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# UNIFIED CLOUD INFRASTRUCTURE REMEDiation IN EBAY

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## Agenda

- ❖ eBay K8s Footprint
- ❖ Manage Cloud Infrastructure with k8s
  - ❖ Model the Datacenter and Cluster
  - ❖ Architecture View
- ❖ Unified Cloud Infrastructure Remediation
  - ❖ Unified Remediation Framework
  - ❖ Configurable Remediation Flow
  - ❖ Application-aware Remediation
- ❖ Summary, Q&A



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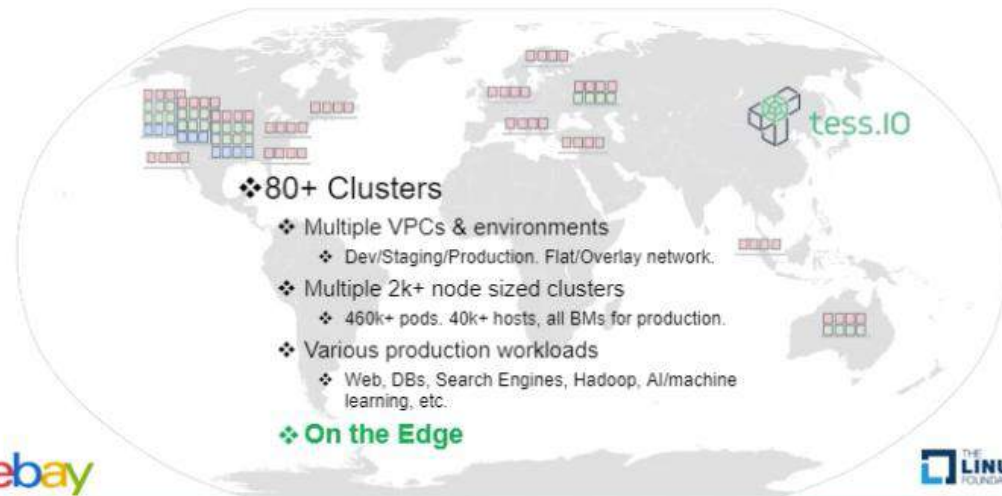


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## eBay K8s Footprint





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## Model the Datacenter and Cluster

### ❖ Infrastructure layer:

- ❖ Datacenter, AZ, Rack, ComputeAsset, etc.
- ❖ VPC, Switch, Subnet, IPaddress, etc.

### ❖ Software layer:

- ❖ SKU, Flavor, SSHKey, OSImage, VolumeConfig, etc.
- ❖ NodePool, ComputeNode, ComputeNodeRemediation, ComputeNodeDisruptionBudget, etc.



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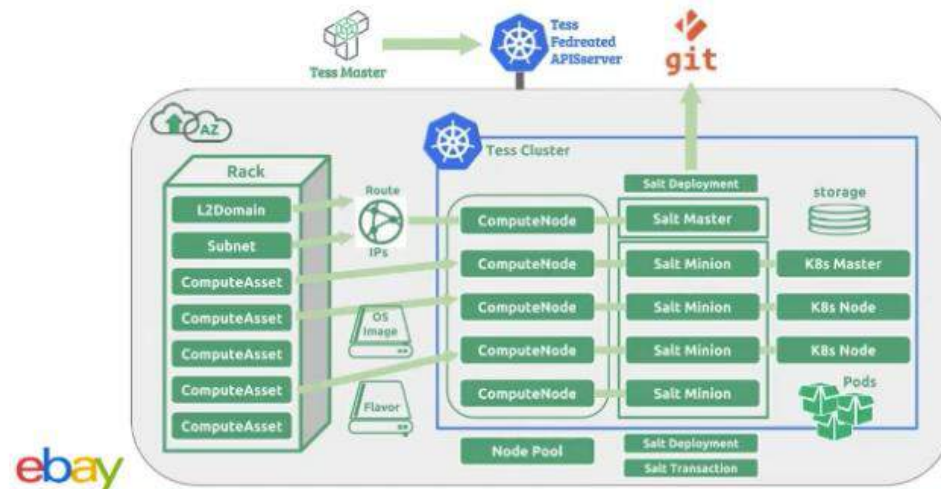


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## A single AZ architecture view

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3 apiserver pod  
3 etcd pod  
All our controllers



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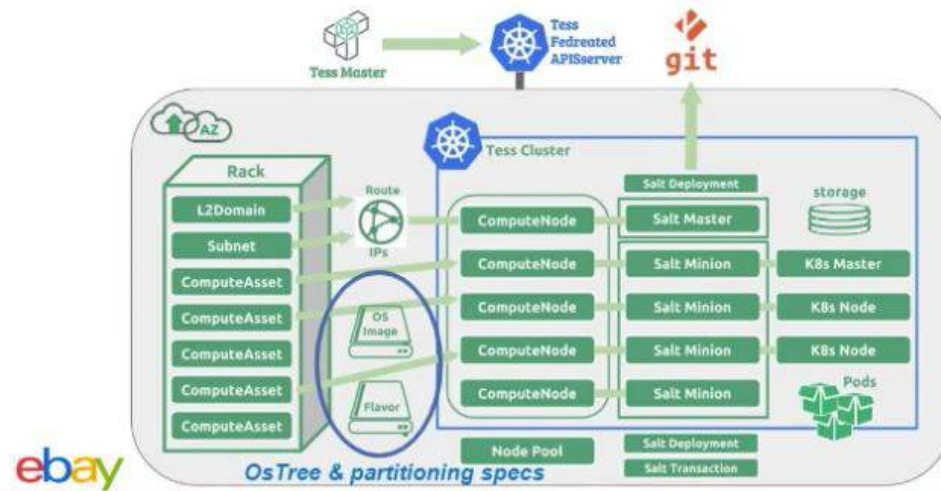


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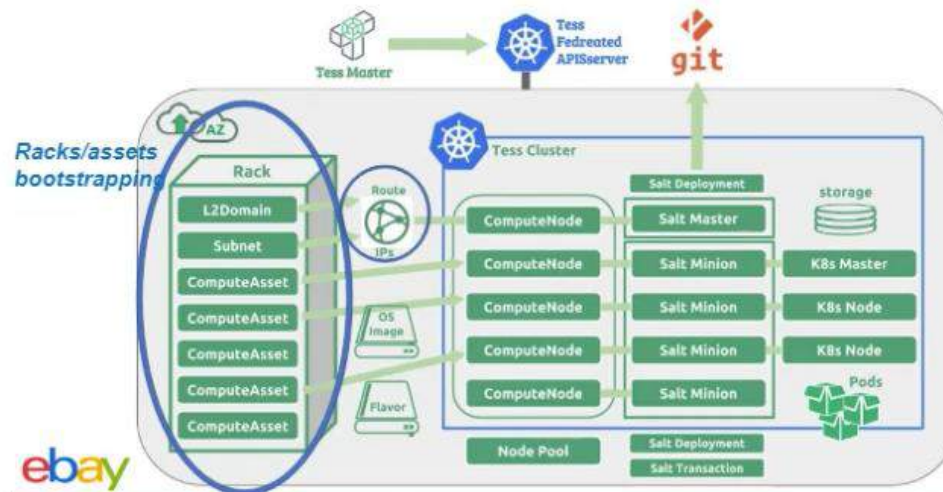


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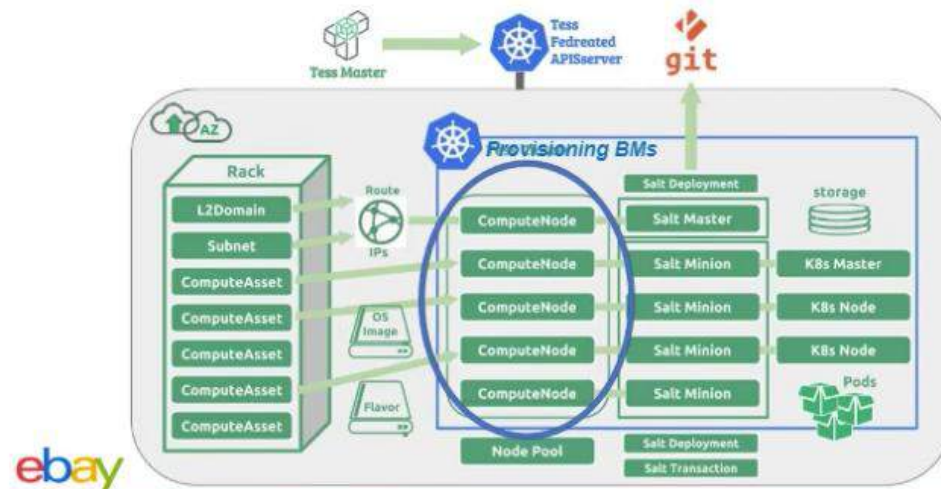


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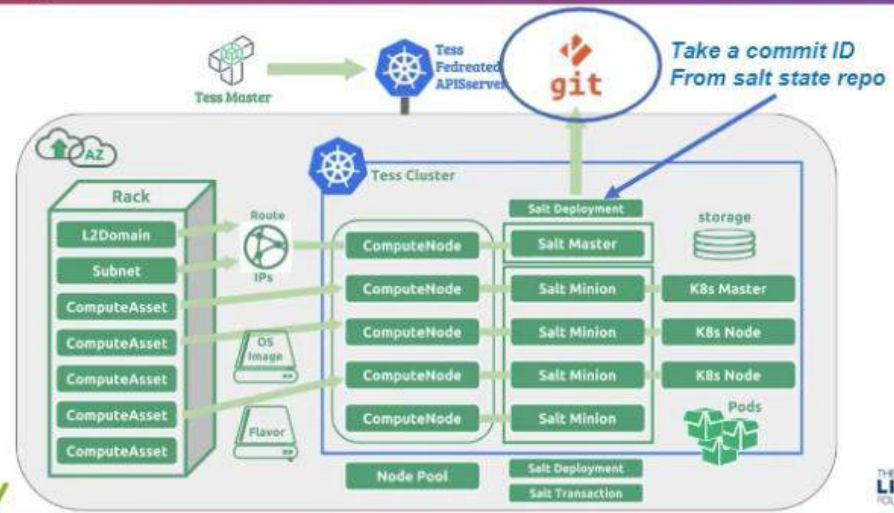


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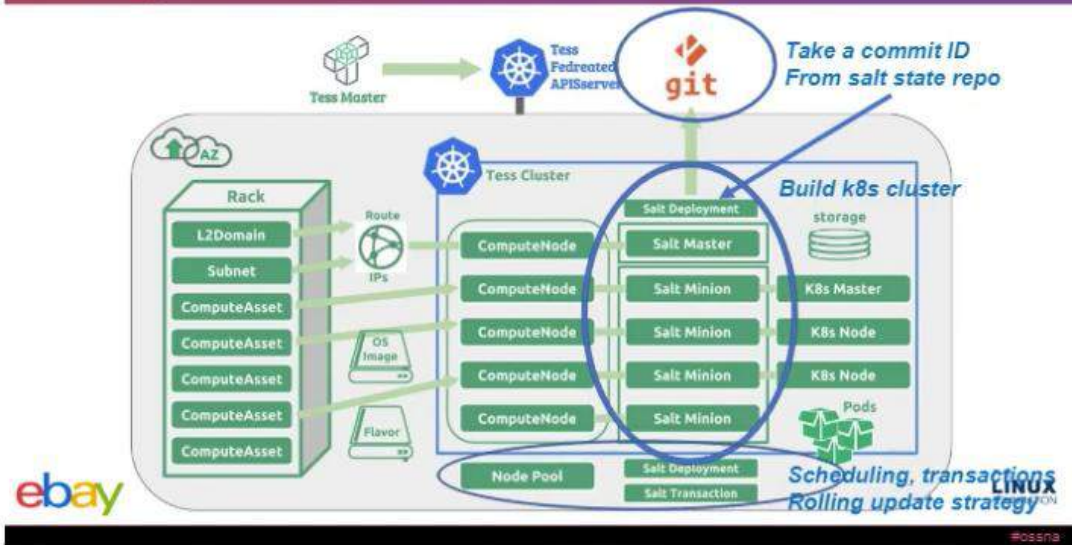


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## A single AZ architecture view





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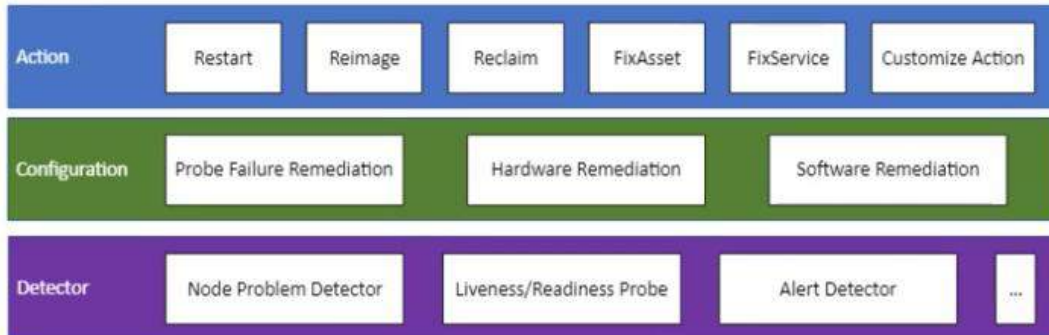


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## Unified Remediation Framework



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## Unified Remediation Framework

## Detector

Node Problem Detector

Liveness/Readiness Probe

Alert Detector

...

## ❖ Node Problem Detector

- ❖ System Log
- ❖ MCE log
- ❖ IPMI tool
- ❖ Disk detect tool

## ❖ Liveness/Readiness Probe

- ❖ NPD/Runtime

## ❖ Alert Detector



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## Unified Remediation Framework

Configuration

Probe Failure Remediation

Hardware Remediation

Software Remediation

- ❖ Probe Failure
- ❖ Hardware Failure
  - ❖ MCE Error
  - ❖ Disk Error
    - ❖ Disk Lost
    - ❖ Disk RW Failure
    - ❖ Disk Bad Block
    - ❖ Disk Kernel Error
  - ❖ NIC Link Down
  - ❖ CPU Lockup
  - ❖ IPMI Error
- ❖ Software Failure
  - ❖ Node Problem Detector
  - ❖ Kubelet
  - ❖ Container Runtime



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## Unified Remediation Framework

Action

Restart

Reimage

Reclaim

FixAsset

FixService

Customize Action

## ❖ On Failure Action

- ❖ Restart
- ❖ Reimage
- ❖ Reclaim
- ❖ FixAsset
- ❖ FixService
- ❖ IPMIReset

## ❖ On Success Action

- ❖ RestoreData
- ❖ Notification



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## Configurable Remediation Flow



```
1 ProbeError:
2   priority: 1
3   onFailureEnabled: true
4   onFailure:
5     precondition:
6       minimumFailureCount: 3
7     policy:
8       - operation: drainNode
9         gracePeriodInMinutes: 1440
10      - operation: restart
11        maxRetries: 1
12      - operation: reimage
13      - operation: reclaim_fixasset
14  onSuccessEnabled: true
15  onSuccess:
16    policy:
17      - operation: uncordon
```



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## Application-aware Remediation

### ❖ Purpose

- ❖ Application data migration
- ❖ Application failover process

### ❖ Method:

- ❖ PodDisruptionBudget
- ❖ If grace period expires, remediation flow will kick off workflow to ask the application owner to fix the issue and remove/change the PDB



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## Summary, Q&amp;A

- ❖ Summary
  - ❖ Manage Cloud Infrastructure with k8s
  - ❖ Unified Cloud Infrastructure Remediation

## ❖ Q &amp; A



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