High Level Design/Requirements

BPI – Device modeling

Rogers Communications

Author: Rogers

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# Document Control

## Change Record

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## Reviewers

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## Approvers

| Name | Position | Date |
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## References

|  | Document | Company | Date |
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## Definitions, Acronyms, and Abbreviations

|  |  |
| --- | --- |
| **Term/Acronym** | **Definition** |
| BPI | Blue Planet Inventory |
| OSS | Operations Support System |
| ETL | Extract, Transform, Load |
| CSV | Comma-separated values |
| IPRAN | IP Radio Access Network |
| IP RAN | Rogers Home Phone |
| EPON | Ethernet Passive Optical Network |
| AD | Active Directory |
| CPE | Customer Premises Equipment |
| CLLI | Common Language Location Identifier |
| PDF | Portable Data Format |
| SSO | Single Sign-on |
| GO | Guided Operations |
| MGC | Media Gateway Controller |
| MGW | Media Gateway |
| CO | Central Office Voice Switch |
| PSTN | Public Switched Telephone Network |
| SS7 | Signaling System 7 |
| RBS | Radio Base Station |
| eNB | e-Node B |
| LTE | Long Term Evolution |

# Overview

The purpose of this document is to define and describe the high-level design (HLD) for modeling devices in BPI

The Scope for this work involves the modeling of Devices, Cards and Plugins presented in the attached list:



## Assumptions and Exclusions

The assumptions and exclusions for this solution are identified in the following table.

|  |  |
| --- | --- |
| **No.** | **Assumptions and Exclusions** |
| 1 | All the current functionalities will be extended to these device models |
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## Solution Overview

#### Device Types

Attached list provides details regarding all the device types that are required to be modeled in BPI:

[Equipment Modeling List](https://rcirogers.sharepoint.com/:x:/r/sites/ossinventorysolutions/Shared%20Documents/NRM_EVOLUTION/BPI%20Device%20Modeling/BPI_Device_Modelling_Final_with_Roles.xlsx?d=w00ddc6e26855423ca9026d4a7d8d0434&csf=1&web=1&e=4YGA4O)

***Note: The Tab labeled “Device” contains the list of devices being modeled under this SOW***

***Note: Nokia 1830 PSS-16II is very similar to Nokia 1830 PSS-16 (already modeled in BPI)***

#### Device Attributes

No new device attributes are being introduced in this project. The following list states the attributes to be applied based on Role Type:

|  |  |
| --- | --- |
| **Roles** | **Device Attributed To Be Applied** |
| TLAN | Existing Role in BPI and all attributes related to this role should be applied to the device |
| SW | All attributes related to ENB role should be applied |
| eNB | Existing Role in BPI and all attributes related to this role should be applied to the device |
| gNB | All attributes related to ENB role should be applied |
| EON | Existing Role in BPI and all attributes related to this role should be applied to the device |
| Customer Edge | Copy Device Attributed from role type: ***EON*** |
| ACCESS | Existing Role in BPI and all attributes related to this role should be applied to the device |
| OADM | Existing Role in BPI and all attributes related to this role should be applied to the device |
| PASSIVE | Existing Role in BPI and all attributes related to this role should be applied to the device |
| FAL | OOB BPI attributes |
| A2L | Existing Role in BPI and all attributes related to this role should be applied to the device |
| S | Existing Role in BPI and all attributes related to this role should be applied to the device |
| CSD | Existing Role in BPI and all attributes related to this role should be applied to the device |
| A2H | Existing Role in BPI and all attributes related to this role should be applied to the device |
| A3 | Existing Role in BPI and all attributes related to this role should be applied to the device |
| MGW | Copy Device Attributed from role type: ***EON*** |
| AGW | Copy Device Attributed from role type: ***EON*** |
| EXPRESS | Existing Role in BPI and all attributes related to this role should be applied to the device |
| ILA | Existing Role in BPI and all attributes related to this role should be applied to the device |
| OTN | Existing Role in BPI and all attributes related to this role should be applied to the device |
| ROADM | Existing Role in BPI and all attributes related to this role should be applied to the device |

#### Card Types

The attached list contains all the cards that will be modeled in this project:

[Equipment Modeling List](https://rcirogers.sharepoint.com/:x:/r/sites/ossinventorysolutions/Shared%20Documents/NRM_EVOLUTION/BPI%20Device%20Modeling/BPI_Device_Modelling_Final_with_Roles.xlsx?d=w00ddc6e26855423ca9026d4a7d8d0434&csf=1&web=1&e=4YGA4O)

#### Plug-In Types

The attached list contains all the plugins that will be modeled in this project:

[Equipment Modeling List](https://rcirogers.sharepoint.com/:x:/r/sites/ossinventorysolutions/Shared%20Documents/NRM_EVOLUTION/BPI%20Device%20Modeling/BPI_Device_Modelling_Final_with_Roles.xlsx?d=w00ddc6e26855423ca9026d4a7d8d0434&csf=1&web=1&e=4YGA4O)

* + 1. **Network Infrastructure**

No new functionality needed. Existing functionality applicable for all new device types based on roles.

Existing Networks applicable to RBS role to apply for GNB and SW roles.



* + 1. **Visualization and Diagrams**

Equipment diagrams should be provided as per the device models. Existing functionality applicable for all new device types based on roles.

* + 1. **Reporting and Searching**

No new functionality needed. Existing functionality applicable for all new device types based on roles.

* + 1. **Discovery and Reconciliation**
* NA
  + 1. **External System Integration**

NA

* + 1. **User Management and Security**

NA

## Use Case Summary

N/A

## Block Relationship Diagram

NA

# Supported Software and Devices

NA

# Workflow

## Use Cases

### Create New Device

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Modify a Device

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Remove a Device

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Device Search/View

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Object Group (Devices, Connections, Locations, etc.) Report.

To display the report of the existing objects matching a configured filtering criteria in BPI, the authorized user will use the Data Grid feature:

1. Select the option for Reports from the main menu in the navigation bar located on top of the GUI:
   1. Select the option for Tabbed Data Grid report.
   2. Select the desired tab to view from the available tab options at the top of the data grid:
2. Customers
3. Orders
4. Locations
5. Devices
6. Cards
7. Ports
8. Connections
9. Cross-connections
10. Rings
11. IP Subnets
12. OSPF areas
13. Enter the filtering criteria to desired fields to visualize the desired information only, based on the request, to be displayed in the report.
14. Use the navigation controls at the bottom of the report to display the next or previous set of entries from the report.
15. Use the menu button to select the additional features available to manage the content of the Data Grid report:
    1. Refresh content and clear filters
    2. Export contents to file
    3. Manage fields and templates

### Create New Connection

No new connection types required. Existing connection types applicable for all new device types based on roles.

### Modify a Connection

No new connection types required. Existing connection types applicable for all new device types based on roles.

### Remove a Connection

No new connection types required. Existing connection types applicable for all new device types based on roles.

### Create New Network

NA

### Modify a Network

NA

### Create a Ring Topology

NA

### Create a Number Range.

NA

# Data Model Design

## Model

### Number Model

No changes are needed. Existing number model applicable as per device role.

Devices with GNB role will have same IP address and VLAN assignment as devices with ENB role.

Devices with SW role to have only LTE O&M assignments.

### Hierarchy Topology Model

No changes are needed. Existing number model applicable as per device role.

Existing Networks applicable to RBS role to apply for GNB and SW roles.

### Device Types and Attributes

|  |  |
| --- | --- |
| **Roles** | **Device Attributed To Be Applied** |
| TLAN | Existing Role in BPI and all attributes related to this role should be applied to the device |
| SW | All attributes related to ENB role should be applied |
| eNB | Existing Role in BPI and all attributes related to this role should be applied to the device |
| gNB | All attributes related to ENB role should be applied |
| EON | Existing Role in BPI and all attributes related to this role should be applied to the device |
| Customer Edge | Copy Device Attributed from role type: ***EON*** |
| ACCESS | Existing Role in BPI and all attributes related to this role should be applied to the device |
| OADM | Existing Role in BPI and all attributes related to this role should be applied to the device |
| PASSIVE | Existing Role in BPI and all attributes related to this role should be applied to the device |
| FAL | OOB BPI attributes |
| A2L | Existing Role in BPI and all attributes related to this role should be applied to the device |
| S | Existing Role in BPI and all attributes related to this role should be applied to the device |
| CSD | Existing Role in BPI and all attributes related to this role should be applied to the device |
| A2H | Existing Role in BPI and all attributes related to this role should be applied to the device |
| A3 | Existing Role in BPI and all attributes related to this role should be applied to the device |
| MGW | Copy Device Attributed from role type: ***EON*** |
| AGW | Copy Device Attributed from role type: ***EON*** |
| EXPRESS | Existing Role in BPI and all attributes related to this role should be applied to the device |
| ILA | Existing Role in BPI and all attributes related to this role should be applied to the device |
| OTN | Existing Role in BPI and all attributes related to this role should be applied to the device |
| ROADM | Existing Role in BPI and all attributes related to this role should be applied to the device |

# Naming Conventions

## Summary

The purpose of this section is to define and describe the Naming Convention rules for the objects being used in the Blue Planet Inventory (BPI) database.

There are several items that should be considered as part of the implementation of the BPI solution related to naming rules definition. These items include:

* **Inventory database objects / BPI entities**
  + Location – Sites
  + Device
    - Equipment
    - Shelf
    - Card
    - Port
  + Circuit/Connection
    - Network Facilities – Connectivity services between network devices.
    - Customer Circuits - Connectivity services between network devices and customer.
    - Circuit components
      * Physical connection
      * Virtual Circuit/Channel
* **Domains**
  + Microwave
  + Transport
  + Rogers Home Phone (RHP)
  + IP RAN
* **Object naming values**
  + CLLI
    - Site
      * Room
    - Device
  + Device TID
  + System Name – Hostname
  + Network Facilities Connection CLFI
  + Customer Circuit CLCI

### Device and Connection Naming

Devices with GNB and SW roles have the same entity code as ENB devices.

The following is a set of definitions of the different elements which are used in Device and Circuit name generation in IP RAN for devices and connections.

**Device Role =** A1, S1, A2, S2, A3, eNB or NB, modeled in ARM as an attribute of an IPRAN device. Rogers role of device in IPRAN is based on device’s physical configuration (cards/modules in device).

**Entity Code =** an alphanumeric 3-character code issued by Telcordia indicating the role of a Device.

* Note that this is not equivalent to the Rogers Device Role but there is a 1:1 mapping between them.

**Hostname =** <Device Role-2>-<Location Code-5>-<Instance#-2> Attribute of Router and Switch devices.

* Device Role and Location code are defined in this section and Instance# is 2 digits that ensure the Hostname is unique in Rogers network. E.g. S1-E1068-01, A2-C2715-01, A3-W1094-02…

**Device CLLI Role Name** = <Device CLLI-11> = <Location CLLI-8><Entity Code-3> identifies a Device Role in a Building Location and is used in Circuit Naming convention.

**Location Code** = <Region Code-1><Instance#-4>, where Region Code is 1 character that can be A (Atlantic), C (Central), E (East), or W (West) and Instance# is a 4-digit number that makes the Location Code unique in Rogers.

* Attribute of Unit/Room Location that is a Rogers unique identifier for a Room. e.g. E1068, C2715, W1094…

**Device Name Standard** = Device CLLI Instance Name = <Location CLLI-8><Entity Code-3>**.**<Location Code-5>-<Instance Identifier-2>

* + <Location CLLi-8> is the 8-character CLLI identifier/name of the Building Location where the Device is located.
  + <Entity Code-3> is the 3-character CLLI identifier for the Role of the Device. Note that the Role and Entity Code are attributes of a Device, and that Entity Code depends on Role. The Role, Entity Code and Device relationships will be maintained in the ARM Metadata and/or database.
  + <Location Code-5> is a 5-character Rogers unique identifier for the Room Location where the Device is located. Location Code is an attribute of a Room Location.
  + <Instance Identifier-2> is a 2-digit sequence number guaranteeing uniqueness of the Device Name within a Room Location (automatically incremented when required as new Devices are added to a Room).

**Circuit Name Standard** = <Instance Identifier-4>**/**<Facility Type Code>**/**<A-end Device CLLI-11>**/**<Z-end Device CLLI-11>

* + <Instance Identifier-4> is a 4-digit sequence number guaranteeing uniqueness of the Circuit Name (automatically incremented when required as new Circuits are added).
  + <Facility Type Code> = <Circuit Type Code><optional CLLI Bandwidth Code><optional Protection Flag P>. <Circuit Type Code> is based on the ARM Circuit Type and the value in the Circuit Service Type attribute. The ARM Circuit Type, Service Type and Facility Type Code relationships will be maintained in the ARM Metadata and/or database. The optional CLLI Bandwidth Code will be based on the value in the Circuit Bandwidth attribute (for applicable ARM Circuit Types). The optional Protection Flag P will be appended to the Facility Type Code if the value in the Circuit Protection attribute is True (for applicable ARM Circuit Types).
  + <A-end Device CLLI-11> is the CLLI Role Name of the Device at the A-end of the Circuit and <Z-end Device CLLI-11> is the CLLI Role Name of the Device at the Z-end of the Circuit. Note that ordering of the A-end and Z-end is **not** based on the ARM GUI or API A-end and Z-end selected. The A-end and Z-end ordering primary ordering is based on the relative CLLI Entity Code Score between the terminating Devices maintained in the ARM Metadata and/or database – the Device whose CLLI Entity Code Score is highest will be the A-end CLLI-11. The default CLLI Entity Code Score for a Device is 0 (zero), so a Device without a specified CLLI Entity Code Score will be defaulted to 0. If both the CLLI Entity Code Score is the same for both terminating Devices, then the ordering will be based on an ascending alphanumeric sort based on the Device CLLI-11.

## Transport/EON

### Device Naming - Transport

|  |  |  |  |
| --- | --- | --- | --- |
| **Vendor** | **Device** | **Device Roles** | **Naming Convention** |
| **Ciena** | **WAVESERVER 5 CHASSIS (186-3001-900)** | **ACCESS,EXPRESS,ILA,EON,OADM,OTN,ROADM** | **<clli\_code>+<O2D>-<sequence number>** |
| **Nokia** | **1830 PSS-16II** | **EXPRESS,ILA,EON,OADM,ROADM** | **<clli\_code>+<O2D>-<sequence number>** |
| **Nokia** | **1830 PSI-M** | **EXPRESS,ILA,EON,OADM,ROADM** | **<clli\_code>+<O2D>-<sequence number>** |
| **Huber and Suhner** | **CUBE 3RU 19-inch LGX Modular Shell for 16 SX LGX module slots** | **ACCESS, OADM, PASSIVE** | **<clli\_code>+<O2P>-<sequence number>** |
| **Huber and Suhner** | **CUBE 1RU 19-inch LGX Modular Shell for 3 LGX module slots** | **ACCESS, OADM, PASSIVE** | **<clli\_code>+<O2P>-<sequence number>** |

### Device Naming – EON

|  |  |  |  |
| --- | --- | --- | --- |
| **Vendor** | **Device** | **Device Roles** | **Naming Convention** |
| **RAD** | **ETX-2i 100G RAD** | **EON, Customer Edge** | **<clli\_code>+<sequence number>** |
| **Nokia** | **Nokia 7750 SR1-e** | **MGW, AGW** | **<Device Role>+<sequence number>.<clli\_code>** |
| **Nokia** | **Nokia 7750 SR-2s** | **MGW, AGW** | **<Device Role>+<sequence number>.<clli\_code>** |
| **Nokia** | **Nokia 7750 SR-7 chassis** | **MGW, AGW** | **<Device Role>+<sequence number>.<clli\_code>** |
| **Nokia** | **1830 PSS-16II** | **EXPRESS,ILA,EON,OADM,ROADM** | **<clli\_code>+<O2D>-<sequence number>** |
| **Nokia** | **1830 PSI-M** | **EXPRESS,ILA,EON,OADM,ROADM** | **<clli\_code>+<O2D>-<sequence number>** |
| **Nokia** | **7210 SAS-D** | **EON, Customer Edge** | **<clli\_code>+<sequence number>** |
| **Nokia** | **7210 SAS-DXP** | **EON, Customer Edge** | **<clli\_code>+<sequence number>** |

### Device Naming – IPRAN

|  |  |  |  |
| --- | --- | --- | --- |
| **Vendor** | **Device** | **Device Roles** | **Naming Convention** |
| **Ericsson** | **MINI-LINK 6693** | **MICROWAVE, Operations modernization** | **MW-Locationcode-SequenceNumber** |
| **Ericsson** | **MINI-LINK 6352, 6352/2** | **MICROWAVE, Operations modernization** | **MW-Locationcode-SequenceNumber** |
| **Ericsson** | **Ericsson Router 6675** | **IPRAN,RBS,eNB,gNB, Operations modernization** | **<Device Role><SequenceNumber>-<location\_emg>-R6675** |
| **Ericsson** | **Baseband 6620** | **IPRAN,RBS,eNB,gNB, Operations modernization** | **<Device Role>-<location\_code>-<location\_emg><sector>** |
| **Ericsson** | **Baseband 6648** | **IPRAN,RBS,eNB,gNB, Operations modernization** | **<Device Role>-<location\_code>-<location\_emg><sector>** |
| **Ericsson** | **Baseband 6651** | **IPRAN,RBS,eNB,gNB, Operations modernization** | **<Device Role>-<location\_code>-<location\_emg><sector>** |
| **Ericsson** | **MINI-LINK 6692** | **MICROWAVE, Operations modernization** | **MW-Locationcode-SequenceNumber** |
| **Ericsson** | **MINI-LINK 6694** | **MICROWAVE, Operations modernization** | **MW-Locationcode-SequenceNumber** |
| **Ericsson** | **Baseband 6502** | **IPRAN,RBS,eNB,gNB, Operations modernization** | **<Device Role>-<location\_code>-<location\_emg><sector>** |
| **Ericsson** | **Baseband 6705** | **IPRAN,RBS,eNB,gNB, Operations modernization** | **<Device Role>-<location\_code>-<location\_emg><sector>** |
| **Ericsson** | **Radio Processor 6353** | **IPRAN,RBS,eNB,gNB, Operations modernization** | **<Device Role>-<location\_code>-<location\_emg><sector>** |
| **Ericsson** | **Baseband 6318 (COW)** | **IPRAN,RBS,eNB,gNB, Operations modernization** | **<Device Role>-<location\_code>-<location\_emg><sector>** |
| **Cisco** | **NCS-540** | **A2L, S, CSD** | **<Device Role>-<location\_code>-<sequence number>** |
| **Cisco** | **NCS-560** | **A2H, A2L, A3** | **<Device Role>-<location\_code>-<sequence number>** |
| **Cisco** | **ISR1100** |  |  |

### Device Naming – IPWAN

|  |  |  |  |
| --- | --- | --- | --- |
| **Vendor** | **Device** | **Device Roles** | **Naming Convention** |
| **Cisco** | **NCS-5504-SYS** | **FAL** | **<Device Role>-<location\_code>-<sequence number>** |
| **Cisco** | **NCS-5501-SE** | **FAL** | **<Device Role>-<location\_code>-<sequence number>** |
| **Cisco** | **NCS-55A2-MOD-SYS** | **FAL** | **<Device Role>-<location\_code>-<sequence number>** |

### Connection Naming – CLFI

No new requirements. Current implementation should be extended to the new device/card/plug in models

# Internal Integrations

# External Integrations

# Resource Adaptors

# Service Templates

# Microservices

There is no requirement for implementation of Microservices at this Phase.

# User Interfaces

## GUI

### View / Search Site Location

It will be possible for the user to search for a Site Location and view the details about it or proceed to execute some other operations such a Creation, Modification or Deletion, by using the following options:

#### BPI Search functionalities

The user should be able to search for all new devices by using the Global Search and Fast Search functionalities provided by BPI.

* Search criteria available to perform the search by using BPI Search functionalities will be the following:
* Global Search
  + Device
  + CLLI Device Name
  + Device TID Name
  + Device Type
  + Device Role
  + Region
  + Location Code
  + OSPF
  + Ring
  + Connection
  + CLFI Name
  + Device CLLI Name
  + Connection Type
  + A Device TID Name
  + Z Device TID Name
  + Ring
  + Ring Name
  + Region
  + OSPF Name
  + OSPF
  + OSPF Name
  + Region
  + OSPF Revision
* Fast Search
  + Location
  + Site Name
  + Address (Street name and number)
  + City/Town
  + Location Code
  + ZIP Code
* The user enters the information that is available to execute the search in the Global or Fast Search field. The existing matches in BPI for the information entered are displayed in a list for the user to select the desired entry.

Graphical user interface, application

Description automatically generated

### Create Device

No new functionality needed. Existing functionality applicable for all new device types based on roles.

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### Modify Device

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Remove Device

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Create Network

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Create Connection

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Manage Network

No new functionality needed. Existing functionality applicable for all new device types based on roles.

#### Create OSPF Area

No new functionality needed. Existing functionality applicable for all new device types based on roles.

#### Delete OSPF Area

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Create/Modify Number Range

#### IP Address Assignment

No new functionality needed. Existing functionality applicable for all new device types based on roles.

#### VLAN Assignment

.

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### RBS Assignment and Rollout

No new functionality needed. Existing functionality applicable for all new device types based on roles.

Functionality for ENB device role to apply to devices with GNB role.

#### Create RBS Assignment

No new functionality needed. Existing functionality applicable for all new device types based on roles.

Functionality for ENB device role to apply to devices with GNB role.

### RBS Rollout

No new functionality needed. Existing functionality applicable for all new device types based on roles.

Functionality for ENB device role to apply to devices with GNB role.

### Guided Operations (GO) for RBS Assignment and RBS Rollout

No new functionality needed. Existing functionality applicable for all new device types based on roles.

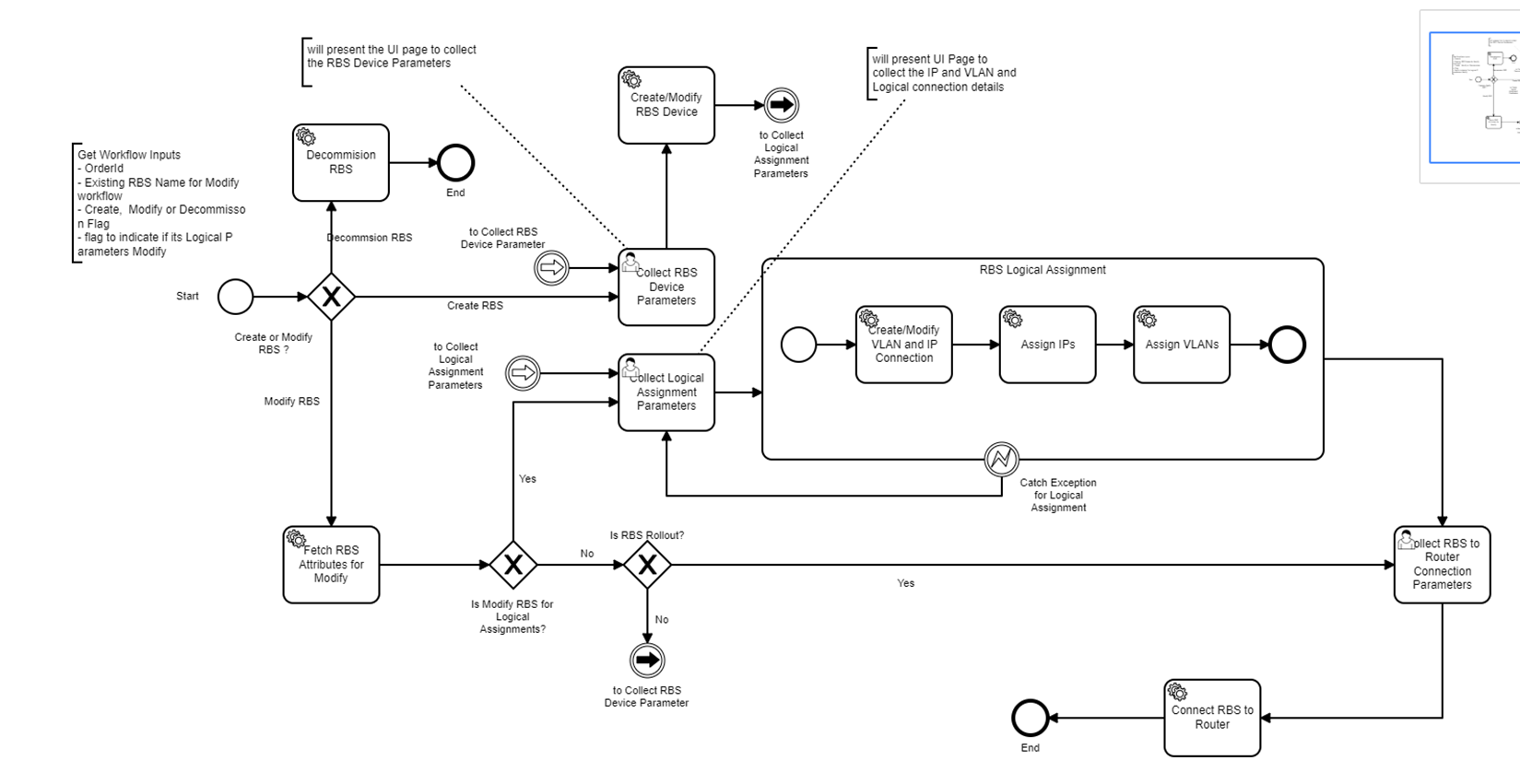
Existing GO templates applicable to devices with ENB role to apply for devices with GNB.

BPI provides a set of OOTB Guided Operations workflows to support the following activities:

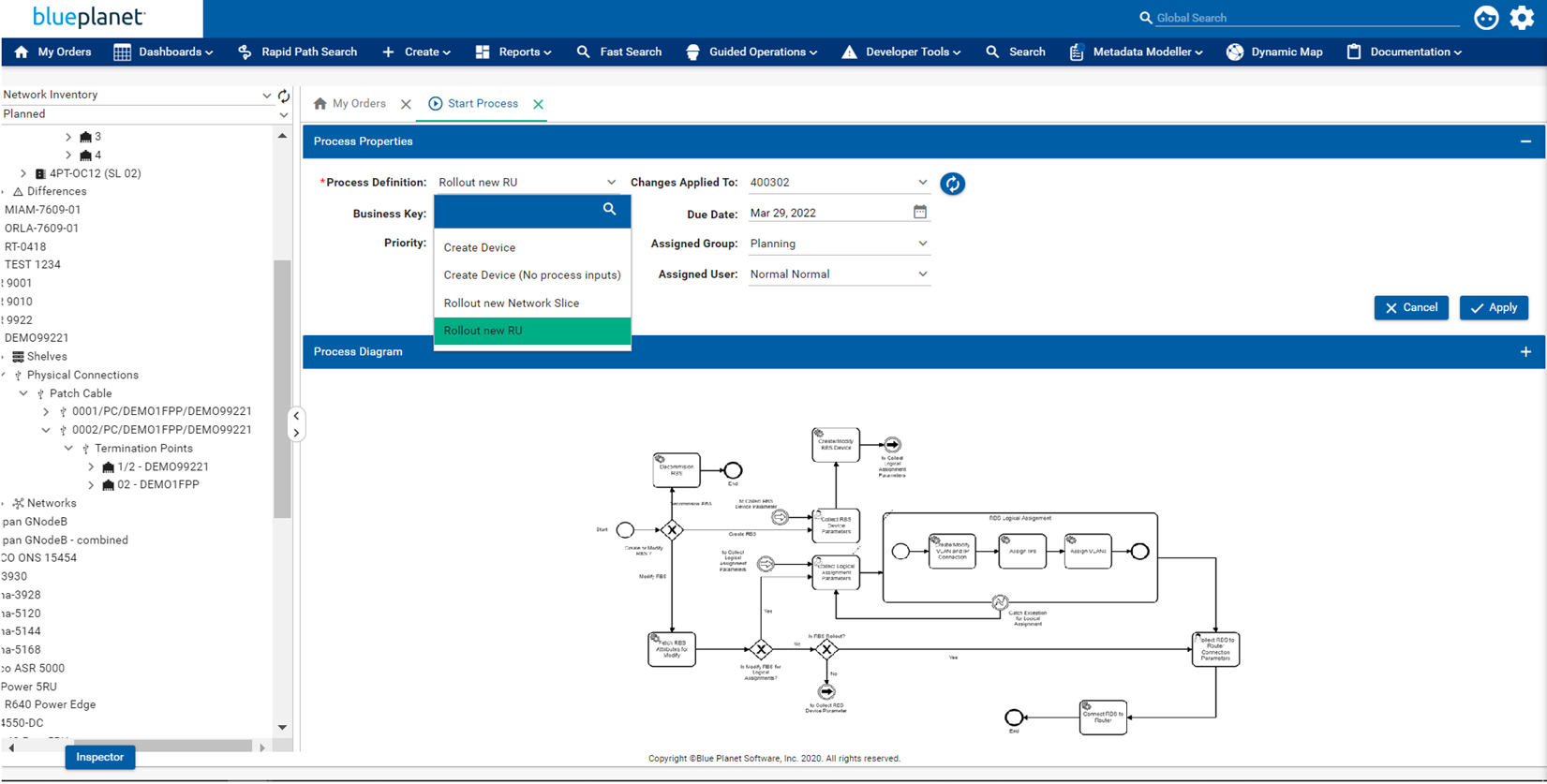
* RBS Assignment
* RBS Rollout
* Expand Backhaul

These workflows should be customized according to the Rogers business process to create the RBS, the circuits, and associate the RBS to the OSPF area, the ring and the numeric resources that should be associated to it.

Following is the high-level overview of the default processes and workflows available in BPI to support such activities:



The calling of the workflow for the RBS Assignment/Rollout process is displayed below:



### Spur Modification

No new functionality needed. Existing functionality applicable for all new device types based on roles.

Existing functionality applicable to RBS role to apply for GNB and SW roles.

### Create Multiple Connections

NA

### Create/Modify Reservation

No new functionality needed. Existing functionality applicable for all new device types based on roles.

# Reports

## IP RAN

### Data Grid

The authorized user will be able to generate reports to get the information about specific groups of IP RAN objects displayed in BPI.

The different groups of objects listed in the report will be visualized by using the Data Grid functionality available OOTB in BPI.

This functionality in BPI will be provided through customized search rules to display the list of elements and attributes for the following groups of IP RAN objects:

* Customers
* Orders
* Locations
* Devices
* Cards
* Ports
* Connections
* Cross-connections
* Rings
* IP Subnets
* OSPF areas

The Search process is launched by selecting the “Search” option from the top menu in the GUI and then selecting the desired object as search criteria in the “Search for: ” field.

Graphical user interface, text, email, website

Description automatically generated

An example of the Device report obtained in BPI is shown below:

Graphical user interface, text, application, email

Description automatically generated

The authorized user will be able to configure filters by using the fields in the columns for the Locations report.

The user can select the fields that will be added to or removed from the report by configuring them in the option “Manage Fields”.

Graphical user interface, application

Description automatically generated

When the authorized user selects the fields from the list of available options to generate the report then it will be allowed to search for and filter the devices by using either part or the full text related to the column in the report.

The user can launch IP RAN operations such as Modify Device or Delete Device by opening the right-click context menu while hovering on top of the selected Device entry in the data grid.

The report content can be exported as a file in PDF, XLS, CSV formats by using the “Export” option.

### Connection Summary

No new functionality needed. Existing functionality applicable for all new device types based on roles.

### Hop-by-Hop Report.

No new functionality needed. Existing functionality applicable for all new device types based on roles.

The authorized user will be able to generate a report that provides a filtered view of the Hop-by-Hop IP assignments for inclusion in a Work Order in BPI.

The Hop-by-Hop report can be called from the following IP RAN objects: Region, OSPF area, Primary and Secondary ring, and IP RAN devices with the following assigned roles:

* A3
* A2
* A2H
* A2L
* CSD
* S
* S2

### Loopback Assignment Report.

The authorized user will be able to generate a report that provides a filtered view of the router Loopback IP assignments for inclusion in a Work Order in BPI.

The Hop-by-Hop report can be called from the following IP RAN objects: Region, OSPF area, Primary and Secondary ring, and IP RAN devices with the following assigned roles:

* A2
* A2H
* A2L
* CSD
* S
* S2

### RBS Assignment Report

LTE RBS Assignment report should include new devices with GNB and SW roles.

### Impact Report.

No new functionality needed. Existing functionality applicable for all new device types based on roles.

Graphical user interface, application, Word

Description automatically generated

The IP RAN user will be able to invoke the Impact Report by selecting the option “Operations” → “Impact Report” from the right-click context menu when hovering with the mouse pointer on top of the following objects:

* Area 0 OSPF
* Area OSPF
* Primary Ring
* A3 device
* C3 device
* A2/S2 device

## Transport/EON

### Data Grid

The new device/card/plug ins should be supported in the data grid and all the current functionality of the data grid should be extended to these models.

### Impact Report.

The current Impact report functionality should be extended to all the new device/card/plug in types being modeled.

### Reservations Report

The current reservation functionality needs to accommodate for the new device/card/plug in types being modeled.

## Diagrams

### Equipment diagrams

Made available ss per device modelling. No new requirements

A picture containing chart

Description automatically generated

# Quality of Service Design Considerations

## Restart Strategy

## Crash Recovery

## Security

### General

* User accounts will be authorized by using the Rogers Active Directory server.
* Authorized user accounts entering their credentials in BPI will have access to all the sections in the application without requiring logging into the system again.
* The user profile specifies the activities/privileges that the user has access to will be configured in BPI.
* User privileges will be enforced down to the field and/or control level in the BPI GUI’s. If a user is allowed to enter or modify the data for a field, the field will appear as editable in the GUI. If a user is allowed to perform the operation related to a control, this will appear as enabled. If a user is not allowed to enter or modify the data for a field or is not allowed to perform the operation associated to a control, the field will appear as read-only, and the control will appear as disabled.

### IP RAN

* For IP RAN, a special set of roles can be created in BPI allowing the members to execute the Create Device, Modify Device, Remove Device, Create connection, Modify connection and Delete connection operations in accordance with their configured user profile.

### Transport/EON

* For devices that are configured for ACCESS, EXPRESS, OADM, ROADM, PASSIVE, ILA, OTN roles should only be available for the transport users
* For device roles EON, AWG, MGW and Customer Edge the GUI will only present these to users that belong to the EON user group
* All device models should be available to Global Admin users

## Performance

# List of Requirements

# Migration Strategy