

# Oracle® Communications Network Integrity

## MIB-II UIM Integration Cartridge Guide



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# Preface

This guide describes the functionality and design of the Oracle Communications Network Integrity Management Information Base (MIB) II Unified Inventory Management (UIM) Integration cartridge.

## Audience

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

You should have a good working knowledge of SNMP and SNMP operations, specifications, the use of Oracle Communications Design Studio for Network Integrity, and UIM.

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

- *Network Integrity Concepts*
- *Network Integrity Developer's Guide*
- *Network Integrity MIB-II SNMP Cartridge Guide*
- *Network Integrity UIM Integration Cartridge Guide*
- *Network Integrity Cisco Router and Switch UIM Integration Cartridge Guide*

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# 1

## Overview

This chapter provides an overview of the Oracle Communications Network Integrity MIB-II UIM Integration cartridge.

### About MIB-II UIM Integration Cartridge

The MIB-II UIM Integration cartridge provides discrepancy detection, discrepancy resolution and import functionality for integration with Oracle Communications Unified Inventory Management (UIM). Using the MIB-II UIM Integration cartridge, you can quickly integrate arbitrarily discovered management information bean (MIB) MIB-II data with UIM.

The cartridge imports MIB-II devices from UIM and supports extensibility where custom scan parameters are required for selective import of data. The import action allows logical device trees in UIM to be imported to Network Integrity for comparison of objects with discovered data.

The cartridge detects discrepancies in MIB-II SNMP discovery results in a UIM context. The discrepancy detection action provides the mechanism to allow a filtered comparison of logical trees between data that is discovered and data that is imported from UIM.

The cartridge resolves MIB-II SNMP discrepancies into UIM. The discrepancy resolution action allows the discovered logical device trees to be created and updated in UIM. For more information about discrepancy detection and discrepancy resolution, see "Using Design Studio to Extend Network Integrity" in *Network Integrity Developer's Guide*.

### About Cartridge Dependencies

This section provides information on dependencies that the MIB-II UIM Integration cartridge has on other cartridges.

#### Run-Time Dependencies

For the MIB-II UIM Integration cartridge to work at run time:

- The Address\_Handlers and MIB-II SNMP cartridges must be deployed to Network Integrity.
- UIM must be installed and be accessible to Network Integrity.

The following components must be installed in UIM:

- ora\_ni\_uim\_ocim
- ora\_ni\_uim\_device
- UIM Integration Web Service

#### Design-Time Dependencies

The MIB-II UIM Integration cartridge has the following dependencies:

- MIB\_II\_SNMP\_Cartridge

- NetworkIntegritySDK
- ora\_uim\_device
- UIM\_Integration\_Cartridge

See "About the UIM Integration Cartridge" in *Network Integrity UIM Integration Cartridge Guide* for information about the operation of the web service and its dependencies.

## Opening the Cartridge Files in Design Studio

To review and extend the MIB-II UIM Integration cartridge, you must first download the Oracle Communications MIB-II UIM Integration cartridge software from the Oracle software delivery website:

<https://edelivery.oracle.com>

The software contains the MIB-II UIM Integration cartridge ZIP file, which has the following structure:

- \UIM\_Cartridge\_Projects\
- \Network\_Integrity\_Cartridge\_Projects\

The **UIM\_Cartridge\_Projects** and **Network\_Integrity\_Cartridge\_Projects** folders contain the extensible Design Studio files.



### Note:

When importing MIB files into Design Studio, ensure that the MIB files do not have any filename extension. For example, rename the **FileMIB1.txt** file to **FileMIB1** before importing it into Design Studio.

See "Getting Started with Design Studio for Network Integrity" in *SCD Design Studio Modeling Network Integrity* and "Using Design Studio to Extend Network Integrity" in *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" in *SCD Design Studio Modeling Network Integrity* for information about building and deploying cartridges.

# 2

## About the Cartridge Components

This chapter describes the components of Oracle Communications Network Integrity MIB-II UIM Integration cartridge.

The MIB-II UIM Integration cartridge contains the following actions:

- [Import MIB-II from UIM Action](#)
- [Detect MIB-II UIM Discrepancies Action](#)
- [Resolve MIB-II in UIM Action](#)

### Import MIB-II from UIM Action

The Import MIB-II from UIM action imports MIB-II logical device trees from Oracle Communications Unified Inventory Management (UIM). Import scan parameters are available on the Create Scan page in Network Integrity to configure import filters.

This import extends the Abstract Import from UIM action (from the UIM Integration cartridge) and inherits all its processors. For information about the inherited processors in this action, see "Abstract Import from UIM Action" in *Network Integrity UIM Integration Cartridge Guide*.

The Import MIB-II from UIM action contains the following processors run in the following order:

1. Import UIM Initializer (inherited)
2. [Scan Parameter MIB II Initializer](#)
3. Logical Device UIM Finder (inherited)
4. Physical Device UIM Finder (inherited)
5. Logical Device UIM Importer (inherited)
6. Linked Physical Device UIM Importer (inherited)
7. Logical Device UIM Persister (inherited)
8. Physical Device UIM Importer (inherited)
9. Physical Device UIM Persister (inherited)

"[Figure 2-1](#)" illustrates the processor workflow of the Import MIB-II from UIM action.



Figure 2-1 Import MIB-II from UIM Action Processor Workflow



## Scan Parameter MIB II Initializer

This processor initializes the scan parameters configured on the Create Scan page in Network Integrity.

Table 2-1 describes the import scan parameters used to configure import filters.

Table 2-1 Import Scan Parameters in the UI

Filter	Pattern	Example
Name	Supports comma separated list for multiple values and wildcards	rot3640-11
Management IP Address	Supports comma separated list for multiple values and wildcards	10.10.10.10
Inventory State	<ul style="list-style-type: none"> <li>INSTALLED</li> <li>UNAVAILABLE</li> </ul>	N/A
Network Location /Entity Code	Supports comma separated list for multiple values and wildcards	NYHQ1.D3

The import functionality is implemented to:

- Retrieve all the Logical Device Ids that match the filter criteria and have the deviceGeneric specification.
- Iterate over each Id:
  - Retrieve the Logical tree from UIM.
  - Persist the Logical Device and child interfaces.

This import action provides scan parameters that allow the user to set filters when creating an import scan. The filters determine the set of entities included in the import scan.

[Table 2-2](#) shows scan filter values used when configuring the filters in the base class.

**Table 2-2 Import Scan Parameters (not set by the user)**

Filter	Value
Query Physical Devices	False
Import Related Physical or Logical Device	False
Logical Device Specification	deviceGeneric

## Detect MIB-II UIM Discrepancies Action

The Detect MIB-II UIM Discrepancies action enables discrepancy detection between discovered MIB-II SNMP results 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 in this action, see "Abstract Detect UIM Discrepancies Action" in *Network Integrity UIM Integration Cartridge Guide*.

The Detect MIB-II UIM Discrepancies Action contains the following processors run in the following order:

1. UIM Discrepancies Filter Intializer (inherited)
2. [MIB II UIM Filters Initializer](#)
3. Discrepancy Detector (inherited)

"[Figure 2-2](#)" illustrates the processor workflow of the Detect MIB-II UIM Discrepancies action.

Figure 2-2 Detect MIB-II UIM Discrepancies Action Processor Workflow



## MIB II UIM Filters Initializer

This processor adds the following filters to ignore association discrepancies between logical and physical devices. Discrepancy detection between logical and physical devices is required only when a different import action is used to import both logical and physical devices.

- Disregard Association+ and Association- discrepancies on Logical Device
- Disregard Association+ and Association- discrepancies on Device Interface

## Resolve MIB-II in UIM Action

The Resolve MIB-II in UIM action resolves discrepancies between discovered MIB-II SNMP data and the data imported from UIM.

This 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 in this action, see "Abstract Resolve in UIM Action" in *Network Integrity UIM Integration Cartridge Guide*.

The Resolve MIB-II 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

"Figure 2-3" illustrates the processor workflow of the Resolve MIB-II in UIM action.

**Figure 2-3    Resolve MIB-II in UIM Action Processor Workflow**



# 3

## Using the Cartridge

This chapter provides instructions for using the Oracle Communications Network Integrity MIB-II UIM Integration cartridge in Network Integrity.

### Creating an Import MIB-II from UIM Scan

The Import MIB-II from UIM scan imports simple network management protocol (SNMP) logical devices from Oracle Communications Unified Inventory Management (UIM).

To create an Import MIB-II from UIM scan:

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, do the following:
  - From the **Scan Action** list, select **Import MIB-II From UIM**.  
The **Scan Type** field displays **Import**.
  - In the Scan Action Parameters area, leave all the fields with their default values.
3. Make any other required configurations.
4. Save and run the scan.  
The logical device model is created for each device and used the deviceGeneric and interfaceGeneric specifications.

### Populating UIM with Discovered Data

This procedure describes steps to populate UIM with network data.

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, do the following:
  - From the **Scan Action** list, select **Discover MIB-II SNMP**.  
The **Scan Type** field displays **Discover**.
  - Select **Detect Discrepancies**.
  - In the Scan Action Parameters area, leave all the fields with their default values.
3. Run the discovery scan.  
The scan generates one entity+ discrepancies for each device.
4. Right-click on the discrepancies you want to populate into UIM and select **Correct in UIM**.
5. Click **Submit**.
6. Verify that UIM is populated with the discovered data.

You can now create an import scan to import the MIB-II data from UIM. You can run a new discovery scan with discrepancy detection which should not detect any discrepancies that you populated in UIM.

# 4

## About Cartridge Modeling

This chapter provides information on modeling the Oracle Communications Network Integrity MIB-II UIM Integration cartridge.

For information about the following, see "About Cartridge Modeling" in *Network Integrity MIB-II SNMP Cartridge Guide*:

- MIB-II UIM Integration Cartridge UML Representation
- Hierarchy Mapping
- Oracle Communications Information Model Information
- Specifications
- Field Mappings

## Specification Support in UIM

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. This cartridge is used to directly deploy specifications to UIM.

Oracle Communications Design Studio features are used to tag certain characteristics as specific to UIM. These characteristics appear on specifications deployed to UIM, but they do not appear on specifications deployed to Network Integrity.

Network Integrity specifications such as GenericMedia are defined in the MIB-II SNMP cartridge. This cartridge references **ora\_ni\_uim\_device** for the shared deviceGeneric and interfaceGeneric specifications.

The following tables identify which characteristics on the shared specifications are specific to UIM.

## Device Generic Characteristics

[Table 4-1](#) shows Device Generic characteristics.

**Table 4-1 Device Generic Characteristics**

Characteristic Name	Specific to UIM
mgmtIpAddress	No
sysObjectId	No
nativeEmsAdminServiceState	Yes
nativeEmsServiceState	Yes

**Table 4-1 (Cont.) Device Generic Characteristics**

Characteristic Name	Specific to UIM
nativeEmsName	Yes

## Interface Generic Characteristics

[Table 4-2](#) shows Interface Generic characteristics.

**Table 4-2 Interface Generic Characteristics**

Characteristic Name	Specific to UIM
ifAlias	No
ifName	No
ifPromiscuousMode	No
ifType	Yes
minSpeed	Yes
maxSpeed	Yes
nominalSpeed	Yes
physicalAddress	Yes
physicalLocation	Yes
nativeEmsConnectorPresent	Yes
mtuCurrent	Yes
mtuSupported	Yes
nativeEmsAdminServiceState	Yes
nativeEmsServiceState	Yes
nativeEmsName	Yes
ifSpeed	Yes
highSpeed	Yes



# 5

## Design Studio Construction

This chapter provides information on using Oracle Communications Design Studio to construct for the Oracle Communications Network Integrity MIB-II UIM Integration cartridge.

### Import MIB-II from UIM Action

"Table 5-1" shows the import action of the MIB-II UIM Integration cartridge.

**Table 5-1 Import MIB-II from UIM Action**

Result Category	Scan Parameters	Model	Processors
Device	<ul style="list-style-type: none"><li>name</li><li>mgmtIPAddress</li><li>adminState</li><li>networkLocationEntityCode</li></ul>	MIB-II UIM Model	<ul style="list-style-type: none"><li>Scan Parameter MIB-II UIM Initializer</li><li>This action extends the Abstract Import from UIM action. See "Abstract Import from UIM Action" in <i>Network Integrity UIM Integration Cartridge Guide</i> for information about the processors in this action.</li></ul>

### Detect MIB-II UIM Discrepancies Action

"Table 5-2" shows the discrepancy detection action of the MIB-II UIM Integration cartridge.

**Table 5-2 Detect MIB-II UIM Discrepancies Action**

Model	Results Source	Notes	Processors
MIB-II UIM Model	Discover MIB-II SNMP	Discrepancy detection compares the discovered tree from Discover MIB-II SNMP.	<ul style="list-style-type: none"><li>MIB-II UIM Filters Initializer</li><li>This action extends the Abstract Detect UIM Discrepancies action. See "Abstract Detect UIM Discrepancies Action" in <i>Network Integrity UIM Integration Cartridge Guide</i> for information about the processors in this action.</li></ul>

### Resolve MIB-II in UIM Action

"Table 5-3" shows the discrepancy resolution action of the MIB-II UIM Integration cartridge.

Table 5-3 Resolve MIB-II in UIM Action

Model	Results Source	Result Category	Processors
MIB-II UIM Model	Discover MIB-II SNMP	All	This action extends the Abstract Resolve in UIM action. See "Abstract Resolve in UIM Action" in <i>Network Integrity UIM Integration Cartridge Guide</i> for information about the processors in this action.

# 6

## Design Studio Extensions

This chapter provides examples of extending certain aspects of the Oracle Communications Network Integrity MIB-II UIM Integration cartridge.

### Updating Property Files

To update the property files (in the event that new interface types or new vendors are introduced), see "Updating Property Files" in *Network Integrity MIB-II SNMP Cartridge Guide*.

### Extending the Cartridge for Physical Devices

If you want to extend the cartridge project to discover, resolve, and import physical device trees, see "Overview" in *Network Integrity Cisco Router and Switch UIM Integration Cartridge Guide*. This cartridge serves as a fully implemented example.

### Import and Discrepancy Resolution Extensions

The import action and source code are extensible to work with physical device trees. An example of this can be seen in the Cisco Router and Switch UIM Integration cartridge that extends both the source code and Oracle Communications Design Studio construction of the import action.

The discrepancy resolution action and source code are extensible to work with physical device trees. An example of this can be seen in the Cisco Router and Switch UIM Integration cartridge that extends both the source code and Design Studio construction of the discrepancy resolution action.