AUTHORIZED DOCUMENTATION

Null Service and Loopback Service Drivers Implementation Guide

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Identity Manager

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About This Guide

This guide provides information about the Identity Manager Loopback Service and Null Service drivers. Service drivers are used only for Metadirectory engine functions, not for connecting with external systems. They are automatically installed when you install Identity Manager.

The guide is organized as follows:

- Chapter 1, “Understanding the Null Service and Loopback Service Drivers,” on page 7
- Chapter 2, “Installing the Driver Files,” on page 9
- Chapter 3, “Creating a New Null Service Driver,” on page 11
- Chapter 4, “Creating a New Loopback Service Driver,” on page 15
- Chapter 5, “Upgrading an Existing Driver,” on page 19
- Chapter 6, “Managing the Driver,” on page 21
- Appendix A, “Driver Properties,” on page 23

Audience

This guide is intended for administrators, consultants, and network engineers who require a high-level introduction to Identity Manager business solutions, technologies, and tools.

Documentation Updates

For the most recent version of this document, see the Identity Manager Documentation Web site (http://www.novell.com/documentation/idm401/index.html).

Additional Documentation

For documentation on other Identity Manager drivers, see the Identity Manager Drivers Web site (http://www.novell.com/documentation/idm401drivers/index.html).

Understanding the Null Service and Loopback Service Drivers

1

Novell Identity Manager includes two utility drivers, Null Service and Loopback Service, whose purpose is to implement custom behavior through policies established on the drivers' Subscriber and Publisher channels. Like other service drivers such as Entitlement and Workflow, the Null Service and Loopback Service drivers do not connect to external applications or systems.

The Null Service driver performs any tasks that are implemented through policies on the Subscriber channel. The Publisher channel is not used; the driver does not connect the Subscriber channel to the Publisher channel, but rather acts as a sink for most operations, simulates doing something with operations, and then returns success. Typical uses for the Null Service driver include the following:

- Adding the classes and attributes that you want to monitor for change in the Subscriber Filter as *Synchronize* for the class and *Notify* for the attribute.
- Adding Subscriber Event Transformation policies that react to specific object or attribute changes, and performing actions such as:
  - Making modifications back into the Identity Vault (using actions that manipulate source attributes and objects).
  - Sending e-mail.
  - Generating custom Audit events.
  - Calling extension functions to communicate the change outside of Identity Manager.
- Adding a final Subscriber Event Transformation policy that vetoes all events.

The Null Service driver should be sufficient for the majority of the tasks you want to perform. However, if you need to process policies on both the Subscriber and Publisher channels, you can use the Loopback Service driver instead. The only difference between the two drivers is that the Loopback driver's Subscriber channel connects to the Publisher channel so that events can also be processed on the Publisher channel.

Installing the Driver Files

2

By default, the Null Service and Loopback driver files are installed on the Metadirectory server at the same time as the Metadirectory engine. The installation program extends the Identity Vault's schema and installs the driver shim. It does not create the driver in the Identity Vault (see Chapter 3, "Creating a New Null Service Driver," on page 11 or Chapter 4, "Creating a New Loopback Service Driver," on page 15) or upgrade an existing driver's configuration (see Chapter 5, "Upgrading an Existing Driver," on page 19).

If you performed a custom installation and did not install the Null Service or the Loopback driver on the Metadirectory server, you have two options:

- Install the files on the Metadirectory server, using the instructions in "Installing Identity Manager" in the *Identity Manager 4.0.1 Integrated Installation Guide*.
- Install the Remote Loader (required to run the driver on a non-Metadirectory server) and the driver files on a non-Metadirectory server where you want to run the driver. See "Installing Identity Manager" in the *Identity Manager 4.0.1 Integrated Installation Guide*.

Creating a New Null Service Driver

3

After the Null Service driver files are installed on the server where you want to run the driver (see Chapter 2, “Installing the Driver Files,” on page 9), you can create the driver in the Identity Vault. You do so by importing the driver packages and then modifying the driver configuration to suit your environment.

- Section 3.1, “Creating the Driver in Designer,” on page 11
- Section 3.2, “Creating the Driver in iManager,” on page 14
- Section 3.3, “Activating the Driver,” on page 14

3.1 Creating the Driver in Designer

You create the Null Service driver by installing the driver packages and then modifying the configuration to suit your environment. After you create and configure the driver, you need to deploy it to the Identity Vault and start it.

- Section 3.1.1, “Importing the Current Driver Packages,” on page 11
- Section 3.1.2, “Installing the Driver Packages,” on page 12
- Section 3.1.3, “Configuring the Driver Settings,” on page 12
- Section 3.1.4, “Configuring the Driver Policies,” on page 13
- Section 3.1.5, “Deploying the Driver,” on page 13
- Section 3.1.6, “Starting the Driver,” on page 14

3.1.1 Importing the Current Driver Packages

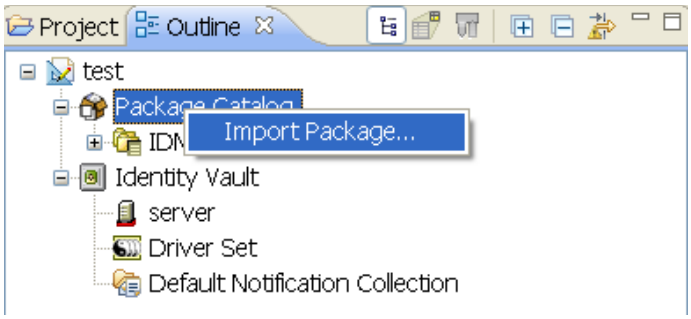
The driver packages contain the items required to create a driver, such as policies, entitlements, filters, and Schema Mapping policies. These packages are only available in Designer and can be updated after they are initially installed. You must have the most current version of the packages in the Package Catalog before you can create a new driver object.

To verify you have the most recent version of the driver packages in the Package Catalog:

1. Open Designer.
2. In the toolbar, click *Help* > *Check for Package Updates*.
3. Click *OK* to update the packages

   or

   Click *OK* if the packages are up-to-date.
4. In the Outline view, right-click the Package Catalog.
5. Click *Import Package*.



6 Select any Null Service driver packages

or

Click *Select All* to import all of the packages displayed.

By default, only the base packages are displayed. Deselect *Show Base Packages Only* to display all packages.

7 Click *OK* to import the selected packages, then click *OK* in the successfully imported packages message.

8 After the current packages are imported, continue with Section 3.1.2, “Installing the Driver Packages,” on page 12.

3.1.2 Installing the Driver Packages

After you have imported the current driver packages into the Package Catalog, you can install the driver packages to create a new driver.

1 In Designer, open your project.

2 In the Modeler, right-click the driver set where you want to create the driver, then click *New* > *Driver*.

3 Select *Null Service Base*, then click *Next*.

4 On the Null Service page, specify a name for the driver, then click *Next*.

5 Review the summary of tasks that will be completed to create the driver, then click *Finish*.

6 After the driver packages are installed, if you want to change the configuration of the Role-Based Entitlement driver, continue to Section 3.1.3, “Configuring the Driver Settings,” on page 12.

or

If you do not want to change the configuration of the driver, continue to Section 3.1.5, “Deploying the Driver,” on page 13.

3.1.3 Configuring the Driver Settings

After you installed the driver packages, the Null Service driver will run. However, there are many configuration settings that you can use to customize and optimize the driver. The settings are divided into categories such as Driver Configuration, Engine Control Values, and Global Configuration Values (GCVs). The settings are described in Appendix A, “Driver Properties,” on page 23.

If you do not have the Driver Properties page displayed in Designer:

1. Open your project.
2. In the Modeler, right-click the driver icon or the driver line, then select *Properties*.
3. Make the changes you want, then continue to Section 3.1.4, “Configuring the Driver Policies,” on page 13.

3.1.4 Configuring the Driver Policies

The basic driver configuration does not include any policies. To have the driver perform any work, you need to create the appropriate policies. For information about creating policies, see the *Policies in Designer 4.0.1* guide.

After you have created the appropriate policies, continue with Section 3.1.5, “Deploying the Driver,” on page 13.

3.1.5 Deploying the Driver

After a driver is created in Designer, it must be deployed into the Identity Vault.

1. In Designer, open your project.
2. In the Modeler, right-click the driver icon or the driver line, then select *Live* > *Deploy*.
3. If you are authenticated to the Identity Vault, skip to Step 5; otherwise, specify the following information:
   - **Host:** Specify the IP address or DNS name of the server hosting the Identity Vault.
   - **Username:** Specify the DN of the user object used to authenticate to the Identity Vault.
   - **Password:** Specify the user’s password.
4. Click *OK*.
5. Read the deployment summary, then click *Deploy*.
6. Read the successful message, then click *OK*.
7. Click *Define Security Equivalence* to assign rights to the driver.

   The driver requires rights to objects within the Identity Vault. The Admin user object is most often used to supply these rights. However, you might want to create a DriversUser (for example) and assign security equivalence to that user. Whatever rights that the driver needs to have on the server, the DriversUser object must have the same security rights.

   7a Click *Add*, then browse to and select the object with the correct rights.

   7b Click *OK* twice.
8. Click *Exclude Administrative Roles* to exclude users that should not be synchronized.

   You should exclude any administrative User objects (for example, Admin and DriversUser) from synchronization.

   8a Click *Add*, then browse to and select the user object you want to exclude.

   8b Click *OK*.

8c Repeat Step 8a and Step 8b for each object you want to exclude.

8d Click *OK*.

9 Click *OK*.

3.1.6 Starting the Driver

When a driver is created, it is stopped by default. To make the driver work, you must start the driver and cause events to occur. Identity Manager is an event-driven system, so after the driver is started, it won't do anything until an event occurs.

To start the driver:

1. In Designer, open your project.
2. In the Modeler, right-click the driver icon or the driver line, then select *Live* > *Start Driver*.

For information about management tasks for the driver, see Chapter 6, "Managing the Driver," on page 21.

3.2 Creating the Driver in iManager

Drivers are created with packages, and iManager does not support packages. In order to create or modify drivers, you must use Designer. See Section 3.1, "Creating the Driver in Designer," on page 11.

3.3 Activating the Driver

If you created the driver in a driver set where you have already activated the Metadirectory engine and service drivers, the driver inherits the activation. If you created the driver in a driver set that has not been activated, you must activate the driver within 90 days. Otherwise, the driver stops working.

For information on activation, refer to "Activating Novell Identity Manager Products" in the *Identity Manager 4.0.1 Integrated Installation Guide*.

Creating a New Loopback Service Driver

4

After the Loopback Service driver files are installed on the server where you want to run the driver (see Chapter 2, “Installing the Driver Files,” on page 9), you can create the driver in the Identity Vault. You do so by importing the driver packages and then modifying the driver configuration to suit your environment.

- Section 4.1, “Creating the Driver in Designer,” on page 15
- Section 4.2, “Creating the Driver in iManager,” on page 18
- Section 4.3, “Activating the Driver,” on page 18

4.1 Creating the Driver in Designer

You create the Loopback Service driver by installing the driver packages and then modifying the configuration to suit your environment. After you create and configure the driver, you need to deploy it to the Identity Vault and start it.

- Section 4.1.1, “Importing the Current Driver Packages,” on page 15
- Section 4.1.2, “Installing the Driver Packages,” on page 16
- Section 4.1.3, “Configuring the Driver Settings,” on page 16
- Section 4.1.4, “Configuring the Driver Policies,” on page 17
- Section 4.1.5, “Deploying the Driver,” on page 17
- Section 4.1.6, “Starting the Driver,” on page 18

4.1.1 Importing the Current Driver Packages

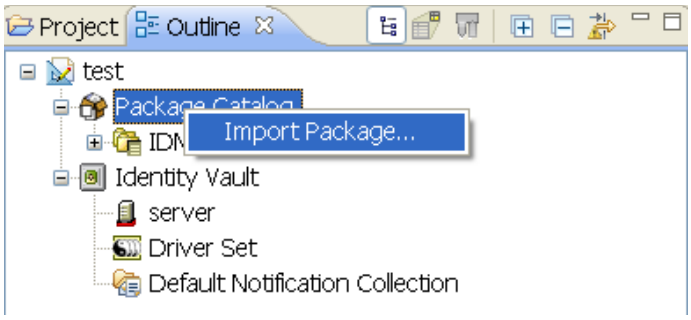
The driver packages contain the items required to create a driver, such as policies, entitlements, filters, and Schema Mapping policies. These packages are only available in Designer and can be updated after they are initially installed. You must have the most current version of the packages in the Package Catalog before you can create a new driver object.

To verify you have the most recent version of the driver packages in the Package Catalog:

1. Open Designer.
2. In the toolbar, click *Help* > *Check for Package Updates*.
3. Click *OK* to update the packages

   or

   Click *OK* if the packages are up-to-date.
4. In the Outline view, right-click the Package Catalog.
5. Click *Import Package*.



6 Select any Loopback driver packages

or

Click *Select All* to import all of the packages displayed.

By default, only the base packages are displayed. Deselect *Show Base Packages Only* to display all packages.

7 Click *OK* to import the selected packages, then click *OK* in the successfully imported packages message.

8 After the current packages are imported, continue with Section 3.1.2, “Installing the Driver Packages,” on page 12.

4.1.2 Installing the Driver Packages

After you have imported the current driver packages into the Package Catalog, you can install the driver packages to create a new driver.

1 In Designer, open your project.

2 In the Modeler, right-click the driver set where you want to create the driver, then click *New* > *Driver*.

3 Select *Loopback Base*, then click *Next*.

4 On the Loopback page, specify a name for the driver, then click *Next*.

5 Review the summary of tasks that will be completed to create the driver, then click *Finish*.

6 After the driver packages are installed, if you want to change the configuration of the Role-Based Entitlement driver, continue to Section 4.1.3, “Configuring the Driver Settings,” on page 16.

or

If you do not want to change the configuration of the driver, continue to Section 4.1.5, “Deploying the Driver,” on page 17.

4.1.3 Configuring the Driver Settings

After you have installed the driver packages, the Loopback Service driver will run. However, there are many configuration settings that you can use to customize and optimize the driver. The settings are divided into categories such as Driver Configuration, Engine Control Values, and Global Configuration Values (GCVs). The settings are described in Appendix A, “Driver Properties,” on page 23.

If you do not have the Driver Properties page displayed in Designer:

1. Open your project.
2. In the Modeler, right-click the driver icon or the driver line, then select *Properties*.
3. Make the changes you want, then continue to Section 4.1.4, “Configuring the Driver Policies,” on page 17.

4.1.4 Configuring the Driver Policies

The basic driver configuration does not include any policies. To have the driver perform any work, you need to create the appropriate policies. For information about creating policies, see the *Policies in Designer 4.0.1* guide.

After you have created the appropriate policies, continue to Section 4.1.5, “Deploying the Driver,” on page 17.

4.1.5 Deploying the Driver

After a driver is created in Designer, it must be deployed into the Identity Vault.

1. In Designer, open your project.
2. In the Modeler, right-click the driver icon or the driver line, then select *Live* > *Deploy*.
3. If you are authenticated to the Identity Vault, skip to Step 5; otherwise, specify the follow information:
   - **Host:** Specify the IP address or DNS name of the server hosting the Identity Vault.
   - **Username:** Specify the DN of the user object used to authenticate to the Identity Vault.
   - **Password:** Specify the user’s password.
4. Click *OK*.
5. Read the deployment summary, then click *Deploy*.
6. Read the successful message, then click *OK*.
7. Click *Define Security Equivalence* to assign rights to the driver.

   The driver requires rights to objects within the Identity Vault. The Admin user object is most often used to supply these rights. However, you might want to create a DriversUser (for example) and assign security equivalence to that user. Whatever rights that the driver needs to have on the server, the DriversUser object must have the same security rights.

   7a Click *Add*, then browse to and select the object with the correct rights.

   7b Click *OK* twice.
8. Click *Exclude Administrative Roles* to exclude users that should not be synchronized.

   You should exclude any administrative User objects (for example, Admin and DriversUser) from synchronization.

   8a Click *Add*, then browse to and select the user object you want to exclude.

   8b Click *OK*.

8c Repeat Step 8a and Step 8b for each object you want to exclude.

8d Click *OK*.

9 Click *OK*.

4.1.6 Starting the Driver

When a driver is created, it is stopped by default. To make the driver work, you must start the driver and cause events to occur. Identity Manager is an event-driven system, so after the driver is started, it won't do anything until an event occurs.

To start the driver:

1. In Designer, open your project.
2. In the Modeler, right-click the driver icon or the driver line, then select *Live* > *Start Driver*.

For information about management tasks for the driver, see Chapter 6, "Managing the Driver," on page 21.

4.2 Creating the Driver in iManager

Drivers are created with packages, and iManager does not support packages. In order to create or modify drivers, you must use Designer. See Section 4.1, "Creating the Driver in Designer," on page 15.

4.3 Activating the Driver

If you created the driver in a driver set where you already activated the Metadirectory engine and service drivers, the driver inherits the activation. If you created the driver in a driver set that has not been activated, you must activate the driver within 90 days. Otherwise, the driver stops working.

For information on activation, refer to "Activating Novell Identity Manager Products" in the *Identity Manager 4.0.1 Integrated Installation Guide*.

Upgrading an Existing Driver

5

The following sections provide information to help you upgrade an existing driver to version 4.0.1:

- Section 5.1, “Supported Upgrade Paths,” on page 19
- Section 5.2, “What’s New in Version 4.0.1,” on page 19
- Section 5.3, “Upgrade Procedure,” on page 19

5.1 Supported Upgrade Paths

You can upgrade from any 3.*x* version of the Null Service driver or Loopback Service driver. Upgrading a pre-3.*x* version of the driver directly to version 4.0.1 is not supported.

5.2 What’s New in Version 4.0.1

Version 4.0.1 of the driver does not include any new features.

From 4.0 version of the driver, driver content is delivered in packages instead of through a driver configuration file.

5.3 Upgrade Procedure

The process for upgrading the Null or Loopback driver is the same as for other Identity Manager drivers. For detailed instructions, see “Upgrading Drivers to Packages” in the *Identity Manager 4.0.1 Upgrade and Migration Guide*.

Managing the Driver

6

As you work with the Null Service driver and the Loopback Service driver, there are a variety of management tasks you might need to perform, including the following:

- Starting and stopping the driver
- Viewing driver version information
- Using Named Passwords to securely store passwords associated with the driver
- Monitoring the driver's health status
- Backing up the driver
- Inspecting the driver's cache files
- Viewing the driver's statistics
- Using the DirXML Command Line utility to perform management tasks through scripts
- Securing the driver and its information

Because these tasks, as well as several others, are common to all Identity Manager drivers, they are included in one reference, the *Identity Manager 4.0.1 Common Driver Administration Guide*.

Driver Properties

A

This section provides information about the Driver Configuration and Global Configuration Values properties for the Null Service driver and the Loopback Service driver. These are the only unique properties for drivers. All other driver properties (Named Password, Engine Control Values, Log Level, and so forth) are common to all drivers. Refer to "Driver Properties" in the *Identity Manager 4.0.1 Common Driver Administration Guide* for information about the common properties.

The properties information is presented from the viewpoint of iManager. If a field is different in Designer, it is marked with a icon.

- Section A.1, "Driver Configuration," on page 23
- Section A.2, "Global Configuration Values," on page 26

A.1 Driver Configuration

In iManager:

1. In iManager, click to display the Identity Manager Administration page.
2. Open the driver set that contains the driver whose properties you want to edit:
   - **2a** In the *Administration* list, click *Identity Manager Overview*.
   - **2b** If the driver set is not listed on the *Driver Sets* tab, use the *Search In* field to search for and display the driver set.
   - **2c** Click the driver set to open the Driver Set Overview page.
3. Locate the driver icon, then click the upper right corner of the driver icon to display the *Actions* menu.
4. Click *Edit Properties* to display the driver's properties page.
5. Click *Driver Configuration.*

In Designer:

1. Open a project in the Modeler.
2. Right-click the driver icon or line, then select click *Properties* > *Driver Configuration.*

The Driver Configuration options are divided into the following sections:

- Section A.1.1, "Driver Module," on page 24
- Section A.1.2, "Driver Object Password (iManager Only)," on page 24
- Section A.1.3, "Authentication," on page 24
- Section A.1.4, "Startup Option," on page 25
- Section A.1.5, "Driver Parameters," on page 25
- Section A.1.6, "ECMAScript," on page 25
- Section A.1.7, "Global Configurations," on page 25

A.1.1 Driver Module

The Driver Module section lets you change the driver from running locally to running remotely or the reverse.

Option	Description

Java	Used to specify the name of the Java class that is instantiated for the shim component of the driver. This class can be located in the `classes` directory as a class file, or in the `lib` directory as a `.jar` file. If this option is selected, the driver is running locally.
	
	The name of the Java class for the Null Service driver is:
	
	`com.novell.nds.dirxml.driver.nulldriver.NullDriverShim`
	
	The name of the Java class for the Loopback Service driver is:
	
	`com.novell.nds.dirxml.driver.loopback.LoopbackDriverShim`

Native	Used to specify the name of the `.dll` file that is instantiated for the application shim component of the driver. If this option is selected, the driver is running locally.
Connect to Remote Loader	This setting does not apply to the Null Service driver or the Loopback Service driver. You cannot use these drivers with the Remote Loader.

A.1.2 Driver Object Password (iManager Only)

Option	Description
Driver Object Password	This setting does not apply to the Null Service driver or the Loopback Service driver.

A.1.3 Authentication

The Authentication section stores the information required to authenticate to the connected system and to the Remote Loader. The Null Service driver and Loopback Service driver function only against the Identity Vault and cannot use the Remote Loader. Therefore, the authentication settings do not apply.

The only setting that applies to the drivers is the cache setting.

Option	Description
Driver Cache Limit (kilobytes) or *Cache limit (KB)*	Specify the maximum event cache file size (in KB). If it is set to zero, the file size is unlimited. Click *Unlimited* to set the file size to unlimited in Designer.

A.1.4 Startup Option

The Startup Option section enables you to set the driver state when the Identity Manager server is started.

Option	Description
Auto start	The driver starts every time the Identity Manager server is started.
Manual	The driver does not start when the Identity Manager server is started. The driver must be started through Designer or iManager.
Disabled	The driver has a cache file that stores all of the events. When the driver is set to *Disabled*, this file is deleted and no new events are stored in the file until the driver state is changed to *Manual* or *Auto Start*.
Do not automatically synchronize the driver	This option applies only if the driver is deployed and was previously disabled. If this is not selected, the driver re-synchronizes the next time it is started.

A.1.5 Driver Parameters

The Driver Parameters section lets you configure the driver-specific parameters.

Parameter	Description
Driver parameters for server	Displays or specifies the server name or IP address of the server whose driver parameters you want to modify.
Edit XML	Opens an editor so that you can edit the driver's configuration file.
Driver Options	There are no general driver options.
Subscriber Options	There are no general Subscriber channel options.
Publisher Options	There are no Publisher channel options.
Publisher Heartbeat Interval	Configures the driver to send a periodic status message on the Publisher channel when there has been no Publisher traffic for the given number of minutes. The default is every minute.

A.1.6 ECMAScript

Enables you to add ECMAScript resource files. The resources extend the driver's functionality when Identity Manager starts the driver.

A.1.7 Global Configurations

Displays an ordered list of Global Configuration objects. The objects contain extension GCV definitions for the driver that Identity Manager loads when the driver is started. You can add or remove the Global Configuration objects, and you can change the order in which the objects are executed.

A.2 Global Configuration Values

There are no predefined global configuration values (GCVs) specific to the Loopback Service driver and Null Service driver. As with all drivers, you can add GCVs that you need.

In iManager:

1. In iManager, click to display the Identity Manager Administration page.
2. Open the driver set that contains the driver whose properties you want to edit:
   - **2a** In the *Administration* list, click *Identity Manager Overview*.
   - **2b** If the driver set is not listed on the *Driver Sets* tab, use the *Search In* field to search for and display the driver set.
   - **2c** Click the driver set to open the Driver Set Overview page.
3. Locate the driver icon, then click the upper right corner of the driver icon to display the *Actions* menu.
4. Click *Edit Properties* to display the driver's properties page.
5. Click *Global Config Values*.

In Designer:

1. Open a project in the Modeler.
2. Right-click the driver icon or line, then select *Properties* > *Global Configuration Values*.