



BPI Developer Fundamentals Training

BPI112ILT, Revision 1.0

Blue Planet Inventory

Challenge Lab

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Change History

Blue Planet Release	Revision	Publication Date	Reason for Change
22.08.2	1.0	March, 2023	Initial version.

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Introduction

This document describes the concepts of the Challenge Labs for the Blue Planet Inventory Academy and contains the Challenge Lab tasks for Week 2 of the Academy.

After the ILT training is completed, you are provided with an additional day of access to the remote lab environment, where you should independently perform the Challenge Lab exercises. This will give you an opportunity for additional self-study and assessment of the knowledge gained during the training.

The Challenge Lab document and the exercises are similar to the Lab Guide, but only the final goal/outcome are presented to you, without step-by-step instructions.

For any questions or assistance, the instructor is available in the training chatroom for the duration of the Challenge Lab. You will be assisted as needed with troubleshooting issues that may arise during the Challenge Lab.

After the Challenge Lab is completed, a 1-hour review workshop will be delivered to the student group.

Task 1: Blue Planet Inventory

In this task, you will manage the inventory through the BPI UI. You will create the information about the location of the inventory, and you will create the order to provision the inventory in that location. You will need to create two devices and place them in the appropriate racks. Once the order for provisioning those devices is created, you will also need to add creating physical and ethernet connections between the created devices.

NOTE: Finish this task before moving on to the second task.

Objectives

- Create a new building with at least one floor and one room at the location Singapore.
- Create a new order. Assign the following activities to that order.
- In the location, create one **ASR 9922** device with the role of the Edge router in the MPLS Core network and name the device "**DEVICE_1**".
- Create an appropriate rack and place the device in the rack.
- Add the **A99-32X100GE-TR** card to the LC 00 slot of the device and add the **QSFP-100G-LR4** pluggable to card slot 1.
- Complete the order.
- Create a new order. Assign the following activities to that order.
- Create another device in the same location with the same card configuration. Name the device "**DEVICE_2**".
- Create a cable fiber connection between the created devices.
 - Name: **DEVICE_1- DEVICE_2-CABLE_FIBER**
 - Source: **DEVICE_1**
 - Target: **DEVICE_2**
- Create an ethernet connection between the created devices.
 - Name: **DEVICE_1- DEVICE_2-ETHERNET**
 - Source: **DEVICE_1**
 - Target: **DEVICE_2**
- Create an ethernet network diagram and export it.

Task 2: Graph Model

In this task, you will inspect the inventory in planned and live perspectives. You will create queries to look at the graphs of the inventory which was modified in the first challenge.

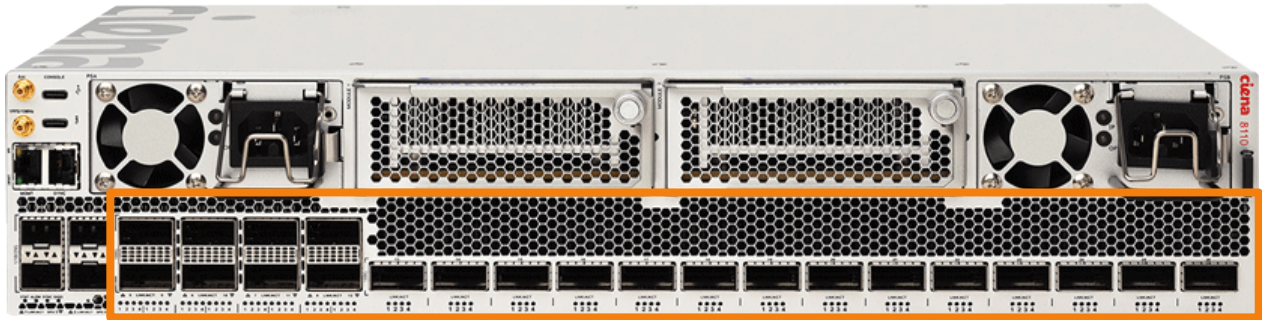
NOTE: This task is dependent on the first task. Complete the first task before moving on to this task.

Objectives

- Write a query to find the Archetype model node for the device **ASR 9922**.
- Write a query which will display the graph of nodes towards which the archetype of the device ASR 9922 has the relationship IS_COMPATIBLE.
 - NOTE: the relationship goes out of the ASR 9922 archetype node.
- Write a query which will match the ASR 9922 device instances which are in live perspective.
 - NOTE: at least one node should be returned in the result.
- Write a query to match the device instance node with the name **DEVICE_1**.
- Create a query which will show the graph that is connecting DEVICE_1 with the card A99-32X100GE-TR which is placed in the slot position LC 00.
 - Try using the path option when defining a relationship in the query.
 - Use “**WHERE all(<variable> IN relationships(<graph>) WHERE <conditions>)**” to filter out the relationships “CREATE” and “MODIFY” since those relationships are created by the activities.
- Write a query to display the physical connection node between the devices DEVICE_1 and DEVICE_2.
- Write a query to display the network node between the devices DEVICE_1 and DEVICE_2.

Task 3: Metadata Modeller

In this task, you will create a simplified model of the Ciena 8110 device in BPI.



You can find the specifications of the device at <https://www.ciena.com/products/8110>.

Objectives

- Create the Archetype for the Ciena 8110 device.
 - In this model, you need to only add 22 **QSFP28** positions.
 - Define its direct compatibilities.
- Create an equipment diagram design which will display the device label and the QSFP28 positions as seen in the image above.

Task 4: Generic UI Framework

In this task, you will extend the functionality of the ASR 9922 device page. You will add extra fields which can be used to store and display extra information about the device.

Objectives

- Create fields for the following custom properties to be displayed whenever you open a page of items, which have the ASR 9922 device archetype.
 - Min Working Temperature(°C)
 - Number
 - Max Working Temperature(°C)
 - Number
 - Airflow
 - Dropdown with options “FRONT-TO-BACK” and “BACK-TO-FRONT”
 - Default: “FRONT-TO-BACK”
- Create a device and set the values for the created fields.
- Validate that the field values are stored in the database.
- Modify the field values of the created device.
- Validate that the values have changed after the modification.

Task 5: TMF APIs

In this task, you will create an API request to the TMF639 Resource Inventory Management API to create a new rack in the Building-02 location. You will also create a new notification hub and monitor the notification event that gets triggered by an update of your new resource.

You can view the existing Postman requests for reference. You can also access the Swagger docs at <https://bpi.lab/blueplanet-inventory-tmf-api/swagger-ui/index.html>.

Objectives

- Create a new Postman Collection and name it **BPI Challenge Lab**. Add all the requests that you create to that Collection.
- Create an authentication request to collect the authentication token with read/write permissions. Use this token for authenticating your requests.
 - username: **tmf-api**
 - password: **tmf-api-secret-phase**
 - *Hint: Store the token value in the postman variable and use the variable when creating your requests.*
- Create a request to get 20 resources of any type.
- Create a request to get 10 locations with an offset 20.
- Create a request for creating an internal hub for the **ResourceCreationNotification** event type.
- Create a request to get the device with the name **DEVICE 1**.
- Based on the response of the get request for the device, create a request which will create a device with the name **Device-TMF**.
 - *Hint: use the response body from the get request to create a new device.*
- Create a request which will modify the resource characteristic „partNumber“ of the device DEVICE 1 and set it to the value **60-1877-01**.
- Inspect the notification in the hub that you created.

Task 6: Ingestion Framework

In this task, you will create multiple data ingestion sources which you will use to modify the inventory in different perspectives. You will also create discrepancies between different perspectives and in the end you will resolve those discrepancies.

You can view the existing Postman requests for reference.

Objectives

- Create 2 data sources:
 - First data source:
 - Name: **Data_Source_1**
 - Ingestion config:
 - Kafka topic: **data-ingestion-challenge-1**
 - Group id: **challenge_group**
 - Retry config
 - Kafka topic: **data-ingestion-challenge-1-retry**
 - Group id: **challenge_group_retry**
 - Timeout(seconds): **10**
 - Retry count: **4**
 - Perspective: **17**
 - Rules: ["Ingestion Lab Device Rule", "Ingestion Card Rule", "Ingestion Physical Connection Rule", "Ingestion Service Rule", "Ingestion Network Rule"]
 - Operations: **manageInventory**
 - ignoreCompatibilities: **true**
 - Second data source:
 - Name: **Data_Source_2**
 - Ingestion config:
 - Kafka topic: **data-ingestion-challenge-2**
 - Group id: **challenge_group**
 - Retry config
 - Kafka topic: **data-ingestion-challenge-2-retry**
 - Group id: **challenge_group_retry**
 - Timeout(seconds): **5**
 - Retry count: **3**
 - Perspective: **2**
 - Rules: ["Ingestion Lab Device Rule", "Ingestion Card Rule", "Ingestion Physical Connection Rule", "Ingestion Service Rule", "Ingestion Network Rule"]

- Operations: **manageInventory**
 - ignoreCompatibilities: **true**
- Create a device in perspectives 2 and 17 through the data ingestion (use different orders to create devices).
 - In perspective 2, set the description to **Created in perspective 2**.
 - In perspective 17, set the description to **Created in perspective 17**.
- Open the BPI UI and find the device summary for the created device.
- Inspect conflicts if there are any.
- Complete the order to move the device from the plan perspective to the live perspective.
- Inspect and resolve any remaining conflicts.

Task 7: Guided Operations

In this task, you will create a workflow diagram, using on-boardable forms, which will be comprised of one user task and one service task.

NOTE: The Groovy script, needed for completing this task, is provided in the lab.

Objectives

- Create a workflow diagram which will have the purpose to modify the building's address. The workflow needs to have 2 tasks:
 - **User task:** to complete the task, the user needs to input a city name, a building name, and the building address.
 - **Service task:** using the input from the user task, it needs to modify the address of the existing building.
- Create the workflow and confirm that the tasks can be executed correctly.