



# NetIQ® Identity Package Deployment Tool PDT 1.0 User Guide

June 2023

## Legal Notice

For information about NetIQ legal notices, disclaimers, warranties, export and other use restrictions, U.S. Government restricted rights, patent policy, and FIPS compliance, see <https://www.netiq.com/company/legal/> (<https://www.microfocus.com/en-us/legal>).

**Copyright (C) 2023 NetIQ Corporation. All rights reserved.**

---

# Contents

|                                                                     |           |
|---------------------------------------------------------------------|-----------|
| <b>About this Book and the Library</b>                              | <b>5</b>  |
| <b>About NetIQ Corporation</b>                                      | <b>7</b>  |
| <b>1 Introduction</b>                                               | <b>9</b>  |
| Installing NetIQ Identity Package Deployment Tool . . . . .         | 9         |
| Launching NetIQ Identity Package Deployment Tool . . . . .          | 9         |
| Implementation Checklist . . . . .                                  | 10        |
| <b>2 Creating Staging Environments</b>                              | <b>11</b> |
| When No Staging Environment Exists . . . . .                        | 11        |
| When You Want to Create an Additional Staging Environment . . . . . | 12        |
| When You Want to Modify an Existing Staging Environment . . . . .   | 13        |
| When You Want to Delete a Staging Environment . . . . .             | 13        |
| <b>3 Adding an Identity Vault to Stage</b>                          | <b>15</b> |
| Searching for Identity Vaults . . . . .                             | 16        |
| Viewing Identity Vault Configuration . . . . .                      | 16        |
| Modifying Identity Vault Configuration . . . . .                    | 17        |
| Viewing Identity Vault Packages . . . . .                           | 17        |
| Modifying Identity Vault Package Details . . . . .                  | 17        |
| Deploying Identity Vault . . . . .                                  | 18        |
| Deleting Identity Vault . . . . .                                   | 18        |
| <b>4 Adding Driver Sets and Drivers</b>                             | <b>19</b> |
| Adding a Driver Set . . . . .                                       | 19        |
| Viewing Driver Set Configuration . . . . .                          | 20        |
| Modifying Driver Set Configuration . . . . .                        | 20        |
| Viewing Driver Set Packages . . . . .                               | 20        |
| Modifying Driver Set Package Details . . . . .                      | 20        |
| Deleting Driver Sets . . . . .                                      | 21        |
| Deploying a Driver Set . . . . .                                    | 21        |
| Adding a Driver to Driver Set . . . . .                             | 22        |
| Viewing Installed Drivers and its Status . . . . .                  | 23        |
| Driver Actions . . . . .                                            | 24        |
| Deploying Drivers . . . . .                                         | 28        |
| <b>5 Understanding Packages</b>                                     | <b>29</b> |
| Using Packages . . . . .                                            | 29        |
| Advantages of Packages . . . . .                                    | 30        |
| Package Content . . . . .                                           | 30        |
| Understanding Package Dependencies . . . . .                        | 32        |

|          |                                                   |           |
|----------|---------------------------------------------------|-----------|
| <b>6</b> | <b>Managing Installed Packages</b>                | <b>33</b> |
|          | Listing Packages.....                             | 33        |
|          | Finding a Package.....                            | 33        |
|          | Sorting Packages in Order.....                    | 33        |
|          | Viewing Package Details.....                      | 34        |
|          | Importing Packages into the Package Catalog.....  | 35        |
|          | Downloading Packages.....                         | 35        |
|          | Comparing Package Versions.....                   | 36        |
|          | Deleting Packages From Package Catalog.....       | 37        |
|          | Configuring Channel for Downloading Packages..... | 37        |
| <br>     |                                                   |           |
| <b>7</b> | <b>Version Control Using Git</b>                  | <b>39</b> |
|          | Benefits of Using Git.....                        | 39        |
|          | How Does Git Work?.....                           | 39        |
|          | Cloning a Git Repository.....                     | 40        |
|          | Other Operations in Git Menu.....                 | 41        |
|          | Adding Git Credentials.....                       | 41        |
|          | Viewing Commit History.....                       | 41        |
|          | Viewing File History.....                         | 41        |
|          | Changing Git Credentials.....                     | 42        |
|          | Deleting Your Git Credentials.....                | 42        |

# About this Book and the Library

The *NetIQ Identity Package Deployment Tool PDT 1.0 User Guide* provides information on how to use the NetIQ Identity Package Deployment Tool to design, test, and deploy Identity Manager solutions.

## Intended Audience

This guide is intended for consultants, partners, and existing customers responsible for designing, deploying, and administering an Identity Manager solution.

## Other Information in the Library

For more information about the library for Identity Manager, see the [Identity Manager documentation website](#) and [Identity Manager Drivers documentation website](#) (<https://www.netiq.com/documentation/identity-manager-48-drivers/>).



# About NetIQ Corporation

We are a global, enterprise software company, with a focus on the three persistent challenges in your environment: Change, complexity and risk—and how we can help you control them.

## Our Viewpoint

### **Adapting to change and managing complexity and risk are nothing new**

In fact, of all the challenges you face, these are perhaps the most prominent variables that deny you the control you need to securely measure, monitor, and manage your physical, virtual, and cloud computing environments.

### **Enabling critical business services, better and faster**

We believe that providing as much control as possible to IT organizations is the only way to enable timelier and cost effective delivery of services. Persistent pressures like change and complexity will only continue to increase as organizations continue to change and the technologies needed to manage them become inherently more complex.

## Our Philosophy

### **Selling intelligent solutions, not just software**

In order to provide reliable control, we first make sure we understand the real-world scenarios in which IT organizations like yours operate — day in and day out. That's the only way we can develop practical, intelligent IT solutions that successfully yield proven, measurable results. And that's so much more rewarding than simply selling software.

### **Driving your success is our passion**

We place your success at the heart of how we do business. From product inception to deployment, we understand that you need IT solutions that work well and integrate seamlessly with your existing investments; you need ongoing support and training post-deployment; and you need someone that is truly easy to work with — for a change. Ultimately, when you succeed, we all succeed.

## Our Solutions

- ♦ Identity & Access Governance
- ♦ Access Management
- ♦ Security Management
- ♦ Systems & Application Management
- ♦ Workload Management
- ♦ Service Management

## Contacting Sales Support

For questions about products, pricing, and capabilities, contact your local partner. If you cannot contact your partner, contact our Sales Support team.

|                                  |                                                                                                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Worldwide:</b>                | <a href="http://www.netiq.com/about_netiq/officelocations.asp">www.netiq.com/about_netiq/officelocations.asp</a> |
| <b>United States and Canada:</b> | 1-888-323-6768                                                                                                   |
| <b>Email:</b>                    | <a href="mailto:info@netiq.com">info@netiq.com</a>                                                               |
| <b>Web Site:</b>                 | <a href="http://www.netiq.com">www.netiq.com</a>                                                                 |

## Contacting Technical Support

For specific product issues, contact our Technical Support team.

|                                         |                                                                                                  |
|-----------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>Worldwide:</b>                       | <a href="http://www.netiq.com/support/contactinfo.asp">www.netiq.com/support/contactinfo.asp</a> |
| <b>North and South America:</b>         | 1-713-418-5555                                                                                   |
| <b>Europe, Middle East, and Africa:</b> | +353 (0) 91-782 677                                                                              |
| <b>Email:</b>                           | <a href="mailto:support@netiq.com">support@netiq.com</a>                                         |
| <b>Web Site:</b>                        | <a href="http://www.netiq.com/support">www.netiq.com/support</a>                                 |

## Contacting Documentation Support

Our goal is to provide documentation that meets your needs. The documentation for this product is available on the NetIQ Web site in HTML and PDF formats on a page that does not require you to log in. If you have suggestions for documentation improvements, click **Add Comment** at the bottom of any page in the HTML version of the documentation posted at [www.netiq.com/documentation](http://www.netiq.com/documentation). You can also email [Documentation-Feedback@netiq.com](mailto:Documentation-Feedback@netiq.com). We value your input and look forward to hearing from you.

## Contacting the Online User Community

NetIQ Communities, the NetIQ online community, is a collaborative network connecting you to your peers and NetIQ experts. By providing more immediate information, useful links to helpful resources, and access to NetIQ experts, NetIQ Communities helps ensure you are mastering the knowledge you need to realize the full potential of IT investments upon which you rely. For more information, visit <https://www.netiq.com/communities/>.

# 1 Introduction

NetIQ Identity Package Deployment Tool (PDT) is a web-based tool that automates the deployment of drivers and packages in various customer environments. The tool enables you to build a model of your staging environment, which includes an Identity Vault, Identity Manager driver sets, and different types of Identity Manager drivers and packages.

The tool allows you to create multiple staging environments, and with Git version control, you can maintain the environment configurations in Git repositories. You can track configuration changes in drivers and staging files locally and revert changes if required. It simplifies driver maintenance and deployment processes in the customer environment.

The application is easy to set up on Windows and Linux workstations and laptops. The user interface is accessible via a web browser. For more information about the recommended hardware, supported operating systems, and web browsers, see [System Requirements](#) in the *NetIQ Identity Package Deployment Tool 1.0 Release Notes*.

## Installing NetIQ Identity Package Deployment Tool

To install NetIQ Identity Package Deployment Tool, see [Installing Identity Package Deployment Tool 1.0](#) in the *NetIQ Identity Package Deployment Tool 1.0 Release Notes*.

## Launching NetIQ Identity Package Deployment Tool

Perform the following steps:

- 1 In the address bar of a browser, type `https://<IP address>:8280/pdt` and press **Enter**.  
Where, <IP address> is the IP address of the system where NetIQ Package Deployment Tool is installed.  
For example, `https://10.0.0.0:8280/pdt`
- 2 To login, enter the username and password.  
Username: ptdadmin (by default)  
Password: The password you entered during the installation process.
- 3 Click **Login**.

# Implementation Checklist

Use the following checklist to create a complete staging environment ready for deployment with the Package Deployment Tool.

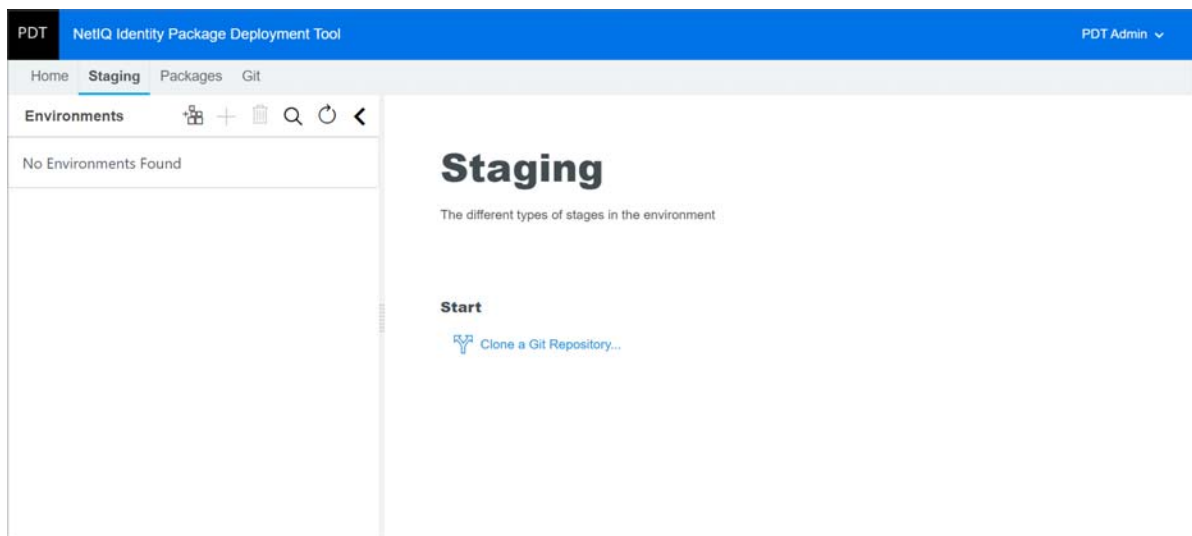
|                          | Checklist Items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | 1. A basic staging environment consists of a stage set with different stages. Start by building a stage set, then proceed to stages. For more information, see <a href="#">Chapter 2, “Creating Staging Environments,” on page 11</a> .                                                                                                                                                                                                                                                                                                                                                                                            |
| <input type="checkbox"/> | 2. For each stage, configure at least one Identity Vault. A stage can also have multiple Identity Vaults. For more information, see <a href="#">Chapter 3, “Adding an Identity Vault to Stage,” on page 15</a> .                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <input type="checkbox"/> | 3. Each Identity Vault must contain a driver set. To add a driver set, see <a href="#">“Adding a Driver Set” on page 19</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <input type="checkbox"/> | 4. Add drivers to the driver set. Select the mandatory and optional feature packages to include in a given driver. For more information, see <a href="#">“Adding a Driver to Driver Set” on page 22</a> .                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <input type="checkbox"/> | 5. (Optional) You can add additional feature packages to a driver if required. For more information, see <a href="#">“Managing Packages” on page 25</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <input type="checkbox"/> | 6. Based on your requirements, you can select what you want to deploy from the Package Deployment Tool to the Identity Vault. To learn more about deployment, choose one of the following topics: <ul style="list-style-type: none"><li>♦ See <a href="#">“Deploying Identity Vault” on page 18</a> for instructions on how to deploy Identity Vault with all driver sets and drivers.</li><li>♦ See <a href="#">“Deploying a Driver Set” on page 21</a> for instructions on how to deploy a driver set with all drivers.</li><li>♦ To deploy only selected drivers, see <a href="#">“Deploying Drivers” on page 28</a>.</li></ul> |

## 2 Creating Staging Environments

- ♦ “When No Staging Environment Exists” on page 11
- ♦ “When You Want to Create an Additional Staging Environment” on page 12
- ♦ “When You Want to Modify an Existing Staging Environment” on page 13
- ♦ “When You Want to Delete a Staging Environment” on page 13

### When No Staging Environment Exists

If you are new to Package Deployment Tool and have no staging environments, you will see the following window:



You are directed to the **Staging** menu by default, where you can first set up a staging environment.

A typical staging environment consists of a stage set with different stages.

**1** To create a stage set:

**1a** Click .

**1b** Specify the values for all the fields marked with an asterisk (\*) in the Create Stage Set window.

---

**NOTE:**

- ♦ You cannot change the specified **ID** later.
  - ♦ Do not use special characters, such as space, hyphen, and underscore in the **ID** field.
- 

**1c** (Optional) Specify a description of the stage set.

**1d** Click **Create**.

2 To add a new stage to the newly created stage set:

2a On the left pane, select the stage set you created, then click **+**.

2b Specify the values for all the fields marked with an asterisk (\*) in the Create Stage window.

---

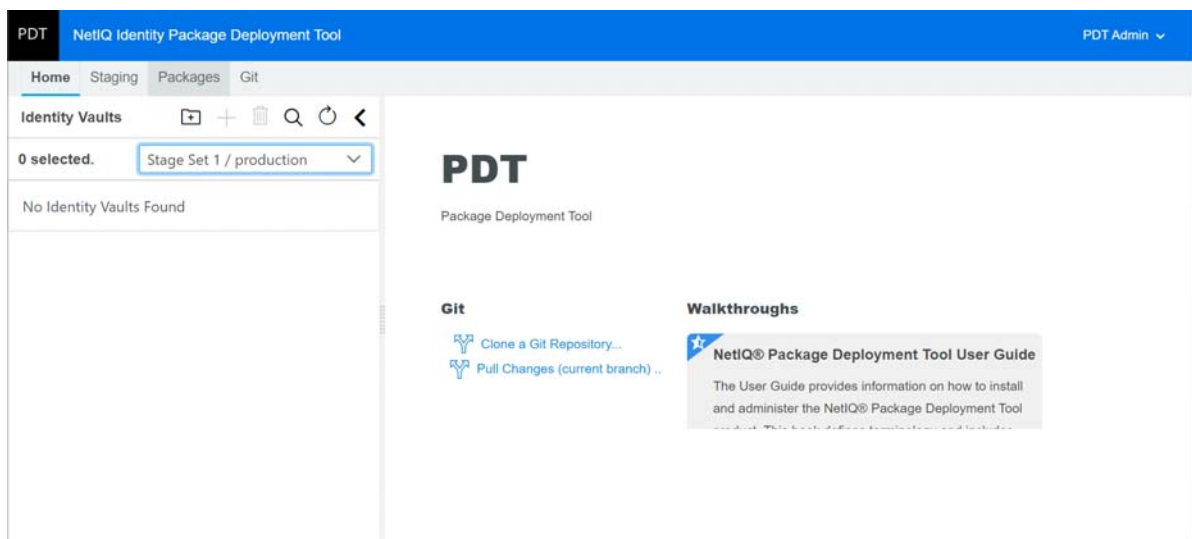
**NOTE:**

- ♦ You cannot change the specified **ID** later.
  - ♦ Do not use special characters, such as space, hyphen, and underscore in the **ID** field.
- 

2c (Optional) Specify a description of the stage.

2d Click **Create**.

After successfully creating the staging environment, the following window appears on the home screen:



The left navigation pane displays the staging environments, where you can select the stage you want to work with from the drop-down list. When you log in to the Package Deployment Tool, it takes you to the **Home** menu, which is the default landing page.

## When You Want to Create an Additional Staging Environment

You can create multiple staging environments using the Package Deployment Tool. Follow the steps in [Step 2 on page 12](#) to create additional stages and [Step 1 on page 11](#) to create additional stage sets.

## When You Want to Modify an Existing Staging Environment

You can modify the name and description of a stage set and its stages independently.

To modify an existing staging environment, select the stage set or the stage you want to modify, change the name and description as desired and click **Save**.

## When You Want to Delete a Staging Environment

When you delete a stage set, all stages contained within the stage set are also deleted, including the Identity Vaults, driver sets, drivers, and packages. You can also select and delete individual stages. Be careful when deleting a staging environment because you cannot undo deletion.

**To delete:**

- 1 Select the check box next to the stage set or the stage you want to delete.  
You can select multiple check boxes to delete in bulk.
- 2 Click .
- 3 Click **Delete**.



# 3 Adding an Identity Vault to Stage

Every stage environment must have at least one Identity Vault. You can add the Identity Vault after creating a staging environment. That Identity Vault must be linked to a server with Identity Manager installed on it.

To add an Identity Vault to a stage environment:

- 1 Click **Home**.
- 2 In the **Stage** drop-down list, select a stage where you want to add the Identity Vault.
- 3 Click .
- 4 Specify the values for all the fields marked with an asterisk (\*) in the Create Identity Vault window.

---

**NOTE:**

- ♦ You cannot change the specified **ID** later.
  - ♦ Do not use special characters, such as space, hyphen, and underscore in the **ID** field.
- 

- 5 (Optional) Specify the port number and password to connect to the host server.
- 6 Click **Create**.

The following table contains a description of the Identity Vault configuration settings.

**Table 3-1** Configuration Settings for an Identity Vault

| Field           | Description                                                                                                                                                           |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ID</b>       | The unique identifier of the Identity Vault object.                                                                                                                   |
| <b>Name</b>     | The name of the Identity Vault.                                                                                                                                       |
| <b>Host</b>     | The eDirectory host where you plan to log in and deploy.                                                                                                              |
| <b>Port</b>     | The port number to use in order to connect to the host server.                                                                                                        |
| <b>Username</b> | The eDirectory username in LDAP format that has sufficient rights to make changes to objects associated with this deployment. For example, cn=admin, ou=sa, o=system. |
| <b>Password</b> | The password for the eDirectory username.                                                                                                                             |

| Field                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Secure Connection</b> | <p>The connection between the Package Deployment Tool and the Identity Vault can be secure or non-secure.</p> <p><b>Secure Connection:</b> In a secure connection, the LDAP server listens on port 636 by default. If you configured the secure port as 700, specify this port number in the <b>Host</b> field. For example, 192 . 99 . 78 . 51 : 700.</p> <p><b>Non-secure Connection:</b> If you use a non-secure connection, all the information you enter, such as user names and passwords, is sent over the wire in clear text. The LDAP server listens on port 389 in a non-secure connection by default.</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>♦ Non-secure connection is not supported through Package Deployment Tool in this release.</li> <li>♦ For security reasons, named passwords will be deployed only in a secure connection.</li> </ul> <p>If you want to use a non-default port, specify the port number of the LDAP server for establishing a connection.</p> |

After adding an Identity Vault, you can perform the following operations on existing Identity Vaults:

- ♦ [“Searching for Identity Vaults” on page 16](#)
- ♦ [“Viewing Identity Vault Configuration” on page 16](#)
- ♦ [“Modifying Identity Vault Configuration” on page 17](#)
- ♦ [“Viewing Identity Vault Packages” on page 17](#)
- ♦ [“Modifying Identity Vault Package Details” on page 17](#)
- ♦ [“Deploying Identity Vault” on page 18](#)
- ♦ [“Deleting Identity Vault” on page 18](#)

## Searching for Identity Vaults

A simple search is provided to help you find an Identity Vault by its name. In the left navigation pane, click  and specify the name in the search bar. If driver sets are already configured in your environment, you can also search for driver sets using the same search option.

Click  to refresh the page and see an updated list of Identity Vaults and driver sets.

## Viewing Identity Vault Configuration

To view the Identity Vault configuration settings:

- 1 In the **Home** menu, select a stage from the **Stage** drop-down list.
- 2 Select the Identity Vault.
- 3 Click **Configuration** in the preview pane.

# Modifying Identity Vault Configuration

---

**NOTE:** Modifying Identity Vault is not allowed after deployment.

---

- 1 In the **Home** menu, select a stage from the **Stage** drop-down list.
- 2 Select the Identity Vault that you want to modify.
- 3 Click **Configuration** in the preview pane.
- 4 Edit the parameters as required.
- 5 Click **Save**.

## Viewing Identity Vault Packages

When there are no packages in Identity Vault, the message *"No Packages Found"* will appear.

If Identity Vault has packages, you can find them in the Installed Packages list in the **Packages** tab. These packages do not require driver or driver set packages, but the content of their package can affect all drivers in the Identity Vault. For more information on Identity Vault packages, see [Chapter 5, "Understanding Packages," on page 29](#).

You can click on a package to view its configuration values.

**To add packages to the Identity Vault:**

- 1 Click  next to the Installed Packages.
- 2 Select the required package version and the corresponding check box in the Available Packages list.
- 3 Click **Save**.

After adding the packages, you can upgrade, downgrade, or uninstall them any time you want.

## Modifying Identity Vault Package Details

---

**NOTE:** Modifying Identity Vault package is not allowed after deployment.

---

- 1 In the **Home** menu, select the stage from the **Stage** drop-down list.
- 2 Select the required Identity Vault.
- 3 Click **Packages in the preview pane**.  
A list of packages installed on the selected Identity Vault is displayed.
- 4 Select the package that you want to modify.
- 5 In Package Details pane, edit the parameters as required.
- 6 Click .

# Deploying Identity Vault

Use the Deploy IDV feature to save Identity Vault and driver sets configurations, and drivers into an Identity Vault server.

---

**IMPORTANT:** Package Deployment Tool does not allow you to change configuration values after deploying into the Identity Vault. You cannot change the Identity Vault, driver set, or driver configurations after deployment.

---

- 1 In the **Home** menu, select the stage from the **Stage** drop-down list.
- 2 Select the required Identity Vault.
- 3 Click  to deploy the Identity Vault.

After the Identity Vault is successfully deployed, you can monitor the log file in real-time. To view the logs, go to the **Logs** tab. The following operations are available in the **Logs** tab:

- ♦ Click  to stop the polling manually; the log reporting file is cleared. The polling automatically stops when the log file is downloaded.
- ♦ Click  to reload the page.
- ♦ Click  to copy the logs to your clipboard.
- ♦ To change the polling rate, select the desired interval from the drop-down list. The application checks for the log file every 2s, 5s, or 10s depending on the value selected. You can also choose to turn off polling.

## Deleting Identity Vault

When you delete an Identity Vault from a stage, all driver sets, including drivers and packages, that are part of the Identity Vault are also deleted. Also, the Identity Vault is deleted from the Package Deployment Tool, but the Identity Vault still persists in the staging environment.

### To delete an Identity Vault:

- 1 In the left navigation pane, select the stage from the **Stage** drop-down list.
- 2 Select the check box next to the Identity Vault that you want to delete.  
You can select multiple Identity Vaults (in the same stage) for deletion.
- 3 Click .
- 4 Click **Delete**.

# 4 Adding Driver Sets and Drivers

This chapter describes the following sections:

- ♦ “Adding a Driver Set” on page 19
- ♦ “Deploying a Driver Set” on page 21
- ♦ “Adding a Driver to Driver Set” on page 22
- ♦ “Deploying Drivers” on page 28

## Adding a Driver Set

An Identity Vault must contain at least one driver set. A driver set is a container that holds Identity Manager drivers and library objects. Only one driver set can be active on server at a time. As a result, all active drivers must be grouped into the same driver set. You can use the PDT tool to create a driver set.

**To create a driver set:**

- 1 Click **Home**.
- 2 Select a stage, then an Identity Vault where you want to add the driver set.
- 3 Click .
- 4 Specify the values for all the fields marked with an asterisk (\*) in Create Driver Set window.
- 5 Click **Create**.

The following table contains a description of the driver set settings.

**Table 4-1** Driver Set Settings

| Field          | Description                                                                                                                                                                                                                                                                                                                |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ID             | The unique identifier for the driver set object.                                                                                                                                                                                                                                                                           |
| Name           | The name of the driver set.                                                                                                                                                                                                                                                                                                |
| Server DN      | The server name and context in LDAP notation. The application displays available servers for selection in the drop-down list.                                                                                                                                                                                              |
| Deploy Context | Select the DN for the driver set in the DN Lookup Browser.<br><br>The Identity Vault assigns the default DN container value to all driver sets in LDAP format. If you specify a DN container here on the Driver Set object, that setting takes precedence over the Identity Vault setting. For example, ou=IDM, o=company. |

After adding a driver set, you can perform the following operations on existing driver sets:

- ♦ [“Viewing Driver Set Configuration” on page 20](#)
- ♦ [“Modifying Driver Set Configuration” on page 20](#)
- ♦ [“Viewing Driver Set Packages” on page 20](#)
- ♦ [“Modifying Driver Set Package Details” on page 20](#)
- ♦ [“Deleting Driver Sets” on page 21](#)

## Viewing Driver Set Configuration

To view the configuration settings of a driver set:

- 1 In the left navigation pane, select a stage from the **Stage** drop-down list.
- 2 Expand and select the driver set under the Identity Vault.
- 3 Click **Configuration** in the preview pane.

## Modifying Driver Set Configuration

---

**NOTE:** Modifying driver set configuration is not allowed after deployment.

---

Before deploying, if you want to modify driver set configurations:

- 1 Click **Home**.
- 2 Select a stage, then expand the Identity Vault option in left navigation pane.
- 3 Select a driver set that you want to modify.
- 4 Click **Configuration**.
- 5 Edit the parameters as required.
- 6 Click **Save**.

## Viewing Driver Set Packages

Packages that have been installed on a driver set are displayed in the **Packages** tab. You can click on a package to view its configuration settings.

Note that the driver set packages can require Identity Vaults packages but not driver packages. For more information on driver set packages, see [Chapter 5, “Understanding Packages,” on page 29](#).

## Modifying Driver Set Package Details

---

**NOTE:** Modifying driver set package is not allowed after deployment.

---

Before deploying, if you want to modify package details:

- 1 Click **Home**.
- 2 Select a stage, then expand the Identity Vault option in left navigation pane.

- 3 Select the required driver set.
- 4 Click **Packages**. A list of packages installed on the selected driver set is displayed.
- 5 Select the package that you want to modify.
- 6 In Package Details pane, edit the parameters as required.
- 7 Click .

## Deleting Driver Sets

To delete a driver set:

- 1 Click **Home**.
- 2 Select the stage from the **Stage** drop-down list.
- 3 Expand the Identity Vault option, then select the check box next to the driver set that you want to delete.  
You can select multiple driver sets (in the same stage) for deletion.
- 4 Click .
- 5 Click **Delete**.

## Deploying a Driver Set

Use the Deploy Driver Set feature to save the driver sets configurations and drivers into an Identity Vault server.

---

**IMPORTANT:** Package Deployment Tool does not allow you to change configuration values after deploying into the Identity Vault. You cannot change the driver set or driver configurations after deployment.

---

- 1 In the **Home** menu, select the stage from the **Stage** drop-down list.
- 2 Expand the Identity Vault option, then select the check box next to the driver set that you want to deploy.
- 3 Click  to deploy the driver set.

After the driver set is successfully deployed, you can monitor the log file in real-time. To view the logs, go to the **Logs** tab. The following operations are available in the **Logs** tab:

- ♦ Click  to stop the polling manually; the log reporting file is cleared. The polling automatically stops when the log file is downloaded.
- ♦ Click  to reload the page.
- ♦ Click  to copy the logs to your clipboard.
- ♦ To change the polling rate, select the desired interval from the drop-down list. The application checks for the log file every 2s, 5s, or 10s depending on the value selected. You can also choose to turn off polling.

# Adding a Driver to Driver Set

A driver provides the connection between an application and the Identity Vault. The driver is the connector that enables data synchronization and sharing between systems. A driver has two basic responsibilities: reporting data changes (events) in the application to the Identity Manager and carrying out data changes (commands) submitted by the Identity Manager to the application.

You can use Package Deployment Tool to add drivers to a driver set, which is linked to an Identity Vault.

## To add a driver:

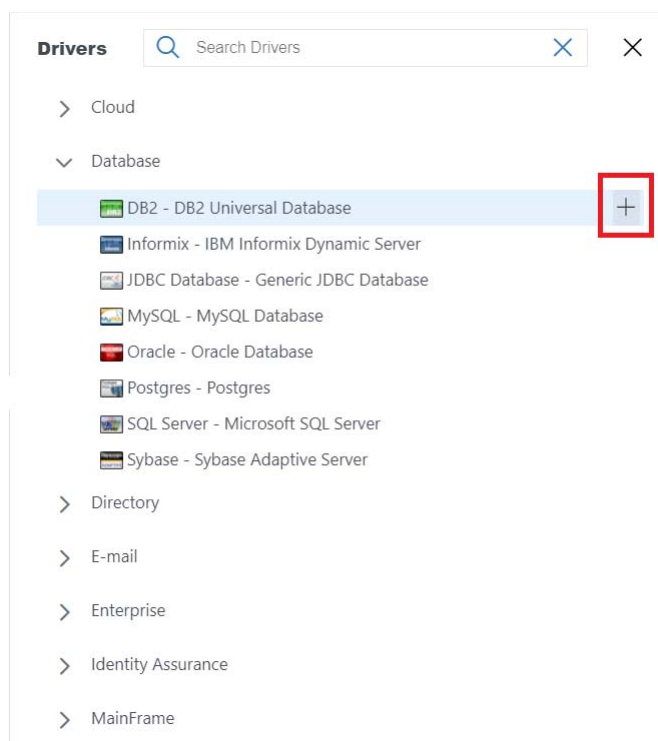
- 1 Click **Home**.
- 2 Select the stage from the **Stage** drop-down list.
- 3 Expand the Identity Vault option, then select the check box next to the driver set where you want to add a driver.
- 4 Click **+**.
- 5 Select a required driver from the Drivers pane. To add the driver, click **+** next to the selected driver.

---

**TIP:** You can look for a specific driver using the search option in the **Drivers** pane.

---

For example, the following figure illustrates how to add the DB2 - DB2 Universal Database driver.



- 6 Select the required base package version from the drop-down list, then click the check box next to the driver base package and click **Next**.

Driver base configuration packages contain the base functionality for a driver. Driver base configuration package is installed first. Only one base package can be selected.

- 7 Select the check box next to the required mandatory packages, then click **Next**.

If there is a feature that is required for a driver to function, but is not included in the driver base configuration package, it is added to a mandatory features package.

- 8 (Conditional) If you want to install any of the available optional features for the base package you selected, ensure the check box next to those packages is selected. Most options are selected by default because they are recommended for the driver.

Optional features packages contain features for a driver that are not mandatory for the driver to function.

---

**NOTE:** In most installations, you are recommended to install all optional features.

---

- 9 (Conditional) If you do not want to install a particular optional feature, clear the check box for that package.

- 10 Click **Next**.

- 11 (Conditional) If the base package requires a dependent package, PDT prompts you to install the dependent package. Select the dependent packages, then click **Next**.

- 12 Respond to any prompts, if necessary, then click **Next**.

These prompts are specific for each driver. Each driver guide contains the specific instructions for that driver. See the [Identity Manager Driver Documentation Web site \(https://www.netiq.com/documentation/identity-manager-48-drivers/\)](https://www.netiq.com/documentation/identity-manager-48-drivers/) for the specific driver information.

- 13 Review the installation summary, then click **Finish**.

After the packages are installed, the driver contains the functionality included in the packages.

After adding a driver, you can perform the following operations on a driver:

- ♦ [“Viewing Installed Drivers and its Status” on page 23](#)
- ♦ [“Driver Actions” on page 24](#)

## Viewing Installed Drivers and its Status

When there are no drivers in a driver set, the message *“No drivers found”* will appear.

If a driver set contains drivers, you can see the driver images in the right preview pane. You can perform the following operations in the **Drivers** tab:

- ♦ Click  to sort the list of drivers in an alphabetical sequence.
- ♦ Click  to refresh the page and see an updated list of drivers.
- ♦ Click  to import a driver from Identity Vault.
- ♦ Click  to deploy one or more drivers to Identity Vault. For more information, see [“Deploying a Driver Set” on page 21](#).
- ♦ Click  to search a driver by its name.

- ♦ Select the **Driver Actions**  icon to compare, deploy, and delete drivers, and manage driver packages. For more information, see [“Driver Actions” on page 24](#).
- ♦ **Driver status:** Hover your mouse over the driver’s status icon (the green or red circle on the driver) to view its current state. The following table can help you interpret the driver status and take required actions:

| Color                                                                             | Driver State  | Indicates that...                     |
|-----------------------------------------------------------------------------------|---------------|---------------------------------------|
|  | Running       | The driver is active and reachable.   |
|  | Stopped       | The driver is down and not reachable. |
|                                                                                   | Starting      | The driver is starting.               |
|                                                                                   | Not running   | The driver is inactive but reachable. |
|                                                                                   | Shutting down | The driver has shut down gracefully.  |

## Driver Actions

The following actions are supported by clicking the **Driver Actions**  icon on the individual driver’s tile:

- ♦ [“Comparing Drivers” on page 24](#)
- ♦ [“Deploying Drivers” on page 25](#)
- ♦ [“Deleting a Driver” on page 25](#)
- ♦ [“Managing Packages” on page 25](#)

## Comparing Drivers

The Compare feature allows you to compare a driver that is used in multiple staging environments.

---

**NOTE:** You can compare any two similar drivers present in different stages within the same stage set.

---

You can run Compare before deploying a driver in a staging environment to a driver that already exists in the Identity Vault. Package Deployment Tool provides conflict resolution on an object-by-object basis and allows you to migrate the differences between existing and new values before deploying a driver.

**To compare a driver:**

- 1 In **Home** menu, select the driver set where the required driver is present.
- 2 In the **Drives** tab, click  on the driver that you want to compare.
- 3 Click **Compare**.  
When the selected driver is not available in other staging environments, the message *“Selected driver is not available in any other stage”* will appear.
- 4 In Compare Driver window, select the Stage/Driver that is present in another stage.

- 5 Click **Compare**.
- 6 Click on the driver to expand the view and see a comparison of the drivers in two stages at Base Package level.
- 7 (Optional) Select the required tab to compare drivers in other package categories such as Dependent Package, Mandatory Package, Featured Package, and Common Package.
- 8 (Optional) Click the **Migrate** icon to copy values from the left side driver to the right side driver. You can also manually change the values on the right side driver.
- 9 Click .

## Deploying Drivers

Suppose you create a new driver that you want to deploy into a staging environment. Use the following procedure to deploy an Identity Manager Driver into a driver set:

- 1 In **Home** menu, select the driver set where the required driver is present.
- 2 In the **Drives** tab, click  on the driver that you want to deploy.
- 3 Click **Deploy**.

## Deleting a Driver

When you delete a driver, it is deleted from the Package Deployment Tool, however, the driver still persists in the Identity Vault and in the driver set.

- 1 Click **Home**.
- 2 Select the stage from the **Stage** drop-down list.
- 3 Expand the Identity Vault option, then select the required driver set.
- 4 In the **Drives** tab, click  on the driver where you to add the package.
- 5 Select **Delete**.
- 6 Click **Delete**.

## Managing Packages

The **Manage Packages** option allows you to add a new package and manage installed packages in a staging environment. This ensures that you only have the required packages in your environment, thus improving the performance of the system.

- ♦ [“Installing Packages” on page 26](#)
- ♦ [“Upgrading Installed Packages” on page 26](#)
- ♦ [“Downgrading Installed Packages” on page 27](#)
- ♦ [“Uninstalling Packages” on page 27](#)

## Installing Packages

You can add new functionality to an existing driver by adding new packages to an existing Identity Vault, driver set, or driver.

- 1 Click **Home**.
- 2 Select the stage from the **Stage** drop-down list.
- 3 Expand the Identity Vault option, then select the required driver set.
- 4 In the **Drives** tab, click  on the driver where you to add the package.
- 5 Select **Manage Packages**.
- 6 In **Manage Packages** pane, click .
- 7 Select the packages to install, then click **Save**. For example, the following figure shows a list of packages available for installation.

**Available Packages** ×

|                                     | Package Name                                       | Version                             |
|-------------------------------------|----------------------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | Password Expiration Notification Templates         | 1.0.0 <span>▼</span>                |
| <input type="checkbox"/>            | Identity Manager Default Universal Password Policy | 2.0.0.20140912183446 <span>▼</span> |
| <input type="checkbox"/>            | Scripting AD/Exchange                              | 1.0.0.20140821132745 <span>▼</span> |
| <input type="checkbox"/>            | Helpdesk Ticket Templates                          | 4.8.0.20190914160925 <span>▼</span> |
| <input type="checkbox"/>            | Provisioning Notification Templates                | 2.2.0.20190914160915 <span>▼</span> |
| <input type="checkbox"/>            | Email Based Approval Templates                     | 2.0.1.20190809181859 <span>▼</span> |
| <input type="checkbox"/>            | Job Default Notification Templates                 | 1.0.0 <span>▼</span>                |
| <input type="checkbox"/>            | LDAP Library                                       | 2.0.1.20190806142032 <span>▼</span> |
| <input type="checkbox"/>            | Password Management Notification Templates         | 2.2.0.20180206112704 <span>▼</span> |

Save Cancel

If the list is empty, there are no available packages to install.

- 8 The saved packages will appear in the **Install** section in Manage Packages preview pane. To add the packages, click .

---

**NOTE:** If you do not want to add the selected packages, click .

---

## Upgrading Installed Packages

You can upgrade any package that is installed in your environment if there is a newer version of the package available.

### To upgrade an installed package:

- 1 Click **Home**.
- 2 Select the stage from the **Stage** drop-down list.
- 3 Expand the Identity Vault option, then select the required driver set.
- 4 In the **Drives** tab, click  on the driver where you to upgrade the package.
- 5 In the Manage Packages preview pane, click  for the package which you want to upgrade.
- 6 Select the required version from the **Upgrade to** drop-down list.
- 7 Click **OK**.
- 8 The packages will appear in the **Upgrade** section in Manage Packages preview pane. Click  to save.

### Downgrading Installed Packages

You can downgrade any package that you have upgraded. This allows you to revert the driver back to a known state for troubleshooting purposes.

#### To downgrade an installed package version:

- 1 Click **Home**.
- 2 Select the stage from the **Stage** drop-down list.
- 3 Expand the Identity Vault option, then select the required driver set.
- 4 In the **Drives** tab, click  on the driver where you to downgrade the package.
- 5 In the Manage Packages preview pane, click  for the package which you want to downgrade.
- 6 Select the required version from the **Downgrade to** drop-down list.
- 7 Click **OK**.
- 8 The packages will appear in the **Downgrade** section in Manage Packages preview pane. Click  to save.

### Uninstalling Packages

- 1 Click **Home**.
- 2 Select the stage from the **Stage** drop-down list.
- 3 Expand the Identity Vault option, then select the required driver set.
- 4 In the **Drives** tab, click  on the driver where you to uninstall the package.
- 5 In the Manage Packages preview pane, click  for the package which you want to uninstall.
- 6 The packages will appear in the **Uninstall** section in Manage Packages preview pane. Click  to save.

# Deploying Drivers

Use the Deploy multiple drivers feature to save one or more drivers into an Identity Vault server.

---

**IMPORTANT:** Package Deployment Tool does not allow you to change configuration values after deploying into the Identity Vault. You cannot change the driver configurations after deployment.

---

- 1 In the **Home** menu, select the stage from the **Stage** drop-down list.
- 2 Expand the Identity Vault option, then select the required driver set.
- 3 Click  and select the drivers that you want to deploy.

---

**NOTE:** You can deploy a maximum of five drivers at a time. Drivers are deployed in a sequence into the Identity Vault.

---

- 4 Click **Deploy**.

Deploy driver packages request is initiated successfully. At any given time, a driver will display one of the following statuses:

| Driver Status             | Indicates that...                                                                                         |
|---------------------------|-----------------------------------------------------------------------------------------------------------|
| Last Deployment Completed | The driver is successfully deployed in Identity Vault. Displays the date and time of the last deployment. |
| Last Deployment Failure   | The driver did not deploy in Identity Vault. Displays the date and time of deployment failure.            |
| New Changes: Redeploy     | If the driver packages have been upgraded or downgraded, the driver requires to be redeployed.            |
| In progress               | The driver deployment is currently in progress.                                                           |
| Imported. Yet to deploy   | When the driver is imported from the Identity Vault.                                                      |
| Yet to deploy             | Driver created in PDT but not yet deployed to Identity Vault.                                             |

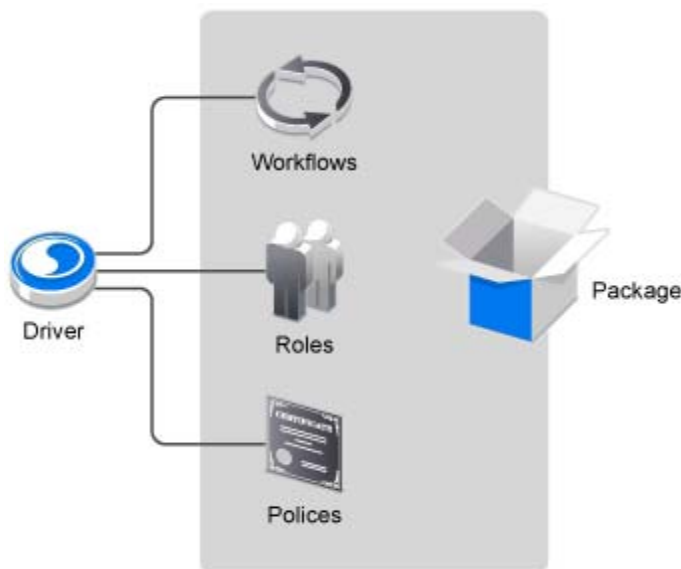
# 5 Understanding Packages

Identity Manager drivers consist of several components like roles, workflows, policies, ECMAScripts, and style sheets. The configuration of each of these components makes each Identity Manager driver unique. This complexity makes it challenging to add new content to drivers, as when you need to create different components multiple times. To save time and help manage Identity Manager content, Identity Manager uses packages.

## Using Packages

Packages are the delivery mechanism for Identity Manager content. It is a container for components of Identity Manager driver content, organized according to the functionality you want to provide to a driver. Packages can contain different types of content that you can move from one environment to another, allowing you to re-use content in multiple places and create and configure drivers more efficiently.

**Figure 5-1** Identity Manager Package



In NetIQ Identity Package Deployment Tool (PDT), the packages are stored in the package catalog, which is accessible via the **Packages** menu. Packages must be imported into the package catalog, then the packages are installed on the Identity Vault, driver sets, or drivers. The package catalog is an object that is only displayed in PDT and it holds all of the packages that are installed in staging environments.

PDT allows you to manage and work with packages. Packages are typically in a .jar file format. This enables you to easily import packages into PDT and then deploy into different staging environments. For more information about how to manage packages, see [Chapter 6, “Managing Installed Packages,” on page 33](#).

For more information about how packages work, see the following sections:

- ♦ [“Advantages of Packages” on page 30](#)
- ♦ [“Package Content” on page 30](#)
- ♦ [“Understanding Package Dependencies” on page 32](#)

## Advantages of Packages

**Easy to upgrade:** Packages allow you to upgrade an installed package.

**Easy to revert to factory settings:** Packages are easy to install, uninstall, and revert to a shipping configuration of the driver.

**Easy to reuse common functionalities:** Packages allow you to group common functions in a particular package, which can be referenced by other drivers.

**Easy content life cycle management:** Packages allow you to manage the life cycle of the content due to versioning.

**Easy to update:** Packages allow you to update the features of a driver without updating the entire driver.

## Package Content

Packages are installed on drivers, driver sets, and Identity Vaults. The content of the packages installed on the Identity Vault can affect all of the drivers in the Identity Vault. The content of the packages installed on the driver set can affect all of the drivers in the driver set. The content of the packages installed on a driver only affects that driver.

You can store many different types of objects in a package, including driver objects, library objects, User Application objects, DS object resources, filter extension resources, and package prompt resources. The types of objects you can store in a package depends on the type of the package itself.

---

**NOTE:** You can install content on a driver without adding that content to a package, including policies, ECMAScripts, and GCVs. However, if you install content directly on a driver, you cannot control what order the driver runs the content.

For example, if you have a package that contains 10 policies installed on a driver, and one non-package policy also installed on that driver, the non-package policy may run in between two of the package policies, regardless of how you order the policies.

---

The following table lists the objects that can be installed in the different package types.

**Table 5-1** *Package Content in Package Types*

| Object Type/Package Type | Driver | Driver Set     | Identity Vault |
|--------------------------|--------|----------------|----------------|
| Notification Templates   |        |                | X              |
| Library                  |        | X <sup>1</sup> | X <sup>1</sup> |

| Object Type/Package Type         | Driver         | Driver Set     | Identity Vault |
|----------------------------------|----------------|----------------|----------------|
| Credential Application object    | X              | X <sup>2</sup> | X <sup>2</sup> |
| Credential Repository object     | X              | X <sup>2</sup> | X <sup>2</sup> |
| DirXML Script                    | X              | X <sup>2</sup> | X <sup>2</sup> |
| ECMAScript                       | X              | X <sup>2</sup> | X <sup>2</sup> |
| Mapping Table                    | X              | X <sup>2</sup> | X <sup>2</sup> |
| Global Configuration object      | X              | X              | X <sup>2</sup> |
| DS object                        | X              | X              | X <sup>2</sup> |
| Resource object                  | X              | X <sup>2</sup> | X <sup>2</sup> |
| Schema Map                       | X              | X <sup>2</sup> | X <sup>2</sup> |
| XSLT                             | X              | X <sup>2</sup> | X <sup>2</sup> |
| Job                              | X              | X              |                |
| Entitlement                      | X              |                |                |
| Entities                         | X <sup>3</sup> |                |                |
| Lists                            | X <sup>3</sup> |                |                |
| Queries                          | X <sup>3</sup> |                |                |
| Relationships                    | X <sup>3</sup> |                |                |
| Configuration                    | X <sup>3</sup> |                |                |
| Provisioning Request Definitions | X <sup>3</sup> |                |                |
| Teams                            | X <sup>3</sup> |                |                |
| Roles                            | X <sup>3</sup> |                |                |
| Role Configuration               | X <sup>3</sup> |                |                |
| Resources                        | X <sup>3</sup> |                |                |
| Separation of Duty (SoDs)        | X <sup>3</sup> |                |                |

<sup>1</sup> Libraries are not packaged, only their contents. Packages store the library's name and location and create it at install time, if it doesn't already exist.

<sup>2</sup> These items can only be added to a package of the respective type if they are in a library.

<sup>3</sup> These items can only be added to a User Application driver package.

## Understanding Package Dependencies

Many packages require one or more other packages to function properly. When you install a package, the package may require other packages also be installed, either as feature sub-packages or separate packages entirely. For example, several packages require you to install the default Common Settings package before installing or deploying.

These dependencies are mandatory and are always enforced, indicating a technical dependency one package has for a component of another package.

## Understanding Driver Set Packages and Identity Vault Packages

A package can be a **driver package**, a **driver set package**, or an **Identity Vault package**. In general, package dependencies have a one-way “pyramid” structure. Driver packages can require other driver packages, driver set packages, or Identity Vault packages, and driver set packages can also require Identity Vault packages. However, Identity Vault packages cannot require driver or driver set packages, and driver set packages cannot require driver packages.

## Understanding Base Packages and Feature Packages

In addition, a package can be a **base package** or a **feature package**. Feature packages contain the actual functionality a driver uses, broken apart by “feature,” while base packages tell PDT how to assemble those feature sub-packages together into an actual driver. Base packages should be used to create a driver and not to deliver content.

Feature packages themselves may be **mandatory** or **optional**, depending on the requirements of the base package. Some features may not be strictly necessary for a driver to function but could be useful for some users, while other features are required for the driver to function properly.

You configure the mandatory and optional feature packages in the Properties of the base package. When you install a driver, the Driver Configuration Wizard displays both the mandatory and optional features of that driver’s base package and installs the mandatory feature packages and allows you to select which optional feature packages you want to install.

# 6 Managing Installed Packages

Package Deployment Tool allows you to manage all packages in the package catalog. You can perform the following operations in the **Packages** menu:

- ♦ “Listing Packages” on page 33
- ♦ “Viewing Package Details” on page 34
- ♦ “Importing Packages into the Package Catalog” on page 35
- ♦ “Downloading Packages” on page 35
- ♦ “Comparing Package Versions” on page 36
- ♦ “Deleting Packages From Package Catalog” on page 37
- ♦ “Configuring Channel for Downloading Packages” on page 37

## Listing Packages

The **Packages** menu displays a list of all available packages in the package catalog. It includes packages installed with the original version of the Package Deployment Tool and packages downloaded from the website. The total number of existing packages is displayed in the navigation pane next to **Packages**. Use the  icon to see an updated list of packages in the package catalog.

You can also filter and search for a specific package.

## Finding a Package

To find a specific package or package version, you can use one of the following options:

### Simple Search

Enter any package name in the search bar.

### Filtered Search

To filter the search for packages, click  and specify any of the following criteria:

- ♦ The group which the package belongs to
- ♦ The category the package is stored in

You can also add the group and category criteria to see a more refined list.

## Sorting Packages in Order

You can sort the package list in an alphabetical order. To sort the list, click  next to the **Packages** in the navigation pane.

The sort icon is hidden. Move your mouse to the left to the refresh icon to see the sort icon.

↑: Indicates packages are sorted in ascending (A to Z) order.

↓: Indicates packages are sorted in descending (Z to A) order.

## Viewing Package Details

Click on a package in the package list to view its general settings, build details, and vendor information. You cannot change the values of these parameters.

| Parameter              | Description                                                                                                                                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General</b>         | The general settings of the package.                                                                                                                                                                                    |
| <b>Name</b>            | Displays the package name.                                                                                                                                                                                              |
| <b>Short Name</b>      | Displays the unique short name for the package. This name is unique for the package in the Identity Vault.                                                                                                              |
| <b>Version</b>         | Displays the package version.                                                                                                                                                                                           |
| <b>Description</b>     | Displays a description for the package.                                                                                                                                                                                 |
| <b>Base Package</b>    | Indicates it is a base package.                                                                                                                                                                                         |
| <b>Category</b>        | Displays the category the package is stored in.                                                                                                                                                                         |
| <b>Group</b>           | Displays the group the package belongs to.                                                                                                                                                                              |
| <b>Build Info</b>      | The build information of the package.                                                                                                                                                                                   |
| <b>Build Host Name</b> | Displays where the package is hosted.                                                                                                                                                                                   |
| <b>Build Time</b>      | Displays the time stamp when the package was built.                                                                                                                                                                     |
| <b>Build User</b>      | Displays the name of the user who built the package.                                                                                                                                                                    |
| <b>Creation Time</b>   | Displays the time stamp when the package was created.                                                                                                                                                                   |
| <b>Protected</b>       | If this option is selected, the Copy package option is disabled on imported packages. This allows a developer to protect the content of a package and not allow someone else to create a new package with this content. |
| <b>Released</b>        | Indicates package is released.                                                                                                                                                                                          |
| <b>Vendor</b>          | The package vendor information. This allows you to contact the vendor of a package if you need more information about a package.                                                                                        |
| <b>Vendor Name</b>     | Displays the name of the package vendor.                                                                                                                                                                                |
| <b>Vendor Address</b>  | Displays the address of the package vendor.                                                                                                                                                                             |
| <b>Vendor Email</b>    | Displays the e-mail for the package vendor.                                                                                                                                                                             |
| <b>Vendor Url</b>      | Displays the URL of the package vendor.                                                                                                                                                                                 |

# Importing Packages into the Package Catalog

If you want to add a custom package to the package catalog, you can import the package .jar file.

**To import one or more packages into the package catalog:**

- 1 In the **Packages** menu, click .
- 2 Browse and select a package on your file system, click **Open**.  
You can import multiple packages at once.
- 3 In the Upload Queue, click  next to the package that you want to add to the package catalog.

| Parameter         | Description                                                                                                                                                                                                                        |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>       | Name of the package.                                                                                                                                                                                                               |
| <b>Size</b>       | Size of the package .jar file.                                                                                                                                                                                                     |
| <b>Progress</b>   | Upload progress percentage.                                                                                                                                                                                                        |
| <b>Status</b>     | Displays the upload status. A tick symbol indicates success, whereas a cross symbol indicates an error while uploading.                                                                                                            |
| <b>Actions</b>    |  : Uploads individual package.<br> : Deletes individual package. |
| <b>Upload all</b> | Uploads all packages in the queue at once.                                                                                                                                                                                         |
| <b>Cancel all</b> | Cancels all currently queued package uploads.                                                                                                                                                                                      |
| <b>Remove all</b> | Deletes all packages in the upload queue.                                                                                                                                                                                          |

## Downloading Packages

By default, the **Packages** menu displays only the packages included with the original version of Package Deployment Tool. Any package that is updated later can be downloaded using the **Browse and Download** option. Deleted package versions can be downloaded again.

The **Browse and Download** option allows you to browse through the latest package updates available online at [http://nu.novell.com/designer/packages/idm/updatesite2\\_0\\_0/plugins](http://nu.novell.com/designer/packages/idm/updatesite2_0_0/plugins) and download the required version into PDT. All packages, including downloaded packages are saved in the <Designer installed location>/packages/eclipse/plugin folder.

**To download a package:**

- 1 In the **Packages** menu, click .
- 2 In Download Packages window, select the check box next to the package or a specific version of the package you want to download.

---

**NOTE:**

- ♦ If all of the available packages are already downloaded, the list is empty.
  - ♦ When you select a package, all versions of the package will get downloaded.
- 

3 Click **Download**.

4 Click **Close**.

The downloaded packages are listed in the list of available packages.

## Comparing Package Versions

The Compare feature allows you to see differences between two package versions in the package catalog. Package Deployment Tool analyzes the two package .jar files and displays the differences so you know what has changed between the two versions.

The Compare icon is disabled until you select two versions of a package.

It should be noted that PDT compares two versions of the same package, not two different packages. For example, comparing JDBC Account Tracking and JDBC Data Collection is not allowed.

### To compare:

- 1 Go to **Packages** and type the package name into the search box.
- 2 Expand the package to display all its versions, then select the check box next to the two versions you want to compare.

---

**NOTE:** You can only compare two package versions. The Compare icon is disabled when a third package is selected.

---

3 Click .

4 PDT compares the two packages at an object level and goes all the way down to the attribute level. Select the object, then the specific attribute to display the differences in the preview pane. The number of changes found is shown in the upper right corner; the UP and DOWN arrows let you to navigate through it.

5 (Optional) Select how you want to review the difference:

- ♦ **Split View:** Use the split view to see a side-by-side view of the result, with the differences highlighted in red and green.  
Red highlights differences in the package on the left pane, while green highlights differences in the package on the right preview pane.
- ♦ **Inline View:** Displays the differences in a single preview pane. Uncheck the **Split View** box to see the differences inline.
- ♦ **White space:** When comparing, you can specify to ignore any differences that occur in white space, which can be a space character or a tab character. For better output, you should ignore all whitespaces. However, if you want to change the default behavior, select from any of the following options:
  - ♦ All
  - ♦ None

- ♦ Boundary
- ♦ Selection
- ♦ Trailing
- ♦ **Switch Diff:** Click  to swap the package on the left preview pane with the package on the right. If you click **Switch Diff** again, the package moves back to the left preview pane.

6 To open the **Packages** catalog, click .

## Deleting Packages From Package Catalog

You can delete all unused packages (all versions of a package) from the package catalog or a specific version if it is no longer in use.

---

**NOTE:** Before deleting a package, ensure that it is currently not in use. You will receive an error if you try to delete a package that is in use.

---

**To delete a package, perform the following steps after uninstalling the package:**

- 1 Click **Packages**.
- 2 (Conditional) If you want to delete the entire package, select the check box next to the package. All versions of the selected package will get deleted.

---

**TIP:** You can select multiple packages for deletion.

---

- 3 (Conditional) If you want to delete a specific version of the package, select the check box next to the version. You can select multiple versions for deletion.
- 4 Click .
- 5 Click **Delete**.

## Configuring Channel for Downloading Packages

In addition to the **Browse and Download** option, which downloads available packages from a pre-configured location, PDT offers **Configure Channel** option, which allows you to add your channel URLs for package downloads. PDT reads these URLs for package updates and adds them to the available for download list.

**To add your download channel URL:**

- 1 In the **Packages** menu, click .
- 2 Click .
- 3 Enter a channel name and a URL.
- 4 Select the **Enable** check box for the channel URL to enable it.
- 5 Click **Save**.

You can configure the PDT to read from multiple channels.

**To delete a channel URL:**

- 1 Select the check box next to the channel URL you want to delete.
- 2 Click .

# 7 Version Control Using Git

You can keep track of your PDT environment configurations, staging files, and driver recipes in Git. Git is an open source distributed version control system used for storing and retrieving files. It allows you to manage, maintain, and track the history of changes, or retrieve an earlier state or compare different states of files. For more information about Git, see [Git documentation](#).

## Benefits of Using Git

**Implicit backup:** Git maintains multiple backup copies within the repository. This is useful in case of an event or disk crash.

**Pull and Push operation:** Git allows you to copy changes to a remote or local repository.

- ♦ The **Pull** operation fetches the changes from the Git repository to a local repository. This is useful when you want to synchronize changes between the two repository instances.
- ♦ The **Push** or **Publish** operation publishes the changes from the staging area to a local repository and further publish them to the Git repository. You can also publish your changes directly from the staging area to the Git repository.

## How Does Git Work?

After logging in to Package Deployment Tool, you can first clone a Git repository. The repository is cloned locally at `./PDT/StagingEnvironment` location. The Package Deployment Tool pulls files from the source Git repository.

- ♦ **Working Tree:** This consists of the files that you are currently working on. You can add, modify, or delete a file from the local code base location. You can modify multiple files at a time. The changes are added to the **Working Tree** once you have modified the required information.

The file changes are displayed in the **Source Control > Changes** drop-down option.

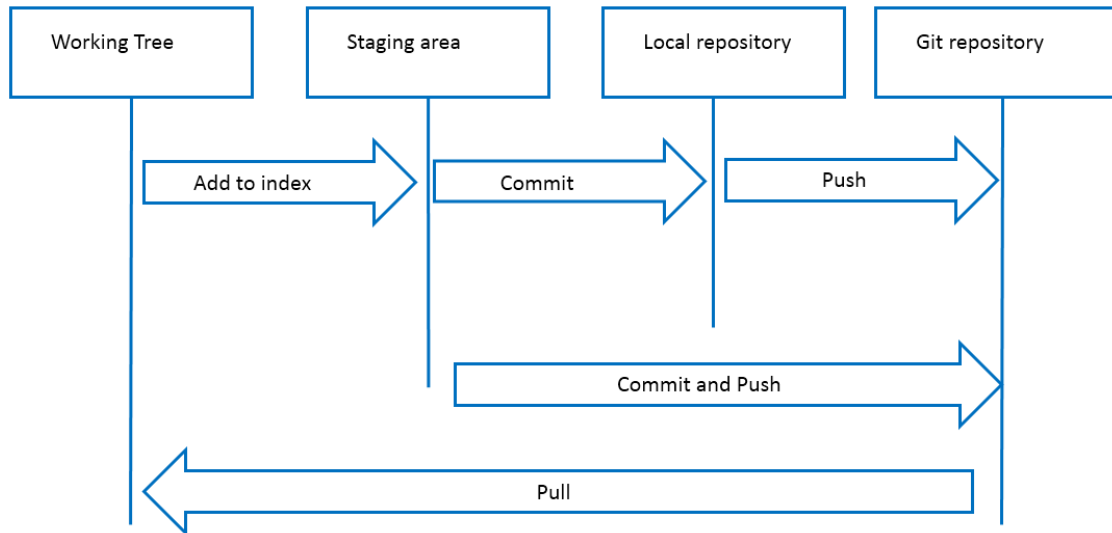
- ♦ **Staging Area:** This is an intermediate storage area. This area has the changes that were made to the files in the **Working Tree**. After you add all changed files to commit, they are displayed in the **Source Control > Staged Changes** drop-down option. Git collects all changes which will be part of the next commit action from this area.
- ♦ **Git Repository:** This is the area that stores all the committed changes. The final version of the changes are available in the Git repository.

After you commit all staged changes to the remote git repository, you can see the committed files in the **Commits** drop-down option.

Let us understand how Git works. You first edit the files in the working tree. After editing the file, you move the file from the working tree to the staging area. The **Commit** option is used to commit the changes from the staging areas to the local repositories. You use the **Push** option again to commit changes from the local repository to the Git repository.

You can directly commit the changes from the staging area to the local and Git repository by using the **Commit and push** option.

**Figure 7-1** Commit, Push, and Pull operation

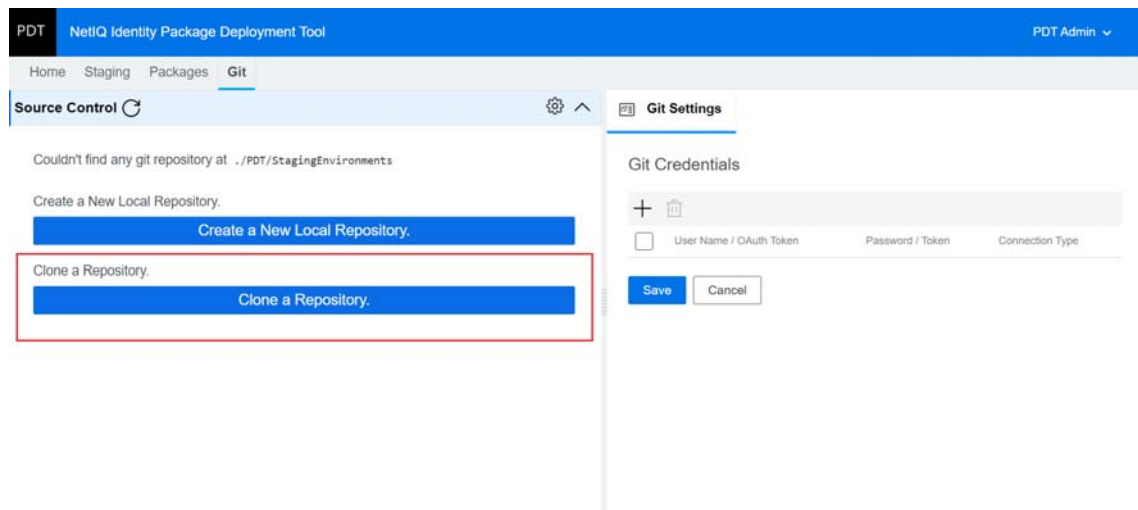


## Cloning a Git Repository

**NOTE:** Before cloning a Git repository, make sure that the `./PDT/StagingEnvironments` is empty.

Perform the following actions to clone a Git repository:

- 1 Click **Git**.
- 2 Click **Clone a Repository**.



- 3 PDT needs user credentials to access a remote server where you maintain your Git repository. To add your credentials:

3a Click  in Add Git Credentials window.

3b Based on the type of connection you want to use, provide the following details:

- ♦ **For HTTPS:** Do one of the following:
  - ♦ Select HTTPS in the **Connection Type** drop-down, enter your user name in the **User Name / OAuth Token** field and password in the **Password / Token** field; OR
  - ♦ Select HTTPS in the **Connection Type** drop-down, enter the access token in the **User Name / OAuth Token** field
- ♦ **For SSH:** Select SSH in the **Connection Type** drop-down and provide the private key in the **Password / Token** field. **User Name / OAuth Token** is not required.

3c Click **Save**.

3d Specify the Git repository URL you wish to clone in the **Repository URL** field.

3e Click **Save**.

## Other Operations in Git Menu

- ♦ [“Adding Git Credentials” on page 41](#)
- ♦ [“Viewing Commit History” on page 41](#)
- ♦ [“Viewing File History” on page 41](#)
- ♦ [“Changing Git Credentials” on page 42](#)
- ♦ [“Deleting Your Git Credentials” on page 42](#)

## Adding Git Credentials

Package Deployment Tool does not store your Git credentials locally. Next time when you commit, you need to add your Git credentials again.

To add your credentials, click **Git**. You will see the **Git Settings** in the right preview pane. If **Git Settings** do not appear in right preview pane, click  in the Source Control drop-down. For further steps, see [Step 3 on page 41](#).

## Viewing Commit History

You can view the history of all commits to a remote Git repository in the **Commits** drop-down option.

## Viewing File History

When you select a file in the Changes drop-down, you can view the complete history of all changes committed to a file in the **File History** drop-down option.

## Changing Git Credentials

The Package Deployment Tool can store multiple user Git credentials. You can specify which credentials PDT should use for remote repository authentication. To change the credentials, click  in the **Source Control** drop-down and select the credential of your choice.

## Deleting Your Git Credentials

- 1 Click **Git**.

You will see **Git Settings** in the right preview pane. If the **Git Settings** do not appear in right preview pane, click  in the **Source Control** drop-down.

- 2 Select the check box next to the credential that you want to delete.

You can delete all credentials by selecting the check box next to the **User Name/OAuth Token** parameter.

- 3 Click .