

# U-UI Functional Impacts/Interaction Flows/APIs

## A. Order Service API

This API developed for creating new SOTN Service. It takes configured data of SOTN VPN and Site.

- After configuring when we click on Done Button , it invokes this REST API to get the configured data and send the data to SO for provisioning.
- The API performs the following operation:
- Read the configured data and send the data to SO for provisioning.

**URL:** /api/usecaseui/server/v1/uui-lcm/Sotnservices

**Response:**

```
{
  "service":
  {
    "serviceId": "244be53a-f84a-42e0-8aba-3ff2bf4c7347",
    "operationId": "dd16f580-455e-4 690-969b-2894effd3395"
  }
}
```

1. Prepare the required SOTN VPN and SOTN site information according to the SO model structure.
2. Pushing this model information to SO for provisioning.
3. After receiving the required model SO instantiate the service.

**API internal process:**

1. This API receive the requested data in object format.
2. This API convert data from object to String.
3. Sending the data along with its type.

**Interface definition:**

Interface Definition	Description
Content-Type	application/json
Operation Type	POST
URI	https://{host}:{port}/api/usecaseui/server/v1/uui-lcm/Sotnservices

### • Request Header

Header Name	Req uired?	Description
Accept	N	Determines the format of the body of the response. Valid value is "application/json"
Content-Type	Y	Determines the format of the request content. Only application/json is supported.
Content-Length	N	Number of bytes in the body of the request. Note that content length is limited to 1 MB.
Authorization	N	Supplies Basic Authentication credentials for the request. If the Authorization header is missing, then an HTTP 400 Invalid Request response is returned. If the string supplied is invalid, then an HTTP 401 Unauthorized response is returned.

### 2.Request Body

Attribute	Required?	Cardinality	Content	Values	Description
service	Y	1	SOTN service Object		The content of the RequestInfo object.
site	Y	1...n	SOTN sites Object		The content of Router request object

## 2.1 SOTN service Object

Attribute	Required?	Cardinality	Content	Values	Description
serviceName	Y	1	String		A unique name to create service.
description	Y	1	String		Information related to service
COS	Y	1	String		Type of subscription(Premium/Standard)
serviceType	Y	1	String		Type of Service(epl/evpl)
highAvailability	Y	1	String		High Bandwidth(yes/no).
CIR	Y	1	String		
EIR	Y	1	String		

## 2.2 SOTN sites Object

Attribute	Required?	Cardinality	Content	Values	Description
Site name	Y	1	string		A unique name to create site
address	Y	1	string		Address of the site location
description	Y	1	string		Information related to site
Zipcode	Y	1	String		Postal code for site location
Vlan	Y	1	String		

## 3.Asynchronous Response Body

Attribute	Required?	Cardinality	Content	Values	Description
serviceId	Y	1	String		A unique Id for created service.
operationId	Y	1	String		

## B. Ordered Service API

- A new API developed which obtain the SOTN ordered sites informations based on instanceId.
- On selecting instance it invokes this REST API to get the ordered service data from AAI.
- The API performs the following operation:

1. Reads the data for selected service instance from AAI.

**URL:** /api/usecaseui-server/v1/uui-lcm/Sotnservices/servicesubscription/SOTN/serviceinstance/{instanceId}

### Response:

```
{
  "ethtSvcName": "vpn022",
  "cir": "98900",
  "eir": "1000",
  "vpnInformations": [ {
    "vpnThreshold": "1000",
    "vpnBandwidth": "100",
    "vpnType": "Hub-Spoke",
    "vpnId": "a8529dee-523e-4c6b-bc83-e26d68a9911c",
    "vpnName": "vpn022",
    "sites": [ {
      "zipCode": "100008",
      "address": "beijing",
      "siteId": "d5b530fe-2271-4ed6-8c09-b7ce368a1f59",
      "siteName": "ISAAC01-hub1",
      "description": "desc"
    }
  ]
}
```

2. Storing the response of this API in object0.
3. Based on the service instance showing specific service informations

#### API internal process:

1. Based on the subscriptionType and serviceInstanceId it invokes the API.
2. After receiving the response from AAI, storing the data as an object.
3. Parsing the data and deleting the irrelevant ( i.e VPN informations) field .

#### Interface definition:

Interface Definition	Description
Content-Type	application/json
Operation Type	GET
URI	https://{host}:{port}/api/usecaseui-server/v1/uui-lcm/Sotnservices/servicesubscription/SOTN/serviceinstance/{instanceId}

##### • Request Header

Header Name	Required?	Description
Accept	N	Determines the format of the body of the response. Valid value is "application/json"
Content-Type	N	Determines the format of the request content. Only application/json is supported.
Content-Length	N	Number of bytes in the body of the request. Note that content length is limited to 1 MB.
Authorization	N	Supplies Basic Authentication credentials for the request. If the Authorization header is missing, then an HTTP 400 Invalid Request response is returned. If the string supplied is invalid, then an HTTP 401 Unauthorized response is returned.

##### • Synchronous Response Body

Attribute	Required?	Cardinality	Content	Values	Description
Service Information	Y	1	UUID/String		A unique Id for an ONAP transaction.
Sire Information	Y	1	UUID/String		A unique ID to track multiple requests associated with a transaction.

##### • Service Information Info

Attribute	Required?	Cardinality	Content	Values	Description
ethSvcName	Y	1	Timestamp		
cir	Y	1	Timestamp		
eir	N	0..N	List of LinkInfo		List of Link's
ebs	Y	1			
Coloraware	Y	1			
cbs	Y	1			

##### • Site Info

Attribute	Required	cardinality	Content	Values	Description
SiteName	Y	1	String		A unique site Name
Description	Y	1	String		Description about site
Postalcode	Y	1	String		Information sitelocation

## C. Network Topology API

1. A new API developed which obtain the SOTN ordered sites informations based on instanceId.
2. On selecting instance it invokes this REST API to get the ordered service data from AAI.
3. The API performs the following operation:

**URL:** /api/usecaseui-server/v1/uui-lcm/Sotnservices/topology/service/service-subscriptions/service-subscription/{servicetypeparam}/service-instances/service-instance/{serviceInstanceId}

**Response:**

```
[
  {
    "zipCode": "28013",
    "role": "dsvpn-hub",
    "siteName": "Madrid",
    "description": "Madrid",
    "location": "Madrid",
    "attribute": {
      "Zip Code": "28013",
      "Site Name": "Madrid",
      "cvlan": "400",
      "Link Status": "down",
      "Location": "Madrid"
    }
  },
  {
    "zipCode": "NE1 4LF",
    "role": "dsvpn-hub",
    "address": "Newcastle",
    "siteId": "2f4b3e25-bdd1-404d-bed5-381ced380318",
    "siteName": "Newcastle",
    "description": "Newcastle",
    "location": "Newcastle",
    "attribute": {
      "Zip Code": "NE1 4LF",
      "Site Name": "Newcastle",
      "cvlan": "400",
      "Access node Id": "10.10.10.10",
      "Access LTP Id": "149",
      "Link Status": "down",
      "Location": "Newcastle"
    }
  }
]
```

- 1. Storing the response of this API in object0.
- 2. Based on the service instance showing specific service informations on world map by finding the latitude and longitude(using sitename and zipcode) of each site using leaflet library.

**API internal process:**

- 1. Based on the subscriptionType and serviceInstanceId it invokes the API.
- 2. After receiving the response from AAI, storing the data as an object.
- 3. From the response of the API call to AAI, the following information can be obtained.
- 4. Sitename and zipcode.
- 5. Call the leaflet module API with sitename and zipcode.
- 6. From the response of step 3.b, we would be having array latitude and longitude of sites.

**Interface definition:**

Interface Definition	Description
Content-Type	application/json
Operation Type	GET
URI	https://{host}:{port}/api/usecaseui-server/v1/uui-lcm/Sotnservices/topology/service/service-subscriptions/service-subscription/{servicetypeparam}/service-instances/service-instance/{serviceInstanceId}

- Request Header

Header Name	Required?	Description
Accept	N	Determines the format of the body of the response. Valid value is "application/json"
Content-Type	N	Determines the format of the request content. Only application/json is supported.
Content-Length	N	Number of bytes in the body of the request. Note that content length is limited to 1 MB.
Authorization	N	Supplies Basic Authentication credentials for the request. If the Authorization header is missing, then an HTTP 400 Invalid Request response is returned. If the string supplied is invalid, then an HTTP 401 Unauthorized response is returned.

- Response Body

Attribute	Required?	Cardinality	Content	Values	Description
zipCode	Y	1	String		Zipcode/PostalCode of site.
role	Y	1	String		Spoke/Hub
siteName	Y	1	String		Unique name for site
description	Y	1	String		Site address
location	Y	1	String		Address of site
attribute	Y	1	Site attribute object		Have site info attribute in below table

#### Site attribute object

Attribute	Required?	Cardinality	Content	Values	Description
Zip Code	Y	1	String		Postal code of location(site)
Site Name	Y	1	String		A unique name for site
cvlan	Y	1	String		
Access node Id	N	1	String		
Access LTP Id	Y	1	String		
Link Status	Y	1	String	Active/Down	Status of Link
Location	Y	1	String		Information of city(i.e cityname)

## D. Resource Topology API

- A new API developed which obtain the SOTN ordered sites informations based on instance ID.
- On selecting instance it invokes this REST API to get the ordered service data from AAI.
- The API performs the following operation:

1. Reads the data for selected service instance from AAI.

**URL:** /api/usecaseui-server/v1/uui-lcm/Sotnservices/resourceTopology/service/service-subscriptions/service-subscription/service-instances/service-instance/{serviceInstance}

#### Response:

```
{
  "nodes": [
    {
      "id": "73022190-d634-4824-aaac-1435f73cbd47",
      "shape": "circularImage",
      "image": "/assets/treeTopology/connectivity.png",
```

```

"label":"Connectivity",
"color":"Green",
"dataNode":{
  "ethtSvcName":"SOTN_9001_TS2_assured",
  "colorAware":"null",
  "cbs":"null",
  "couplingFlag":"null",
  "ebs":"evpl",
  "cir":"20000",
  "eir":"20000"
}
},
{
  "id":"10.10.10.10-SOTN_9001_TS2_assured",
  "shape":"circularImage",
  "image": "./assets/treeTopology/vpnbinding.png",
  "label":"VPN Binding",
  "color":"Green",
  "dataNode":{
    "vpn-id":"10.10.10.10-SOTN_9001_TS2_assured",
    "vpn-name":"10.10.10.10-SOTN_9001_TS2_assured",
    "vpn-type":"ethernet",
    "vpn-region":"assured",
    "access-provider-id":"5555",
    "access-client-id":"6666",
    "access-topology-id":"100",
    "src-access-node-id":"10.10.10.10",
    "src-access-ltp-id":"58",
    "dst-access-node-id":"10.10.10.10",
    "dst-access-ltp-id":"149",
    "operational-status":"Created",
    "resource-version":"1561389584516"
  }
},
{
  "id":"10.10.10.10",
  "shape":"circularImage",
  "image": "./assets/treeTopology/accessnode.png",
  "label":"Access Node",
  "color":"Green",

```

```
"dataNode":{
  "pnf-name":"10.10.10.10",
  "pnf-id":"10.10.10.10",
  "in-maint":true,
  "resource-version":"1561303054088",
  "admin-status":"up",
  "operational-status":"up"
},
{
  "id":"nodeId-10.10.10.10-ltpId-58",
  "shape":"circularImage",
  "image":"/assets/treeTopology/tpoint.png",
  "label":"Termination Point",
  "color":"Green",
  "dataNode":{
    "interface-name":"nodeId-10.10.10.10-ltpId-58",
    "speed-value":"1000000",
    "equipment-identifier":"0.188.0.8",
    "resource-version":"1561303102525",
    "in-maint":true,
    "network-ref":"providerId-5555-clientId-6666-topologyId-33",
    "transparent":"true",
    "operational-status":"down"
  },
{
  "id":"cross-link-5",
  "shape":"circularImage",
  "image":"/assets/treeTopology/logicallink.png",
  "label":"Logical Link",
  "color":"Green",
  "dataNode":{
    "link-name":"cross-link-5",
    "in-maint":false,
    "link-type":"cross-link",
    "resource-version":"1561284481346",
    "operational-status":"up"
  },
},
```

```

{
  "id": "EXT_AAI",
  "shape": "circularImage",
  "image": "/assets/treeTopology/extraai.png",
  "label": "External AAI",
  "color": "Green",
  "dataNode": {
    "Name": "VDF-ext-net"
  }
}
],
"edges": [
  {
    "from": "73022190-d634-4824-aaac-1435f73cbd47",
    "to": "10.10.10.10-SOTN_9001_TS2_assured"
  },
  {
    "from": "10.10.10.10-SOTN_9001_TS2_assured",
    "to": "nodeId-10.10.10.10-ltpId-149"
  },
  {
    "from": "10.10.10.10-SOTN_9001_TS2_assured",
    "to": "nodeId-10.10.10.10-ltpId-58"
  },
  {
    "from": "nodeId-10.10.10.10-ltpId-58",
    "to": "cross-link-5"
  },
  {
    "from": "null",
    "to": "EXT_AAI"
  }
]
}

```

1. Storing the response of this API in object0.
2. Based on the service instance showing specific service informations on canvas as topology using vis.js.

#### API internal process:

1. Based on the subscriptionType and serviceInstanceId it invokes the API.
2. After receiving the response from AAI, storing the data as an object.
3. From the response of the API call to AAI, the following information can be obtained.
4. Filtered data of Nodes and edges..
5. From the response of step 4, we would be having Nodes and Edges object.



6. Plotting the Nodes and Edges on Canvas using vis.js library.

**Interface definition:**

Interface Definition	Description
Content-Type	application/json
Operation Type	GET
URI	https://{host}:{port}/api/usecaseui-server/v1/uui-lcm/SoTnServices/resourceTopology/service/service-subscriptions/service-subscription/service-instances/service-instance/{serviceInstance}

• **Request Header**

Header Name	Required?	Description
Accept	N	Determines the format of the body of the response. Valid value is "application/json"
Content-Type	N	Determines the format of the request content. Only application/json is supported.
Content-Length	N	Number of bytes in the body of the request. Note that content length is limited to 1 MB.
Authorization	N	Supplies Basic Authentication credentials for the request. If the Authorization header is missing, then an HTTP 400 Invalid Request response is returned. If the string supplied is invalid, then an HTTP 401 Unauthorized response is returned.

• **Response Body**

Attribute	Required?	Cardinality	Content	Values	Description
Nodes	Y	1	Nodes array		List of nodes
Edges	Y	1	Edges array		List of connection between nodes(startnode-->endnode)

**Node Info**

Attribute	Required?	Cardinality	Content	Values	Description
Id	Y	1	String		A unique id for node
shape	Y	1	String	circular	shape of the node
image	Y	1	String	Jpg/png/jpeg	Image for node
label	N	1	String		Label for node
color	Y	1	String		Color of node
Data node	Y	1	object		It is vary upon nodes info

• **HTTP Response Code**

HTTP Code	Response Phrase	Description
201	Created	An optimization solution is found.
202	Accepted	An optimization request is accepted.
400	Bad request	Bad request.
401	Unauthorized	Request body is not compliant with the API definition.
404	Not found	The server cannot find the requested URI.
405	Method not found	The requested method is not supported by a server.
500	Internal server error	The server encountered an internal server error or timed out.

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Solver error

Requested number of solutions cannot be found.