

ELIOT R3 - SD-WAN / WAN Edge / uCPE Test Document

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Introduction

This document covers both ELIOT Blueprint Use Case.

ELIOT is "Enterprise Edge Lightweight and IOT" project under Akarino approved blueprint family and part of Akarino Edge Stack, which intends to develop a fully integrated edge network infrastructure and running edge computing applications on lightweight Edge Nodes. ELIOT targets on making the edge node a lightweight software stack which can be deployed on edge nodes which have limited hardware capacity by leveraging lightweight OS, container running environment and container orchestration applications.

In addition ELIOT stack focuses to have infrastructure for edge computing which will enable high performance, high availability, security and reduce latency.

Akarino Test Group Information

Not Applicable

Overall Test Architecture

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

- 1 Node - ELIOT Manager
- 1 Node - ELIOT Edge Node (uCPE)

Both nodes are running on Virtual Machine - Cent OS 7.5 version.

In Release 1.0 Test Environment was :-

- ELIOT Cluster with Kubernetes on Ubuntu OS 16.04

In Release 2.0 Test Environment was :-

- ELIOT Cluster with Kubernetes on Cent OS 7.5

In Release 3.0 Test Environment is :-

- ELIOT Cluster with Kubernetes on Cent OS 7.5

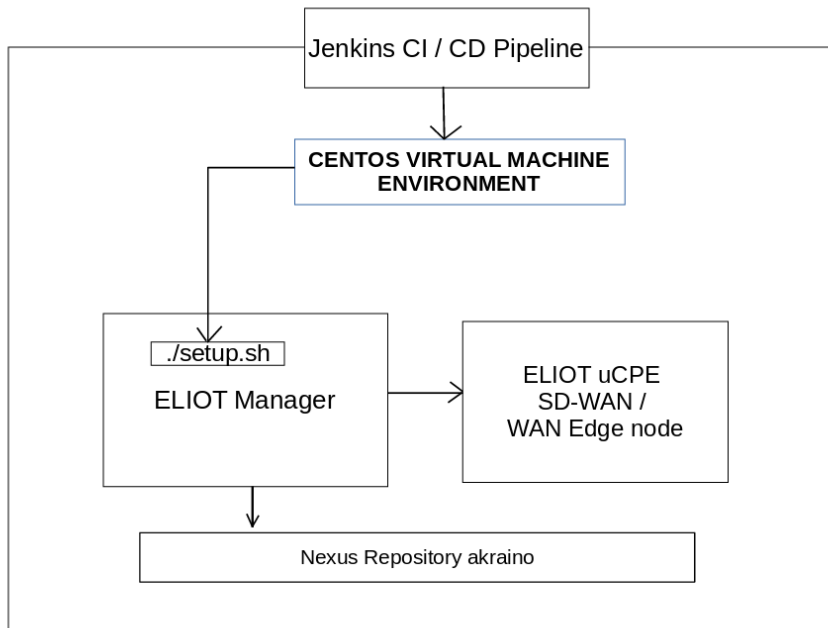
Test Environment Topology

The Test Environment consists of one topology :

- ELIOT topology with Kubernetes Cluster on Cent OS Virtual Machines for ELIOT Manager and ELIOT Edge Node.

In ELIOT Manager the setup.sh is executed which internally installs docker ,k8s and tests k8s deployment by deploying nginx on ELIOT Edge Node

In ELIOT Manager Docker, K8S is installed and in ELIOT Edge Docker is installed.



CI Details

For CI , SD-WAN / WAN Edge / uCPE Blueprint is using Akraino Community Jenkins Server.

For CD, SD-WAN / WAN Edge / uCPE 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 - SD-WAN / WAN Edge / uCPE cluster.
- Upload the job log to Nexus server in post-build actions

Traffic Generator

N/A

Test API description

The Test cases in Release 3.0 remains same as Release 2.0; the verification is to check setup of ELIOT Cluster on Cent OS.

In this version BluVal and Security Sub-Committee mandatory test cases is integrated with the ELIOT CD environment and the logs are pushed to the Akraino Nexus Repository.

ELIOT Platform Test

Test Case 1: Test Kubernetes cluster check.

Test Input :

Execute the bootstrap script to setup the ELIOT Platform

Test Procedure:

```
root@akraino-slave-001:~# cd eliot/blueprints/ucpe/scripts
```

```
root@akraino-slave-001:~# source setup.sh
```

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

NAME	STATUS	ROLES	AGE	VERSION
------	--------	-------	-----	---------

akraino-slave-0001	Ready	master	18h	v1.16.0
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akraino-slave-0002	Ready	<none>	18h	v1.16.0
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Test Case 2:

The Test inputs

There should be a nginx.yaml configuration files which is used for deploying the Nginx on ELIOT Edge Node.

Test Procedure

The setup.sh script will deploy nginx server in the ELIOT Edge Node after Kubernetes Installation.

Expected output

It will check nginx deployment and result the details in the log.

Test Results

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

NAME	READY	STATUS	RESTARTS	AGE
------	-------	--------	----------	-----

nginx-deployment-74d48dbfb8-kvx9q	1/1	Running	0	18h
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CI/CD Logs:

Nexus Repo Path:-

<https://nexus.akraino.org/content/sites/logs/huawei/blueprints/uCPE/job/eliot-uCPE-deploy-k8s-centos-virtual-daily-master/357/>

Blueprint Validation tests

Integrated with Blu-Val validation tools

1. For K8S layer

- Sonobuoy
- Kube-Hunter

2. For OS Layer

- Vuls
- Lyns

Nexus Repo Path:-

<https://nexus.akraino.org/content/sites/logs/huawei/blueprints/uCPE/job/eliot-uCPE-deploy-k8s-centos-virtual-daily-master/357/results/>

K8S LAYER MANDATORY TESTS

1.1 Conformance Test:

(New Test Case)

Test Execution Step :

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

Test Result :

All Test cases are passed.

CI / CD Logs

Logs are pushed in nexus repo:-

<https://nexus.akraino.org/content/sites/logs/huawei/blueprints/uCPE/job/eliot-uCPE-deploy-k8s-centos-virtual-daily-master/357/results/k8s/conformance/>

1.2 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/uCPE/job/eliot-uCPE-deploy-k8s-centos-virtual-daily-master/357/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/uCPE/job/eliot-uCPE-deploy-k8s-centos-virtual-daily-master/357/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/uCPE/job/eliot-uCPE-deploy-k8s-centos-virtual-daily-master/357/results/os/vuls/>

Feature Project Tests

Work In Progress

Test Dashboards

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

Total Tests	Test Executed	Pass	Fail	In Progress
4	4	4	0	

Additional Testing

N/A

Bottlenecks/Errata

N/A