

ELIOT R4 - IoT Gateway Test Document

Introduction

This document covers Test Deployment Environment and Test Case Result for ELIOT IoT Gateway Blueprint.

The number of nodes in the ELIOT Cluster remains same as Release 1.0 and Release 2.0; one virtual machine node for ELIOT Manager and one Virtual Node for ELIOT Edge Node (IoT Gateway)

The changes include testing of the new software included in the ELIOT Platform Stack.

Akarino Test Group Information

Not Applicable

Overall Test Architecture

ELIOT Cluster Number of Nodes remains same as Release 1.0 / 2.0

- One Node for ELIOT Manager.
- One Node for ELIOT Edge Node.

Both the nodes are running on Virtual Machine.

In Release 1.0 the Test Environments were :-

- ELIOT Cluster with Kubernetes on Ubuntu OS.
- ELIOT Cluster with KubeEdge on Ubuntu OS

In Release 2.0 the Test Environments were :-

- ELIOT Cluster with Kubernetes + EdgeX Platform on Ubuntu OS.
- ELIOT Cluster with Kubernetes + OPC-UA on Tailored OS
- ELIOT Cluster with KubeEdge on Cent OS

In Release 3.0 the Test Environments are :-

- ELIOT Cluster with Kubernetes + EdgeX Platform on Ubuntu OS. (*Integrated with Blu-Val validation and Akarino Security Sub-committee recommended Security Tools*)

In Release 4.0 the Test Environments are :-

- ELIOT Cluster with Kubernetes + EdgeX Platform + Edge Gallery services + AppStore + Developer Platform + k3s automated using Ansible tool on Ubuntu OS. (*Integrated with Blu-Val validation and Akarino Security Sub-committee recommended Security Tools*)

Traffic Generator

N/A

Test API description

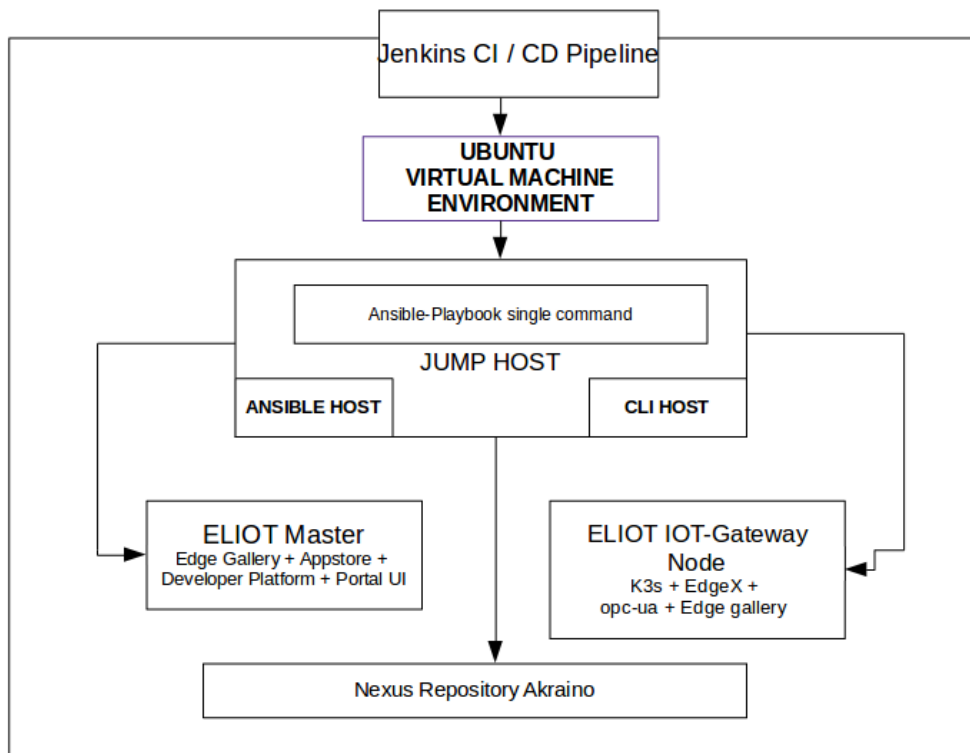
Some test cases are re-used from Release 2.0. Test cases are marked as *inherited from Release 2.0* and *New Test Cases*.

Test Environment

The Test Environment for ELIOT IoT Gateway Blueprint is a Virtual Machine Environment hosted on Huawei Public Cloud, which are in the same network, having public IP's.

Note: Testing in Bare-Metal environment is not done, theoretically it will function.

ELIOT Cluster with Kubernetes + EdgeX Platform on Ubuntu OS



CI Details

For CI IoT Gateway Blueprint is using Akraino Community Jenkins Server.

For CD, IoT Gateway Blueprint is using Private Huawei Lab Jenkins Server. Daily deployment build gets executed and logs are uploaded to nexus repo.

CI Jobs

- Triggered by gerrit patch creation/update, the job runs verify.sh under eliot project.
- Upload the job log to Nexus server in post-build actions

CD Jobs

- Triggered daily automatically , can also be executed manually.
- Executes an bootstrap shell script command to install the complete the environment and executes verify script to check the ELIOT - IoT Gateway cluster.
- Upload the job log to Nexus server in post-build actions

1.1 ELIOT Platform Test

Test Case 1 :

Test K3s Cluster, EDGE Gallery MEC platform , EdgeX Platform on IOTGateway node

Test K8s, Appstore, Developer Portal and EDGE Gallery Services on ELIOT Master node

(Inherited from Release 2.0)

Test Input :

Execute the ansible playbook command to setup the ELIOT Platform.

Test Procedure:

```
root@akraino-slave-0001:~# kubectl get nodes
```

```
NAME                STATUS  ROLES  AGE  VERSIONNOT platform and Soft dia
```

```
akraino-slave-0001  Ready  master  18h  v1.17.2
```

```
akraino-slave-0002  Ready  <none>  18h  v1.17.2
```

On Master Node

```
root@node1:~# kubectl get pods -A
NAMESPACE      NAME                                                    READY   STATUS    RESTARTS   AGE
kube-system    calico-kube-controllers-5f9895d4fc-fqq7c             1/1     Running   2           39m
kube-system    calico-node-fts2d2                                     1/1     Running   3           39m
kube-system    coredns-76798d84dd-7v6sq                             1/1     Running   1           39m
kube-system    coredns-76798d84dd-n2mln                             0/1     Pending   0           39m
kube-system    dns-autoscaler-85f898cd5c-vxlv2                     1/1     Running   1           39m
kube-system    kube-apiserver-node1                                 1/1     Running   2           40m
kube-system    kube-controller-manager-node1                       1/1     Running   1           40m
kube-system    kube-proxy-4mhsp                                       1/1     Running   1           39m
kube-system    kube-scheduler-node1                                 1/1     Running   2           40m
kube-system    kubernetes-dashboard-77475cf576-mz24d               1/1     Running   1           39m
kube-system    kubernetes-metrics-scraper-747b4fd5cd-lpm8p          1/1     Running   1           39m
root@node1:~# kubectl get svc
NAME      TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE
kubernetes ClusterIP   10.233.0.1   <none>        443/TCP    40m
root@node1:~#
```

CI/CD Logs:

Nexus Repo Path:-

<https://nexus.akraino.org/content/sites/logs/huawei/blueprints/iotgateway/job/eliot-iotgateway-deploy-k8s-virtual-daily-master/630/>

Blueprint Validation tests

Integrated with Blu-Val validation tools

1. For K8S layer

- Kube-Hunter

2. For OS Layer

- Vuls
- Lyns

Nexus Repo Path:-

<https://nexus.akraino.org/content/sites/logs/huawei/blueprints/iotgateway/job/eliot-iotgateway-deploy-k8s-virtual-daily-master/630/results/>

K8S LAYER MANDATORY TESTS

1.1 Kube-Hunter

(New Test Case)

Test Execution Step :

Blu-Val Validation test suite kube-hunter test case is executed on ELIOT Platform

Test Result :

All critical Test cases are passed.

CI / CD Logs :

Logs are pushed in nexus repo:-

<https://nexus.akraino.org/content/sites/logs/huawei/blueprints/iotgateway/job/eliot-iotgateway-deploy-k8s-virtual-daily-master/630/results/k8s/kube-hunter/>

OS LAYER MANDATORY TESTS

2.1 Lynis

(New Test Case)

Test Execution Step :

Blu-Val Validation test suite Lynis test case is executed on ELIOT Platform

Test Result :

All critical Test cases are passed.

CI / CD Logs :

Logs are pushed in nexus repo:-

<https://nexus.akraino.org/content/sites/logs/huawei/blueprints/iotgateway/job/eliot-iotgateway-deploy-k8s-virtual-daily-master/630/results/os/lynis/>

2.2 Vuls

(New Test Case)

Test Execution Step :

Blu-Val Validation test suite Lynis test case is executed on ELIOT Platform

Test Result :

All critical Test cases are passed.

CI / CD Logs :

Logs are pushed in nexus repo:-

<https://nexus.akraino.org/content/sites/logs/huawei/blueprints/iotgateway/job/eliot-iotgateway-deploy-k8s-virtual-daily-master/630/results/os/vuls/>

Feature Project Tests

Not applicable

Test Dashboards

Single pane view of how the test score looks like for the Blue print.

Total Tests	Test Executed	Pass	Fail	In Progress
3	3	3	0	0

Additional Testing

N/A

Bottlenecks/Errata

N/A