

# O-RAN Information Model (from Eclipse/Papyrus)

Updates in this release include:

- PolicyError and related entities
- PolicyList and related entities
- PolicyNotification and related entities

- 1 Diagrams
  - 1.1 Overview
    - 1.1.1 Diagrams
      - Figure 11: Diagram ORAN Class Diagram
      - Figure 12: Diagram ORAN Component Diagram
      - Figure 13: Diagram ORAN Datatypes
      - Figure 14: Diagram ORAN Interfaces
      - Figure 15: Diagram PolicyList
      - Figure 16: Diagram Policy
      - Figure 17: Diagram Policy Notification
      - Figure 18: Diagram Policy Error
- 2 Interfaces
  - 2.1 Overview
    - 2.1.1 Interfaces
      - 2.1.1.1 A1 interface
      - 2.1.1.2 A1-EI interface
      - 2.1.1.3 A1-ML interface
      - 2.1.1.4 A1-P interface
      - 2.1.1.5 E1 interface
      - 2.1.1.6 E2 interface
      - 2.1.1.7 F1-c interface
      - 2.1.1.8 F1-u interface
      - 2.1.1.9 FHControl interface
      - 2.1.1.10 FHManagement interface
      - 2.1.1.11 FHSynch interface
      - 2.1.1.12 FHUser interface
      - 2.1.1.13 O1 interface
      - 2.1.1.14 O1\* interface
      - 2.1.1.15 W1 interface
      - 2.1.1.16 X2 interface
- 3 ObjectClasses
  - 3.1 Overview
    - 3.1.1 Classes
      - 3.1.1.1 XAppMgr class
      - 3.1.1.2 CarrierPreferenceConnection class
      - 3.1.1.3 CarrierPreferenceTraffic class
      - 3.1.1.4 EnergyEfficiencyMode class
      - 3.1.1.5 InfrastructureManagementFramework class
      - 3.1.1.6 ManagedElement class
      - 3.1.1.7 ManagedFunction class
      - 3.1.1.8 NearRTRIC class
      - 3.1.1.9 NonRTRIC (RGPF) class
      - 3.1.1.10 OCUCPFunction class
      - 3.1.1.11 OCUUPFunction class
      - 3.1.1.12 ODUFunction class
      - 3.1.1.13 ORUFunction class
      - 3.1.1.14 Policy class
      - 3.1.1.15 PolicyError class
      - 3.1.1.16 PolicyList class
      - 3.1.1.17 PolicyNotification class
      - 3.1.1.18 PolicyStatement class
      - 3.1.1.19 Qos5QiMod class
      - 3.1.1.20 Qos5qi class
      - 3.1.1.21 QosGbr class
      - 3.1.1.22 QosNonGbr class
      - 3.1.1.23 QosProfile class
      - 3.1.1.24 ServiceManagementAndOrchestrationFramework class
      - 3.1.1.25 XApp class
      - 3.1.1.26 eNodeB class
- 4 Sandbox
  - 4.1 Overview
    - 4.1.1 Associations
      - 4.1.1.1 association
      - 4.1.1.2 association
      - 4.1.1.3 association

- 4.1.1.4 association
- 4.1.2 Diagrams
- 4.1.3 Classes
  - 4.1.3.1 CloudAppliance class
  - 4.1.3.2 CuCp class
  - 4.1.3.3 CuUp class
  - 4.1.3.4 Du class
  - 4.1.3.5 ManagedElement (Service) class
  - 4.1.3.6 ManagedFunction class
  - 4.1.3.7 NearRtRic class
  - 4.1.3.8 NonRtRic (RGPF) class
  - 4.1.3.9 Pnf class
  - 4.1.3.10 RApp class
  - 4.1.3.11 Ru class
  - 4.1.3.12 Vnf class
  - 4.1.3.13 Xapp class
- 5 TypeDefinitions
  - 5.1 Overview
    - 5.1.1 Datatypes
      - 5.1.1.1 Arp datatype
      - 5.1.1.2 DN datatype
      - 5.1.1.3 DateTime primitive type
      - 5.1.1.4 Number primitive type
      - 5.1.1.5 PLMNId datatype
      - 5.1.1.6 ProblemDetailsType datatype
      - 5.1.1.7 URI primitive type
    - 5.1.2 Enumerations
      - 5.1.2.1 EnforcementReasonType enumeration
      - 5.1.2.2 EnforcementStatusType enumeration
      - 5.1.2.3 OptimizationType enumeration
      - 5.1.2.4 PolicyCapabilityType enumeration
      - 5.1.2.5 PolicyErrorType enumeration
      - 5.1.2.6 PolicyErrorType enumeration
      - 5.1.2.7 PreferenceType enumeration
      - 5.1.2.8 PrimaryType enumeration
      - 5.1.2.9 SupportedType enumeration

# 1 Diagrams

## 1.1 Overview

**Qualified Name:** ORAN::Diagrams

**Description:**

This IOC represents the logical function CU-CP of gNB and en-gNB

### 1.1.1 Diagrams

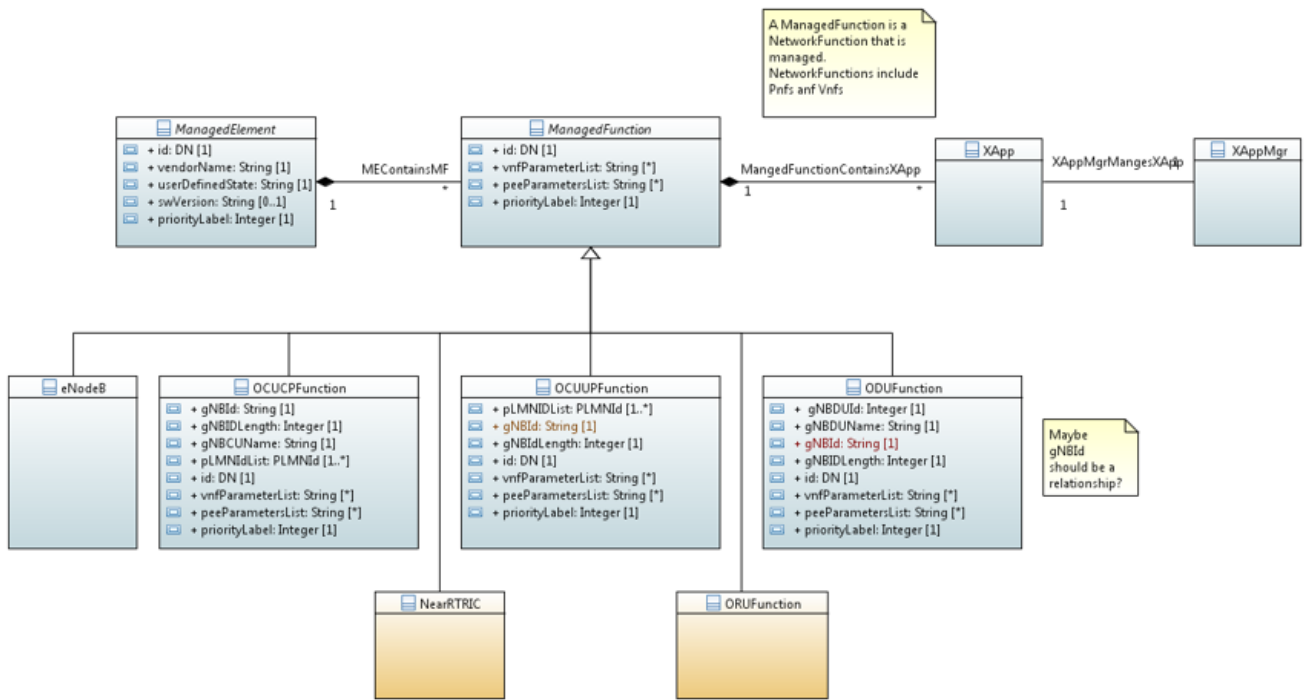


Figure 11: Diagram ORAN Class Diagram

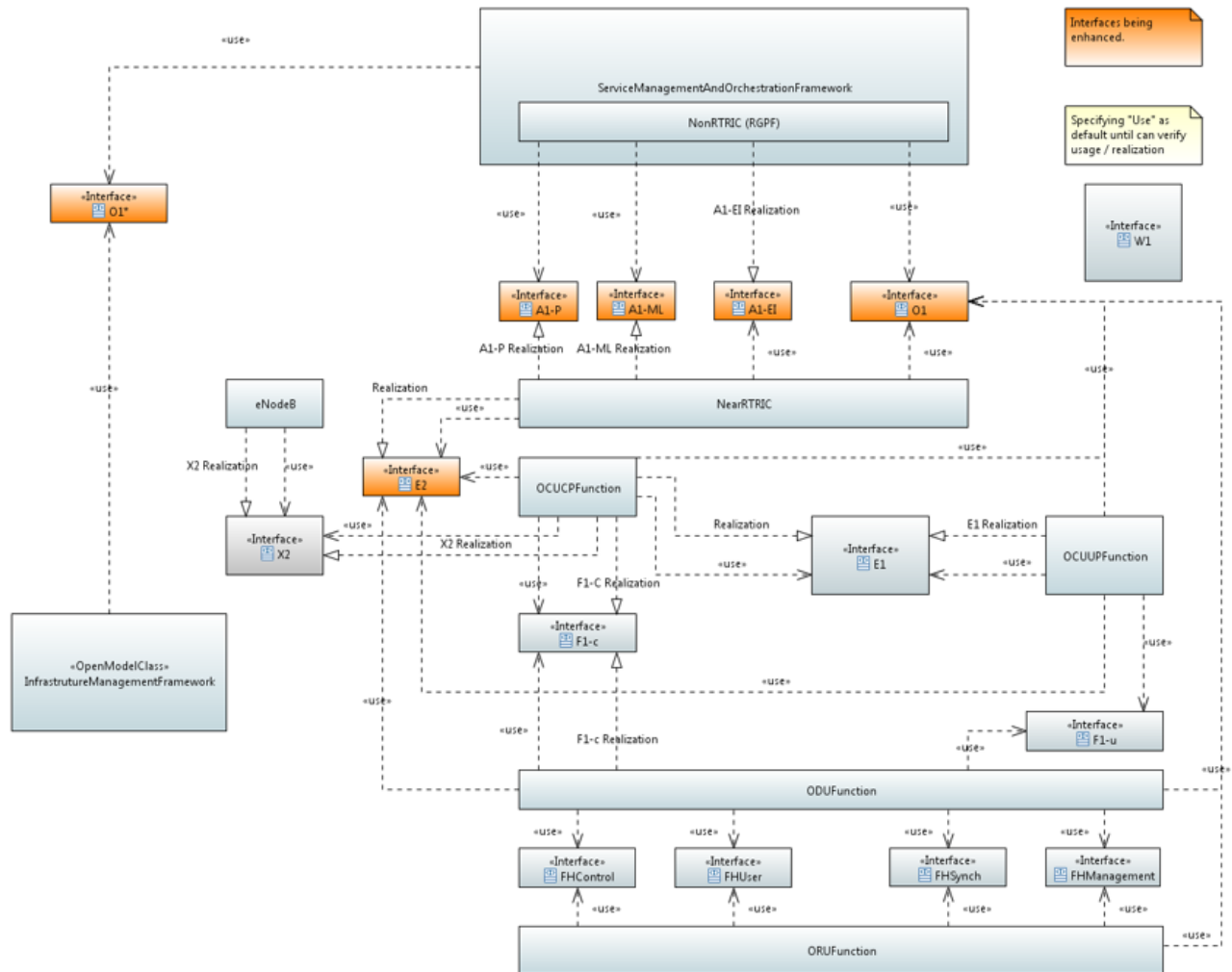


Figure 12: Diagram ORAN Component Diagram

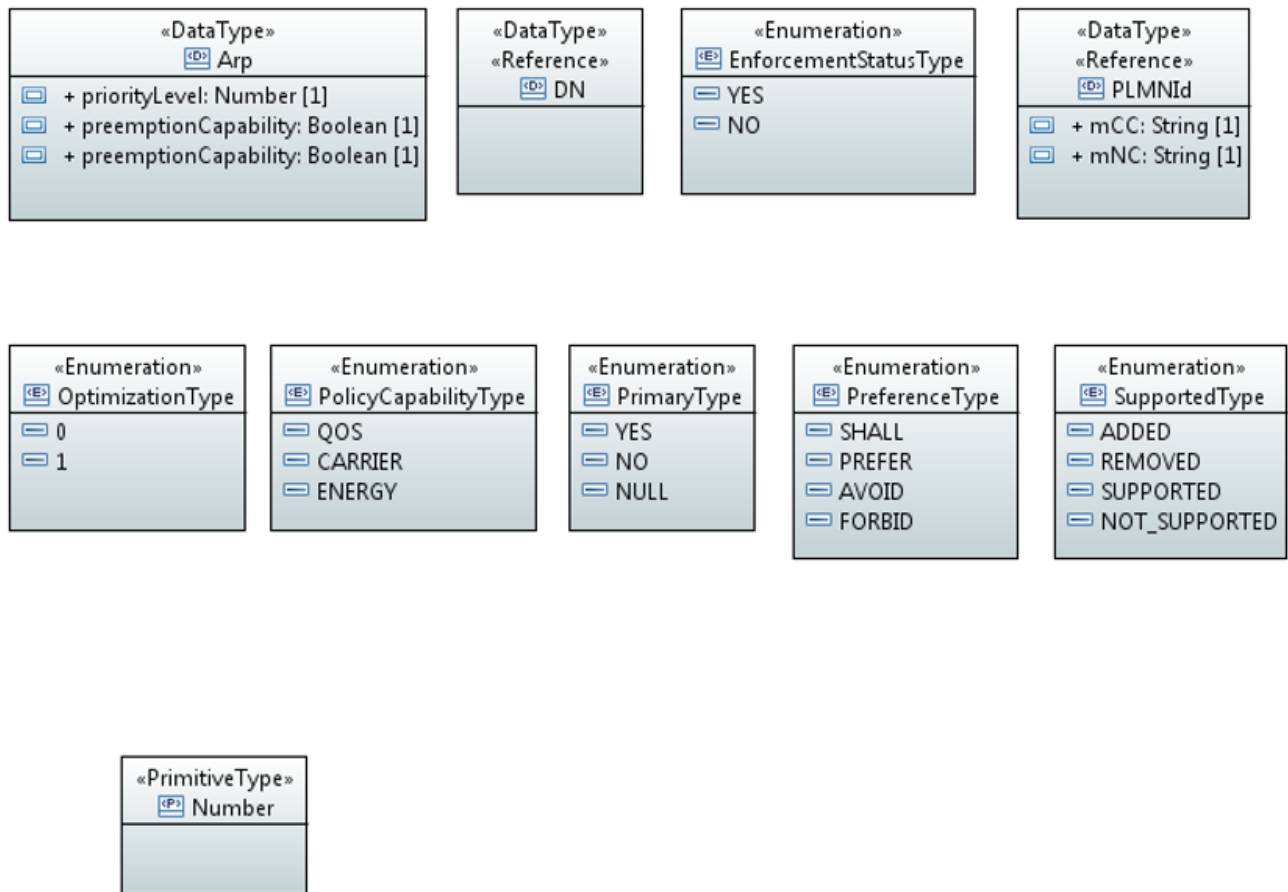


Figure 13: Diagram ORAN Datatypes

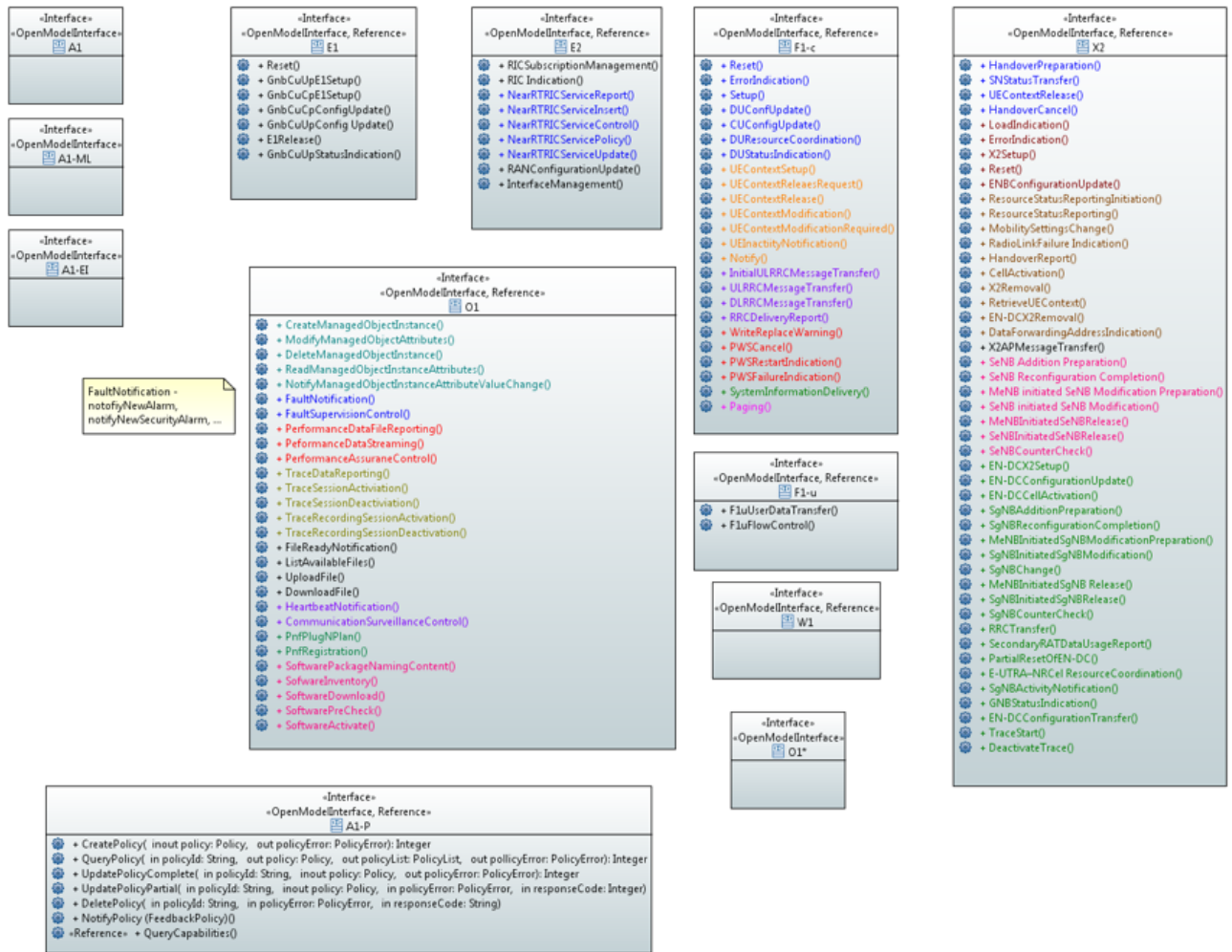


Figure 14: Diagram ORAN Interfaces

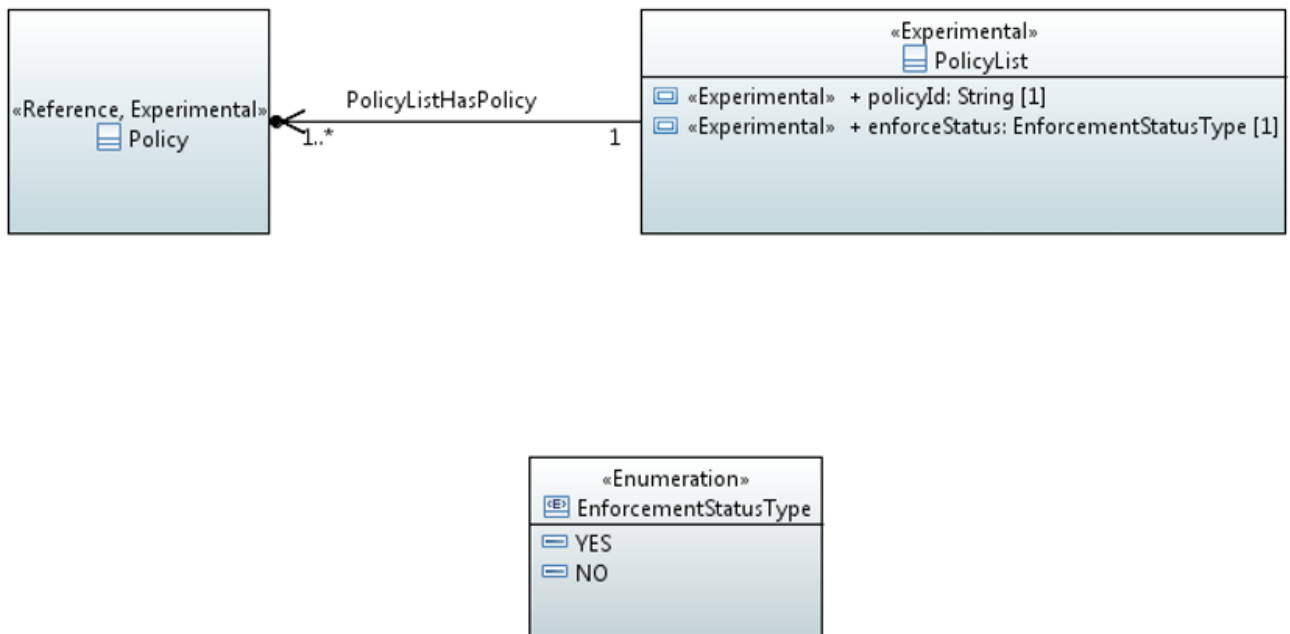


Figure 15: Diagram PolicyList

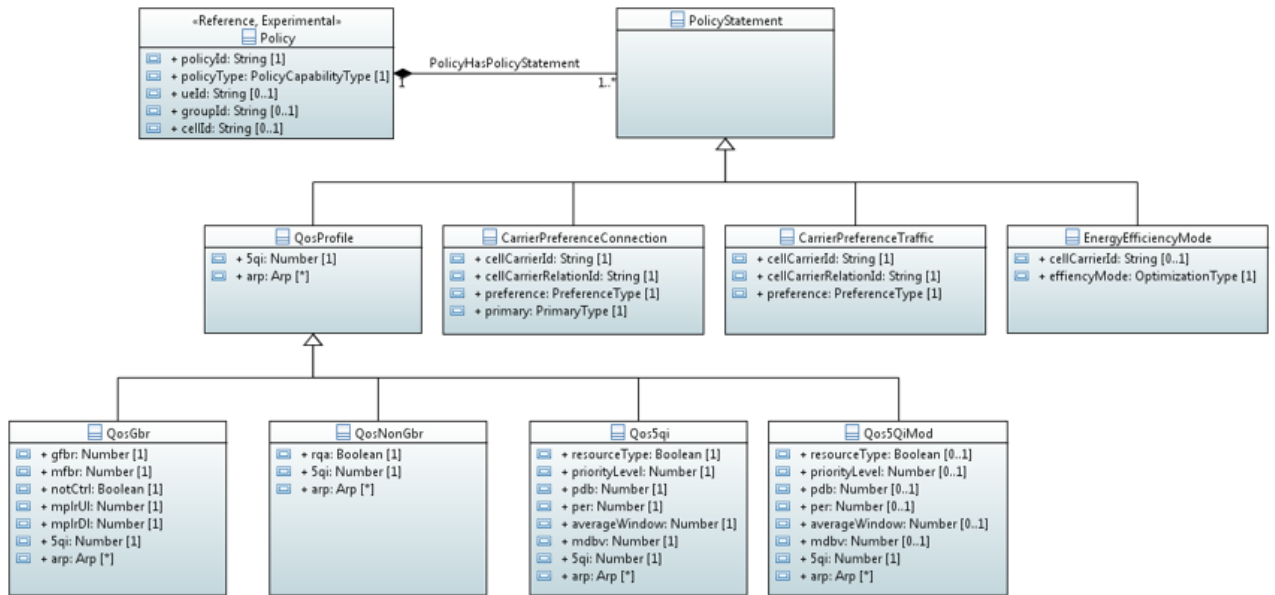


Figure 16: Diagram Policy

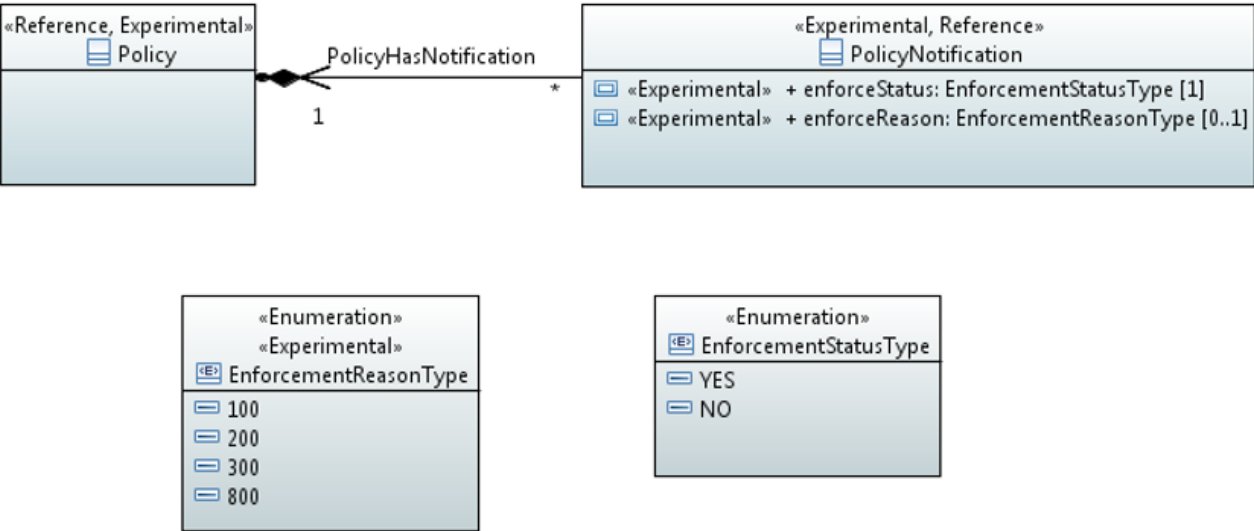


Figure 17: Diagram Policy Notification

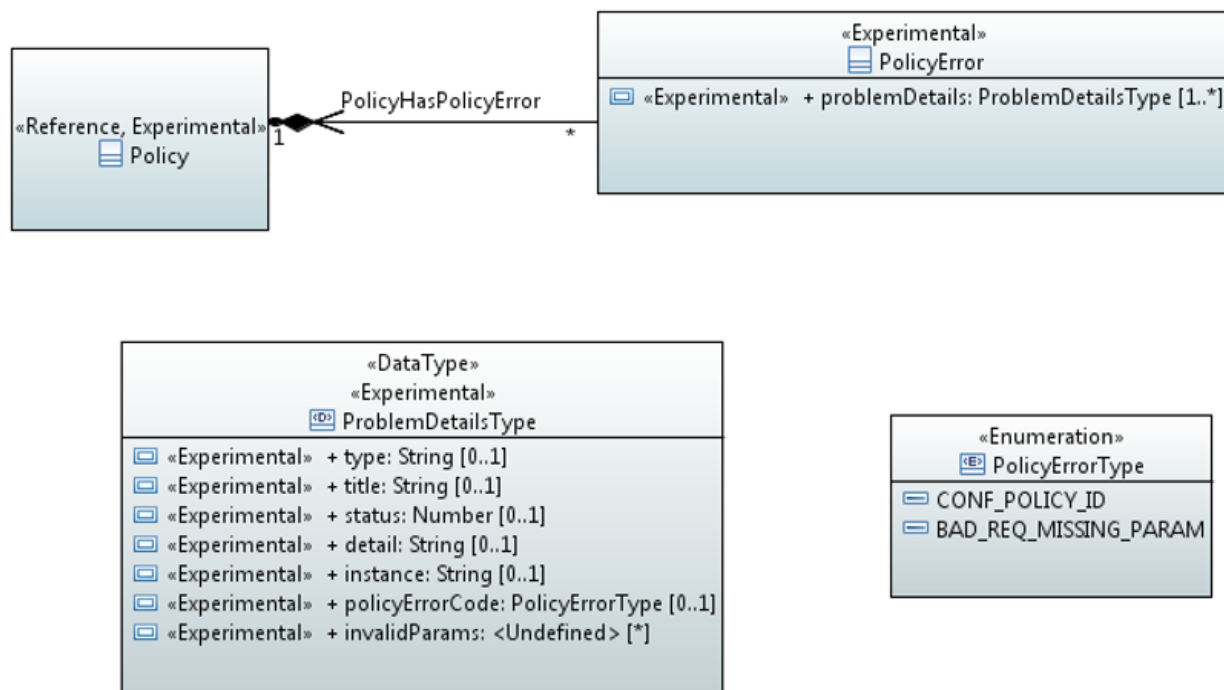


Figure 18: Diagram Policy Error

## 2 Interfaces

### 2.1 Overview

**Qualified Name:** ORAN::Interfaces

#### 2.1.1 Interfaces

##### 2.1.1.1 A1 interface

**Qualified Name:** ORAN::Interfaces::A1

**Description:**

The A1 interface is between the Non Real-Time RIC (RGPF) and the Near Real-Time RIC. This is a streaming interface.

The interface is used to provide the following:

- Enrichment Information
- Policy Objectives
- Policy Resources
- Machine Learnings (Feedback)

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY

2.1.1.2      A1-EI interface

Qualified Name: ORAN::Interfaces::A1-EI

Applied Stereotypes:

- OpenModelInterface
- support: MANDATORY

2.1.1.3      A1-ML interface

Qualified Name: ORAN::Interfaces::A1-ML

Applied Stereotypes:

- OpenModelInterface
- support: MANDATORY

2.1.1.4      A1-P interface

Qualified Name: ORAN::Interfaces::A1-P

Applied Stereotypes:

- OpenModelInterface
- support: MANDATORY
- Reference
- reference: 08.14-oRAN.WG2-A1AP\_v00.00.01

Table 51 Operations for Interface A1-P

| Operation Name | Parameters                                                                                                                                                                                                                                                                                                                                                                                           | Description                                          | Stereotypes                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| CreatePolicy   | <div>policy</div> <div>- type: Policy</div> <div>- direction: inout</div> <div>policyError</div> <div>- type: PolicyError</div> <div>- direction: out</div> <div>responseCode</div> <div>- type: Integer</div> <div>- direction: return</div> <div>- Note: Return code on the CreatePolicy operation with the following values:<br/>201- Created<br/>204 - No content<br/>4xx - An error case.</div> | Create a policy for a single UE or for multiple UEs. | <div>OpenModelOperation</div> <div>- isOperationIdempotent: false</div> <div>- isAtomic: false</div> <div>- support: MANDATORY</div> |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                |                                                                                                                                                                     |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QueryPolicy          | <p>policyId</p> <ul style="list-style-type: none"> <li>- type: String</li> <li>- direction: in</li> </ul> <p>policy</p> <ul style="list-style-type: none"> <li>- type: Policy</li> <li>- direction: out</li> </ul> <p>policyList</p> <ul style="list-style-type: none"> <li>- type: PolicyList</li> <li>- direction: out</li> </ul> <p>returnCode</p> <ul style="list-style-type: none"> <li>- type: Integer</li> <li>- direction: return</li> <li>- Note: Return code with the following values<br/>200 - Ok<br/>4xx - Error</li> </ul> <p>policyError</p> <ul style="list-style-type: none"> <li>- type: PolicyError</li> <li>- direction: out</li> </ul> | The operation to read a policy ofr a single UE or a group of UEs.              | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| UpdatePolicyComplete | <p>policyId</p> <ul style="list-style-type: none"> <li>- type: String</li> <li>- direction: in</li> </ul> <p>policy</p> <ul style="list-style-type: none"> <li>- type: Policy</li> <li>- direction: inout</li> </ul> <p>policyError</p> <ul style="list-style-type: none"> <li>- type: PolicyError</li> <li>- direction: out</li> </ul> <p>responseCode</p> <ul style="list-style-type: none"> <li>- type: Integer</li> <li>- direction: return</li> <li>- Note: Response codes area s follows:<br/>- 201 - Created<br/>- 204 - No content<br/>- 4xx - Error</li> </ul>                                                                                     | The operation to completely update a policy for a single UE or a group of UEs. | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                               |                                                                                                                                                                                                                                                                                                  |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UpdatePolicyPartial              | <p>policyId</p> <ul style="list-style-type: none"> <li>- type: String</li> <li>- direction: in</li> </ul> <p>policy</p> <ul style="list-style-type: none"> <li>- type: Policy</li> <li>- direction: inout</li> </ul> <p>policyError</p> <ul style="list-style-type: none"> <li>- type: PolicyError</li> <li>- direction: in</li> </ul> <p>responseCode</p> <ul style="list-style-type: none"> <li>- type: Integer</li> <li>- direction: in</li> </ul> <ul style="list-style-type: none"> <li>- Note: responseCode values include:<br/>201 - Created<br/>204 - No content<br/>4xx - error</li> </ul> | The operation to partially update a policy for a single UE or a group of UEs. | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul>                                                                                                                              |
| DeletePolicy                     | <p>policyId</p> <ul style="list-style-type: none"> <li>- type: String</li> <li>- direction: in</li> </ul> <ul style="list-style-type: none"> <li>- Note: Policy to be deleted.</li> </ul> <p>policyError</p> <ul style="list-style-type: none"> <li>- type: PolicyError</li> <li>- direction: in</li> </ul> <p>responseCode</p> <ul style="list-style-type: none"> <li>- type: String</li> <li>- direction: in</li> </ul> <ul style="list-style-type: none"> <li>- Note: response codes are as follows:<br/>204 - No Content<br/>4xx - Error</li> </ul>                                             | The operation to delete a policy for a single UE or a group of UEs.           | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul>                                                                                                                              |
| NotifyPolicy<br>(FeedbackPolicy) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                               | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul>                                                                                                                              |
| QueryCapabilities                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                               | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> <p>Reference</p> <ul style="list-style-type: none"> <li>· reference: From 2019.08.14-oRAN.<br/>WG2-A1AP_v00.00.01</li> </ul> |

2.1.1.5 E1 interface

Qualified Name: ORAN::Interfaces::E1

Description:

The E1 interface specifications facilitates the inter-connection of a gNB-CU-CP and a gNB-CU-UP supplied by different manufacturers.

Applied Stereotypes:

- OpenModelInterface
- support: MANDATORY
- Reference
- reference: 3GPP TS 38.460

Table 52 Operations for Interface E1

| Operation Name       | Parameters | Description | Stereotypes                                                                                                                                              |
|----------------------|------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reset                |            |             | OpenModelOperation <ul style="list-style-type: none"><li>· isOperationIdempotent: false</li><li>· isAtomic: false</li><li>· support: MANDATORY</li></ul> |
| GnbCuUpE1Setup       |            |             | OpenModelOperation <ul style="list-style-type: none"><li>· isOperationIdempotent: false</li><li>· isAtomic: false</li><li>· support: MANDATORY</li></ul> |
| GnbCuCpE1Setup       |            |             | OpenModelOperation <ul style="list-style-type: none"><li>· isOperationIdempotent: false</li><li>· isAtomic: false</li><li>· support: MANDATORY</li></ul> |
| GnbCuCpConfigUpdate  |            |             | OpenModelOperation <ul style="list-style-type: none"><li>· isOperationIdempotent: false</li><li>· isAtomic: false</li><li>· support: MANDATORY</li></ul> |
| GnbCuUpConfig Update |            |             | OpenModelOperation <ul style="list-style-type: none"><li>· isOperationIdempotent: false</li><li>· isAtomic: false</li><li>· support: MANDATORY</li></ul> |

|                         |  |  |                                                                                                                                                              |
|-------------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E1Release               |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| GnbCuUpStatusIndication |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |

### 2.1.1.6 E2 interface

**Qualified Name:** ORAN::Interfaces::E2

**Description:**

The purpose of the E2 interface is to allow the RIC to communicate with a RAN to provide guidance, optimization and value added services. The RIC is assumed to consist of a RIC Platform that includes the "E2 Termination" and one or more xApps, including the "E2 Manager" which is also responsible for terminating E2 Global Procedures (E2 SETUP, etc.)

Interface connecting the near-RT RIC and one or more O-CU-CPs, one or more O-CU-UPs, and one or more O-DUs.

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY
- Reference
- reference: ORAN-WG3.E2GAP.0-v0.1

**Table 53 Operations for Interface E2**

| Operation Name            | Parameters | Description                                                                                                 | Stereotypes                                                                                                                                                  |
|---------------------------|------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RICSubscriptionManagement |            | Used to establish E2 subscriptions on the E2 node consisting of an event trigger and a sequence of actions. | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                 |
|-------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RIC Indication          |  | Used to carry messages from a specific RAN Function to the RIC resulting from a REPORT or INSERT Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OpenModelOperation<br><ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| NearRTRICServiceReport  |  | <p>Near-RT RIC requests that E2 NODE sends a REPORT message to Near-RT RIC and the associated procedure continues in E2 NODE after each occurrence of a defined SUBSCRIPTION</p> <p>The REPORT service involves following steps:</p> <ol style="list-style-type: none"> <li>1. Near-RT RIC configures a SUBSCRIPTION in the E2 NODE with information used to configure an INDICATION (Report) that is to be performed by E2 NODE with each occurrence of trigger event</li> <li>2. During normal functioning of the E2 NODE, a trigger event is detected.</li> <li>3. E2 NODE sends INDICATION to Near-RT RIC containing requested REPORT information along with originating Request ID.</li> <li>4. Normal functionality continues on the E2 NODE.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                       | OpenModelOperation<br><ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| NearRTRICServiceInsert  |  | <p>Near-RT RIC requests that E2 NODE sends an INSERT message to Near-RT RIC and suspends the associated procedure in E2 NODE after each occurrence of a defined SUBSCRIPTION</p> <p>The INSERT service involves following steps:</p> <ol style="list-style-type: none"> <li>1. Near-RT RIC configures a SUBSCRIPTION in the E2 NODE with information used to configure an INDICATION (Insert) along with a wait timer that is to be performed by E2 NODE with each occurrence of EVENT</li> <li>2. During normal functioning of the E2 NODE, a trigger event is detected.</li> <li>3. E2 Node sends INDICATION to Near-RT RIC containing requested INSERT information along with originating Request ID.</li> <li>4. E2 Node suspends or halts the associated procedure after a defined Wait period (wait may be set to zero). This process may then be followed by either: <ul style="list-style-type: none"> <li>- Near-RT RIC sends a CONTROL message to trigger a new associated procedure or resume suspended procedure using modified call state or information</li> <li>- Wait timer associated for suspended procedure expires, and original associated procedure continues or halted</li> </ul> </li> </ol> | OpenModelOperation<br><ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| NearRTRICServiceControl |  | <p>Near-RT RIC sends a Control message to E2 Node to initiate or resume the suspended associated procedure in the E2 Node</p> <p>The CONTROL service involves following steps:</p> <ol style="list-style-type: none"> <li>1. Near-RT RIC detects a trigger event. This step may be either triggered by a previous INDICATION sent by E2 Node or internal to Near-RT RIC</li> <li>2. Near-RT RIC performs action</li> <li>3. Near-RT RIC sends CONTROL request to E2 Node. This step may contain an information used to identify a previous suspended call process and may request acknowledgement</li> <li>4. E2 NODE initiates or resumes a call process</li> <li>5. If requested, E2 Node sends a CONTROL Acknowledgement</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | OpenModelOperation<br><ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| NearRTRICServicePolicy  |  | <p>Near-RT RIC requests that E2 Node executes a specific POLICY during functioning of the E2 Node after each occurrence of a defined SUBSCRIPTION</p> <p>The POLICY service involves following steps:</p> <ol style="list-style-type: none"> <li>1. Near-RT RIC configures a SUBSCRIPTION in the E2 NODE with information used to configure a POLICY that is to be performed by E2 NODE with each occurrence of trigger event</li> <li>2. During normal functioning of the E2 NODE, a trigger event is detected.</li> <li>3. E2 NODE modifies ongoing call process according to information contained in the POLICY description statement</li> <li>4. Normal functionality continues on the E2 NODE.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OpenModelOperation<br><ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                        |  |                                                                                                                                                |                                                                                                   |
|------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| NearRTRICServiceUpdate |  | a E2 NODE initiated procedure to inform Near-RT RIC of changes to list of supported Near-RT RIC services and mapping of services to functions. | OpenModelOperation<br>· isOperationIdempotent: false<br>· isAtomic: false<br>· support: MANDATORY |
| RANConfigurationUpdate |  | a E2 node-initiated procedure to inform Near-RT RIC of changes to RAN configuration information.                                               | OpenModelOperation<br>· isOperationIdempotent: false<br>· isAtomic: false<br>· support: MANDATORY |
| InterfaceManagement    |  | E2 set-up, E2 reset, Reporting of General Error Situations                                                                                     | OpenModelOperation<br>· isOperationIdempotent: false<br>· isAtomic: false<br>· support: MANDATORY |

### 2.1.1.7 F1-c interface

**Qualified Name:** ORAN::Interfaces::F1-c

**Description:**

The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN.

F1 User plane interface

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY
- Reference
- reference: 3GPP TS 38.470

**Table 54 Operations for Interface F1-c**

| Operation Name | Parameters | Description | Stereotypes |
|----------------|------------|-------------|-------------|
|----------------|------------|-------------|-------------|

|                        |  |  |                                                                                                                                                              |
|------------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reset                  |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| ErrorIndication        |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| Setup                  |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| DUConfUpdate           |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| CUConfigUpdate         |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| DUResourceCoordination |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| DUStatusIndication     |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                               |  |  |                                                                                                                                                              |
|-------------------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UEContextSetup                |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| UEContextReleaesRequest       |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| UEContextRelease              |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| UEContextModification         |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| UEContextModificationRequired |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| UEInactiityNotification       |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| Notify                        |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                      |  |  |                                                                                                                                                              |
|----------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| InitialULRRCTransfer |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| ULRRCTransfer        |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| DLRRCTransfer        |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| RRCDeliveryReport    |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| WriteReplaceWarning  |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| PWSCancel            |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| PWSRestartIndication |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                           |  |  |                                                                                                                                                              |
|---------------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PWSFailureIndication      |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| SystemInformationDelivery |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
| Paging                    |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |

### 2.1.1.8 F1-u interface

**Qualified Name:** ORAN::Interfaces::F1-u

**Description:**

The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN.

F1 User plane interface

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY
- Reference
- reference: 3GPP TS 38470

**Table 55 Operations for Interface F1-u**

| Operation Name      | Parameters | Description | Stereotypes                                                                                                                                                  |
|---------------------|------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F1uUserDataTransfer |            |             | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                |  |  |                                                                                                                                                              |
|----------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F1uFlowControl |  |  | OpenModelOperation <ul style="list-style-type: none"> <li>· isOperationIdempotent: false</li> <li>· isAtomic: false</li> <li>· support: MANDATORY</li> </ul> |
|----------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 2.1.1.9 FHControl interface

**Qualified Name:** ORAN::Interfaces::FHControl

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY

#### 2.1.1.10 FHManagement interface

**Qualified Name:** ORAN::Interfaces::FHManagement

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY

#### 2.1.1.11 FHSynch interface

**Qualified Name:** ORAN::Interfaces::FHSynch

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY

#### 2.1.1.12 FHUser interface

**Qualified Name:** ORAN::Interfaces::FHUser

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY

#### 2.1.1.13 O1 interface

**Qualified Name:** ORAN::Interfaces::O1

**Description:**

The O1 interface is a batch interface between the NonRTRIC and the NearRTRIC. It also is a means to take information collected by the RPGF that is then distributed to the NearRTRIC. It is also used for file uploads and config updates.

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY
- Reference
- reference: NOK-2019-07-01 O-RAN WG1 O1 Specification v1.0

**Table 56 Operations for Interface O1**

| Operation Name                 | Parameters | Description                                                                                                                                                                                            | Stereotypes                                                                                         |
|--------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Create ManagedObjectInstance   |            | Provisioning MnS Consumer sends synchronous provisioning updates to Provisioning MnS Provider to create a Managed Object Instance (MOI) on the Provisioning MnS Provider and set its attribute values. | Operation<br><br>is OperationIndependent: false<br><br>is Atomic: false<br><br>supported: MANDATORY |
| Modify ManagedObjectAttributes |            | Provisioning MnS Consumer sends synchronous provisioning updates to Provisioning MnS Provider to modify the attributes of a MOI on the Provisioning MnS Provider.                                      | Operation<br><br>is OperationIndependent: false<br><br>is Atomic: false<br><br>supported: MANDATORY |

|                                     |                                                                                                                                                                                  |                                                                                                                           |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Delete ManagedObjectInstance        | Provisioning MnS Consumer sends synchronous provisioning updates to Provisioning MnS Provider to delete a MOI and its children on the Provisioning MnS Provider.                 | <div>Operation</div> <div>is OperationIdempotent: false</div> <div>is Atomic: false</div> <div>supported: MANDATORY</div> |
| ReadManagedObjectInstanceAttributes | Provisioning MnS Consumer sends synchronous provisioning request to Provisioning MnS Provider to return the values of attributes of its MOI(s) on the Provisioning MnS Provider. | <div>Operation</div> <div>is OperationIdempotent: false</div> <div>is Atomic: false</div> <div>supported: MANDATORY</div> |

|                                          |                                                                                                                                                                                                  |                                                                                                              |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| NotifyManagedObjectAttributeValueChanged | Provisioning MnS Provider sends an asynchronous notifyMOIAttributeValueChanged Notification to the Provisioning MnS Consumer to report a configuration change on the Provisioning MnS Provider . | <div>Operation</div> <div>isOptional: false</div> <div>isAtomic: false</div> <div>supported: MANDATORY</div> |
| FaultNotification                        | Fault Supervision MnS Provider sends asynchronous Fault3gpp notification event to Fault Supervision MnS Consumer when an alarm occurs, is cleared, changes state or priority, etc.               | <div>Operation</div> <div>isOptional: false</div> <div>isAtomic: false</div> <div>supported: MANDATORY</div> |

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| FaultSupervisionControl      | Starting with 3GPP Release 16, dedicated operations for Management Services Use Cases will be replaced by IOCs with attributes that can be read and/or set using generic provisioning mechanisms. For Fault Supervision, O-RAN requires the ability to Get Alarm List and Clear Alarm.                                                                                                                                                         | <p>OpenModelOperation</p> <p>isOperationIndepotent: false</p> <p>isAtomic: false</p> <p>support: MANDATORY</p> |
| PerformanceDataFileReporting | Performance Assurance MnS Provider sends asynchronous FileReady notification event to Performance Assurance MnS Consumer sent when PM File is ready for upload. The FileReady notification contains one parameter indicating the location at which the file can be retrieved. Performance Assurance MnS Consumer uploads Bulk PM File from Performance Assurance MnS Provider via secure file transfer protocol, triggered by FileReady event. | <p>OpenModelOperation</p> <p>isOperationIndepotent: false</p> <p>isAtomic: false</p> <p>support: MANDATORY</p> |

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                         |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Performance Data Streaming    | Performance Assurance MnS Provider streams high volume asynchronous Real Time Performance Measurement (RTPM) data to Performance Assurance MnS Consumer at a configurable frequency.                                                                                                                                                                                                                                                                                                          | <div>Operation</div> <div>is Operation Idle Mode: false</div> <div>is Atomic: false</div> <div>support: Mandatory</div> |
| Performance Assurance Control | Starting with 3GPP Release 16, dedicated operations for Performance Assurance Control will be replaced by IOCs with attributes that can be read and/or set using generic provisioning mechanisms. For Performance Assurance, this includes operations such as Create Measurement Job, Terminate Measurement Job and Query Measurement Job. Measurement jobs can be created, terminated and queried by setting and/or getting attributes in the MeasurementControl and MeasurementReader IOCs. | <div>Operation</div> <div>is Operation Idle Mode: false</div> <div>is Atomic: false</div> <div>support: Mandatory</div> |

|                        |                                                                                                                                                                                  |                                                                                                                                                                                                |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TraceDataReporting     | High volume asynchronous streaming of Subscriber and Equipment Trace data (e.g. Call, Cell, UE, MDT) from Trace MnS Provider to Trace MnS Subscriber sent upon triggering event. | <div><div>Operation</div><div><div>isOperationIdle</div><div>moment: false</div></div><div><div>isAtomic</div><div>false</div></div><div><div>support: MA</div><div>NDA TORY</div></div></div> |
| TraceSessionActivation |                                                                                                                                                                                  | <div><div>Operation</div><div><div>isOperationIdle</div><div>moment: false</div></div><div><div>isAtomic</div><div>false</div></div><div><div>support: MA</div><div>NDA TORY</div></div></div> |

|                                 |  |  |                                                                                                                                                                                                                                                                  |
|---------------------------------|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TraceSessionDeactivation        |  |  | <div><div>Operation</div><div><div><div></div></div><div>isOperationIdle</div><div>mpotent: false</div></div><div><div><div></div></div><div>isAtomic:</div><div>false</div></div><div><div><div></div></div><div>support:</div><div>MANDATORY</div></div></div> |
| TraceRecordingSessionActivation |  |  | <div><div>Operation</div><div><div><div></div></div><div>isOperationIdle</div><div>mpotent: false</div></div><div><div><div></div></div><div>isAtomic:</div><div>false</div></div><div><div><div></div></div><div>support:</div><div>MANDATORY</div></div></div> |

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                                                                                                                                                                                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TraceRecordingSessionDeactivation |                                                                                                                                                                                                                                                                                                                                                                                                                 |  | <div><div>Ope<br/>nMo<br/>delO<br/>pera<br/>tion</div><div>.</div><div>is<br/>Ope<br/>ratio<br/>nIde<br/>mpo<br/>tent:<br/>false</div><div>.</div><div>is<br/>Ato<br/>mic:<br/>false</div><div>.</div><div>su<br/>ppor<br/>t:<br/>MA<br/>NDA<br/>TORY</div></div> |
| FileReadyNotification             | The File Ready Notification notifies a File Management MnS Consumer that a file is available for upload from the File Management MnS Provider. In general, File Management MnS Provider sends a FileReady notification for files that the File Management MnS Consumer has configured the File Management MnS Provider to collect on a periodic basis, such as file-based Trace Data or PM Measurement Reports. |  | <div><div>Ope<br/>nMo<br/>delO<br/>pera<br/>tion</div><div>.</div><div>is<br/>Ope<br/>ratio<br/>nIde<br/>mpo<br/>tent:<br/>false</div><div>.</div><div>is<br/>Ato<br/>mic:<br/>false</div><div>.</div><div>su<br/>ppor<br/>t:<br/>MA<br/>NDA<br/>TORY</div></div> |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| ListAvailableFiles | File Management MnS Consumer queries the File Management MnS Provider to identify files that are available on the File Management MnS Provider. Upon receipt of the available files and their locations, the File Management MnS Consumer can determine the next appropriate action.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <div>Operation</div> <div>is<br/>OperationIdempotent:<br/>false</div> <div>is<br/>Atomic:<br/>false</div> <div>support:<br/>MANDATORY</div> |
| UploadFile         | The Upload File Service provides the capability for a File Management MnS Consumer to upload files from the location provided by the File Management MnS Provider. The File Management MnS Consumer may perform this action as a result of a FileReady notification from the File Management MnS Provider informing the File Management MnS Consumer that a file is now available to upload, such as a Performance Management Report (see section 2.5.1) or the File Management MnS Consumer may perform this function after querying the File Management MnS Provider to provide the list of available files for upload (see section 2.5.2). In any case, the file upload is performed using a secure file transfer protocol (SFTP or FTPeS) from the location provided by the File Management MnS Provider. | <div>Operation</div> <div>is<br/>OperationIdempotent:<br/>false</div> <div>is<br/>Atomic:<br/>false</div> <div>support:<br/>MANDATORY</div> |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| DownloadFile          | <p>The File Management MnS Consumer has a file that needs to be downloaded to the File Management MnS Provider such as:</p> <ul style="list-style-type: none"><li>• Software file to upgrade software version executed on the File Management MnS Provider</li><li>• Beamforming configuration file (Opaque Vendor specific data)</li><li>• Machine Learning</li><li>• Certificates</li></ul> <p>The File Management MnS Consumer triggers the file download. The File Management MnS Provider uses a secure file transfer protocol to download the file from the location specified by the File Management MnS Consumer and then notifies the File Management MnS Consumer of the result of the download.</p> | <p>OpenModelOperation</p> <p>isOperationIndependent: false</p> <p>isAtomic: false</p> <p>support: MANDATORY</p> |
| HeartbeatNotification | <p>Communication Surveillance MnS Provider sends asynchronous heartbeat event to Communication Surveillance MnS Consumer at a configurable frequency to allow Communication Surveillance MnS Consumer to supervise the connectivity to the Communication Surveillance MnS Provider.</p>                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>OpenModelOperation</p> <p>isOperationIndependent: false</p> <p>isAtomic: false</p> <p>support: MANDATORY</p> |

|                                                  |                                                                                                                                                                                                    |  |                                                                                                                                                                                             |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Commu<br>nication<br>Surveill<br>anceCo<br>ntrol |                                                                                                                                                                                                    |  | Ope<br>nMo<br>delO<br>pera<br>tion<br><br>.<br>is<br>Ope<br>ratio<br>nIde<br>mpo<br>tent:<br>false<br><br>.<br>is<br>Ato<br>mic:<br>false<br><br>.<br>su<br>ppor<br>t:<br>MA<br>NDA<br>TORY |
| PnfPlug<br>NPlan                                 | PNF Plug-n-Play (PnP) scenario enables a PNF ME to obtain the necessary start-up configuration to allow it to register with a PNF Startup and Registration MnS Consumer for subsequent management. |  | Ope<br>nMo<br>delO<br>pera<br>tion<br><br>.<br>is<br>Ope<br>ratio<br>nIde<br>mpo<br>tent:<br>false<br><br>.<br>is<br>Ato<br>mic:<br>false<br><br>.<br>su<br>ppor<br>t:<br>MA<br>NDA<br>TORY |

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| PnfRegistration              | <p>PNF Startup and Registration MnS Provider sends an asynchronous pnfRegistration event to a PNF Startup and Registration MnS Consumer after PnP to notify PNF Startup and Registration MnS Consumer of new PNF Startup and Registration MnS Provider to be managed</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>OpenModelOperation</p> <p>isOperationIndepotent: false</p> <p>isAtomic: false</p> <p>support: MANDATORY</p> |
| SoftwarePackageNamingContent | <p>PNF Software Package naming, content and format are vendor specific and do not require standardization in O-RAN. A PNF Software Package may contain one or more files. Some of the files in the Software Package may be optional for the PNF (example: a file that has not changed version). The PNF is aware of the content and format of its available Software Packages and can determine which files it needs to download. The softwarePackage Managed Object Class (MOC) contains attributes about a software package such as: software package name, version, fileList, integrityStatus (valid, invalid, empty), runningState (active, passive), vendor, productName, softwareType (operational, factory), etc. This MOC is applicable to VNFs and PNFs and is a generic term that O-RAN will use to refer to the software available on the PNF rather than the legacy term of software slot. On a PNF, a softwarePackage MOI corresponds to a hardware software slot.</p> <p>The PNF creates one instance of softwarePackage for each software package supported concurrently on the PNF. Typically, a PNF will have two softwarePackage MOIs for operational software; one with runningState = active and one with runningState = passive. Some PNFs also have a softwarePackage MOI for the factory software which would be read only. O-RAN may have PNFs that support more than one passive slot. In this case the inventory query result would show multiple MOIs with runningState=passive.</p> | <p>OpenModelOperation</p> <p>isOperationIndepotent: false</p> <p>isAtomic: false</p> <p>support: MANDATORY</p> |

|                    |                                                                                                                                                                                                                                                                                           |                                                                                                                                                  |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Software Inventory | The PNF Startup and Registration MnS Consumer sends a Software Inventory Request and retrieves information about the software packages on the PNF Software MnS Provider.                                                                                                                  | <div>Operation</div> <div>is<br/>Operation<br/>idempotent:<br/>false</div> <div>is<br/>Atomic:<br/>false</div> <div>support:<br/>MANDATORY</div> |
| Software Download  | Software Download triggers the download of a specific software package to the PNF Software MnS Provider. This download service includes integrity checks on the downloaded software and the installation of the software into the software slot corresponding to the softwarePackage MOI. | <div>Operation</div> <div>is<br/>Operation<br/>idempotent:<br/>false</div> <div>is<br/>Atomic:<br/>false</div> <div>support:<br/>MANDATORY</div> |

|                  |                                                                                                                                                                                                                                                                                                                                       |                                                                                                                             |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| SoftwarePreCheck | Software Pre-check is an optional Use Case that the Service Provider may choose to utilize to confirm that the PNF Software MnS Provider is in a good state to activate the new software and provide information needed for planning the timing of the software replacement--such as whether a reset or a data migration is required. | OpenModelOperation<br>.<br>is<br>OperationIdempotent:<br>false<br>.<br>is<br>Atomic:<br>false<br>.<br>support:<br>MANDATORY |
| SoftwareActivate | PNF Software MnS Consumer triggers the activation of a software package on the PNF Software MnS Provider including data migration and reset if needed.                                                                                                                                                                                | OpenModelOperation<br>.<br>is<br>OperationIdempotent:<br>false<br>.<br>is<br>Atomic:<br>false<br>.<br>support:<br>MANDATORY |

#### 2.1.1.14 O1\* interface

**Qualified Name:** ORAN::Interfaces::O1\*

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY

#### 2.1.1.15 W1 interface

**Qualified Name:** ORAN::Interfaces::W1

**Description:**

: interface between an eNB-CU and an eNB-DU, providing an interconnection point between the eNB-CU and the eNB-DU.

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY
- Reference
- reference: 3GPP TS 37.470

**2.1.1.16 X2 interface**

**Qualified Name:** ORAN::Interfaces::X2

**Description:**

The X2 interface supports the exchange of signalling information between two eNBs. In addition, the interface supports the forwarding of PDUs to the respective tunnel endpoints.

**Applied Stereotypes:**

- OpenModelInterface
- support: MANDATORY
- Reference
- reference: 3GPP TS 36.423

**Table 57 Operations for Interface X2**

| Operation Name      | Parameters | Description                                                                                                                              | Stereotypes                                                                                                   |
|---------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| HandoverPreparation |            | This procedure is used to establish necessary resources in an eNB for an incoming handover. The procedure uses UE-associated signalling. | OpenModelOperation<br><br>· isOperationIdempotent: false<br><br>· isAtomic: false<br><br>· support: MANDATORY |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                       |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| SNStatusTransfer | The purpose of the SN Status Transfer procedure is to transfer the uplink PDCP SN and HFN receiver status and the downlink PDCP SN and HFN transmitter status either, from the source to the target eNB during an X2 handover, between the eNBs involved in dual connectivity and/or LWA, or between MeNB and en-gNB involved in EN-DC, for each respective E-RAB for which PDCP SN and HFN status preservation applies. | OpenModelOperation<br><br>· is<br>OperationIdempotent: false<br><br>· is<br>Atomic: false<br><br>· support: MANDATORY |
| UEContextRelease | For handover, the UE Context Release procedure is initiated by the target eNB to indicate to the source eNB that radio and control plane resources for the associated UE context are allowed to be released.                                                                                                                                                                                                             | OpenModelOperation<br><br>· is<br>OperationIdempotent: false<br><br>· is<br>Atomic: false<br><br>· support: MANDATORY |
| HandoverCancel   | The Handover Cancel procedure is used to enable a source eNB to cancel an ongoing handover preparation or an already prepared handover.                                                                                                                                                                                                                                                                                  | OpenModelOperation<br><br>· is<br>OperationIdempotent: false<br><br>· is<br>Atomic: false<br><br>· support: MANDATORY |

|                 |                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                       |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| LoadIndication  | The purpose of the Load Indication procedure is to transfer load and interference co-ordination information between eNBs controlling intra-frequency neighboring cells, and additionally between eNBs controlling inter-frequency neighboring cells for TDD.                                                                                                              | OpenModelOperation<br><br>· is<br>OperationIdempotent: false<br><br>· is<br>Atomic: false<br><br>· support: MANDATORY |
| ErrorIndication | The Error Indication procedure is initiated by an eNB to report detected errors in one incoming message, provided they cannot be reported by an appropriate failure message.                                                                                                                                                                                              | OpenModelOperation<br><br>· is<br>OperationIdempotent: false<br><br>· is<br>Atomic: false<br><br>· support: MANDATORY |
| X2Setup         | The purpose of the X2 Setup procedure is to exchange application level configuration data needed for two eNBs to interoperate correctly over the X2 interface. This procedure erases any existing application level configuration data in the two nodes and replaces it by the one received. This procedure also resets the X2 interface like a Reset procedure would do. | OpenModelOperation<br><br>· is<br>OperationIdempotent: false<br><br>· is<br>Atomic: false<br><br>· support: MANDATORY |

|                                   |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                       |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reset                             | <p>The purpose of the Reset procedure is to align the resources in eNB1 and eNB2, or the resources in eNB and en-gNB involved in the EN-DC in the event of an abnormal failure. The procedure resets the X2 interface. This procedure doesn't affect the application level configuration data exchanged during, e.g., the X2 Setup procedure, EN-DC X2 Setup procedure.</p> | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is Operationndependent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| ENBConfigurationUpdate            | <p>The purpose of the eNB Configuration Update procedure is to update application level configuration data needed for two eNBs to interoperate correctly over the X2 interface.</p>                                                                                                                                                                                         | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is Operationndependent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| ResourceStatusReportingInitiation | <p>This procedure is used by an eNB to request the reporting of load measurements to another eNB. The procedure uses non UE-associated signalling.</p>                                                                                                                                                                                                                      | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is Operationndependent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                           |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ResourceS<br>tatusReport<br>ing    | <p>This procedure is initiated by eNB2 to report the result of measurements admitted by eNB2 following a successful Resource Status Reporting Initiation procedure.</p> <p>The procedure uses non UE-associated signalling.</p>                                                                                                                                                                                                                                                                                                                              | <p>OpenMo<br/>delOper<br/>ation</p> <p>· is<br/>Operatio<br/>nldemp<br/>otent: f<br/>alse</p> <p>· is<br/>Atomic:<br/>false</p> <p>· su<br/>pport:<br/>MANDA<br/>TORY</p> |
| MobilitySett<br>ingsChange         | <p>This procedure enables an eNB to negotiate the handover trigger settings with a peer eNB controlling neighbouring cells.</p> <p>The procedure uses non UE-associated signalling.</p>                                                                                                                                                                                                                                                                                                                                                                      | <p>OpenMo<br/>delOper<br/>ation</p> <p>· is<br/>Operatio<br/>nldemp<br/>otent: f<br/>alse</p> <p>· is<br/>Atomic:<br/>false</p> <p>· su<br/>pport:<br/>MANDA<br/>TORY</p> |
| RadioLinkF<br>ailure<br>Indication | <p>The purpose of the Radio Link Failure Indication procedure is to transfer information regarding RRC re-establishment attempts, or received RLF Reports, between eNBs. The signalling takes place from the eNB at which a re-establishment attempt is made, or an RLF Report is received, to an eNB to which the UE concerned may have previously been attached prior to the connection failure. This may aid the detection of radio link failure and handover failure cases (TS 36.300 [15]).</p> <p>The procedure uses non UE-associated signalling.</p> | <p>OpenMo<br/>delOper<br/>ation</p> <p>· is<br/>Operatio<br/>nldemp<br/>otent: f<br/>alse</p> <p>· is<br/>Atomic:<br/>false</p> <p>· su<br/>pport:<br/>MANDA<br/>TORY</p> |

|                |                                                                                                                                                                                                                                                                                               |                                                                                                                                |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| HandoverReport | <p>The purpose of the Handover Report procedure is to transfer mobility related information between eNBs.</p> <p>The procedure uses non UE-associated signalling.</p>                                                                                                                         | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| CellActivation | <p>The purpose of the Cell Activation procedure is to request to a neighbouring eNB to switch on one or more cells, previously reported as inactive due to energy saving reasons.</p> <p>The procedure uses non UE-associated signalling.</p>                                                 | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| X2Removal      | <p>The purpose of the X2 Removal procedure is to remove the signaling connection between two eNBs in a controlled manner. If successful, this procedure erases any existing application level configuration data in the two nodes.</p> <p>The procedure uses non UE-associated signaling.</p> | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                       |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RetrieveUE Context              | <p>The purpose of the Retrieve UE Context procedure is to retrieve the UE context from the eNB where the RRC connection has been suspended (old eNB) and transfer it to the eNB where the RRC Connection has been requested to be resumed (new eNB) or to retrieve the UE context for a UE which attempts to re-establish its RRC connection in an eNB (the new eNB) different from the eNB (the old eNB) where the RRC connection failed, e.g. due to RLF.</p> <p>The procedure uses UE-associated signalling.</p>                                                  | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| EN-DCX2Removal                  | <p>The purpose of the EN-DC X2 Removal procedure is to remove the signaling connection between eNB and en-gNB in a controlled manner. If successful, this procedure erases any existing application level configuration data in the two nodes.</p> <p>NOTE: In case the signalling transport is shared among several X2-C interface instances, and the TNL association is still used by one or more X2-C interface instances, the initiating node should not initiate the removal of the TNL association.</p> <p>The procedure uses non UE-associated signaling.</p> | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| DataForwardingAddressIndication | <p>The purpose of the Data Forwarding Address Indication procedure is to allow the new eNB to provide data forwarding addresses to the old eNB in case the RRC connection has been re-established, as specified in TS 36.300 [15].</p> <p>The procedure uses UE-associated signalling.</p>                                                                                                                                                                                                                                                                           | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                                 |                                                                                                                                                                                                                                       |                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| X2APMessageTransfer             | <p>The purpose of the X2AP Message Transfer procedure is to allow indirect transport of an X2AP message (except the X2AP MESSAGE TRANSFER message) between two eNBs and to allow an eNB to perform registration.</p>                  | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| SeNB Addition Preparation       | <p>The purpose of the SeNB Addition Preparation procedure is to request the SeNB to allocate resources for dual connectivity operation for a specific UE.</p> <p>The procedure uses UE-associated signalling.</p>                     | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| SeNB Reconfiguration Completion | <p>The purpose of the SeNB Reconfiguration Completion procedure is to provide information to the SeNB whether the requested configuration was successfully applied by the UE.</p> <p>The procedure uses UE-associated signalling.</p> | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                                              |                                                                                                                                                                                           |                                                                                                                                                                       |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MeNB initiated SeNB Modification Preparation | <p>This procedure is used to enable an MeNB to request an SeNB to modify the UE context at the SeNB.</p> <p>The procedure uses UE-associated signalling.</p>                              | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| SeNB initiated SeNB Modification             | <p>This procedure is used by the SeNB to modify the UE context in the SeNB.</p> <p>The procedure uses UE-associated signalling.</p>                                                       | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| MeNBInitiatedSeNBRelease                     | <p>The MeNB initiated SeNB Release procedure is triggered by the MeNB to initiate the release of the resources for a specific UE.</p> <p>The procedure uses UE-associated signalling.</p> | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| SeNBInitiatedSeNBRelease | <p>This procedure is triggered by the SeNB to initiate the release of the resources for a specific UE.</p> <p>The procedure uses UE-associated signalling.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| SeNBCounterCheck         | <p>This procedure is initiated by the SeNB to request the MeNB to execute a counter check procedure to verify the value of the PDCP COUNTs associated with SCG bearers established in the SeNB.</p> <p>The procedure uses UE-associated signalling.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| EN-DCX2Setup             | <p>The purpose of the EN-DC X2 Setup procedure is to exchange application level configuration data needed for eNB and en-gNB to interoperate correctly over the X2 interface. This procedure erases any existing application level configuration data in the two nodes and replaces it by the one received. This procedure also resets the X2 interface like a Reset procedure would do.</p> <p>NOTE: If X2-C signalling transport is shared among multiple X2-C interface instances, one EN-DC X2 Setup procedure is issued per X2-C interface instance to be setup, i.e. several X2 Setup procedures may be issued via the same TNL association after that TNL association has become operational.</p> <p>The procedure uses non UE-associated signalling.</p> | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |

|                          |                                                                                                                                                                                                                                                                      |                                                                                                                                                                        |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN-DCConfigurationUpdate | <p>The purpose of the EN-DC Configuration Update procedure is to update application level configuration data needed for eNB and en-gNB to interoperate correctly over the X2 interface.</p> <p>The procedure uses non UE-associated signalling.</p>                  | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIndependent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| EN-DCCellActivation      | <p>The purpose of the EN-DC Cell Activation procedure is to enable an eNB to request a neighbouring en-gNB to switch on one or more cells, previously reported as inactive due to energy saving reasons.</p> <p>The procedure uses non UE-associated signalling.</p> | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIndependent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| SgNBAdditionPreparation  | <p>The purpose of the SgNB Addition Preparation procedure is to request the en-gNB to allocate resources for EN-DC connectivity operation for a specific UE.</p> <p>The procedure uses UE-associated signalling.</p>                                                 | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIndependent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| SgNBReconfiguration Completion           | <p>The purpose of the SgNB Reconfiguration Completion procedure is to provide information to the en-gNB whether the requested configuration was successfully applied by the UE.</p> <p>The procedure uses UE-associated signalling.</p>                                                                                              | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| MeNBInitiatedSgNBModificationPreparation | <p>This procedure is used to enable an MeNB to request an en-gNB to modify the UE context at the en-gNB, or to query the current SCG configuration for supporting delta signalling in MeNB initiated SgNB change, or to provide the S-RLF-related information to the en-gNB.</p> <p>The procedure uses UE-associated signalling.</p> | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| SgNBInitiatedSgNBModification            | <p>This procedure is used by the en-gNB to modify the UE context in the en-gNB.</p> <p>The procedure uses UE-associated signalling.</p>                                                                                                                                                                                              | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |

|                          |                                                                                                                                                                                           |                                                                                                                                |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| SgNBChange               | <p>This procedure is used by the en-gNB to change to another en-gNB.</p> <p>The procedure uses UE-associated signalling.</p>                                                              | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| MeNBInitiatedSgNBRelease | <p>The MeNB initiated SgNB Release procedure is triggered by the MeNB to initiate the release of the resources for a specific UE.</p> <p>The procedure uses UE-associated signalling;</p> | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| SgNBInitiatedSgNBRelease | <p>This procedure is triggered by the en-gNB to initiate the release of the resources for a specific UE.</p> <p>The procedure uses UE-associated signalling.</p>                          | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                       |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SgNBCounterCheck            | <p>This procedure is initiated by the en-gNB to request the MeNB to execute a counter check procedure to verify the value of the PDCP COUNTs associated with SN terminated bearers.</p> <p>The procedure uses UE-associated signalling.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| RRCTransfer                 | <p>The purpose of the RRC Transfer procedure is to deliver a PDCP-C PDU encapsulating an LTE RRC message to the en-gNB so that it may then be forwarded to the UE, or from the en-gNB, if it was received from the UE. Delivery status may also be provided from the en-gNB to the MeNB using the RRC Transfer.</p> <p>The procedure is also to enable transfer of the NR RRC message container with the NR measurements from the MeNB to the en-gNB, when received from the UE.</p> <p>The procedure is also to enable transfer of the NR RRC message container with the NR failure information from the MeNB to the en-gNB, when received from the UE.</p> <p>The procedure uses UE-associated signalling.</p> | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |
| SecondaryRATDataUsageReport | <p>This procedure is initiated by the en-gNB to report secondary RAT data volume.</p> <p>The procedure uses UE-associated signalling.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>OpenModelOperation</p> <ul style="list-style-type: none"> <li>· is OperationIdempotent: false</li> <li>· is Atomic: false</li> <li>· support: MANDATORY</li> </ul> |

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| PartialResetOfEN-DC               | <p>This procedure is triggered by the en-gNB or the MeNB to initiate the reset of the resources for selected UEs.</p> <p>The procedure uses non UE-associated signalling.</p>                                                                                                                                                                                                                                                                                                                                                                                  | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| E-UTRA-NRCellResourceCoordination | <p>The purpose of the E-UTRA – NR Cell Resource Coordination procedure is to enable coordination of radio resource allocation between an eNB and an en-gNB that are sharing spectrum and whose coverage areas are fully or partially overlapping. During the procedure, the eNB and en-gNB shall exchange their intended resource allocations for data traffic, and, if possible, converge to a shared resource. The procedure is only to be used for the purpose of E-UTRA – NR spectrum sharing.</p> <p>The procedure uses non-UE-associated signalling.</p> | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| SgNBActivityNotification          | <p>The purpose of the SgNB Activity Notification procedure is to allow an en-gNB to send a notification to an eNB concerning user data traffic activity of already established E-RABs. The procedure uses UE-associated signalling.</p>                                                                                                                                                                                                                                                                                                                        | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |

|                            |                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| GNBStatus<br>Indication    | <p>The purpose of the gNB Status Indication procedure is to inform the eNB that the en-gNB is overloaded so that overload reduction actions can be applied. The procedure uses non-UE associated signalling.</p>                                                                                                                  | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| EN-DCConfigurationTransfer | <p>The purpose of the EN-DC Configuration Transfer procedure is to transfer the EN-DC SON Configuration container, either from the eNB to the en-gNB or from the en-gNB to the eNB, in the context of en-gNB X2 TNL address discovery as described in TS 36.300 [15].</p> <p>The procedure uses non UE-associated signalling.</p> | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |
| TraceStart                 | <p>The purpose of the Trace Start procedure is to allow the MeNB to request the en-gNB to initiate a trace session for a UE. The procedure uses UE-associated signalling.</p>                                                                                                                                                     | <p>OpenModelOperation</p> <p>· is<br/>OperationIdempotent: false</p> <p>· is<br/>Atomic: false</p> <p>· support: MANDATORY</p> |

|                  |                                                                                                                                                                                                    |                                                                                                                       |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Deactivate Trace | The purpose of the Deactivate Trace procedure is to allow the MeNB to request the en-gNB to stop the trace session for the indicated trace reference. The procedure uses UE-associated signalling. | OpenModelOperation<br><br>· is<br>OperationIdempotent: false<br><br>· is<br>Atomic: false<br><br>· support: MANDATORY |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|

### 3 ObjectClasses

#### 3.1 Overview

**Qualified Name:** ORAN::ObjectClasses

##### 3.1.1 Classes

###### 3.1.1.1 XAppMgr class

**Qualified Name:** ORAN::ObjectClasses:: XAppMgr

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

###### 3.1.1.2 CarrierPreferenceConnection class

**Qualified Name:** ORAN::ObjectClasses::CarrierPreferenceConnection

**Description:**

to select the carrier to use in a different way than what would be through default behavior

**Parent class:** PolicyStatement

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

**Table 61 Attributes for Package ObjectClasses**

| Attribute Name | Type | Mult. | Description | Stereotypes |
|----------------|------|-------|-------------|-------------|
|----------------|------|-------|-------------|-------------|

|                       |                |   |                                                                        |                                                                                                                                                                                                                                  |
|-----------------------|----------------|---|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cellCarrierId         | String         | 1 | the identity of a carrier in a cell for which policy is applicable     | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| cellCarrierRelationId | String         | 1 | the identifier of a cell relation (Neighbour Cell Relattion [36.300])  | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| preference            | PreferenceType | 1 | the preference of carrier usage [shall/prefer/avoid/forbid].           | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| primary               | PrimaryType    | 1 | indicates if the carrier is used as primary connection [Yes, No, null] | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

### 3.1.1.3 CarrierPreferenceTraffic class

**Qualified Name:** ORAN::ObjectClasses::CarrierPreferenceTraffic

**Description:**

to schedule traffic on available carriers in a different way than what would be through default behavior

**Parent class:** PolicyStatement

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

**Table 62 Attributes for Package ObjectClasses**

| Attribute Name        | Type           | Mult. | Description                                                           | Stereotypes                                                                                                                                                                                                                      |
|-----------------------|----------------|-------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cellCarrierId         | String         | 1     | the identity of a carrier in a cell for which policy is applicable [] | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| cellCarrierRelationId | String         | 1     | the identifier of a cell relation (Neighbour Cell Relattion [36.300]) | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| preference            | PreferenceType | 1     | the preference of carrier usage [shall/prefer/avoid/forbid].          | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

#### 3.1.1.4 EnergyEfficiencyMode class

**Qualified Name:** ORAN::ObjectClasses::EnergyEfficiencyMode

**Description:**

to optimize operation for energy efficiency

An energy efficiency policy is to apply either for a specific cell, or for the whole system (all cells). In a cell it can apply to a specific carrier or to all carriers.

**Parent class:** PolicyStatement

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

**Table 63 Attributes for Package ObjectClasses**

| Attribute Name | Type             | Mult. | Description                                                        | Stereotypes                                                                                                                                      |
|----------------|------------------|-------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| cellCarrierId  | String           | 0..1  | the identity of a carrier in a cell for which policy is applicable | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| efficiencyMode | OptimizationType | 1     | the preference for efficiency [full capacity/energy efficient      | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

### 3.1.1.5      **InfrastrutureManagementFramework class**

**Qualified Name:** ORAN::ObjectClasses::InfrastrutureManagementFramework

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

### 3.1.1.6      **ManagedElement class**

**Qualified Name:** ORAN::ObjectClasses::ManagedElement

**Description:**

This IOC (Information Object Class) represents telecommunications equipment or TMN entities within the telecommunications network providing support and/or service to the subscriber.

An ME communicates with a manager (directly or indirectly) over one or more management interfaces for the purpose of being monitored and/or controlled. MEs may or may not additionally perform element management functionality.

An ME contains equipment that may or may not be geographically distributed. An ME is often referred to as a "Network Element".

A telecommunication equipment has software and hardware components. The IOC described above represents the case when the software component is designed to run on dedicated hardware component. In the case when the software is designed to run on ETSI NFV defined NFVI [15], the IOC description would exclude the NFVI component supporting the above mentioned subject software. A ManagedElement may be contained in either a SubNetwork or in a MeContext instance. A single ManagedElement may also exist stand-alone with no parent at all.

The ManagedElement IOC may be used to represent combined ME functionality (as indicated by the managedElementType attribute and the contained instances of different functional IOCs).

Single function ManagedElement IOC instances will have a 1..1 containment relationship to a function IOC instance (in this context a function IOC instance is an instance of an IOC derived from the ManagedFunction IOC). Multiple function ManagedElement instances will have a 1..N containment relationship to function IOC instances.

NOTE: For some specific functional IOCs a 1..N containment relationship is permitted. The specific functional entities are identified in the NRMs that define subclasses of ManagedFunction.

This class is abstract.

Applied Stereotypes:

- OpenModelClass
- support: MANDATORY
- Reference
- reference: 3GPP TS 28622

Table 64 Attributes for Package ObjectClasses

| Attribute Name | Type   | Mult. | Description                                                                                                                                                                                                                | Stereotypes                                                                                                                                                              |
|----------------|--------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| id             | DN     | 1     | An attribute whose &quot;name+value&quot; can be used as an RDN when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance. | OpenModelAttribute<br><br>· partOfObjectKey: 0<br><br>· uniqueSet:<br><br>· isInvariant: false<br><br>· unsigned: false<br><br>· counter: NA<br><br>· support: MANDATORY |
| vendor Name    | String | 1     | The name of the vendor.                                                                                                                                                                                                    | OpenModelAttribute<br><br>· partOfObjectKey: 0<br><br>· uniqueSet:<br><br>· isInvariant: false<br><br>· unsigned: false<br><br>· counter: NA<br><br>· support: MANDATORY |

|                  |         |      |                                                                                                                                                                                                                                                             |                                                                                                                                                  |
|------------------|---------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| userDefinedState | String  | 1    | An operator defined state for operator specific usage.                                                                                                                                                                                                      | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| swVersion        | String  | 0..1 | The software version of the ManagementNode or ManagedElement (this is used for determining which version of the vendor specific information is valid for the ManagementNode or ManagedElement).                                                             | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| priorityLabel    | Integer | 1    | This is a label that consumer would assign a value on a concrete instance of the managed object. The management system takes the value of this attribute into account. The effect of this attribute value to the subject managed entity is not standardized | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

### 3.1.1.7 ManagedFunction class

**Qualified Name:** ORAN::ObjectClasses::ManagedFunction

**Description:**

This IOC is provided for sub-classing only. It provides attribute(s) that are common to functional IOCs. Note that a ManagedElement may contain several managed functions. The ManagedFunction may be extended in the future if more common characteristics to functional objects are identified.

This IOC can represent a telecommunication function either realized by software running on dedicated hardware or realized by software running on NFVI. Each ManagedFunction instance communicates with a manager (directly or indirectly) over one or more management interfaces exposed via its containing ME instance.

This class is abstract.

Applied Stereotypes:

- OpenModelClass
- support: MANDATORY
- Reference
- reference: 3GPP TS 28622

Table 65 Attributes for Package ObjectClasses

| Attribute Name   | Type   | Mult. | Description                                                                                                                                                                                                      | Stereotypes                                                                                                                                                               |
|------------------|--------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| id               | DN     | 1     | An attribute whose "name+value" can be used as an RDN when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance. | OpenModelAttribute<br><br>· partOfObjectKey: 0<br><br>· unique Set:<br><br>· isInvariant: false<br><br>· unsigned: false<br><br>· counter: NA<br><br>· support: MANDATORY |
| vnfParameterList | String | 0..*  | This attribute contains the parameter set of the VNF instance(s) corresponding to an NE. Each entry in the list contains:<br>- vnfInstanceId<br>- vnfId (optional)<br>- flavourId (optional)<br>- autoScalable   | OpenModelAttribute<br><br>· partOfObjectKey: 0<br><br>· unique Set:<br><br>· isInvariant: false<br><br>· unsigned: false<br><br>· counter: NA<br><br>· support: MANDATORY |

|               |         |      |                                                                                                                                                                                                                                                             |                                                                                                                                                   |
|---------------|---------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| parameterList | String  | 0..* | This attribute contains the parameter list for the control and monitoring of power, energy and environmental parameters of ManagedFunction instance(s).                                                                                                     | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| priorityLabel | Integer | 1    | This is a label that consumer would assign a value on a concrete instance of the managed object. The management system takes the value of this attribute into account. The effect of this attribute value to the subject managed entity is not standardized | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

### 3.1.1.8 NearRTRIC class

**Qualified Name:** ORAN::ObjectClasses::NearRTRIC

**Parent class:** ManagedFunction

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

### 3.1.1.9 NonRTRIC (RGPF) class

**Qualified Name:** ORAN::ObjectClasses::NonRTRIC (RGPF)

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

### 3.1.1.10 OCUCPFunction class

**Qualified Name:** ORAN::ObjectClasses::OCUCPFunction

**Description:**

This IOC represents the logical function CU-CP of gNB and en-gNB defined in 3GPP TS 38.401 [4].

Parent class: ManagedFunction

Applied Stereotypes:

- OpenModelClass
- support: MANDATORY
- Reference
- reference: 3GPP TS 28541

Table 66 Attributes for Package ObjectClasses

| Attribute Name | Type    | Mult. | Description                                                                                             | Stereotypes                                                                                                                                                               |
|----------------|---------|-------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| gNBId          | String  | 1     | It identifies a gNB within a PLMN. The gNB ID is part of the NR Cell Identifier (NCI) of the gNB cells. | OpenModelAttribute<br><br>· partOfObjectKey: 0<br><br>· unique Set:<br><br>· isInvariant: false<br><br>· unsigned: false<br><br>· counter: NA<br><br>· support: MANDATORY |
| gNBIDLength    | Integer | 1     | This indicates the number of bits for encoding the gNB ID                                               | OpenModelAttribute<br><br>· partOfObjectKey: 0<br><br>· unique Set:<br><br>· isInvariant: false<br><br>· unsigned: false<br><br>· counter: NA<br><br>· support: MANDATORY |

|                |            |         |                                                                                                                                                                                                                  |                                                                                                                                                                                                                       |
|----------------|------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| gNBCU<br>Name  | String     | 1       | It identifies the Central Entity of a NR node                                                                                                                                                                    | OpenModelAttribute<br><ul style="list-style-type: none"> <li>partOfObjectKey: 0</li> <li>unique Set:</li> <li>isInvariant: false</li> <li>unsigned: false</li> <li>counter: NA</li> <li>support: MANDATORY</li> </ul> |
| plMNid<br>List | PLM<br>Nid | 1.<br>* | List of unique identities for PLMN.                                                                                                                                                                              | OpenModelAttribute<br><ul style="list-style-type: none"> <li>partOfObjectKey: 0</li> <li>unique Set:</li> <li>isInvariant: false</li> <li>unsigned: false</li> <li>counter: NA</li> <li>support: MANDATORY</li> </ul> |
| id             | DN         | 1       | An attribute whose "name+value" can be used as an RDN when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance. | OpenModelAttribute<br><ul style="list-style-type: none"> <li>partOfObjectKey: 0</li> <li>unique Set:</li> <li>isInvariant: false</li> <li>unsigned: false</li> <li>counter: NA</li> <li>support: MANDATORY</li> </ul> |

|                     |         |      |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                       |
|---------------------|---------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| vnfParameterList    | String  | 0..* | <p>This attribute contains the parameter set of the VNF instance(s) corresponding to an NE. Each entry in the list contains:</p> <ul style="list-style-type: none"> <li>- vnfInstanceId</li> <li>- vnfIdId (optional)</li> <li>- flavourId (optional)</li> <li>- autoScalable</li> </ul> | <p>OpenModelAttribute</p> <ul style="list-style-type: none"> <li>- partOfObjectKey: 0</li> <li>- unique Set:</li> <li>- isInvariant: false</li> <li>- unsigned: false</li> <li>- counter: NA</li> <li>- support: MANDATORY</li> </ul> |
| powerParametersList | String  | 0..* | <p>This attribute contains the parameter list for the control and monitoring of power, energy and environmental parameters of ManagedFunction instance(s).</p>                                                                                                                           | <p>OpenModelAttribute</p> <ul style="list-style-type: none"> <li>- partOfObjectKey: 0</li> <li>- unique Set:</li> <li>- isInvariant: false</li> <li>- unsigned: false</li> <li>- counter: NA</li> <li>- support: MANDATORY</li> </ul> |
| priorityLabel       | Integer | 1    | <p>This is a label that consumer would assign a value on a concrete instance of the managed object. The management system takes the value of this attribute into account. The effect of this attribute value to the subject managed entity is not standardized</p>                       | <p>OpenModelAttribute</p> <ul style="list-style-type: none"> <li>- partOfObjectKey: 0</li> <li>- unique Set:</li> <li>- isInvariant: false</li> <li>- unsigned: false</li> <li>- counter: NA</li> <li>- support: MANDATORY</li> </ul> |

### 3.1.1.11 OCUUPFunction class

**Qualified Name:** ORAN::ObjectClasses::OCUUPFunction

**Description:**

This IOC represents the logical function CU-UP of gNB or en-gNB defined in 3GPP TS 38.401 [4].

Parent class: ManagedFunction

Applied Stereotypes:

- OpenModelClass
- support: MANDATORY
- Reference
- reference: 3GPP TS 28541

Table 67 Attributes for Package ObjectClasses

| Attribute Name | Type   | Mult. | Description                                                                                             | Stereotypes                                                                                                                                       |
|----------------|--------|-------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| pLMNID List    | PLMNid | 1..*  | List of unique identities for PLMN.                                                                     | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| gNBId          | String | 1     | It identifies a gNB within a PLMN. The gNB ID is part of the NR Cell Identifier (NCI) of the gNB cells. | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

|                  |         |      |                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                       |
|------------------|---------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| gNBIdLength      | Integer | 1    | This indicates the number of bits for encoding the gNB ID                                                                                                                                                                                                                | OpenModelAttribute<br><ul style="list-style-type: none"> <li>partOfObjectKey: 0</li> <li>unique Set:</li> <li>isInvariant: false</li> <li>unsigned: false</li> <li>counter: NA</li> <li>support: MANDATORY</li> </ul> |
| id               | DN      | 1    | An attribute whose "name+value" can be used as an RDN when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.                                                         | OpenModelAttribute<br><ul style="list-style-type: none"> <li>partOfObjectKey: 0</li> <li>unique Set:</li> <li>isInvariant: false</li> <li>unsigned: false</li> <li>counter: NA</li> <li>support: MANDATORY</li> </ul> |
| vnfParameterList | String  | 0..* | This attribute contains the parameter set of the VNF instance(s) corresponding to an NE. Each entry in the list contains: <ul style="list-style-type: none"> <li>vnfInstanceId</li> <li>vnfdId (optional)</li> <li>flavourId (optional)</li> <li>autoScalable</li> </ul> | OpenModelAttribute<br><ul style="list-style-type: none"> <li>partOfObjectKey: 0</li> <li>unique Set:</li> <li>isInvariant: false</li> <li>unsigned: false</li> <li>counter: NA</li> <li>support: MANDATORY</li> </ul> |

|                   |         |      |                                                                                                                                                                                                                                                             |                                                                                                                                                   |
|-------------------|---------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| peeParametersList | String  | 0..* | This attribute contains the parameter list for the control and monitoring of power, energy and environmental parameters of ManagedFunction instance(s).                                                                                                     | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| priorityLabel     | Integer | 1    | This is a label that consumer would assign a value on a concrete instance of the managed object. The management system takes the value of this attribute into account. The effect of this attribute value to the subject managed entity is not standardized | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

### 3.1.1.12 ODUFunction class

**Qualified Name:** ORAN::ObjectClasses::ODUFunction

**Description:**

This IOC represents the logical function DU of gNB or en-gNB defined in 3GPP TS 38.401 [4].

**Parent class:** ManagedFunction

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY
- Reference
- reference: 3GPP TS 28541

**Table 68 Attributes for Package ObjectClasses**

| Attribute Name | Type | Mult. | Description | Stereotypes |
|----------------|------|-------|-------------|-------------|
|----------------|------|-------|-------------|-------------|

|         |         |   |                                                                                                         |                                                                                                                                                                                                                                   |
|---------|---------|---|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| gNBDUId | Integer | 1 | It uniquely identifies the DU at least within a gNB.                                                    | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· unique Set:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| gNBName | String  | 1 | It identifies the Distributed Entity of a NR node                                                       | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· unique Set:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| gNBId   | String  | 1 | It identifies a gNB within a PLMN. The gNB ID is part of the NR Cell Identifier (NCI) of the gNB cells. | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· unique Set:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

|                  |         |      |                                                                                                                                                                                                                                                                                 |                                                                                                                                                   |
|------------------|---------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| gNBIDLength      | Integer | 1    | This indicates the number of bits for encoding the gNB ID                                                                                                                                                                                                                       | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| id               | DN      | 1    | An attribute whose "name+value" can be used as an RDN when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.                                                                | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| vnfParameterList | String  | 0..* | This attribute contains the parameter set of the VNF instance(s) corresponding to an NE. Each entry in the list contains: <ul style="list-style-type: none"> <li>- vnfInstanceId</li> <li>- vnfId (optional)</li> <li>- flavourId (optional)</li> <li>- autoScalable</li> </ul> | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

|               |         |      |                                                                                                                                                                                                                                                             |                                                                                                                                                   |
|---------------|---------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| parameterList | String  | 0..* | This attribute contains the parameter list for the control and monitoring of power, energy and environmental parameters of ManagedFunction instance(s).                                                                                                     | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| priorityLabel | Integer | 1    | This is a label that consumer would assign a value on a concrete instance of the managed object. The management system takes the value of this attribute into account. The effect of this attribute value to the subject managed entity is not standardized | OpenModelAttribute<br>· partOfObjectKey: 0<br>· unique Set:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

### 3.1.1.13 ORUFunction class

**Qualified Name:** ORAN::ObjectClasses::ORUFunction

**Parent class:** ManagedFunction

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

### 3.1.1.14 Policy class

**Qualified Name:** ORAN::ObjectClasses::Policy

**Description:**

A policy object always contains one or more sets of:

- one policy identifier (PolicyID);
- one policy type identifier (TypeID);
- one scope identifier;

and

- one or more policy statements.

**Applied Stereotypes:**

- Experimental
- OpenModelClass
- support: MANDATORY
- Reference
- reference: 08.14-oRAN.WG2-A1AP\_v00.00.01

**Table 69 Attributes for Package ObjectClasses**

| Attribute Name | Type                 | Mult. | Description                                                                     | Stereotypes                                                                                                                                      |
|----------------|----------------------|-------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| policyId       | String               | 1     | policy identifier assigned by the A1-P Producer when a policy is created        | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| policyType     | PolicyCapabilityType | 1     | policy type identifier                                                          | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| ueld           | String               | 0..1  | UE identifier                                                                   | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| groupId        | String               | 0..1  | identifer of a pre-defined group of UEs, either NSSAI [23.501] or SPID [25.401] | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

|        |        |      |                          |                                                                                                                                                                                                                   |
|--------|--------|------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cellId | String | 0..1 | cell identifier [23.003] | OpenModelAttribute <ul style="list-style-type: none"> <li>partOfObjectKey: 0</li> <li>uniqueSet:</li> <li>isInvariant: false</li> <li>unsigned: false</li> <li>counter: NA</li> <li>support: MANDATORY</li> </ul> |
|--------|--------|------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 3.1.1.15 PolicyError class

**Qualified Name:** ORAN::ObjectClasses::PolicyError

**Applied Stereotypes:**

- Experimental
- OpenModelClass
- support: MANDATORY

**Table 610 Attributes for Package ObjectClasses**

| Attribute Name | Type               | Mult. | Description                                                                       | Stereotypes                                                                                                                                                                                                                           |
|----------------|--------------------|-------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| problemDetails | ProblemDetailsType | 1..*  | In case a policy request is not accepted, additional information can be provided. | Experimental<br><br>OpenModelAttribute <ul style="list-style-type: none"> <li>partOfObjectKey: 0</li> <li>uniqueSet:</li> <li>isInvariant: false</li> <li>unsigned: false</li> <li>counter: NA</li> <li>support: MANDATORY</li> </ul> |
| _policy        | Policy             | 1     | Policy that this error is associated with.                                        | OpenModelAttribute <ul style="list-style-type: none"> <li>partOfObjectKey: 0</li> <li>uniqueSet:</li> <li>isInvariant: false</li> <li>unsigned: false</li> <li>counter: NA</li> <li>support: MANDATORY</li> </ul>                     |

### 3.1.1.16 PolicyList class

**Qualified Name:** ORAN::ObjectClasses::PolicyList

**Description:**

The policy list object is a representation of the collection of policies

**Applied Stereotypes:**

- Experimental
- OpenModelClass
- support: MANDATORY

**Table 611 Attributes for Package ObjectClasses**

| Attribute Name | Type                  | Mult. | Description                                                              | Stereotypes                                                                                                                                                          |
|----------------|-----------------------|-------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| policyId       | String                | 1     | policy identifier assigned by the A1-P Producer when a policy is created | Experimental<br><br>OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| enforceStatus  | EnforcementStatusType | 1     |                                                                          | Experimental<br><br>OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| _policy        | Policy                | 1..*  | List of policies specified by the PolicyList                             | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY                     |

**3.1.1.17 PolicyNotification class**

**Qualified Name:** ORAN::ObjectClasses::PolicyNotification

**Description:**

The policy notification object is the A1 policy feedback message

**Applied Stereotypes:**

- Experimental
- OpenModelClass
- support: MANDATORY
- Reference
- reference: ATT-2019.09.16-ORAN.WG2-CR-A1\_AP\_policyNotifications\_v2

**Table 612 Attributes for Package ObjectClasses**

| Attribute Name | Type                  | Mult. | Description                                                    | Stereotypes                                                                                                                                                          |
|----------------|-----------------------|-------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| enforceStatus  | EnforcementStatusType | 1     | indicating if policy is being enforced or not                  | Experimental<br><br>OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| enforceReason  | EnforcementReasonType | 0..1  | Indicating the reason why a policy is no longer being enforced | Experimental<br><br>OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| _policy        | Policy                | 1     | The policy that this notification is for.                      | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY                     |

### 3.1.1.18 PolicyStatement class

**Qualified Name:** ORAN::ObjectClasses::PolicyStatement

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

### 3.1.1.19 Qos5QiMod class

**Qualified Name:** ORAN::ObjectClasses::Qos5QiMod

**Description:**

Part of QoS profile for change of QoS characteristic(s) of a standard 5QI value

**Parent class:** QosProfile

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

**Table 613 Attributes for Package ObjectClasses**

| Attribute Name | Type    | Mult. | Description                       | Stereotypes                                                                                                                                                                                                               |
|----------------|---------|-------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| resourceType   | Boolean | 0..1  | Resource Type, see [23.501]       | OpenModelAttribute<br><ul style="list-style-type: none"><li>· partOfObjectKey: 0</li><li>· uniqueSet:</li><li>· isInvariant: false</li><li>· unsigned: false</li><li>· counter: NA</li><li>· support: MANDATORY</li></ul> |
| priorityLevel  | Number  | 0..1  | Priority Level, see [23.501]      | OpenModelAttribute<br><ul style="list-style-type: none"><li>· partOfObjectKey: 0</li><li>· uniqueSet:</li><li>· isInvariant: false</li><li>· unsigned: false</li><li>· counter: NA</li><li>· support: MANDATORY</li></ul> |
| pdb            | Number  | 0..1  | Packet Delay Budget, see [23.501] | OpenModelAttribute<br><ul style="list-style-type: none"><li>· partOfObjectKey: 0</li><li>· uniqueSet:</li><li>· isInvariant: false</li><li>· unsigned: false</li><li>· counter: NA</li><li>· support: MANDATORY</li></ul> |

|               |        |      |                                                 |                                                                                                                                                                                                                               |
|---------------|--------|------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| per           | Number | 0..1 | Packet Error Rate, see [23.501]                 | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| averageWindow | Number | 0..1 | Averaging Window, see [23.501]                  | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| mdbv          | Number | 0..1 | Maximum Data Burst Volume, see [23.501]         | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| 5qi           | Number | 1    | 5G QoS Identifier, see [23.501]                 | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| arp           | Arp    | 0..* | Allocation and Retention Priority, see [23.501] | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

### 3.1.1.20 Qos5qi class

**Qualified Name:** ORAN::ObjectClasses::Qos5qi

**Description:**

Part of QoS profile containing all QoS characteristics a for non-standard 5QI value

NOTE: Including this statement in a policy is conditionally mandatory for a policy object where the 5QI parameter in the qos\_profile statement has a non-standard value.

**Parent class:** QosProfile

**Applied Stereotypes:**

- OpenModelAttribute
- support: MANDATORY

**Table 614 Attributes for Package ObjectClasses**

| Attribute Name | Type    | Mult. | Description                       | Stereotypes                                                                                                                                      |
|----------------|---------|-------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| resourceType   | Boolean | 1     | Resource Type, see [23.501]       | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| priorityLevel  | Number  | 1     | Priority Level, see [23.501]      | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| pdb            | Number  | 1     | Packet Delay Budget, see [23.501] | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

|               |        |      |                                                 |                                                                                                                                                                                                                               |
|---------------|--------|------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| per           | Number | 1    | Packet Error Rate, see [23.501]                 | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| averageWindow | Number | 1    | Averaging Window, see [23.501]                  | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| mdbv          | Number | 1    | Maximum Data Burst Volume, see [23.501]         | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| 5qi           | Number | 1    | 5G QoS Identifier, see [23.501]                 | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| arp           | Arp    | 0..* | Allocation and Retention Priority, see [23.501] | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

### 3.1.1.21 QosGbr class

**Qualified Name:** ORAN::ObjectClasses::QosGbr

**Description:**

Part of QoS profile specific to GBR profiles

**Parent class:** QosProfile

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

**Table 615 Attributes for Package ObjectClasses**

| Attribute Name | Type    | Mult. | Description                            | Stereotypes                                                                                                                                      |
|----------------|---------|-------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| gfbr           | Number  | 1     | Guaranteed Flow Bit Rate, see [23.501] | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| mfbr           | Number  | 1     | Maximum Flow Bit Rate, see [23.501]    | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| notCtrl        | Boolean | 1     | Notification control, see [23.501]     | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

|        |        |      |                                                    |                                                                                                                                                                                                                                  |
|--------|--------|------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mplrUl | Number | 1    | Maximum Packet Loss Rate – Up Link, see [23.501]   | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| mplrDl | Number | 1    | Maximum Packet Loss Rate – Down Link, see [23.501] | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| 5qi    | Number | 1    | 5G QoS Identifier, see [23.501]                    | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| arp    | Arp    | 0..* | Allocation and Retention Priority, see [23.501]    | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

### 3.1.1.22 QosNonGbr class

**Qualified Name:** ORAN::ObjectClasses::QosNonGbr

**Description:**

Part of QoS profile specific to non-GBR profiles

**Parent class:** QosProfile

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

**Table 616 Attributes for Package ObjectClasses**

| Attribute Name | Type    | Mult. | Description                                     | Stereotypes                                                                                                                                                                                                                      |
|----------------|---------|-------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| rqa            | Boolean | 1     | Reflective QoS Attribute, see [23.501]          | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| 5qi            | Number  | 1     | 5G QoS Identifier, see [23.501]                 | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| arp            | Arp     | 0..*  | Allocation and Retention Priority, see [23.501] | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

### 3.1.1.23 QosProfile class

**Qualified Name:** ORAN::ObjectClasses::QosProfile

**Description:**

Common part of all QoS profiles

**Parent class:** PolicyStatement

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

**Table 617 Attributes for Package ObjectClasses**

| Attribute Name | Type   | Mult. | Description                                     | Stereotypes                                                                                                                                      |
|----------------|--------|-------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 5qi            | Number | 1     | 5G QoS Identifier, see [23.501]                 | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| arp            | Arp    | 0..*  | Allocation and Retention Priority, see [23.501] | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

### 3.1.1.24 ServiceManagementAndOrchestrationFramework class

**Qualified Name:** ORAN::ObjectClasses::ServiceManagementAndOrchestrationFramework

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

### 3.1.1.25 XApp class

**Qualified Name:** ORAN::ObjectClasses::XApp

**Description:**

An xAPP is a (collection of) microservice(s) that extend the functionality of a managed function.

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

### 3.1.1.26 eNodeB class

**Qualified Name:** ORAN::ObjectClasses::eNodeB

**Parent class:** ManagedFunction

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

# 4 Sandbox

## 4.1 Overview

Qualified Name: ORAN::Sandbox

### 4.1.1 Associations

#### 4.1.1.1 association

Qualified Name:

Warning: violation of modeling guidelines: association has not been named.

Table 71 Member ends for Association

| Attribute Name | Aggreg.   | Navig.     | Mult. | Type      | Description | Stereotypes                                                                                                                                      |
|----------------|-----------|------------|-------|-----------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| rapp           | composite | Not navig. | 0..*  | RApp      |             | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |
| nearrrtric     | none      | Not navig. | 1     | NearRtRic |             | OpenModelAttribute<br>· partOfObjectKey: 0<br>· uniqueSet:<br>· isInvariant: false<br>· unsigned: false<br>· counter: NA<br>· support: MANDATORY |

#### 4.1.1.2 association

Qualified Name:

Warning: violation of modeling guidelines: association has not been named.

Table 72 Member ends for Association

| Attribute Name | Aggreg. | Navig. | Mult. | Type | Description | Stereotypes |
|----------------|---------|--------|-------|------|-------------|-------------|
|----------------|---------|--------|-------|------|-------------|-------------|

|                |           |            |      |                 |  |                                                                                                                                                                                                                               |
|----------------|-----------|------------|------|-----------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| xapp           | composite | Not navig. | 0..* | Xapp            |  | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| managedunction | none      | Not navig. | 1    | NonRtRic (RGPF) |  | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

#### 4.1.1.3 association

Qualified Name:

Warning: violation of modeling guidelines: association has not been named.

Table 73 Member ends for Association

| Attribute Name | Aggreg.   | Navig.     | Mult. | Type            | Description | Stereotypes                                                                                                                                                                                                                   |
|----------------|-----------|------------|-------|-----------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| managedunction | composite | Not navig. | 0..*  | ManagedFunction |             | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

|                          |      |            |   |                          |  |                                                                                                                                                                                                                               |
|--------------------------|------|------------|---|--------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| managedelement (service) | none | Not navig. | 1 | ManagedElement (Service) |  | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
|--------------------------|------|------------|---|--------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 4.1.1.4 association

Qualified Name:

Warning: violation of modeling guidelines: association has not been named.

Table 74 Member ends for Association

| Attribute Name | Aggreg. | Navig.     | Mult. | Type | Description | Stereotypes                                                                                                                                                                                                                   |
|----------------|---------|------------|-------|------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| xapp           | none    | Not navig. | 1     | Xapp |             | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |
| rapp           | none    | Not navig. | 1     | RApp |             | OpenModelAttribute <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> |

## 4.1.2 Diagrams

Figure 71: Diagram Class Hierarchy

## 4.1.3 Classes

### 4.1.3.1 CloudAppliance class

Qualified Name: ORAN::Sandbox::CloudAppliance

**Parent class:** ManagedFunction

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### **4.1.3.2      CuCp class**

**Qualified Name:** ORAN::Sandbox::CuCp

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### **4.1.3.3      CuUp class**

**Qualified Name:** ORAN::Sandbox::CuUp

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### **4.1.3.4      Du class**

**Qualified Name:** ORAN::Sandbox::Du

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### **4.1.3.5      ManagedElement (Service) class**

**Qualified Name:** ORAN::Sandbox::ManagedElement (Service)

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### **4.1.3.6      ManagedFunction class**

**Qualified Name:** ORAN::Sandbox::ManagedFunction

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### **4.1.3.7      NearRtRic class**

**Qualified Name:** ORAN::Sandbox::NearRtRic

**Parent class:** Pnf

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### 4.1.3.8 NonRtRic (RGPF) class

**Qualified Name:** ORAN::Sandbox::NonRtRic (RGPF)

**Parent class:** Pnf

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### 4.1.3.9 Pnf class

**Qualified Name:** ORAN::Sandbox::Pnf

**Parent class:** ManagedFunction

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### 4.1.3.10 RApp class

**Qualified Name:** ORAN::Sandbox::RApp

**Description:**

An RApp takes in messages from the O1 interface, processes the message, and send it through the model. The model replies with an action or additional information that the RApp then sends back out via the A1 interface.

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### 4.1.3.11 Ru class

**Qualified Name:** ORAN::Sandbox::Ru

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### 4.1.3.12 Vnf class

**Qualified Name:** ORAN::Sandbox::Vnf

**Parent class:** ManagedFunction

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

#### 4.1.3.13 Xapp class

**Qualified Name:** ORAN::Sandbox::Xapp

**Description:**

An XApp takes in messages from the E2 interface, processes the message, and send it through the model. The model replies with an action or additional information that the XApp then sends back out via the E2 interface.

**Applied Stereotypes:**

- OpenModelClass
- support: MANDATORY

## 5 TypeDefinitions

### 5.1 Overview

**Qualified Name:** ORAN::TypeDefinitions

#### 5.1.1 Datatypes

##### 5.1.1.1 Arp datatype

**Qualified Name:** ORAN::TypeDefinitions::Arp

**Description:**

Allocation and Retention Priority, see [23.501]

**Table 81 Attributes for Data Type Arp**

| Attribute Name       | Type    | M ult. | Description                                                                                                                                             | Stereotypes                                                                                                                                                           |
|----------------------|---------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| priorityLevel        | Number  | 1      | defines the relative importance of a resource request, see [23.501]                                                                                     | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> |
| preemptionCapability | Boolean | 1      | defines whether a service data flow may get resources that were already assigned to another service data flow with a lower priority level, see [23.501] | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> |
| preemptionCapability | Boolean | 1      |                                                                                                                                                         | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> |

##### 5.1.1.2 DN datatype

**Qualified Name:** ORAN::TypeDefinitions::DN

**Description:**

A Distinguished Name (DN) is used to uniquely identify a MO within a name space.

Applied Stereotypes:

- Reference
- reference: 3GPP TS 32300

5.1.1.3      DateTime primitive type

Qualified Name: ORAN::TypeDefinitions::DateTime

Description:

DateTime - RFC 2822 standard date/time format.

RFC 2822 format

day-of-week, dd MM yyyy HH':'mm':'ss 'GMT'

e.g. Tue, 21 Jun 2016 14:05:20 GMT

5.1.1.4      Number primitive type

Qualified Name: ORAN::TypeDefinitions::Number

Description:

This primitive type is a superset of the standard UML numbering primitives, e.g. Integer and Real.

5.1.1.5      PLMNId datatype

Qualified Name: ORAN::TypeDefinitions::PLMNId

Description:

This <<dataType>> represents the information of a PLMN identification.

Applied Stereotypes:

- Reference
- reference: 3GPP TS 28658

Table 82 Attributes for Data Type PLMNId

| Attribute Name | Type   | Mult. | Description                                                   | Stereotypes                                                                                             |
|----------------|--------|-------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| mCC            | String | 1     | This is the Mobile Country Code (MCC) of the PLMN identifier. | OpenModelAttribute<br>· isInvariant: false<br>· valueRange: no range constraint<br>· support: MANDATORY |
| mNC            | String | 1     | This is the Mobile Network Code (MNC) of the PLMN identifier. | OpenModelAttribute<br>· isInvariant: false<br>· valueRange: no range constraint<br>· support: MANDATORY |

### 5.1.1.6 ProblemDetailsType datatype

**Qualified Name:** ORAN::TypeDefinitions::ProblemDetailsType

**Description:**

In case a policy request is not accepted, additional information can be provided.

**Applied Stereotypes:**

- Experimental

**Table 83 Attributes for Data Type ProblemDetailsType**

| Attribute Name | Type   | Mu It. | Description                                                                                                             | Stereotypes                                                                                                                                                                    |
|----------------|--------|--------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| type           | String | 0..1   | A URI reference according to IETF RFC 3986 [6] that identifies the problem type.                                        | OpenModelAttribute<br><ul style="list-style-type: none"><li>· isInvariant: false</li><li>· valueRange: no range constraint</li><li>· support: MANDATORY</li></ul> Experimental |
| title          | String | 0..1   | A short, human-readable summary of the problem type. It should not change from occurrence to occurrence of the problem. | OpenModelAttribute<br><ul style="list-style-type: none"><li>· isInvariant: false</li><li>· valueRange: no range constraint</li><li>· support: MANDATORY</li></ul> Experimental |
| status         | Number | 0..1   | The HTTP status code for this occurrence of the problem.                                                                | OpenModelAttribute<br><ul style="list-style-type: none"><li>· isInvariant: false</li><li>· valueRange: no range constraint</li><li>· support: MANDATORY</li></ul> Experimental |
| detail         | String | 0..1   | A human-readable explanation specific to this occurrence of the problem.                                                | OpenModelAttribute<br><ul style="list-style-type: none"><li>· isInvariant: false</li><li>· valueRange: no range constraint</li><li>· support: MANDATORY</li></ul> Experimental |

|                     |                     |      |                                                                                                                                                                                     |                                                                                                                                                                                 |
|---------------------|---------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| instance            | String              | 0..1 | A URI reference that identifies the specific occurrence of the problem.                                                                                                             | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Experimental |
| policyErrorC<br>ode | PolicyErrorT<br>ype | 0..1 | A machine-readable application error cause specific to this occurrence of the problem<br>This IE should be present and provide application-related error information, if available. | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Experimental |
| invalidPara<br>ms   |                     | 0..* |                                                                                                                                                                                     | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Experimental |

### 5.1.1.7 URI primitive type

**Qualified Name:** ORAN::TypeDefinitions::URI

**Description:**

Uniform resource identifier

## 5.1.2 Enumerations

### 5.1.2.1 EnforcementReasonType enumeration

**Qualified Name:** ORAN::TypeDefinitions::EnforcementReasonType

**Description:**

The enumeration enforcement\_reason\_type represents the reason why notification is sent (e.g. why enforcement status has changed).

**Applied Stereotypes:**

- Experimental

**Contains Enumeration Literals:**

- 100
  - Policy object syntax error
  - One or more fields in policy object (scope or statements) cannot be interpreted
- 200
  - The scope identifier in the policy object is no longer valid, and policy cannot be enforced
  - Policy scope id is invalid

- 300
  - The policy statement(s) can no longer be enforced for given scope
  - Policy statements not applicable for associated scope
- 800
  - Default
  - Generic default reason for to capture non-specified reasons

#### 5.1.2.2 EnforcementStatusType enumeration

**Qualified Name:** ORAN::TypeDefinitions::EnforcementStatusType

**Contains Enumeration Literals:**

- YES
- NO

#### 5.1.2.3 OptimizationType enumeration

**Qualified Name:** ORAN::TypeDefinitions::OptimizationType

**Description:**

The enumeration optimization\_type represents the system resource to optimize for.

**Contains Enumeration Literals:**

- 0
  - equals that system should be optimized for full capacity (e.g. optimizing spectral efficiency)
- 1
  - equals that system should be optimized for energy efficiency

#### 5.1.2.4 PolicyCapabilityType enumeration

**Qualified Name:** ORAN::TypeDefinitions::PolicyCapabilityType

**Description:**

The enumeration policy\_capability\_type represents the type of policy.

**Contains Enumeration Literals:**

- QOS
  - equals a policy that includes QoS related statement(s)
- CARRIER
  - equals a policy that includes carrier preference statement(s)
- ENERGY
  - equals a policy that includes energy efficiency statement(s)

#### 5.1.2.5 PolicyErrorType enumeration

**Qualified Name:** ORAN::TypeDefinitions::PolicyErrorType

**Description:**

The enumeration policy\_error\_type represents error information that can be provided in addition to the HTTP response error code.

**Contains Enumeration Literals:**

- CONF\_POLICY\_ID
  - Policy instance with requested ID already exists
  - In case a create policy request could not be accepted due to existing policy instance with same policy id
- BAD\_REQ\_MISSING\_PARAM
  - In case a create policy request could not be accepted due to malformed syntax (missing policy ID or scope ID)
  - Bad request due to missing attributes in policy object header (e.g. missing policy ID or scope ID)

#### 5.1.2.6 PolicyErrorType enumeration

**Qualified Name:** ORAN::TypeDefinitions::PolicyErrorType

**Contains Enumeration Literals:**

- CONF\_POLICY\_ID
  - In case a create policy request could not be accepted due to existing policy instance with same policy id
  - Policy instance with requested ID already exists
- BAD\_REQ\_MISSING\_PARAM
  - Bad request due to missing attributes in policy object header (e.g. missing policy ID or scope ID)

- In case a create policy request could not be accepted due to malformed syntax (missing policy ID or scope ID)

### 5.1.2.7 PreferenceType enumeration

**Qualified Name:** ORAN::TypeDefinitions::PreferenceType

**Contains Enumeration Literals:**

- SHALL
  - select the carrier regardless if connection retainability might be at risk
  - equals to select the resource
- PREFER
  - favor the selection of the carrier even if it is not with the best radio quality if the connection retainability is not at risk.
  - equals to favor the selection of the resource
- AVOID
  - equals to avoid selecting the resource
  - avoid selecting the carrier unless the connection retainability is at risk
- FORBID
  - equals to not select the resource
  - not select the carrier under any conditions

### 5.1.2.8 PrimaryType enumeration

**Qualified Name:** ORAN::TypeDefinitions::PrimaryType

**Description:**

The enumeration primary\_type represents if the resource is used as primary resource (e.g. carrier is used as primary connection).

**Contains Enumeration Literals:**

- YES
  - the CellCarrier is used as primary cell
  - equals that the resource is used as primary
- NO
  - equals that the resource is not used as primary
  - the CellCarrier may be used as primary or non-primary cell
- NULL
  - the CellCarrier may be used as primary or non-primary cell
  - equals that the resource may be used as primary or non-primary

### 5.1.2.9 SupportedType enumeration

**Qualified Name:** ORAN::TypeDefinitions::SupportedType

**Description:**

The enumeration supported\_type represents the support of a capability (e.g. policy type).

**Contains Enumeration Literals:**

- ADDED
  - equals that support for a specific capability has been added
- REMOVED
  - equals that support for a specific capability has been removed
- SUPPORTED
  - equals that support for a specific capability is supported
- NOT\_SUPPORTED
  - equals that support for a specific capability is not supported