REC Test Document

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Introduction

REC Blueprint is deployed and validated in Nokia Espoo and AT&T Middletown Radio Edge Cloud Validation Labs. Deployment of REC and test cases have been run automatically with different clusters such as Nokia OpenEdge, Dell and HP Gen 10. REC feature testing is based on Cloud TAF (Test Automation Framework), which tests basic k8s features. Results of deployments and testing are publicly available in LF Akraino nexus servers.

Overall Test Architecture

Test Bed

Five server cluster with REC software, as described in Radio Edge Cloud Validation Lab

Test Framework

Cloud TAF, robot based test framework for REC [https://gerrit.akraino.org/r/gitweb?p=ta%2Fcloudtaf.git;a=summary](https://gerrit.akraino.org/r/gitweb?p=ta%2Fcloudtaf.git;a=summary) Note that this Gerrit link is authoritative. In the event of discrepancies between this wiki page and Gerrit, Gerrit is correct. There is no mechanism for automatically updating this wiki page when tests are added to the test suite and no commitment on the part of the developers to do double entry of test cases. The testcases are located in *.robot files in the aptly named "testcases" subdirectory of the cloudtaf repository. The Jenkins servers clone the cloudtaf repo from Gerrit and run whatever tests are contained in it at that time.

Traffic Generator

N/A

Test API description

Test suites:
- post-install (8 test cases)
- kube-namespace (1 test case)
- kube-service (1 test case)
- smoke-tests (6 test cases)
- pm-supports (2 test cases)

Test cases:

<table>
<thead>
<tr>
<th>#</th>
<th>Test suite</th>
<th>Test case</th>
<th>Short description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td>Verify Image Build Number</td>
<td>Show Build number.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Verify Docker Version</td>
<td>Check version of the installed docker (needed Docker version 19.03.3)</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Verify Kubernetes Clusters</td>
<td>Check pods’ status in kube-system namespace. All pod needs to be in “Running” state.</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Verify State of required services</td>
<td>Check the services are running and active. Checked services: docker.service, kubelet.service</td>
</tr>
</tbody>
</table>
Verify Node Functionality
Checks the state of the nodes. All nodes need to be in “Ready” state.

Verify Package Manager Status
Try to pull caas/hypercube from common(?!) repository. Verify the pull is in success and image is up to date.

Verify Helm Caas Infra Status
Check helm status. Caas-infra helm chart execution status needs to be “DEPLOYED”

Verify creating and testing Namespaces
Create “test-ns” namespace. Create a pod from nginx image in test-ns namespace. Verify the pod is created. Check the pod is created in test-ns namespace. Delete the created pod and namespace.

Verify creating and testing services
Create pod from nginx image. Create a service what contains the previously created pod, and targets TCP port 80 to the pod’s TCP port 80. Verify that the nginx is reachable on TCP port 80. Delete the created service and pod.

Verify all the nodes names. Verify database: cluster size needs to be 3 (wsrep_cluster_size).

Reboot the VIP(?) node. Verify the restart same as ‘Verify Cluster Config Management’ test case.

Stop one of the databases. Check database: cluster size needs to be 2.
Start a database node. Check database: cluster size needs to be 3.
Create a user with all-roles.
Create a user with no roles.
Verify all the sudo-“node” user. All need to be root user.
Verify ‘remotescript-default’ command execution.
Check resource usage of the nodes (kubectl top node).
Check kubectl api metrics (kubectl api-versions | grep metrics). Printout needs to be contain "custom.metrics.k8s.io/v1beta1" and "metrics.k8s.io/v1beta1".

Test execution logs: https://nexus.akraino.org/content/sites/logs/att/job/Cloudtaf_test_suite_Middletown_OE1/ or https://nexus.akraino.org/content/sites/logs/nokia/job/Cloudtaf_test_suite_Espoo_OE/

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

<table>
<thead>
<tr>
<th>Total Tests</th>
<th>Test Executed</th>
<th>Pass</th>
<th>Fail</th>
<th>In Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>18</td>
<td>18</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Additional Testing
ORAN RIC applications are installed after each REC deployment using Jenkins and results are pushed to LF nexus https://nexus.akraino.org/content/sites/logs/att/job/Install_RIC_on_OpenEdge1/

Bottlenecks/Errata