Oracle® Communications Network Integrity

Optical FTP Discovery and UIM Integration Cartridge Guide

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Oracle Communications Network Integrity Optical FTP Discovery and UIM Integration Cartridge Guide, Release 7.5

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Contents

Preface

This guide describes the functionality and design of the Oracle Communications Optical FTP Discovery and UIM Integration cartridge.

Audience

This guide is intended for Network Integrity administrators who want to understand the design and evaluate the functionality of this cartridge, and for Network Integrity developers who want either to build or to extend similar cartridges.

Developers should have a good working knowledge of FTP protocol and their associated operations, specifications, Network Integrity, UIM, and the use of Oracle Communications Design Studio for Network Integrity.

You should be familiar with the following documents included with this release:

- Oracle Communications Network Integrity Concepts
- Oracle Communications Network Integrity Developer's Guide
- Oracle Communications Network Integrity File Transfer and Parsing Guide
- Oracle Communications Network Integrity UIM Integration Cartridge Guide

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Overview

This chapter provides an overview of the Oracle Communications Network Integrity Optical FTP Discovery Cartridge.

This chapter contains the following sections:

- About Optical FTP Discovery Cartridge
- About Cartridge Dependencies
- Opening the Cartridge Files in Design Studio
- Building and Deploying the Cartridge

About Optical FTP Discovery Cartridge

Optical FTP Discovery Cartridge supports modeling of Optical Network devices in DWDM domain.

Optical FTP Discovery Cartridge uses FTP protocol to discover Optical Network Devices.

The Optical FTP Discovery Cartridge provides the following:

- Read and collect data from files provided using FTP/SFTP Protocol.
- Optical Network Device logical and physical structure modeling.
- Discrepancy detection and resolution on modeled data.

This cartridge produces both logical and physical device hierarchies that represent a discovered device. The logical hierarchy includes a logical device, child interfaces, subinterfaces (collectively called interfaces), and device interface configurations. The physical hierarchy includes physical device, equipment, equipment holders, and physical ports. This cartridge creates associations between the physical and logical hierarchies. The first association is at the device level, between the physical device and the logical device, and the second association is at the interface level between physical ports and Interfaces.

The cartridge discovers the following network entities:

- NetworkElement
- Sub_Rack (Shelf/Rack)
- Board (Card)
- Port (Generic / SFP)
- Logical Device
- Interface / Sub-Interface

This cartridge is designed for a standalone display of the model hierarchy in Network Integrity. The cartridge provides no integration with other products but may be extended. This cartridge is specifically designed for discovering Optical Network devices within the DWDM domain, and any attempt to discover other devices will result in a scan failure.

For **Optical FTP Discovery**, modeling of a device fails if it does not follow the FTP file structure properly. For more information about Optical FTP Discovery Input file structure, see About Optical FTP Discovery Input File Structure.

In addition to a discovery action, this cartridge provides discrepancy detection and discrepancy resolution for integration with UIM.

Discrepancy detection provides the mechanism to allow a filtered comparison of logical and physical device trees between what is discovered and what is imported from UIM.

For more information about discrepancy detection actions and processors, see "Using Design Studio to Extend Network Integrity" in *Network Integrity Developer's Guide*.

The discrepancy resolution action enables the discovered logical and physical device trees to be created and updated in UIM.

About Cartridge Dependencies

This section provides information on dependencies that the Optical FTP Discovery cartridge has on other entities.

Run-Time Dependencies

This cartridge requires that the **Address_Handlers** cartridge be deployed to Network Integrity.

Design-Time Dependencies

The Optical FTP Discovery Cartridge has the following dependencies:

- Address_Handlers
- NetworkIntegritySDK
- ora_ni_uim_device
- ora_uim_model
- UIM_Integration_Cartridge

Opening the Cartridge Files in Design Studio

To review and extend the Optical FTP Discovery Cartridge, you must download the Oracle Communications Optical FTP Discovery Cartridge software from the Oracle software delivery web site: https://edelivery.oracle.com

The software contains the Optical FTP Discovery Cartridge ZIP file, which has the following structure:

- \UIM_Cartridge_Projects\
- \Network_Integrity_Cartridge_Projects\
- Optical-FTP-Discovery-Cartridge-R7.iar

See "Getting Started with Design Studio for Network Integrity (1)" in *Design Studio Online Help* and "Using Design Studio to Extend Network Integrity" in *Oracle Communications Network Integrity Developer's Guide* for information about opening files in Design Studio.

Building and Deploying the Cartridge

See "Getting Started with Design Studio for Network Integrity (1)" in *SCD Design Studio Modeling Network Integrity* for information about building and deploying cartridges.

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About the Cartridge Components

This chapter provides information about the components of the Oracle Communications Network Integrity Optical FTP Discovery Cartridge.

The Optical FTP Discovery Cartridge contains the following actions:

- Discover optical Devices FTP
- Detect Optical Device UIM Discrepancies
- Resolve Optical Device in UIM

Discover optical Devices FTP

The Discover optical Devices FTP action retrieves Optical Network device data files using FTP protocol and provides a physical and logical device hierarchical model. This action models the associations between the physical and logical hierarchies.

The Discover optical Devices FTP action contains the following processors run in the following order:

- Optical File Transfer Collector
- Optical File Transfer Parser
- Optical File Transfer Device Modeler

Optical File Transfer Collector

Optical File Transfer Collector is a file transfer processor. See "The File Transfer Processor " in *Oracle Communications Network Integrity File Transfer and Parsing* guide for information on file transfer processors.

The file transfer processor outputs a single parameter. This output parameter holds a collection of file objects, each of which points to the local version of the transferred file. The collection of files is used as input to the next processor Optical File Transfer Parser.

The name of the output parameter is system-generated and based on the name of the file transfer processor. For example, the Sample File Transfer processor outputs **sampleFileTransferFileCollection**.

The type of the output parameter is always **java.util.Collection<java.io.File>**.

Scan Parameter Group

When a cartridge is deployed with scan parameter groups that are generated from a file transfer processor, they appear in the Network Integrity UI as scan parameters. File Transfer Processor Scan Parameter Group is added as a scan parameter to Optical File Transfer Collector.

Table 2-1 Characteristics in the File Transfer Processor Scan Parameter Group

Parameter	Default Value	Mandatory	Description
Transfer Type	FTP	Yes	Select how files should be transferred: **FTP**, **SFTP**, **Local**.
File Pattern	N/A	No	A pattern to match file names. The pattern supports wildcard characters. The supported wildcard characters are "*", "%", and "_". "*" and "%" represent a match of zero or more characters. "_" represents a match of any single character. Wildcard characters can be escaped with a backslash.
Port	N/A	No	The port used to connect to the remote server. The default is **21** for FTP and **22** for SFTP.
User Name	N/A	No	The user name to connect to the remote location.
Password	N/A	No	The password to connect to the remote location.
Session Timeout	60	No	The amount of time in seconds before an idle connection is timed out. The valid range is from **1** to **3600**.
Source File Management	Rename	No	Select the action to take on source files when the file transfer is complete. Options are: **Delete**, **Rename**, **Nothing**.
Rename Suffix	Processed	No	The suffix to add to the source file if the source file management characteristic has a value of **Rename**.

Optical File Transfer Parser

Optical File Transfer Parser is a discovery processor. This processor accepts the list of files from Optical File Transfer Collector processor as an input and is used to parse files and collect required data.

The properties file available in the cartridge **Optical_FTP_Discovery_Cartridge/src/opticalfiles.properties** contains key value pairs of file names that should be considered.

The sample **opticalfiles.properties** is as follows:

Key **Board_REPORT_File_Name** contains value **Board_Report_**. This specifies that the files with names starting with "**Board_Report_**" will be considered for discovery and modeling Boards. The same rule applies to all other types of files.

Optical File Transfer Parser processor generates collection of neObjects that contains device details.

```
NE_REPORT_FILE_NAME=NE_Report
SUBRACK_REPORT_FILE_NAME=Subrack_Report_
BOARD_REPORT_FILE_NAME=Board_Report_
PORT_REPORT_FILE_NAME=Port_Report_
PHYSICAL_LOCATION_FILE_NAME=Physical_Location
```

Scan Parameter Group

Additional filtering of devices based on **Network Element Name** and **Network Element Type Name** can be achieved using **Optical Device Scan Parameters**. This parameter group appears in Network Integrity as a scan parameter.

Table 2-2 Characteristics in the Optical Device Scan Parameters Group

Parameter	Default Value	Mandatory	Description
networkElementName	N/A	No	A pattern to match **networkElementName**. By default, it supports all deviceNames
networkElementQualifier	N/A	No	Select the matching Criteria for networkElementName : • Equals • Equals_Ignore_Case • Begins_With • Begins_With_Ignore_Case • Ends_with • Ends_with_Ignore_Case • Contains • Contains_Ignore_Case • Comma_Delimited_Names • Comma_Delimited_Names_Ignore_Case
networkElementType	N/A	No	A pattern to match networkElementType. By default, it supports all deviceTypes

Table 2-2 (Cont.) Characteristics in the Optical Device Scan Parameters Group

Parameter	Default Value	Mandatory	Description
networkElementTypeQualifier	N/A	No	Select the matching Criteria for networkElementType : • Equals • Equals_Ignore_Case • Begins_With • Begins_With_Ignore_Case • Ends_with • Ends_with_Ignore_Case • Contains • Contains_Ignore_Case • Comma_Delimited_Names • Comma_Delimited_Names_Ignore_Case

Optical File Transfer Device Modeler

Optical File Transfer Device Modeler is a discovery processor. It accepts collection of **neObject** generated by Optical File Transfer Parser as input. This processor models the collected data into physical and logical devices.

Detect Optical Device UIM Discrepancies

The Detect Optical Device UIM Discrepancies action detects discrepancies between discovery scan results of action Discover optical Devices FTP and data imported from UIM.

This discrepancy detection action extends the Abstract Detect UIM Discrepancies action (from the UIM Integration cartridge) and inherits all its processors. For information about the inherited processors, see "Overview" in *Network Integrity UIM Integration Cartridge Guide*.

The Detect Optical Device UIM Discrepancies action contains the following processors run in the following order:

1. UIM Discrepancies Filter Initializer (inherited)
2. Discrepancy Detector (inherited)

Resolve Optical Device in UIM

The Resolve Optical Device in UIM action resolves discrepancies on logical and physical hierarchies and associations between the logical and physical entities in UIM.

The discrepancy resolution action extends the Abstract Resolve in UIM action (from the UIM Integration cartridge) and inherits all its processors. For information about the inherited processors, see "Overview" in *Network Integrity UIM Integration Cartridge Guide*.

The Resolve Optical Device in UIM action contains the following processors run in the following order:

1. UIM Resolution Framework Initializer (inherited)

2. UIM Resolution Initializer (inherited)
3. UIM Resolution Framework Dispatcher (inherited)

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Using the Cartridge

This chapter provides instructions for using the Oracle Communications Network Integrity Optical FTP Discovery Cartridge in Network Integrity

Creating a Discover Optical Devices FTP Scan

The Discover Optical Devices FTP scan is used to discover and model data. It discovers network information using FTP protocol and creates network entities Physical device, shelf, card, port, and interface/sub-interface.

To create a Discover optical Devices FTP scan:

1. Create a new scan.

   See the "Creating a Scan" in *Network Integrity Online Help* for more information.
2. On the **General** tab, do the following:
   a. From the **Scan Action** list, select **Discover Optical Devices FTP**.

      The Scan Type field displays **Discovery**.
   b. In the **Scan Action Parameters** section, configure the scan with appropriate parameters for both **File Transfer Processor Scan** parameter and **Optical Device Scan** parameter.
3. On the **Scope** tab, specify the path to the file directory.
4. Save and run the scan.

   The scan discovers and models logical and physical devices.

The scan creates device model for each logical and physical device. The physical device structure uses **GenericPhysicalDeviceSpecification** and various references defined in the Discover optical Devices FTP action. For more information, see "Model Collections".

Populating UIM with Discovered Data for Optical Network Vendor

You can populate UIM with network data discovered by the Discover optical Devices FTP discovery action.

To populate UIM with discovered network data:

1. Create a new scan.

   See "Creating a Scan" in *Network Integrity Online Help* for more information.
2. On the **General** tab of the Create Scan page, perform the following:
   a. From the **Scan Action** list, select **Discover Optical Devices FTP**.

      The Scan Type field displays **Discovery**.
   b. Select **Detect Discrepancies**.
   c. In the Scan Action Parameters area, enter the required configurations.

3. Save the scan.
4. Run the discovery scan.

   The scan generates **Entity+** discrepancies for each of the discovered device.
5. Right-click on the discrepancies you want to populate into UIM and select **Correct** in UIM.
6. Click **Submit**.
7. Verify if UIM is populated with the discovered data.

> **Note:**
>
> The Import Action **Import from UIM** available in UIM_Integration_Cartridge can be used to import data from UIM.

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About Cartridge Modeling

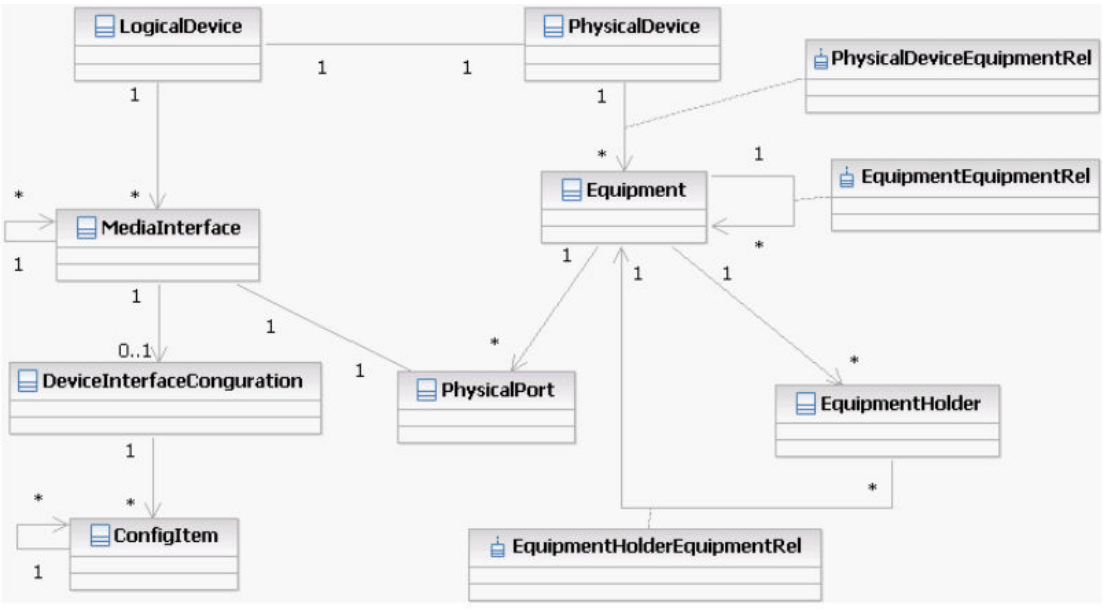
The Oracle Communications Network Integrity Optical FTP Discovery Cartridge models the collected data according to Oracle Communications Information Model. The collected data is modeled into the following entities:

- Equipment
- EquipmentHolder
- EquipmentEquipmentRel
- EquipmentHolderEquipmentRel
- LogicalDevice
- PhysicalDevice
- PhysicalDeviceEquipmentRel
- PhysicalPort
- DeviceInterfaceConfiguration
- DeviceInterfaceConfigurationItem

See *Oracle Communications Information Model Reference* for more information about the Information Model.

Cartridge Representation

The following figure shows the object relationship being rendered for Optical Network Vendor Devices.



Hierarchy Mapping

When a device is discovered, the media interface encapsulates common information about that interface. The device interface configuration captures the media type information that decorates the interface with media-specific parameters that define its behavior (that is; Generic, ATM, Frame Relay or VLAN). This cartridge supports only **Generic**.

Oracle Communications Information Model Information

All entities (for example, physical device, logical device, media interface, and so on) are Oracle Communications Information Model 1.0-compliant for static fields. The dynamic fields (sometimes referred to as characteristics) are application specific. You can customize application-specific data with the device interface configuration mechanism.

The Optical FTP Discovery Cartridge supports the following configuration:

- Optical Generic Media

For the list of Information Model fields, see "Logical Mapping" and "Physical Mapping".

Specifications

This section lists the specifications included in the **ora_ni_uim_device** cartridge for Optical Network Vendor Devices.

You must first model inventory (UIM) specifications in an inventory cartridge using Design Studio, define the cartridge dependency such that the Network Integrity cartridge is dependent on the inventory cartridge, and then use the inventory cartridge specifications in the Network Integrity cartridge model.

Specifications shared with Oracle Communications Unified Inventory Management (UIM) are defined in the **ora_ni_uim_device** cartridge. These cartridges are used to directly deploy specifications to UIM.

Physical Device

The following table shows the list of physical device specifications.

Table 4-1 Physical Device Specifications

Specification	Cartridge	Intended Usage
GenericPhysicalDeviceSpecification	ora_ni_uim_device	Used to model all types of Optical Network Vendor devices.

GenericPhysicalDeviceSpecification is available in **ora_ni_uim_device** and used to model all types of supported devices.

The following table shows the characteristics applied to the physical device specifications.

Table 4-2 Physical Device Characteristics

Characteristics	Field Type	Field Content
discoveredModelNumber	string	Text

Table 4-2 (Cont.) Physical Device Characteristics

Characteristics	Field Type	Field Content
discoveredPartNumber	string	Text
discoveredVendorName	string	Text
hardwareRev	string	Text
mgmtIpAddress	string	Text
nativeEmsName	string	Text
modelName	string	Text
owner	string	Text
softwareRev	string	Text
userLabel	string	Text

Equipment

The following table shows the list of Equipment specifications.

Table 4-3 Equipment Specifications

Specification	Cartridge	Intended Usage
GenericEquipmentShelfSpecification	ora_ni_uim_device	Used to model all types of supported devices.
GenericEquipmentSpecification	ora_ni_uim_device	Used to model all types of supported devices.

GenericEquipmentShelfSpecification and **GenericEquipmentSpecification** are available in **ora_ni_uim_device** and used to model all types of supported devices.

The following table shows the characteristics applied to the equipment specifications.

Table 4-4 Equipment Characteristics

Charecteristics	Field Type	Field Content
discoveredModelNumber	String	Text
discoveredPartNumber	String	Text
discoveredVendorName	String	Text
hardwareRev	String	Text
softwareRev	String	Text
modelName	String	Text
nativeEmsName	String	Text
owner	String	Text
userLabel	String	Text

Equipment Holder

The following table shows the list of Equipment Holder specifications.

Table 4-5 Equipment Holder Specifications

Specification	Cartridge	Intended Usage
GenericEquipmentHolderSpecification	ora_ni_uim_device	Used to model all types of Optical Network Vendor devices.

GenericEquipmentHolderSpecification is available in **ora_ni_uim_device** and used to model all types of supported devices.

The following table shows the characteristics applied to the equipment holder specifications.

Table 4-6 Equipment Holder Characteristics

Characteristics	Field Type	Field Content
modelName	String	Text
nativeEmsName	String	Text
discoveredVendorName	String	Text
owner	String	Text
userLabel	String	Text
direction	String	Text
edgePoint	String	Text
tpProtectionAssociation	String	Text

Physical Port

The following table shows the list of Physical Port specifications.

Table 4-7 Physical Port Specifications

Specification	Cartridge	Intended Usage
GenericPhysicalPortSpecification	ora_ni_uim_device	Used to model all types of Optical Network Vendor devices.

GenericPhysicalPortSpecification is available in **ora_ni_uim_device** and used to model all type of supported devices.

The following table shows the characteristics applied to the Physical Port specifications.

Table 4-8 Physical Port Characteristics

Characteristics	Field Type	Field Content
direction	String	Text
discoveredVendorName	String	Text
edgePoint	String	Text
nativeEmsName	String	Text
tpProtectionAssociation	String	Text
Port Type	String	Text
Port Level	String	Text

Logical Device

The following table shows the list of Logical Device specifications.

Table 4-9 Logical Device Specifications

Specification	Cartridge	Intended Usage
GenericLogicalDeviceSpecification	ora_ni_uim_device	Used to model all types of Optical Network Vendor devices.

GenericLogicalDeviceSpecification is available in **ora_ni_uim_device** and used to model all type of supported devices.

The following table shows the characteristics applied to the GenericLogicalDeviceSpecification.

Table 4-10 Logical Device Characteristics for GenericLogicalDeviceSpecification

Characteristics	Field Type	Field Content
mgmtIPAddress	String	Text
modelName	String	Text
nativeEmsName	String	Text
nativeEmsAdminServiceState	String	Text
nativeEmsServiceState	String	Text
owner	String	Text
sysObjectId	String	Text
userLabel	String	Text

Device Interface

The following table shows the list of Device Interface specifications.

Table 4-11 Device Interface Specifications

Specification	Cartridge	Intended Usage
GenericInterfaceSpecification	ora_ni_uim_device	Used to model all types of Optical Network Vendor devices.

GenericInterfaceSpecification is available in **ora_ni_uim_device** and used to model all type of supported devices.

The following table shows the characteristics applied to the GenericInterfaceSpecification specification.

Table 4-12 Device Interface Characteristics for GenericInterfaceSpecification Specification

Characteristics	Field Type	Filed Content
ifAlias	String	Text
ifName	String	Text
direction	String	N/A

Table 4-12 (Cont.) Device Interface Characteristics for GenericInterfaceSpecification Specification

Characteristics	Field Type	Filed Content
edgePoint	Boolean	N/A
ifPromiscuousMode	Boolean	N/A
mtuCurrent	Long	N/A
mtuSupported	Long	N/A
nativeEmsAdminServiceState	String	Text
nativeEmsConnectorPresent	Boolean	N/A
nativeEmsName	String	Text
owner	String	Text
physicalAddress	String	Text
userLabel	String	Text

Specification Cardinality

The cardinality of all specification parent-child relationships is included in the software code so that **min= 0** and **max= n** conditions are met. This approach allows Network Integrity to programmatically instantiate all objects on demand as they are discovered using the web service.

Equipment Visual Specifications

The visual facility on the Equipment specifications is not used. You can decide to upgrade the technology pack to provide visual effects to the UIM GUI for a given equipment entity.

Field Mapping

The Optical FTP Discovery Cartridge supports the following field mappings:

- **Text**: Implies `Text [255]`.
- **static**: Information Model 1.0 defines this field to be static on the entity specification. The specification provides getters and setters for this field.
- **dynamic**: This is a dynamic field where the entity specification considers the field as a name and value pair. The specification does not provide getters and setters but has a get and set characteristics method holding a HashSet of entries.
- For Optical Network Device FTP, all characteristics are configured using the data retrieved from collected Files.

Logical Mapping

The Optical FTP Discovery Cartridge supports the following logical mappings:

- Logical Device
- Media Interface
- Device Interface Configuration Item Mapping (Optical Generic Media)

Logical Device Mapping

The following table shows Logical Device Mapping.

Table 4-13 Logical Device Mapping

Characteristic	Information Model Support	Value	Field Type
Description	static	NeSubrackType(NE_REPORT)	Text
id	static	Programmatically generated as `Id::Name::"LogicalDevice"`	Text
Name	static	Name(NE_REPORT)	Text
NativeEMSName	static	Name(NE_REPORT)	Text

Media Interface Mapping

The following table shows Media Interface Mapping.

Table 4-14 Media Interface Mapping

Characteristic	Information Model Support	Value	Field Type
id	static	Programmatically generated as Id::Name::InterfaceName::ShelfNumber::SlotNumber::PortNumber	Text
Name	static	Interface Name (Interface_Resource_Report)	Text
description	static	Interface Description (Interface_Resource_Report)	Text
specification	static	Programmatically applies specification "GenericInterfaceSpecification".	N/A
interfaceNumber	static	N/A	Text
customerInterfaceNumber	static	N/A	Text
vendorInterfaceNumber	static	N/A	Text
nativeEmsName	static	Programmatically generated as Id::Name::InterfaceName::ShelfNumber::SlotNumber::PortNumber	Text
nativeEmsAdminServiceState	static	N/A	Enum with the following values: • UNKNOWN • IN_SERVICE • OUT_OF_SERVICE • TESTING • IN_MAINTENANCE

Table 4-14 (Cont.) Media Interface Mapping

Characteristic	Information Model Support	Value	Field Type
nativeEmsServiceState	static	Status (Interface_Resource_Report)	Enum with the following values: • UNKNOWN • IN_SERVICE • OUT_OF_SERVICE • TESTING • IN_MAINTENANCE
ifType	dynamic	Interface Type (Interface_Resource_Report)	Text
mtuSupported	static	N/A	Float
mtuCurrent	static	mtuCurrent (Interface_Resource_Report)	Float
physicalAddress	static	N/A	Text
physicalLocation	static	N/A	Text
minSpeed	static	N/A	Float
maxSpeed	static	N/A	Float
nominalSpeed	static	Speed (Interface_Resource_Report)	Float
ifAlias	dynamic	N/A	Text
ifName	dynamic	N/A	Text

Device Interface Configuration Item Mapping

The following table shows Device Interface Configuration Item Mapping.

Table 4-15 Device Configuration Item (IPv4) Mapping

Characteristic (Generic Media)	Information Model Support	Value	Field Type
ipAddress	dynamic	IPv4Address (Interface_Resource_Report)	Text
prefix	dynamic	N/A	Text
ipVersion	dynamic	Programmatically Generated as IPv4	Enum • IPV4
specification	static	Programmatically applies Optical GenericMedia specification	N/A

Table 4-16 Device Configuration Item (IPv6) Mapping

Characteristic (Generic Media)	Information Model Support	Value	Field Type
ipAddress	dynamic	IPv6Address (Interface_Resource_Report)	Text
prefix	dynamic	N/A	Text

Table 4-16 (Cont.) Device Configuration Item (IPv6) Mapping

Characteristic (Generic Media)	Information Model Support	Value	Field Type
ipVersion	dynamic	Programmatically Generated as IPV6	Enum • IPV6
specification	static	Programmatically applies Optical GenericMedia specification	N/A

Physical Mapping

The Optical FTP Discovery Cartridge supports the following physical mappings:

- Physical Device
- Equipment Shelf
- Equipment Holder
- Equipment Card
- Physical Port

Physical Device Mapping

The following table shows Physical Device mapping.

Table 4-17 Physical Device Mapping

Characteristic (Generic Physical Device Specification)	Information Model Support	Value	Field Type
SoftwareRev	dynamic	SoftwareRev(NE_REPORT)	Text
PhysicalLocation	static	Location(PHYSICAL_LOCATION_FILE)	Text
NativeEMSName	static	Name(NE_REPORT)	Text
Name	static	Name(NE_REPORT)	Text
ModelName	dynamic	NeType(NE_REPORT)	Text
id	static	Programmatically generated as Id::Name::"PhysicalDevice"	Text
DiscoveredVendorName	dynamic	Set to "opticalVendor"	Text
Description	static	NeSubrackType(NE_REPORT)	Text

Equipment Shelf Mapping

The following table shows Equipment Shelf mapping.

Table 4-18 Equipment Shelf Mapping

Characteristic (GenericEquipmentShelfSpecification)	Information Model Support	Value	Field Type
id	static	Programmatically generated as Type(SUBRACK_REPORT)	Text
Name	static	Programmatically generated as Type(SUBRACK_REPORT)	Text
Description	static	Description(SUBRACK_REPORT) | Subnet(SUBRACK_REPORT)	Text
NativeEmsName	static	Programmatically generated as Type(SUBRACK_REPORT)	Text
PhysicalLocation	static	PhysicalLocation(PHYSICAL_LOCATION_FILE)	Text
ModelName	dynamic	Set to "OPTICAL-SHELF"	Text
DiscoveredVendorName	dynamic	Set to "opticalVendor"	Text
DiscoveredPartNumber	dynamic	Programmatically generated as Type(SUBRACK_REPORT)	Text

Equipment Holder Mapping

The following table shows Equipment Holder mapping.

Table 4-19 Equipment Holder Mapping

Characteristic (GenericEquipmentHolderSpecification)	Information Model Support	Value	Field Type
id	static	Programmatically generated	Text
Name	static	Programmatically generated as "`slot=`" `SlotId(board)`	Text
NativeEMSName	static	Programmatically generated	Text
Owner	dynamic	Set to "opticalVendor"	Text

Equipment Card Mapping

The following table shows Equipment Card mapping.

Table 4-20 Equipment Card Mapping

Characteristic (GenericEquipmentCardSpecification)	Information Model Support	Value	Field Type
id	static	Programmatically generated	Text
Name	static	Name (BOARD_REPORT)	Text
Description	static	Description (BOARD_REPORT)	Text
NativeEMSName	static	Programmatically generated	Text
SerialNumber	static	Programmatically generated using **SerialNo (BOARD_REPORT)**	Text
PhysicalLocation	static	PhysicalLocation(PHYSICAL_LOCATION_FILE)	Text
ModelName	dynamic	Set to "OPTICAL-CARD"	Text
DiscoveredPartNumber	dynamic	Type (BOARD_REPORT)	Text
HardwareRev	dynamic	HardwareRev (BOARD_REPORT)	Text
DiscoveredVendorName	dynamic	Set to "opticalVendor"	Text
Owner	dynamic	Set to "opticalVendor"	Text

Physical Port Mapping

The following table shows Physical Port mapping.

Table 4-21 Physical Port Mapping

Characteristic (GenericPhysicalPortSpecification)	Information Model Support	Value	Field Type
id	static	Programmatically generated	Text
Name	static	Name (PORT_REPORT)	Text
Description	static	PortNeType (PORT_REPORT)	Text
NativeEMSName	static	Programmatically generated	Text
VendorPortName	static	Name (PORT_REPORT)	Text
PortNumber	static	PortNum (PORT_REPORT)	Text
Direction	dynamic	Set to "Bidirectional"	Text
EdgePoint	dynamic	Set to "true"	Text
Port Type	dynamic	Port Type (PORT_REPORT)	Text
Port Level	dynamic	Port Level (PORT_REPORT)	Text

About Design Studio Construction

This chapter provides information on the composition of the Oracle Communications Network Integrity Optical FTP Discovery Cartridge from the Oracle Communications Design Studio perspective.

The following table shows the **Optical_FTP_Discovery_Cartridge** model collection used in the Optical FTP Discovery cartridge.

Table 4-22 Optical_FTP_Discovery_Cartridge Model Collection

Specification	Information Model Entity Type	Intended Usage
GenericLogicalDeviceSpecification	LogicalDevice	Represents the root object discovered on the network for the devices. Logical Device Modeler models logical devices into **GenericLogicalDeviceSpecification**.
GenericPhysicalDeviceSpecification	PhysicalDevice	Represents any Optical Network Vendor Device discovered using FTP protocol.
GenericEquipmentHolderSpecification	EquipmentHolder	Represents any equipment container.
GenericEquipmentShelfSpecification	Equipment	Represents Chassis piece of equipment.
GenericEquipmentSpecification	Equipment	Represents Module piece of equipment.
GenericPhysicalPortSpecification	PhysicalPort	Represents any physical port.
GenericInterfaceSpecification	DeviceInterface	Represents interface discovered under **GenericLogicalDeviceSpecification**.

Logical Specification Lineage

The following example shows a logical specification lineage for Devices. This lineage shows the intended relationship between specifications.

Example 4-1 Logical Specification Lineage

```
GenericLogicalDeviceSpecification
    [0..*] GenericInterfaceSpecification
      [0..1] Optical Generic Media Configuration Item
          [0..1] Optical IP Addresses
              [0..*] Optical IP Address
```

Physical Specification Lineage

The following example shows a physical specification lineage for Devices. This lineage shows the intended relationship between specifications.

Example 4-2 Physical Specification Lineage

```
GenericPhysicalDeviceSpecification
     GenericEquipmentShelfSpecification
           [0..*] GenericEquipmentHolderSpecification
                  [0..1]  GenericEquipmentSpecification
                          [0..*] GenericEquipmentHolderSpecification
                                   [0..1]  GenericEquipmentSpecification
                                           [0..1]
GenericPhysicalPortSpecification
```

Discovery Action

Optical FTP Discovery Cartridge supports discovery action Discover optical Devices FTP.

The following table shows the discovery actions in the Optical FTP Discovery Cartridge.

Table 4-23 Discover optical Devices FTP

Result Category	Address Handler	Scan Parameters	Model	Processors
Device	FileTransferAddressHandler	• Transfer Type • File Pattern • Port • User Name • Password • Session Timeout • Source File Management • Rename Suffix **Note**: These scan parameters must be added for the Create Scan web service request even when the values are left empty.	Optical_FTP_Discovery_Cartridge	• Optical File Transfer Collector • Optical File Transfer Parser • Optical File Transfer Device Modeler

Discovery Processors

Table 4-24 Discover Optical Devices FTP Scan Action Processors

Processor Name	Variable
Optical File Transfer Collector	Input: N/A Output: • OpticalFileTransferCollectorFileCollection Collection of files read from the scope provided.
Optical File Transfer Parser	Input: • OpticalFileTransferCollectorFileCollection Output: • neObjects Collection of device details
Optical File Transfer Device Modeler	Input: neObjects Output: N/A

Discrepancy Detection Action

Detect Optical Device UIM Discrepancies is the action used to perform Discrepancy detection.

Table 4-25 Detect Optical Device UIM Discrepancies

Result Category	Results Score	Scan Parameters	Model	Processors
All	Discover optical Devices FTP	N/A	Optical_FTP_Discovery_Cartridge	This action extends the Abstract Detect UIM Discrepancies action included in the UIM Integration cartridge. See "Abstract Detect UIM Discrepancies Action" in *Network Integrity UIM Integration Cartridge Guide* for more information.

Discrepancy Resolution Action

Resolve Optical Device in UIM is the action used to perform Discrepancy Resolution.

Table 4-26 Resolve Optical Device in UIM

Result Category	Result Score	Processor
All	Discover optical Devices FTP	This action extends the Abstract Resolve in UIM action included in the Network Integrity UIM Integration cartridge. See "Abstract Resolve in UIM Action" in *Network Integrity UIM Integration Cartridge Guide* for more information.

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About Optical FTP Discovery Input File Structure

For Optical Devices FTP scan to work, the files must be populated with the corresponding value.

Table 5-1 List of Supported Files

File Name	Mandatory	Description
NE_REPORT_FILE	YES	This file contains NetworkElement information
SUBRACK_REPORT_FILE_NAME	YES	This file contains Sub_Rack (Equipment Chassis) information
BOARD_REPORT_FILE	YES	This file contains Card related information present under Sub_Rack
PORT_REPORT_FILE	YES	This file contains port Information
PHYSICAL_LOCATION_FILE	YES	This file contains Physical Location details of NetworkElement
Interface_Resource_Report_File	YES	This file contains Device Interface details and Mapping between PhysicalPort Informations

Note:

File naming convention can be changed by making the necessary changes inside **opticalfiles.properties** located at **Optical_FTP_Discovery_Cartridge/src**. Each file is structured with a predetermined set of columns, each containing essential device information.

In each file, the initial seven lines are reserved for report-related information and are not utilized. The eighth line serves as the actual header, defining the columns. The subsequent lines contain the specific details pertaining to each device

NE Report File

The following table shows the list of column headers required within the file.

Table 5-2 NE Report File

Header Name	Essential (Data)	Description
NE Name	YES	Network Element name

Table 5-2 (Cont.) NE Report File

Header Name	Essential (Data)	Description
NE Type	YES	Type of Device Model
NE ID	YES	Unique Id that represent Network Element
Subrack Type	YES	Subrack Type
Software Version	NO	Software Version been used by the device

Sub_Rack Report File

The following table shows the list of column headers required within the file

Table 5-3 Sub_Rack Report File

Header Name	Essential (Data)	Description
NE	YES	Network Element under which this rack is present
Subrack Name	YES	Rack name
Subrack Type	YES	Type of Rack
Subrack ID	YES	Unique Id to represent Rack
Software Version	NO	Rack Software
SN(Bar Code)	NO	Bar Code Information
Description	NO	Rack Description
Subnet	NO	Subnet Related information
Subnet Path	NO	Subnet Path Information

Board Report File

The following table shows the list of column headers required within the file.

Table 5-4 Board Report File

Header Name	Essential (Data)	Description
NE	YES	Network Element under which this board is present
NE Type	YES	Network Element Type
Board Name	YES	Board Name
Board Type	YES	Board Type
Subrack ID	YES	Rack (Id)under which this board is present
Slot ID	YES	Container (Id) that hold this board
Hardware Version	NO	Board Hardware Version
SN(Bar Code)	NO	Board SN(Bar Code)
Serial Number	NO	Board Serial Number
Software Version	NO	Board Software Version

Table 5-4 (Cont.) Board Report File

Header Name	Essential (Data)	Description
Description	NO	Board Description

Physical_Location File

The following table shows the list of column headers required within the file.

Table 5-5 Physical_Location File

Header Name	Essential (Data)	Description
NE Name	YES	Network Element name
Location	YES	Physical Location

Physical Location Report Sample File

8	NE Name	Location
9	SampleNE	SampleLocation

Interface_Resource_Report File

The following table shows the list of column headers required within the file.

Table 5-6 Interface_Resource_Report File

Header Name	Essential (Data)	Description
Interface Name	YES	Interface Name
NE Name	YES	Network Element name
Interface Description	NO	Interface Description
Ipv4Address	NO	IPV4 Address
Ipv6Adress	NO	IPV6 Address
Interface Type	NO	Interface Type
Speed	NO	Interface Supported Speed
Status	NO	Interface Status Supported Value.(UP /DOWN)
MtuCurrent	NO	Interface MtuCurrent Details
Port Mapping	NO	Interface-PhysicalPort Mapping details Supported Value Format: • ShelfNo:SlotNo:PortNo:PortName • SlotNo:PortNo:PortName • null

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About Design Studio Extension

This chapter provides scenarios for the extensibility of Oracle Communications Network Integrity using Oracle Communications Design Studio.

Adding a New Vendor

To discover and model data of a new vendor under Optical Network Vendor Devices, a new action can be created and a new collector processor (FTP) can be added. Subsequently, necessary Discover Model Code can be implemented to model the required Physical and Logical device hierarchy as per the requirement.

Adding a New Device Type under Existing Vendors

For this example to discover and model a new optical Network vendor device, Optical File Transfer Device Modeler implementation can be updated with logic to support modeling of the new device type.

For more details regarding extensibility, see "Using Design Studio to Extend Network Integrity" in *Network Integrity Developer's Guide*.