Task 1-2-3 OAI Deployment & Test

NS Instances

Name | Identifier | Nsd name | Operational Status | Config Status | Detailed Status
--- | --- | --- | --- | --- | ---
Sgcore_panther_team5 | cf9f811e-7076-4cde-ab63-15241ce70782 | oai_cn5g_ns | ✔ | ✔ | ✔

ubuntuhackfest-microk8s-5:~$ kubectl -n $NS get pod
NAME         READY STATUS     RESTARTS AGE
modeloperator-f7767c8fc-gdmh8   1/1 Running 0 10m
smf-0        3/3 Running 0 9m32s
db-0         2/2 Running 0 9m26s
nr-ue-0      3/3 Running 0 9m26s
nrf-0        3/3 Running 0 9n12s
gnb-0        3/3 Running 0 9n25
spgwu-tiny-0 3/3 Running 0 8n52s
smf-0        3/3 Running 0 8m42s

ubuntuhackfest-microk8s-5:~$ kubectl -n $NS logs spgwu-tiny-0 -c spgwu-tiny | grep 'Received SX HEARTBEAT REQUEST'
48

ubuntuhackfest-microk8s-5:~$ kubectl -n $NS logs smf-0 -c smf | grep 'Received N4'
2021-09-17T10:21:44.477Z [oai_smf] [2021-09-17T10:21:44.447192] [smf] [smf_n4 ] [info ] Received N4 ASSOCIATION SETUP RESPONSE from an UP
2021-09-17T10:21:44.477Z [oai_smf] [2021-09-17T10:21:44.447212] [smf] [smf_n4 ] [info ] Received N4 ASSOCIATION SETUP RESPONSE

ubuntuhackfest-microk8s-5:~$
Task 1-2-3 OAI Deployment & Test

- **Functionality Test**
- `kubectl -n $NS logs spgwu-tiny-0 -c spgwu-tiny | grep 'Received SX HEARTBEAT REQUEST' | wc -l`
- `kubectl -n $NS logs smf-0 -c smf | grep 'Received N4'`
- `kubectl -n $NS exec -it nr-ue-0 -c nr-ue -- sh`
- `root@nr-ue-0:/opt/oai-nr-ue# ping -c4 google.com`

- PING google.com (142.250.179.142) 56(84) bytes of data.
- 64 bytes from ams17s10-in-f14.1e100.net (142.250.179.142): icmp_seq=1 ttl=107 time=58.1 ms
- 64 bytes from ams17s10-in-f14.1e100.net (142.250.179.142): icmp_seq=2 ttl=107 time=58.3 ms
### Model 1 (Cloud/Region): cloud-d3821316-79ed-4393-b77d-4fd5b023bc0b/ default

<table>
<thead>
<tr>
<th>App</th>
<th>Status</th>
<th>Scale</th>
<th>Charm</th>
<th>Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>amf</td>
<td>active</td>
<td>1</td>
<td>oai-amf</td>
<td>local</td>
</tr>
<tr>
<td>db</td>
<td>active</td>
<td>1</td>
<td>oai-db</td>
<td>local</td>
</tr>
<tr>
<td>gnb</td>
<td>active</td>
<td>1</td>
<td>oai-gnb</td>
<td>local</td>
</tr>
<tr>
<td>nr-ue</td>
<td>active</td>
<td>1</td>
<td>oai-nr-ue</td>
<td>local</td>
</tr>
<tr>
<td>nrf</td>
<td>active</td>
<td>1</td>
<td>oai-nrf</td>
<td>local</td>
</tr>
<tr>
<td>smf</td>
<td>active</td>
<td>1</td>
<td>oai-smf</td>
<td>local</td>
</tr>
<tr>
<td>spgwu-tiny</td>
<td>active</td>
<td>1</td>
<td>oai-spgwu-tiny</td>
<td>local</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit</th>
<th>Workload</th>
<th>Agent</th>
<th>Machine</th>
<th>Public Address / Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>amf/0 (Leader)</td>
<td>active</td>
<td>idle</td>
<td>-</td>
<td>10.1.230.12</td>
</tr>
<tr>
<td>db/0 (Leader)</td>
<td>active</td>
<td>idle</td>
<td>-</td>
<td>10.1.230.57</td>
</tr>
<tr>
<td>gnb/0 (Leader)</td>
<td>active</td>
<td>idle</td>
<td>-</td>
<td>10.1.230.63</td>
</tr>
<tr>
<td>nr-ue/0 (Leader)</td>
<td>active</td>
<td>idle</td>
<td>-</td>
<td>10.1.230.6</td>
</tr>
<tr>
<td>nrf/0 (Leader)</td>
<td>active</td>
<td>idle</td>
<td>-</td>
<td>10.1.230.58</td>
</tr>
<tr>
<td>smf/0 (Leader)</td>
<td>active</td>
<td>idle</td>
<td>-</td>
<td>10.1.230.34</td>
</tr>
<tr>
<td>spgwu-tiny/0 (Leader)</td>
<td>active</td>
<td>idle</td>
<td>-</td>
<td>10.1.230.34</td>
</tr>
</tbody>
</table>
Task 4 Service Restart Action

Execute stoptcpdump action on amf application

Execute starttcpdump action on amf application

def _on_starttcpdump_action(self, event):
    try:
        self._start_service("tcpdump", "tcpdump")
        event.set_results({
            "output": f"tcpdump started successfully"
        })
    except Exception as e:
        event.fail(f"Start tcpdump action failed with the following exception: {e}")

def _on_stoptcpdump_action(self, event):
    try:
        self._stop_service("tcpdump", "tcpdump")
        event.set_results({
            "output": f"tcpdump stopped successfully"
        })
    except Exception as e:
        event.fail(f"Stop tcpdump action failed with the following exception: {e}")
Task 5 Scale up Operation

https://ui.172.21.18.15.nip.io/login

df:
  - id: default-df
    kdu-resource-profile:
      - id: amf-scale
        kdu-name: native-kdu
        resource-name: amf
        min-number-of-instances: 1
        max-number-of-instances: 5
      - id: smf-scale
        kdu-name: native-kdu
        resource-name: smf
        min-number-of-instances: 1
        max-number-of-instances: 5
      - id: nrf-scale
        kdu-name: native-kdu
        resource-name: nrf
        min-number-of-instances: 1
        max-number-of-instances: 5
      - id: gnb-scale
        kdu-name: native-kdu
        resource-name: gnb
        min-number-of-instances: 1
        max-number-of-instances: 5
Task 5 gNB Scale up Operation

kubectl -n $NS logs amf-0 -c amf

kubect1 -n $NS logs amf-0 -c amf
Task 6 Api Version Upgrade

- NRF Api version Change in NRF application

```python
#Custom action
def _on_changeapiversion_action(self, event):
    try:
        container = self.unit.get_container(self.container_name)
        config = container.pull('/openair-nrf/etc/nrf.conf').read()
        if 'v1' in config:
            newconfig = config.replace('v1', 'v2')
            container.push('/openair-nrf/etc/nrf.conf', newconfig)
            event.set_results({ "output": f"nrf api version updated successfully" })
        else:
            event.set_results({"output": f"nrf api version not updated"})
    except Exception as e:
        event.fail(f"update action failed with the following exception: {e}")
```
Task 6 Api Version Upgrade

- NRF Api version Change in NRF application

```
ubuntu@hackfest-team-5:~$ osm ns-op-list 5gcore_panther_team5

<table>
<thead>
<tr>
<th>id</th>
<th>operation</th>
<th>action_name</th>
<th>status</th>
<th>date</th>
<th>detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>deae1c94-c52c-4341-8fee-298ada80d299</td>
<td>instantiate</td>
<td>N/A</td>
<td>COMPLETED</td>
<td>2021-09-17T0:52:12</td>
<td>-</td>
</tr>
<tr>
<td>fcb9a54d-dd63-47b7-8788-89101edff12</td>
<td>scale</td>
<td>N/A</td>
<td>COMPLETED</td>
<td>2021-09-17T0:58:18</td>
<td>-</td>
</tr>
<tr>
<td>27b4b433-4e7e-4388-8d11-71921442706a</td>
<td>action</td>
<td>stoptcpdump</td>
<td>COMPLETED</td>
<td>2021-09-17T1:57:56</td>
<td>-</td>
</tr>
<tr>
<td>4da63117-0c30-4d43-8f82-1e9e9bc3e84e</td>
<td>action</td>
<td>changeapiversion</td>
<td>COMPLETED</td>
<td>2021-09-17T13:17:28</td>
<td>-</td>
</tr>
</tbody>
</table>
```

```
NRF =
{
  INSTANCE = Q;
  # Q is the default
  PID_DIRECTORY = "/var/run";
  # /var/run is the default

  SBI_INTERFACE :
  {
    # NRF bound interface for SBI interface (e.g., communication with other Nf, e.g., AMF, SMF)
    INTERFACE_NAME = "eth0";
    # YOUR NETWORK CONFIG HERE
    IP4_ADDR = "192.168.1.1";
    PORT = 88;
    # YOUR NETWORK CONFIG HERE (default: 88)
    API_VERSION = "v1";
    # YOUR NRF API VERSION CONFIG HERE
  }
};
```
Difficulties

- Upgraded Juju version
- Can not execute subprocess command in the core network containers
Panther Team

- Tolga Golelcin
- Fatih Ozer
- Atul Agarwal
- Gulsum Atici
- Mehmet Emin Başar
- Mégane Gammoudi

- Thanks to Panther team !
- Thanks to David, Endika, Maciej, Silvia, Gerardo .... for great support.