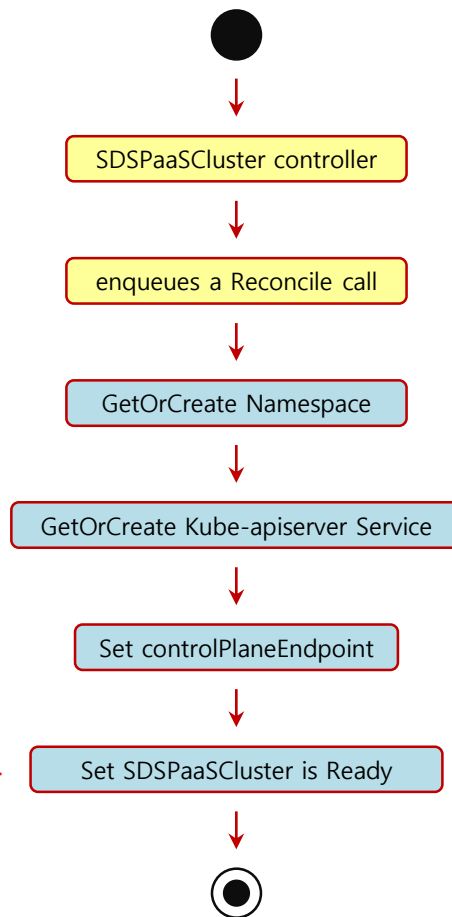
Cluster API Controller Workflow

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kind: Cluster
metadata:
  labels:
    cluster.x-k8s.io/cluster-name: mycluster
  name: mycluster
  namespace: capsds-system
spec:
  controlPlaneRef:
    apiVersion: controlplane.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSControlPlane
    name: mycluster
  infrastructureRef:
    apiVersion: infrastructure.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSCluster
    name: mycluster
  controlPlaneEndpoint:
    host: 10.1.1.10
    port: 6443
```



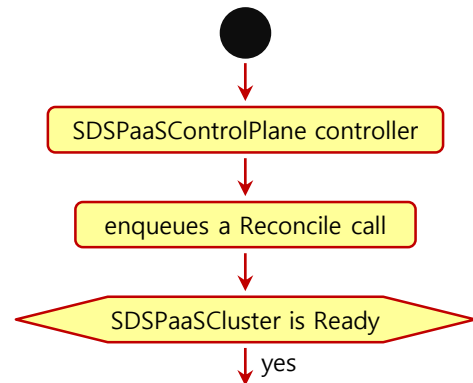
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  labels:
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  name: mycluster
  namespace: capsds-system
spec:
  controlPlaneRef:
    apiVersion: controlplane.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSControlPlane
    name: mycluster
  infrastructureRef:
    apiVersion: infrastructure.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSCluster
    name: mycluster
  controlPlaneEndpoint:
    host: 10.1.1.10
    port: 6443
status:
  conditions:
    - type: InfrastructureReady
      status: "True"
```



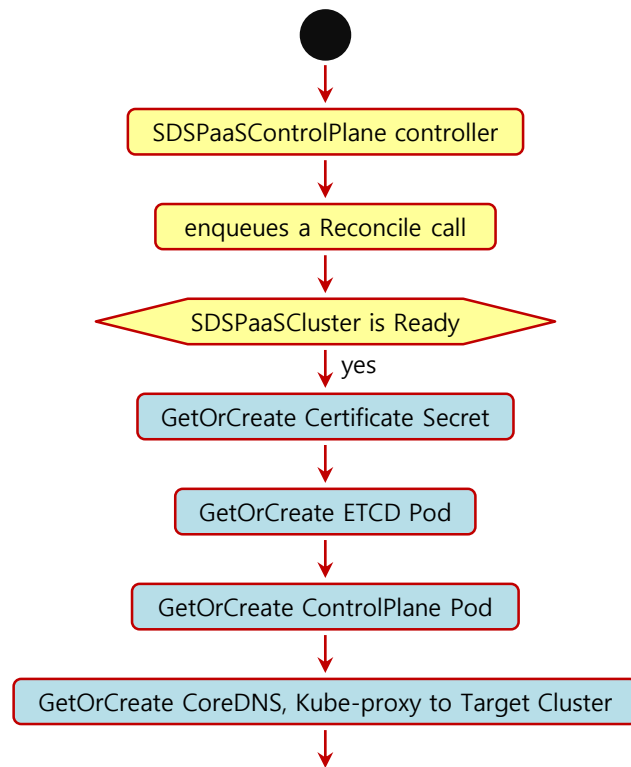
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metadata:
  labels:
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  name: mycluster
  namespace: capsds-system
spec:
  controlPlaneRef:
    apiVersion: controlplane.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSControlPlane
    name: mycluster
  infrastructureRef:
    apiVersion: infrastructure.cluster.x-k8s.io/v1alpha3
    kind: SDSPaaSCluster
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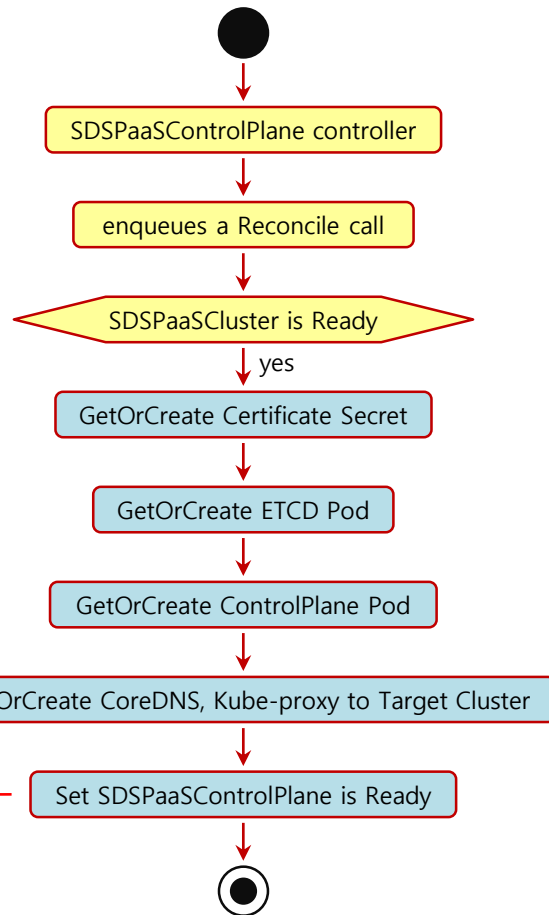
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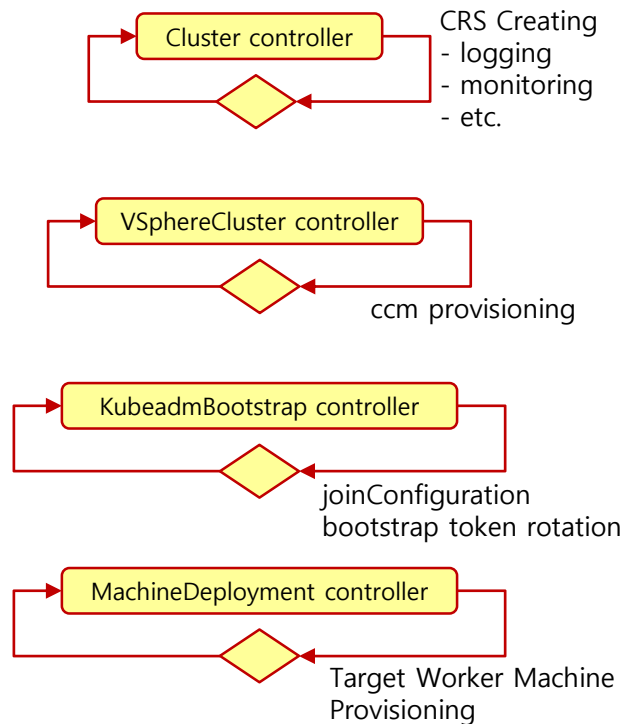
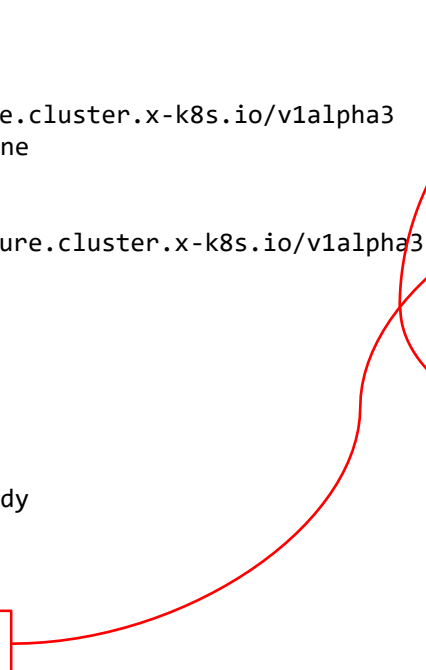
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    kind: SDSPaaSCluster
    name: mycluster
  controlPlaneEndpoint:
    host: 10.1.1.10
    port: 6443
status:
  conditions:
    - type: InfrastructureReady
      status: "True"
    - type: ControlPlaneReady
      status: "True"
```



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    kind: SDSPaaSCluster
    name: mycluster
  controlPlaneEndpoint:
    host: 10.1.1.10
    port: 6443
status:
  conditions:
    - type: InfrastructureReady
      status: "True"
    - type: ControlPlaneReady
      status: "True"
    - type: Ready
      status: "True"
```



DEMO

Q & A



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