

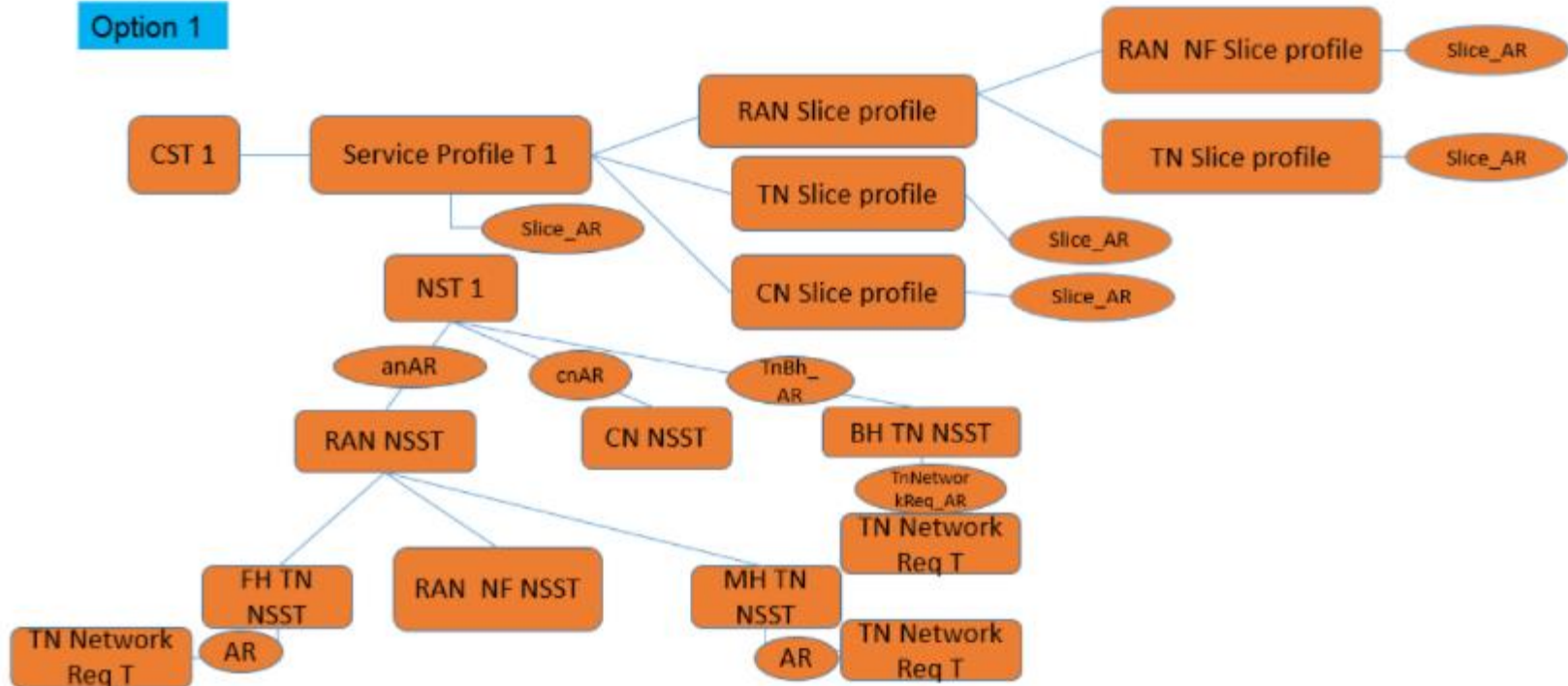
E2E Network Slicing use case : Honolulu Demo sequences

Participants: CMCC, Wipro, Huawei, AT&T, IBM, LTTS, DT, TIM, QCT, Amdocs, Tech Mahindra, Reliance Jio, Tencent, China Telecom, highstreet technologies

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E2E Network Slicing Option1 – SDC Templates

Template design for Option1 is as follows:



Demo sequence – Scenario 1 – New E2E Slice

Creation of new communication service - shareable

The screenshot shows a web browser window with the URL `https://localhost:30283/ui/usecaseui/#/services/slicing-management`. A modal dialog titled "Create Communication Service" is displayed. The dialog contains the following fields and options:

- Communication Service Name :
- Max Number of UEs :
- Data Rate Uplink (Mbps) :
- Data Rate Downlink (Mbps) :
- Latency :
- Resource Sharing Level : Shared Non-shared
- Mobility :
- Area :
- Coverage Area Number :

A tooltip labeled "Scope: 10-200" is visible near the Resource Sharing Level options. The dialog has "Cancel" and "OK" buttons at the bottom right. The background shows a sidebar with menu items like Home, Customer, Services, Lifecycle Management, SOTN Flow, Policy Management, Package Management, Network Topology, and Monitor.

Demo sequence – New E2E Slice

Service Requirements and NST selection

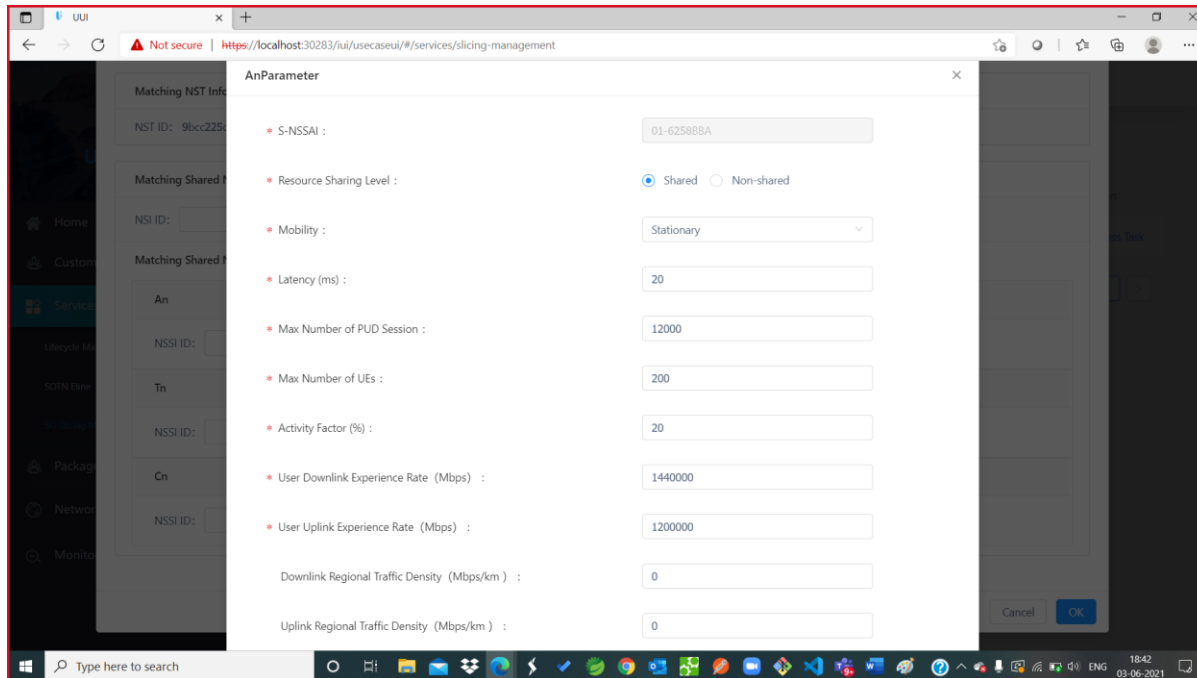
The screenshot shows a web browser window with the URL <https://localhost:30283/nu/usecaseui/#/services/slicing-management>. The main content area displays the configuration for a new e2eSlice, titled 'e2eSlice-new'. The configuration is organized into three sections:

- Configuration Audit Detail:**
 - Task ID: 644241ab-fe7d-4866-be1a-a1ab33ad29ef
 - Task Name: SliceServiceTask
 - S-NSSAI: 01-62588BA
 - Arrived Time: 2021-06-03 18:39:49
 - Status: WaitingToConfirm
- Business Requirement Information:**
 - Slicing Business Name: e2eSlice-new
 - S-NSSAI: 01-62588BA
 - Data Rate Downlink (Mbps): 1440000
 - Data Rate Uplink (Mbps): 1200000
 - Mobility: stationary
 - Latency (ms): 40
 - Use Interval (Month): 20
 - Activity Factor (%): 20
 - Resource Sharing Level: shared
 - Max Number of UEs: 200
 - Availability: 0.0
 - Uplink throughput per UE: 100
 - Downlink throughput per UE: 120
 - Uplink throughput per network slice: 1200000
 - Downlink throughput per network slice: 1440000
 - Maximum packet size: 0
 - Maximum Number of Connections: 12000
 - Terminal density: 0
- Matching NST Information:**
 - NST ID: 9bcc225d-b54f-4718-a3cb-468e31fa7550
 - NST Name: NST01

The 'Area' field is populated with three options: Haidian District - Beijing - Beijing, Xicheng District - Beijing - Beijing, and Changping District - Beijing - Beijing.

Demo sequence – New E2E Slice

AN Slice Profile returned from OOF as part of NSI selection



Demo sequence – New E2E Slice

CN Slice Profile returned from OOF as part of NSI selection

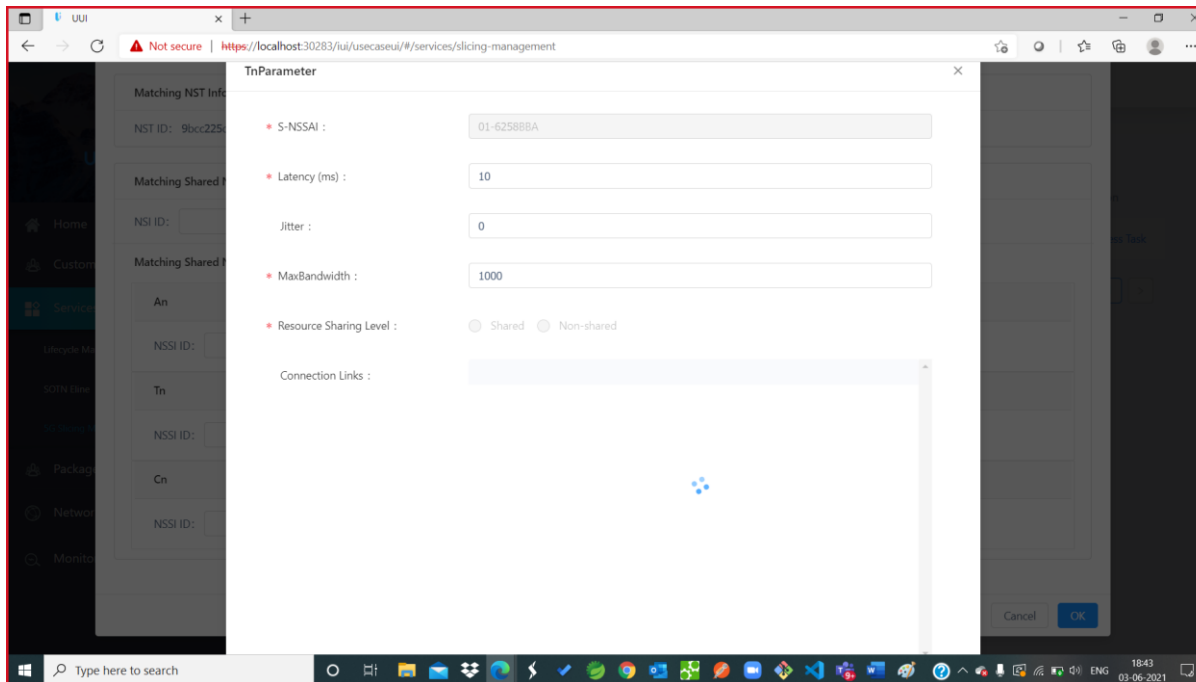
The screenshot shows a web browser window with a 'CnParameter' dialog box open. The dialog box is titled 'CnParameter' and contains the following fields and options:

- S-NSSAI : 01-6258B8A
- Resource Sharing Level : Shared Non-shared
- Mobility : Stationary
- Latency (ms) : 5
- Max Number of UEs : 200
- Activity Factor (%) : 20
- User Downlink Experience Rate (Mbps) : 0
- User UpLink Experience Rate (Mbps) : 0
- Downlink Regional Traffic Density (Mbps/km) : 0
- Uplink Regional Traffic Density (Mbps/km) : 0
- Script Name : ScriptName

The 'User UpLink Experience Rate (Mbps)' field is highlighted with a blue border. The dialog box has 'Cancel' and 'OK' buttons at the bottom right. The browser address bar shows 'https://localhost:30283/ui/usecaseui/#/services/slicing-management'.

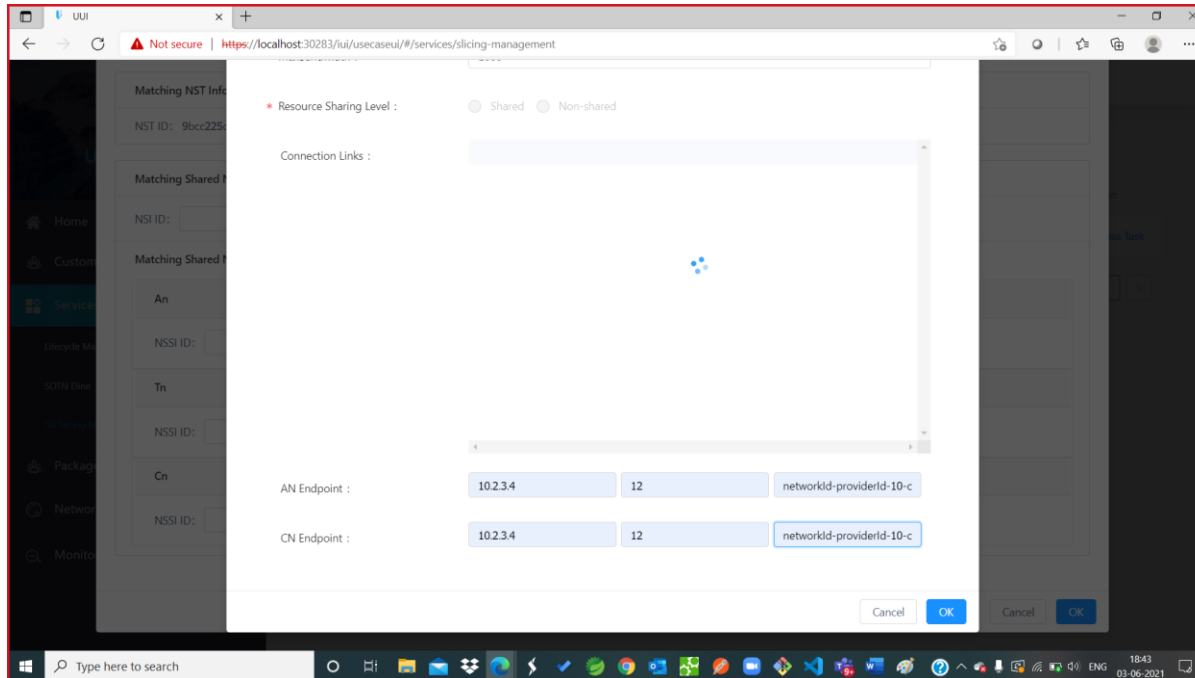
Demo sequence – New E2E Slice

TN Slice Profile returned from OOF as part of NSI selection



Demo sequence – New E2E Slice

AN & CN endpoints update to TN NSSMF



Demo sequence – New E2E Slice

Slice creation progress – AN, CN, TN subnets

The screenshot displays a web browser window with the URL `https://localhost:30283/ui/usecaseui/#/services/slicing-management`. The interface is titled "Slice creation progress" and shows various configuration parameters for a network slice. The parameters are organized into a grid:

Data Rate Uplink (Mbps) : 1200000	Mobility : stationary	Latency (ms) : 40
Use Interval (Month) : 20	Activity Factor (%) : 20	Resource Sharing Level : shared
Max Number of UEs : 200	Availability : 0.0	Uplink throughput per UE : 100
Downlink throughput per UE : 120	Uplink throughput per network slice : 1200000	Downlink throughput per network slice : 1440000
Maximum packet size : 0	Maximum Number of Connections : 12000	Terminal density : 0

Below the parameters, there is an "Area" selection section with three buttons: "Beijing - Beijing - Haidian District", "Beijing - Beijing - Xicheng District", and "Beijing - Beijing - Changping District".

The "Matching NST Information:" section shows:

- NST ID : 9bcc225d-b54f-4718-a3cb-468e31fa7550
- NST Name : NSTO1

The "Task Detail:" section shows a progress bar for three subnets:

- An: _____
- Tn: _____
- Cn: _____

An "OK" button is visible at the bottom right of the interface. The Windows taskbar at the bottom shows the time as 18:52 on 03-06-2021.

Demo sequence – New E2E Slice

Newly created NSI

The screenshot displays a web application interface for managing network slices. The browser address bar shows the URL: `https://localhost:30283/ui/usecaseui/#/services/slicing-management`. The interface includes a sidebar with navigation options: Home, Customer, Services (highlighted), Lifecycle Management, SOTN Eline, 5G Slicing Management, Package Management, Network Topology, and Monitor. The main content area is titled 'Slicing Instance Management' and features a table of service instances. A dropdown menu for 'Status' is set to 'All'. The table contains one entry:

Service Instance Id	Service Instance Name	Service Type	Status	Detail
236e99a3-f3df-41df-b2f6-530d8f4554e4	nsi_e2eSlice-new	embb	deactivated	View Detail

Below the table, there is a pagination control showing '10/ page' and a page indicator '1'.

Demo sequence – New E2E Slice

New Slice instance along with AN, CN, TN NSSIs

The screenshot displays a web application interface with a 'Detail' modal window. The modal contains two tables:

Related Slicing Business List :

Service Instance Id	Service Instance Name	Service Type	S-NSSAI	Status	Detail
aaada055-0c75-4b73-9caf-e2812237b78f	e2eSlice-new	emb	01-62588BA	deactivated	View Detail

Related Slicing NSSI List :

Service Instance Id	Service Instance Name	Service Type	Context	Status	Detail
f9bc5472-d675-4b55-94b7-0c0b6aae6f55	nssi_ane2eSlice-new	emb	01-62588BA	deactivated	View Detail
d9f8ae62-b409-45a7-9549-2a3f60acf64e	nssi_tne2eSlice-new	emb	tn	deactivated	View Detail
NSSI-C-6ZH-HDBNJ-NSSMF-01-A-ZX	nssi_cne2eSlice-new	emb	cn	deactivated	View Detail

Demo sequence - Scenario 2 – Shared E2E Slice

Service Requirements along with selected NST & suitable NSI for sharing

The screenshot shows a web browser window with the URL `https://localhost:30283/ui/asecaseui/#/services/slicing-management`. The page title is `e2eSlice-shared`. The content is organized into several sections:

- Configuration Audit Detail:**
 - Task ID: 9a4042e5-acc4-41ba-be3a-59af6f86c7d4
 - Task Name: SliceServiceTask
 - S-NSSAI: 01-78f2f8f7
 - Arrived Time: 2021-06-03 18:56:42
 - Status: WaitingToConfirm
- Business Requirement Information:**
 - Slicing Business Name: e2eSlice-shared
 - S-NSSAI: 01-78f2f8f7
 - Data Rate Downlink (Mbps): 1920000
 - Data Rate Uplink (Mbps): 1600000
 - Mobility: stationary
 - Latency (ms): 40
 - Use Interval (Month): 20
 - Activity Factor (%): 20
 - Resource Sharing Level: shared
 - Max Number of UEs: 200
 - Availability: 0.0
 - Uplink throughput per UE: 100
 - Downlink throughput per UE: 120
 - Uplink throughput per network slice: 1600000
 - Downlink throughput per network slice: 1920000
 - Maximum packet size: 0
 - Maximum Number of Connections: 12000
 - Terminal density: 0
- Area:** Haidian District - Beijing - Beijing | Xicheng District - Beijing - Beijing | Changping District - Beijing - Beijing
- Matching NST Information:**
 - NST ID: 9bcc225d-b54f-47f8-a3cb-468e31fa7550
 - NST Name: NSTO1
- Matching Shared NSI:**
 - NSI ID: 236e99a3-f3df-41df-b2f6-530d8f4554e4
 - NSI Name: nsi_e2eSlice-new

The browser's taskbar at the bottom shows the system time as 18:57 on 03-06-2021.

Demo sequence – Shared E2E Slice

Subnets shareability: AN NSSI (shared), TN-BH NSSI (shared), CN NSSI (non-shared)

The screenshot displays a web application interface for 'Use case ui' at the URL <https://localhost:30283/ui/usecaseui/#/services/slicing-management>. The interface is divided into a left sidebar with navigation options (Home, Customer, Services, Lifecycle Management, SOTN flow, No-Config Management, Package Management, Network Topology, Monitor) and a main content area. The main content area contains two tables:

Related Slicing Business List :

Service Instance Id	Service Instance Name	Service Type	S-NSSAI	Status	Detail
aaad055-0c75-4b73-9caf-e2812237b78f	e2eSlice-new	emb	01-62588BA	deactivated	View Detail
775112d7-b7af-4f6d-bfd5-8a63ea01fd94	e2eSlice-shared	emb	01-78F2FBF7	deactivated	View Detail

Related Slicing NSSI List :

Service Instance Id	Service Instance Name	Service Type	Context	Status	Detail
c666f61e-10a8-4636-b38f-5cb94dabe76d	nssi_tne2eSlice-shared	emb	tn	deactivated	View Detail
NSSI-C-057-HDBNU-NSSMF-01-A-ZX	nssi_cne2eSlice-shared	emb	cn	deactivated	View Detail
f9bc5472-d675-4b55-94b7-0c0b6aee6f55	nssi_ane2eSlice-new	emb	01-62588BA	deactivated	View Detail
d9f8ae62-b409-45a7-9549-2a3f60ac164e	nssi_tne2eSlice-new	emb	tn	deactivated	View Detail
NSSI-C-6ZH-HDBNU-NSSMF-01-A-ZX	nssi_cne2eSlice-new	emb	cn	deactivated	View Detail

The interface also shows a search bar at the bottom left and a taskbar at the bottom with the system clock indicating 19:11 on 03-06-2021.

Demo sequence – Shared E2E Slice

RAN NSSI Constituents: RAN NF NSSI (shared), TN-FH NSSI (shared), TN-MH NSSI (shared)

The screenshot shows a web browser window with a URL of `https://localhost:30283/#!/usecaseui/#/services/slicing-management`. A 'Detail' modal window is open, displaying a table titled 'Related Slicing Nsi List'. The table has five columns: Service Instance Id, Service Instance Name, Service Type, Status, and Detail. The table contains six rows of data, with the last two rows highlighted in light blue.

Service Instance Id	Service Instance Name	Service Type	Status	Detail
42a871cc-4fc2-4dd5-93bc-ct870cc26426	nsi_e2eService-new	embb	deactivated	View Detail
701bf55d-484d-4290-a0cb-e738b1bcaafc	an_e2eService-new	embb	deactivated	View Detail
1f51812e-f3ca-47db-9df4-c44a924a2b8d	an_e2eService-shared	embb	deactivated	View Detail
6f9df44d-8f6f-f1c9-b5a3-2cc77390:807	nsi_RAN_NF_NSST	embb	deactivated	View Detail
07995a88-3d8a-4ab1-b7c9-956a93e5a73e	nsi_TN_FH_NSST	embb	modified	View Detail
451beec9-bbdd-4b67-a10d-69b764e2fdb1	nsi_TN_MH_NSST	embb	modified	View Detail

Demo sequence – Shared E2E Slice

AN, CN, TN Subnets' progress

The screenshot displays a web application interface for service slicing management. The browser address bar shows the URL `https://localhost:30283/ui/usecaseui/#/services/slicing-management`. The page content is as follows:

Arrived Time: 2021-06-04 12:10:59 Status: Completed

Business Requirement Information:

Slicing Business Name: eZeservice-shared	S-NSSAI: 01-1ASD3409	Data Rate Downlink (Mbps): 1440000
Data Rate Uplink (Mbps): 1200000	Mobility: stationary	Latency (ms): 40
Use Interval (Month): 20	Activity Factor (%): 20	Resource Sharing Level: shared
Max Number of UEs: 200	Availability: 0.0	Uplink throughput per UE: 100
Downlink throughput per UE: 120	Uplink throughput per network slice: 1200000	Downlink throughput per network slice: 1440000
Maximum packet size: 0	Maximum Number of Connections: 12000	Terminal density: 0

Area: Beijing - Beijing - Haidian District Beijing - Beijing - Xicheng District Beijing - Beijing - Changping District

Matching NST Information:

NST ID: 9bcc225d-b54f-4718-a3cb-468e31fa7550 NST Name: NST01

Task Detail:

An _____ _____

Tn _____ _____

Cn _____ _____

Demo sequence – Closed Loop

PM data received at DCAE – Slice Analysis MS

```
ctId=15826, pmData={PrbUsedDl=72, PrbUsedUl=62}], MeasurementObject [measurementObjectId=13999, pmData={PrbUsedDl=74, PrbUsedUl=64}], MeasurementObject [meas
urementObjectId=14000, pmData={PrbUsedDl=77, PrbUsedUl=67}]]]
06:18:08.222 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getKey MeasuredObject: 01-66645DC8
06:18:08.222 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getKey NetworkFunction: 220
06:18:08.222 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getValue queu: [[MeasurementObject [measurementObjectId=15825, pmData={PrbUsedDl=70, Prb
UsedUl=60}]]]
06:18:09.232 [Thread-8] INFO o.o.s.a.ms.service.PmThread - New PM notification
06:18:09.239 [Thread-8] INFO o.o.s.a.ms.service.PmEventProcessor - Processed Event: {01-66645DC8=[MeasurementObject [measurementObjectId=15825, pmData={PrbU
sedDl=71, PrbUsedUl=61}]]}
06:18:09.239 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - putDataToQueue
06:18:09.239 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getKey MeasuredObject: 01-66645DC8
06:18:09.239 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getKey NetworkFunction: 110
06:18:09.239 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getValue queu: [[MeasurementObject [measurementObjectId=15289, pmData={PrbUsedDl=81, Prb
UsedUl=71}], MeasurementObject [measurementObjectId=15290, pmData={PrbUsedDl=83, PrbUsedUl=73}], MeasurementObject [measurementObjectId=15296, pmData={PrbUse
dDl=86, PrbUsedUl=76}]]]
06:18:09.239 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getKey MeasuredObject: 01-66645DC8
06:18:09.239 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getKey NetworkFunction: 330
06:18:09.239 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getValue queu: [[MeasurementObject [measurementObjectId=15826, pmData={PrbUsedDl=70, Prb
UsedUl=60}], MeasurementObject [measurementObjectId=13999, pmData={PrbUsedDl=72, PrbUsedUl=62}], MeasurementObject [measurementObjectId=14000, pmData={PrbUse
dDl=75, PrbUsedUl=65}]], [MeasurementObject [measurementObjectId=15826, pmData={PrbUsedDl=71, PrbUsedUl=61}], MeasurementObject [measurementObjectId=13999, p
mData={PrbUsedDl=73, PrbUsedUl=63}], MeasurementObject [measurementObjectId=14000, pmData={PrbUsedDl=76, PrbUsedUl=66}]], [MeasurementObject [measurementObje
ctId=15826, pmData={PrbUsedDl=72, PrbUsedUl=62}], MeasurementObject [measurementObjectId=13999, pmData={PrbUsedDl=74, PrbUsedUl=64}], MeasurementObject [meas
urementObjectId=14000, pmData={PrbUsedDl=77, PrbUsedUl=67}]]]
06:18:09.239 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getKey MeasuredObject: 01-66645DC8
06:18:09.240 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getKey NetworkFunction: 220
06:18:09.240 [Thread-8] INFO o.o.s.a.ms.service.PmDataQueue - entry.getValue queu: [[MeasurementObject [measurementObjectId=15825, pmData={PrbUsedDl=70, Prb
UsedUl=60}], [MeasurementObject [measurementObjectId=15825, pmData={PrbUsedDl=71, PrbUsedUl=61}]]]
06:18:15.909 [pool-4-thread-4] INFO c.att.nsa.apiClient.http.HttpClient - --> HTTP/1.1 200 OK
06:18:15.910 [pool-3-thread-10] INFO c.att.nsa.apiClient.http.HttpClient - --> HTTP/1.1 200 OK
```

Demo sequence – Closed Loop

Closed Loop triggered – DCAE-Slice Analysis MS

```
81, PrbUsedUL=71}}, MeasurementObject [measurementObjectId=15290, pmData={PrbUsedDL=83, PrbUsedUL=73}}, MeasurementObject [measurementObjectId=15296, pmData={PrbUsedDL=86, PrbUsedUL=76}}, MeasurementObject [measurementObjectId=152825, pmData={PrbUsedDL=70, PrbUsedUL=60}}, MeasurementObject [measurementObjectId=152826, pmData={PrbUsedDL=70, PrbUsedUL=60}}, MeasurementObject [measurementObjectId=13999, pmData={PrbUsedDL=72, PrbUsedUL=62}}, MeasurementObject [measurementObjectId=14000, pmData={PrbUsedDL=75, PrbUsedUL=65}]]
06:18:59.093 [Thread-10] INFO o.o.s.a.m.c.ConfigDbInterfaceService - fetchCurrentConfigurationOfRIC
06:18:59.668 [Thread-10] INFO o.o.s.a.m.c.ConfigDbInterfaceService - fetchCurrentConfigurationOfRIC: {data={nearRTRICId=11, dlThptPerSlice=384, ulThptPerSlice=320}}
06:18:59.668 [Thread-10] INFO o.o.s.a.m.c.ConfigDbInterfaceService - responseMap: {11={nearRTRICId=11, dlThptPerSlice=384, ulThptPerSlice=320}}
06:19:00.175 [Thread-10] INFO o.o.s.a.m.s.SnssaiSamplesProcessor - RIC to Cell Mapping for 01-66645DC8 S-NSSAI: {11={13999, 15290, 15296, 14000, 15289, 15826, 15825}}
06:19:00.176 [Thread-10] INFO o.o.s.a.m.s.SnssaiSamplesProcessor - RIC Configuration {11={nearRTRICId=11, dlThptPerSlice=384, ulThptPerSlice=320}} and Slice Configuration {maxNumberOfConns=null, dlThptPerSlice=19, ulThptPerSlice=16}
06:19:00.176 [Thread-10] INFO o.o.s.a.m.s.SnssaiSamplesProcessor - PRBs sum computed for RIC {11={PrbUsedDL=537}}
06:19:00.176 [Thread-10] INFO o.o.s.a.m.s.SnssaiSamplesProcessor - Throughput computed for RIC {11={dlThptPerSlice=19}}
06:19:00.176 [Thread-10] INFO o.o.s.a.m.s.SnssaiSamplesProcessor - PRBs sum computed for RIC {11={PrbUsedDL=537, PrbUsedUL=467}}
06:19:00.176 [Thread-10] INFO o.o.s.a.m.s.SnssaiSamplesProcessor - Throughput computed for RIC {11={dlThptPerSlice=19, ulThptPerSlice=16}}
06:19:00.177 [Thread-10] INFO o.o.s.a.ms.service.PolicyService - Policy onset message for S-NSSAI: 01-66645DC8 is {"closedLoopControlName":"ControlLoop-Slicing-116d7b00-dbeb-4d03-8719-d0a658fa735b","closedLoopAlarmStart":1623046740176,"closedLoopEventClient":"microservice.sliceAnalysisMS","closedLoopEventStatus":"ONSET","requestID":"7ef3010a-d3c8-482b-945f-3ab17f80dc44","target":"generic-vnf.vnf-id","payload":{"name":"f4669c4d-c166-423c-b80a-c45e6e52059d","serviceInstanceID":"f4669c4d-c166-423c-b80a-c45e6e52059d","globalSubscriberId":"5GCustomer","subscriptionServiceType":"5G","networkType":"AM","additionalProperties":{"modifyAction":"reconfigure","snssaiList":["01-66645DC8"],"sliceProfileId":"ad9b723d-6cd3-43fd-aa9f-316c65dca133","resourceConfig":{"data":{"nearRTRICId":11,"dlThptPerSlice":19,"ulThptPerSlice":16}},"nsInfo":{"nsName":"","nsId":"baaf6672-36e4-4d26-9a34-dd4c0b30bedb"},"scriptName":"AN"}},"from":"DCAE","version":"1.0.2","target_type":"VNF","AAI":{"vserver.is-closed-loop-disabled":"false","vserver.prov-status":"ACTIVE"},"generic-vnf.vnf-id":"f4669c4d-c166-423c-b80a-c45e6e52059d"}}
06:19:00.279 [pool-12-thread-1] INFO c.a.n.c.c.i.CambriaSimplerBatchPublisher - sending 1 msgs to /events/unauthenticated.DCAE_CL_OUTPUT. 01dest: 101 ms
06:19:00.279 [pool-12-thread-1] INFO c.att.nsa.apiClient.http.HttpClient - POST https://message-router:3905/events/unauthenticated.DCAE_CL_OUTPUT (anonymous)
...
06:19:00.317 [pool-12-thread-1] INFO c.att.nsa.apiClient.http.HttpClient - --> HTTP/1.1 200 OK
06:19:00.317 [pool-12-thread-1] INFO c.a.n.c.c.i.CambriaSimplerBatchPublisher - cambria reply ok (38 ms):{"serverTimeMs":0,"count":1}
06:19:06.286 [pool-2-thread-2] INFO c.a.n.c.c.impl.CambriaConsumerImpl - UEB GET /events/org.onap.dmaap.mr.PERFORMANCE_MEASUREMENTS/sliceanalysisms-cg/sliceanalysisms-cid
06:19:06.287 [pool-2-thread-2] INFO c.att.nsa.apiClient.http.HttpClient - GET https://message-router:3905/events/org.onap.dmaap.mr.PERFORMANCE_MEASUREMENTS/sliceanalysisms-cg/sliceanalysisms-cid (anonymous) ...
06:19:06.287 [pool-3-thread-10] INFO c.a.n.c.c.impl.CambriaConsumerImpl - UEB GET /events/DCAE_CL_RSP/sliceanalysisms-cg/sliceanalysisms-cid
06:19:06.287 [pool-3-thread-10] INFO c.att.nsa.apiClient.http.HttpClient - GET https://message-router:3905/events/DCAE_CL_RSP/sliceanalysisms-cg/sliceanalysisms-cid (anonymous) ...
06:19:06.287 [pool-4-thread-4] INFO c.a.n.c.c.impl.CambriaConsumerImpl - UEB GET /events/unauthenticated.ML_RESPONSE_TOPIC/sliceanalysisms-cg/sliceanalysisms-cid
06:19:06.288 [pool-4-thread-4] INFO c.att.nsa.apiClient.http.HttpClient - GET https://message-router:3905/events/unauthenticated.ML_RESPONSE_TOPIC/sliceanalysisms-cg/sliceanalysisms-cid (anonymous) ...
native@stable-control-04:~$ █
```

Demo sequence – Closed Loop

Policy sending the request to SO for new RAN config data from Slice Analysis MS

```
defy NSSI: set property event/payload={"name":"f4669c4d-c166-423c-b80a-c45e6e52059d","serviceInstanceId":"f4669c4d-c166-423c-b80a-c45e6e52059d","globalSubscriberId":"5GCustomer","subscriptionServiceType":"5G","networkType":"AN","additionalProperties":{"modifyAction":"reconfigure","snssaIList":["01-66645DC8"],"sliceProfileId":"ad9b723d-6cd3-43fd-aa9f-316c65dca133","resourceConfig":{"data":[{"nearRTRICId":11,"dLThptPerSlice":19,"uLThptPerSlice":16}]},"nsIInfo":{"nsIName":"","nsIId":"8a6f146c-b15f-4d87-96f1-76ed26ee6004"},"scriptName":"AN"}}
[2021-06-07T06:22:03.923+00:00]INFO|OperationPartial|Session org.onap.policy.drools-applications.controlloop.common:controller-usecases:1.8.2:usecases| SO.Mo
defy NSSI: start operation attempt 1 for 26f186e3-b517-4fd9-b824-2df026ca4b3b
[2021-06-07T06:22:03.924+00:00]INFO|OperationPartial|Session org.onap.policy.drools-applications.controlloop.common:controller-usecases:1.8.2:usecases| SO.Mo
defy NSSI: set timeout to 1200000ms for 26f186e3-b517-4fd9-b824-2df026ca4b3b
[2021-06-07T06:22:03.924+00:00]INFO|ControlLoopOperationParams|Thread-221| started operation SO.Modify NSSI for 26f186e3-b517-4fd9-b824-2df026ca4b3b
[2021-06-07T06:22:03.924+00:00]INFO|controlLoop|Session org.onap.policy.drools-applications.controlloop.common:controller-usecases:1.8.2:usecases| ControlLo
p-Slicing-116d7b00-dbeb-4d03-8719-d0a658fa735b: operational.modifynssi.EVENT.MANAGER.PROCESS.POLICY.STARTED: Step(actor=SO, operation=Modify NSSI) manager=US
ecasesEventManager(numOnsets=1, numAbatements=0)
[2021-06-07T06:22:03.925+00:00]INFO|OperationPartial|Thread-221| [OUT|REST|http://so.onap:8080/onap/so/infra/3gppservices/v1/modify|]
{"name": "f4669c4d-c166-423c-b80a-c45e6e52059d",
 "serviceInstanceId": "f4669c4d-c166-423c-b80a-c45e6e52059d",
 "globalSubscriberId": "5GCustomer",
 "subscriptionServiceType": "5G",
 "networkType": "AN",
 "additionalProperties": {
  "modifyAction": "reconfigure",
  "snssaIList": [
    "01-66645DC8"
  ],
  "sliceProfileId": "ad9b723d-6cd3-43fd-aa9f-316c65dca133",
  "resourceConfig": {
    "data": [
      {
        "nearRTRICId": 11,
        "dLThptPerSlice": 19,
        "uLThptPerSlice": 16
      }
    ]
  },
  "nsIInfo": {
    "nsIName": "",
    "nsIId": "8a6f146c-b15f-4d87-96f1-76ed26ee6004"
  },
  "scriptName": "AN"
}
```

Demo sequence – Closed Loop

New Configuration applied to Netconf server for the s-NSSAI – 01-66645DC8

Request URL

```
https://localhost:8086/restconf/config/network-topology:network-topology/topology/topology-netconf/node/11/yang-ext:mount/ran-netw
```

Response Body

```
    "configParameter": "dLThptPerSlice",
    "configValue": 50
  }
]
},
{
  "sNssai": "01-66645DC8",
  "status": "INACTIVE",
  "configData": [
    {
      "configParameter": "uLThptPerSlice",
      "configValue": 16
    },
    {
      "configParameter": "dLThptPerSlice",
      "configValue": 19
    }
  ]
}
],
},
{
```

Demo sequence – Closed Loop

Successful response at SO after reconfiguration

```
2021-06-07T06:22:05.232Z | o.o.s.b.common.workflow.service.WorkflowProcessor - [WRKFLOW-RESOURCE]Process ModifySliceSubnet:ad2d03f8-c758-11eb-8586-3a85fda67e2
b RUNNING
2021-06-07T06:22:07.525Z | org.onap.so.bpmn.core.json.JsonUtils - getJsonValue(): the raw value is a String Object=processing
2021-06-07T06:22:07.526Z | org.onap.so.bpmn.core.json.JsonUtils - getJsonValue(): the raw value is NOT a String Object=0
2021-06-07T06:22:09.025Z | org.apache.cxf.interceptor.LoggingInInterceptor - Inbound Message
-----
ID: 14
Address: http://so-bpmn-infra.onap:8081/mso/WorkflowMessage/AsyncSdnrResponse/de649cd3-f317-46d6-8472-7767c43ab686
Encoding: UTF-8
Http-Method: POST
Content-Type: application/json
Headers: {Accept=[application/json,*/*], Authorization=[Basic bXNvX2FkbWluOnBhc3N3b3JkMSQ=], connection=[keep-alive], Content-Length=[178], content-type=[app
lication/json], host=[so-bpmn-infra.onap:8081], user-agent=[Jersey/2.25.1 (HttpURLConnection 11.0.8)], x-ecomp-requestid=[5b43e062-ff5d-4271-bb3f-7cdd08ceb58
c], x-invocationid=[4e2121da-94f7-4508-803f-8900e0bf5fa8], x-onap-partnername=[UNKNOWN], x-onap-requestid=[5b43e062-ff5d-4271-bb3f-7cdd08ceb58c], x-requestid
=[5b43e062-ff5d-4271-bb3f-7cdd08ceb58c], x-transactionid=[5b43e062-ff5d-4271-bb3f-7cdd08ceb58c]}
Payload: {
  "status": "success",
  "reason": {"message": "Successful execution of instantiateRANSlice RPC"},
  "requestId": "de649cd3-f317-46d6-8472-7767c43ab686",
  "action": "reconfigure"
}
```

1. Replace the external Core NSSMF simulator by internal Core NSSMF
 - Internal Core NSSMF is tested for non-shared slice, shared slice scenario need to be tested and yet to do the integration
2. Change the display name (Service Instance Name) for RAN NF NSSI, TN-FH NSSI & TN-MH NSSI
3. Closed Loop flow is shown from PM Mapper to RAN Simulator due to an issue at Data Router. To show the data generation part along with closed loop.
4. Alignment/collaboration with CPS
 - for RAN configuration
 - Coverage Area to Tracking Area mapping
5. AN & CN Endpoints, TN Connection Links Selection enhancements
 - Endpoints should be prepopulated for selection. This enhancement will be taken beyond Istanbul Release
 - TN Connection Links – Connection links fetched from AAI should be populated in UI.

Pending Commits or JIRAs

Below are the commits to consider for trying out the demo. These commits will be available as part of Honolulu maintenance release/ Istanbul release.

SO:

<https://jira.onap.org/browse/SO-3629>

<https://jira.onap.org/browse/SO-3624>

SDN-R:

<https://jira.onap.org/browse/CCSDK-3314>

DCAE:

<https://jira.onap.org/browse/DCAEGEN2-2826>

Policy:

<https://jira.onap.org/browse/POLICY-3369>

OOF:

<https://jira.onap.org/browse/OPTFRA-967>

<https://jira.onap.org/browse/OPTFRA-968>



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