



Informatica® Development Platform
10.4.0

Informatica Connector Toolkit Getting Started Guide

Informatica Development Platform Informatica Connector Toolkit Getting Started Guide
10.4.0
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Preface

Use the Informatica® Connector Toolkit Getting Started Guide to learn how to develop an adapter for the Informatica platform. This guide provides tasks and examples that you can use as a reference to develop an adapter by using the Informatica Connector Toolkit.

Informatica Resources

Informatica provides you with a range of product resources through the Informatica Network and other online portals. Use the resources to get the most from your Informatica products and solutions and to learn from other Informatica users and subject matter experts.

Informatica Network

The Informatica Network is the gateway to many resources, including the Informatica Knowledge Base and Informatica Global Customer Support. To enter the Informatica Network, visit <https://network.informatica.com>.

As an Informatica Network member, you have the following options:

- Search the Knowledge Base for product resources.
- View product availability information.
- Create and review your support cases.
- Find your local Informatica User Group Network and collaborate with your peers.

Informatica Knowledge Base

Use the Informatica Knowledge Base to find product resources such as how-to articles, best practices, video tutorials, and answers to frequently asked questions.

To search the Knowledge Base, visit <https://search.informatica.com>. If you have questions, comments, or ideas about the Knowledge Base, contact the Informatica Knowledge Base team at KB_Feedback@informatica.com.

Informatica Documentation

Use the Informatica Documentation Portal to explore an extensive library of documentation for current and recent product releases. To explore the Documentation Portal, visit <https://docs.informatica.com>.

Informatica maintains documentation for many products on the Informatica Knowledge Base in addition to the Documentation Portal. If you cannot find documentation for your product or product version on the Documentation Portal, search the Knowledge Base at <https://search.informatica.com>.

If you have questions, comments, or ideas about the product documentation, contact the Informatica Documentation team at infa_documentation@informatica.com.

Informatica Product Availability Matrices

Product Availability Matrices (PAMs) indicate the versions of the operating systems, databases, and types of data sources and targets that a product release supports. You can browse the Informatica PAMs at <https://network.informatica.com/community/informatica-network/product-availability-matrices>.

Informatica Velocity

Informatica Velocity is a collection of tips and best practices developed by Informatica Professional Services and based on real-world experiences from hundreds of data management projects. Informatica Velocity represents the collective knowledge of Informatica consultants who work with organizations around the world to plan, develop, deploy, and maintain successful data management solutions.

You can find Informatica Velocity resources at <http://velocity.informatica.com>. If you have questions, comments, or ideas about Informatica Velocity, contact Informatica Professional Services at ips@informatica.com.

Informatica Marketplace

The Informatica Marketplace is a forum where you can find solutions that extend and enhance your Informatica implementations. Leverage any of the hundreds of solutions from Informatica developers and partners on the Marketplace to improve your productivity and speed up time to implementation on your projects. You can find the Informatica Marketplace at <https://marketplace.informatica.com>.

Informatica Global Customer Support

You can contact a Global Support Center by telephone or through the Informatica Network.

To find your local Informatica Global Customer Support telephone number, visit the Informatica website at the following link:

<https://www.informatica.com/services-and-training/customer-success-services/contact-us.html>.

To find online support resources on the Informatica Network, visit <https://network.informatica.com> and select the eSupport option.

CHAPTER 1

Introduction to Informatica Connector Toolkit

This chapter includes the following topics:

- [Informatica Connector Toolkit Overview, 7](#)
- [Informatica Connector Perspective, 8](#)
- [Analyze the Data Source, 9](#)
- [Adapter Example: MySQL, 9](#)
- [Building an Adapter, 9](#)

Informatica Connector Toolkit Overview

Use the Informatica Connector Toolkit to build an adapter that provides connectivity between a data source and PowerCenter®, Big Data Management®, or Informatica Cloud®.

Although Informatica supports generic ODBC connectivity and allows access to any data source that has a standards-compliant ODBC driver, building an adapter by using the Informatica Connector Toolkit offers several advantages. In cases where no ODBC driver is available, building an adapter by using the Informatica Connector Toolkit might be the only solution.

When you use the Informatica Connector Toolkit to create an adapter, you can build functionality related to the data source. You can preserve data type integrity and metadata lineage of the data source when you retain the type system of the data source and perform optimal data type conversions.

The Informatica Connector Toolkit consists of libraries, plug-ins, and sample code to assist you in developing adapters for PowerCenter, Big Data Management, or Informatica Cloud. You can use the Informatica Connector perspective in the Eclipse IDE to quickly develop an adapter in an Eclipse environment.

The Informatica Connector Toolkit simplifies the following processes:

- **Development.** You can use the wizards in the Informatica Connector perspective to rapidly develop an adapter. The wizards simplifies the use of internal components and dependencies when you develop an adapter.
- **Testing.** After you define the adapter components, you can test the connection, metadata, and run-time components of the adapter.
- **Deployment.** You can deploy the adapter on local Informatica services and clients and register the adapter on local Informatica services. Alternatively, you can publish the adapter and manually deploy the adapter later.

The Informatica Connector Toolkit API is written in a combination of C/C++ and Java. The connection definition and metadata definition are available in Java. The run-time interfaces are available in C/C++ and Java.

Note: Run-time interfaces are available in C/C++ when you develop adapters for Big Data Management. Run-time interfaces are available only in Java when you develop connectors for Informatica Cloud and PowerCenter.

Informatica Connector Perspective

The views in the Informatica Connector perspective enable you to develop adapters for the Informatica platform and connectors for Informatica Cloud.

After you click the **Create New Connector** icon in the Eclipse Workbench toolbar, you can choose to switch to the Informatica Connector perspective. You can also open the Informatica Connector perspective from the **Window** menu in the Eclipse IDE.

The Informatica Connector perspective consists of the Connector Navigator view and Connector Progress view in the Eclipse Workbench window, and icons in the Eclipse toolbar. You can use the Connector Navigator and Connector Progress views to define, edit, or test the adapter components and view the progress of the adapter project. Use the **Create New Connector** icon in the Toolbar to create an adapter project. You can use the **View or Create Messages** icon in the Eclipse toolbar to view or create messages for the adapter components.

Connector Navigator

You can use the Connector Navigator view to add, define, edit, or test adapter components, such as connection, metadata, and run time.

After you create an Informatica Connector project, you can right-click folders in the Connector Navigator view to define, edit, or test adapter components. You can also right-click the adapter source files and edit them in the Eclipse Workbench editor or any other editor.

Connector Progress

You can use the Connector Progress view to view the completeness of the connector project and to define or edit the connector project components in each phase.

The Connector Progress view consists of the following phases:

Connectivity

You can define, edit, or test the connection component of an adapter in the Connectivity phase.

Metadata

You can define and edit data types and native metadata object components of an adapter in the Metadata phase. You can also define common metadata for Informatica Cloud connectors in the Metadata phase. You can test the adapter metadata components in the Metadata phase.

Runtime

You can define, edit, and test the adapter run-time components in the Runtime phase.

Export/Publish

You can publish the adapter to a location or deploy the adapter on local Informatica services and client directories in the Export/Publish phase.

Analyze the Data Source

Before you develop an adapter for a data source, perform a detailed analysis of the data source.

Analyze the following aspects of the data source:

- Connection attributes that you need to connect to the data source.
- Informatica platform data objects that you need to create to read data and write data.
- Native data types and the possible mapping to the Informatica platform data types.
- APIs available for the following tasks:
 - Validate connection attributes and connect to the data source
 - Browse metadata from the data source
 - Read from or write to the data source
- Additional configuration attributes that you require to read or write data to the data source.

Adapter Example: MySQL

You can use the MySQL adapter sample source code in the Informatica Connector Toolkit to develop an adapter for MySQL.

Use the MySQL adapter sample source code to read data from or write data to MySQL. To use the MySQL adapter sample source code, import the sample projects into Eclipse. Edit the connection, metadata, and run-time components if required and then publish the adapter bundle.

Note: The MySQL adapter sample source code in the Informatica Connector Toolkit is for illustration purposes only.

Building an Adapter

Use the Informatica Connector Toolkit to develop and deploy an adapter for the Informatica platform. You can use the Informatica Connector perspective in the Eclipse IDE to rapidly develop an adapter.

To build an adapter with the Informatica Connector Toolkit, perform the following tasks:

1. Install the Informatica Connector Toolkit and set up the Informatica Connector Toolkit Eclipse plug-in.
2. Create an Informatica connector project and define the following components:
 - Connection
 - Type system

- Metadata
- Runtime

Before you deploy the adapter, you can test and debug the adapter connection, metadata, and run-time components.

3. Publish the adapter bundle or deploy and register the adapter.
4. If you publish the adapter bundle, run the server batch file to deploy and register the adapter with Informatica services. Run the client batch file to deploy the client components.

CHAPTER 2

Installing and Upgrading the Informatica Connector Toolkit

This chapter includes the following topics:

- [Installing the Informatica Connector Toolkit Overview, 11](#)
- [Before You Begin , 12](#)
- [Installation of Eclipse IDE, 12](#)
- [Installing Informatica Connector Toolkit on Windows, 12](#)

Installing the Informatica Connector Toolkit Overview

Install the Informatica Connector Toolkit and set up the Informatica Connector Toolkit Eclipse plug-in. To set up the Informatica Connector Toolkit Eclipse plug-in, you install the required software on the machine where you plan to develop the adapter.

The Informatica Connector Toolkit is part of the Informatica Development Platform (IDP). You can use the Informatica Connector Toolkit installer to install the Informatica Connector Toolkit on the machine in which you plan to develop an adapter.

You can get the Informatica Connector Toolkit installer from the following sources:

- Informatica Development Platform installation DVD.
Informatica ships the Informatica SDKs on a separate DVD. Run the Informatica Connector Toolkit installer to install the Informatica Connector Toolkit on the machine where you plan to do your development.
- Informatica electronic software download site.
When you purchase an Informatica product and choose to download the software, you receive a site link, user ID, and password to access the Informatica electronic software download site. Follow the instructions on the download site to download the Informatica Connector Toolkit installation file.
- Informatica Technology Network.
If you are a registered user of the Informatica Technology Network, you can download the Informatica Connector Toolkit installation file from the Informatica Development Platform page. When you download the file, the Informatica Development Network provides you with a password. Use this password when you extract the files from the download file.

When you run the Informatica Connector Toolkit installer, the installer installs the Informatica Connector Toolkit Eclipse plug-in in the Eclipse IDE.

Before You Begin

Before you develop an adapter with the Informatica Connector Toolkit, you need to install the required software and analyze the data source.

Run the Informatica Connector Toolkit installer to install the Informatica Connector Toolkit on the machine where you plan to develop the adapter. The Informatica Connector Toolkit contains the binaries, tools, samples, and documents that you require to build an adapter.

Install Required Software

Install the following software on the machine where you plan to develop the adapter:

- Eclipse version with support for Plug-in Development Environment (PDE). Informatica Connector Toolkit supports the following Eclipse versions:
 - Eclipse Kepler 4.2.2 and 4.2.3.
 - Eclipse Luna 4.4.2 and 4.4.3.
 - Eclipse Mars 4.5.0 M1 and 4.5.1.
 - For AIX, Eclipse 4.2.2 and above.
- JDK version 1.8.x.
- If you implement the adapter run-time behavior in C/C++, install the following software:
 - For Windows, MinGW 4.8.1 or later, CMake 3.0.2 or later, and Microsoft Visual C++ 2013.
 - For Unix, gcc/g++ 5.2 and CMake 2.6.
 - For AIX, gcc/g++ 4.8.2 or later.
- MySQL Connector/J JDBC driver version 5.1.26 or later if you use the MySQL sample adapter.
- YouTube Data API client library for Java version 3 or later if you use the YouTube sample adapter.

Installation of Eclipse IDE

You can install Eclipse IDE on the machine in which you plan to develop the adapter. Use the Eclipse IDE package to install Eclipse IDE.

You must install Eclipse version supported by Informatica Connector Toolkit for the Informatica Connector Toolkit plug-in to work with the Eclipse IDE.

You can download the Eclipse IDE package from the following location:

<http://www.eclipse.org/downloads/>

Installing Informatica Connector Toolkit on Windows

Install the Informatica Connector Toolkit to install the Informatica Connector Toolkit Eclipse plug-in and other components that you require to build an adapter.

1. Close all other applications.

2. Run the `install.bat` file from the root directory.
3. In the **Welcome** page, click **Next**.
The **Installation Directory** page appears.
4. Select the installation directory in which you want to install the Informatica Connector Toolkit.
5. Select the installation directory in which you installed Eclipse IDE.
6. Select **Install Apache log4j** to install the log4j plug-in version that Informatica Connector Toolkit requires. The installer installs the required Apache log4j plug-in by default. If you have log4j plug-in installed and do not want to install a different version of the library, clear the **Install Apache log4j** option.
7. Select **Install Apache Commons library** to install the commons library that Informatica Connector Toolkit requires.
8. Click **Next**.
The **Pre-Installation Summary** page appears.
9. Click **Install**.
The **Installing** page appears and displays the installation progress.
10. Click **Done** to complete the installation procedure and then exit the installer.

Installed Informatica Connector Toolkit Components

After you install the Informatica SDKs, you can find the Informatica Connector Toolkit in the installation directory where you installed the Informatica Connector Toolkit.

The Informatica Connector Toolkit installation includes the following components to assist you in developing an adapter for the Informatica platform:

- Informatica Connector Toolkit API files. Library files of the Informatica Connector Toolkit API.
- Informatica Connector Toolkit Eclipse plug-in. You can use the wizards and menus that the Informatica Connector Toolkit plug-in adds to the Eclipse IDE to develop, test, and deploy an adapter.
- Sample MySQL and YouTube adapters. The sample MySQL and YouTube adapters include source code that you can use as a model to build an adapter.

Note: The sample MySQL and YouTube adapters are for illustration purposes only.

- Informatica Connector Toolkit API Reference. Online documentation for the Informatica Connector Toolkit API specification.

CHAPTER 3

Creating an Adapter

This chapter includes the following topics:

- [Creating an Adapter Overview, 14](#)
- [Step 1. Create an Adapter Project, 15](#)
- [Step 2. Define the Adapter Connection Attributes, 16](#)
- [Step 3. Define the Adapter Type System, 22](#)
- [Step 4. Define Adapter Metadata, 25](#)
- [Step 5. Define Run-Time Interfaces, 32](#)
- [Test the Read and Write Capabilities of the Adapter, 33](#)
- [Informatica Connector Toolkit Eclipse Plug-in Tip, 37](#)

Creating an Adapter Overview

In this lesson, you create an adapter that enables the Data Integration Service to read data from and write data to MySQL.

Lesson Concepts

You can use the Informatica Connector Toolkit Eclipse plug-in to build an adapter to provide connectivity between a data source and the Informatica platform.

Create an Informatica connector project for each adapter that you want to build. For each project, you can use the Informatica Connector Toolkit Eclipse plug-in to generate the connection, metadata, type system, and run-time java source code.

After you create the project, you define the connection. When you define the connection, you configure the connection attributes, the connection behavior, and add libraries required by the connection to the project. Then, define the type system to configure the adapter data types and how they map to the data types supported by the Informatica platform. Then, define the native metadata definition to configure the adapter metadata required for the data source operation that you want to implement. Finally, define the run-time interfaces. When you define the run-time interfaces, you add run-time libraries to the project and configure how the adapter performs each data source operation. You can also test and debug the adapter connection, metadata, and run-time components.

Lesson Objectives

In this lesson, you complete the following tasks:

- Create a project for the MySQL adapter.

- Define the connection attributes for the MySQL adapter and test the adapter connection components.
- Define the type system for the MySQL data types.
- Define a native metadata definition for the MySQL adapter to read and write data.
- Define run-time interfaces to configure how the MySQL adapter performs read and write operations.
- Test the read capability and write capability of the adapter.

Lesson Prerequisites

Before you start this lesson, complete the following prerequisite:


- Install the Informatica Connector Toolkit. For more information, see [“Installing the Informatica Connector Toolkit Overview” on page 11](#).

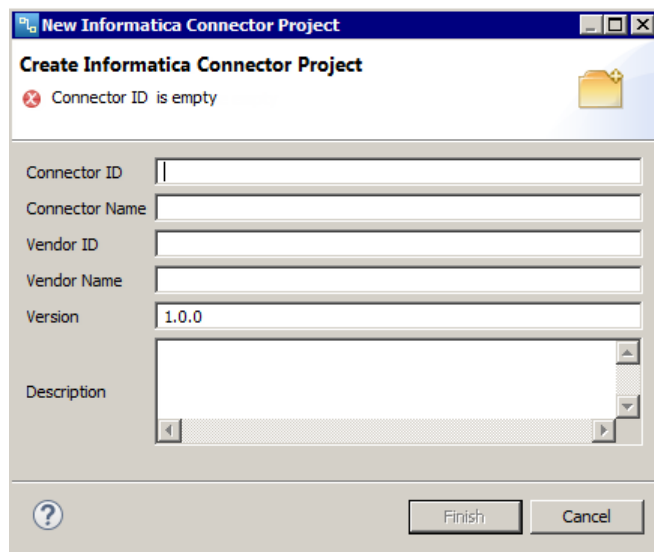
Lesson Timing

Set aside 30 minutes to complete this lesson.

Step 1. Create an Adapter Project

Create a project for the MySQL adapter and define the MySQL adapter properties.

1. From the Eclipse IDE, click the **Create New Connector** button ().
The **Create Informatica Connector Project** dialog box appears.

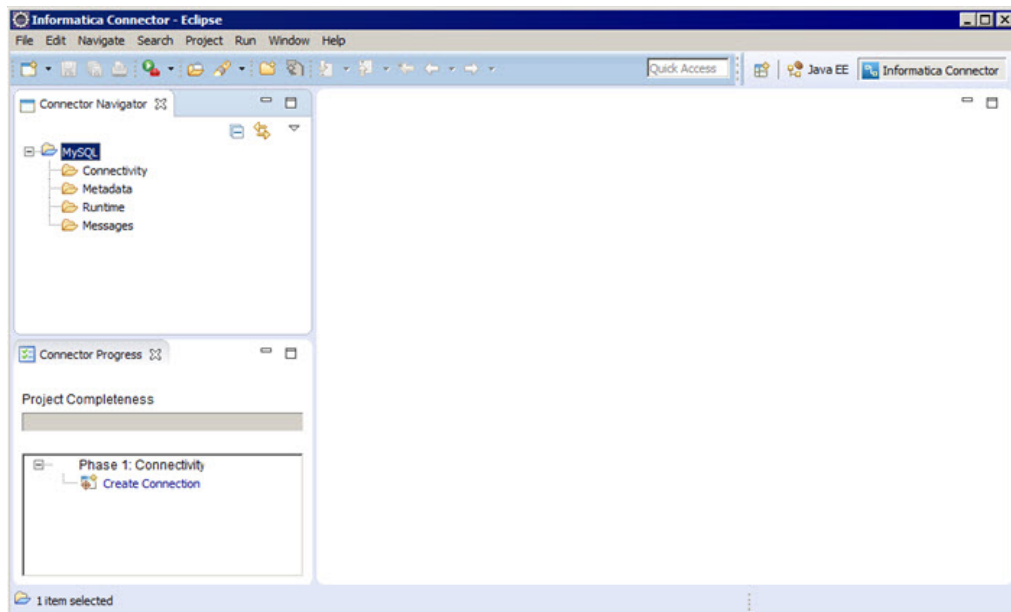


2. Enter the following MySQL adapter project details:

Property	Value
Connector ID	mysql
Connector Name	MySQL
Vendor ID	Informatica
Vendor Name	Informatica Corporation
Version	1.0.0
Description	MySQL sample adapter that demonstrates the Informatica Connector Toolkit capabilities.

3. Click **Finish**.

The MySQL adapter project appears in the **Connector Navigator** view of the Eclipse IDE.



Step 2. Define the Adapter Connection Attributes

Define the connection attributes to specify the behavior and functionality of the adapter when it connects to the MySQL database.

1. In the **Connector Navigator** view, right-click the project and select **Add Connection**.

The **Add Connection** dialog box appears.

2. Enter `MySQL` for the connection type name.
3. Select **Add New** and enter `sample` for the category name.

The category name that you configure corresponds the connection object category.

4. Click **Next**.

The **Connection Attributes** page appears.

Name	Display Name	Data Type	Mandatory	Encrypted	Has Dependents

5. Click **Add** to enter each connection attribute.

The attributes that you configure correspond to the connection object properties.

The **Add Attribute** dialog box appears:

a. Enter the following values for the username attribute:

Property	Value
Name	username
Display Name	User Name
Description	The user name to connect to the MySQL database. [Required]
Datatype	String
Min Length	0
Max Length	16
Options	- Mandatory

- b. Enter the following values for the password attribute:

Property	Value
Name	password
Display Name	Password
Description	The password associated with your user name. [Required]
Datatype	String
Min Length	0
Max Length	16
Options	- Encrypted - Mandatory

- c. Enter the following values for the host name attribute:

Property	Value
Name	hostname
Display Name	Host Name
Description	Host name of the MySQL server to connect. [Required]
Datatype	String
Default Value	localhost
Min Length	0
Max Length	16
Options	- Mandatory

- d. Enter the following values for the port number attribute:

Property	Value
Name	port
Display Name	Port
Description	Port number of the MySQL server to connect. [Required]
Datatype	Integer

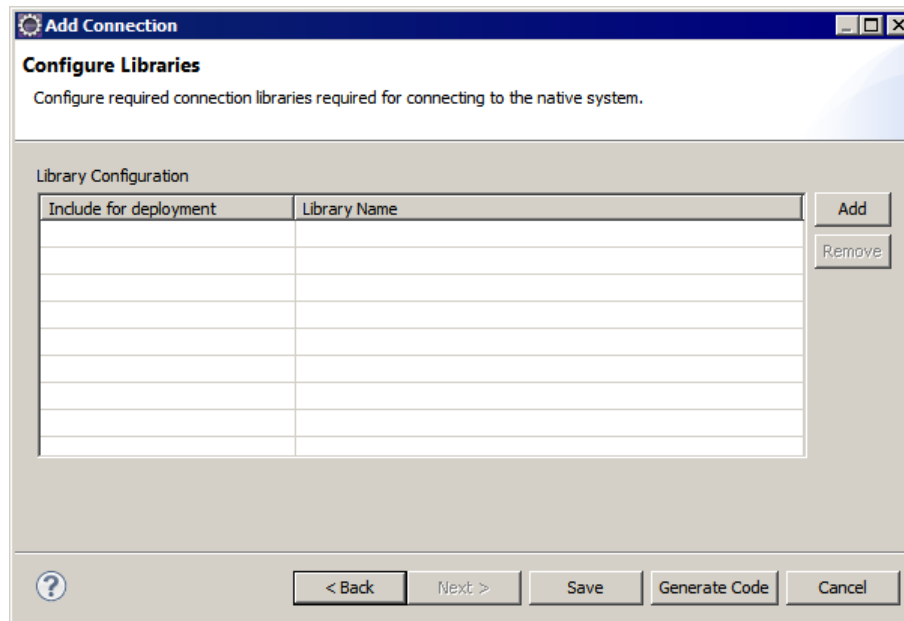
Property	Value
Default Value	3306
Options	- Mandatory

- e. Enter the following values for the catalog attribute:

Property	Value
Name	catalog
Display Name	Catalog
Description	Database catalog to connect. [Required]
Datatype	String
Min Length	0
Max Length	255
Options	- Mandatory

6. Click **Next**.

The **Configure Libraries** page appears.



7. Click **Add** to select each library that the adapter requires to connect to the MySQL database.

8. Click **Generate Code**.

The Informatica Connector generates Java source code in the Connectivity folder of the adapter project.

9. In the Connectivity folder of the adapter project, double-click each file to review the source code and update it as required.

Update the following source code files in the Connectivity folder:

MySQLConnectInfoAdapter.java

This file contains optional methods for connection validation and attribute dependencies.

MySQLConnection.java

This file contains methods that open and close the connection to the MySQL service.

Note: If you regenerate code for the connection project, the Informatica Connector Toolkit does not regenerate code for the user-exposed source code visible in the Informatica perspective. You have to manually edit the source code and make changes if you add, remove, or modify connection attributes.

Test and Debug the Connection to the Data Source

After you define the connection attributes, you can test and debug the connection to the data source.

Create a debug configuration in Eclipse IDE from the **Run** menu. Select the adapter connection project to debug and provide the connection type and connection properties. You can also set breakpoints in the code that you want to debug.

After you create a debug configuration, you can launch the **Test Connection** dialog box to test and debug the connection definition.

1. In the **Connector Progress** view, select **Test Connection**.

The **Test Connection** dialog box appears with the default Java Virtual Machine (JVM) environment settings. The Informatica Connector Toolkit uses the JVM settings to run the debug configuration.

2. Edit the JVM environment settings, if required. Ensure that you use the same port number that appears in JVM settings for the connection properties in the debug configuration.

3. Click **Next**.

The **Connection Details** page appears with the connection attributes that you defined for the adapter.

4. Enter values for the connection attributes.

5. Click **Test Connection**.

A success message appears if the connection to the data source is successful.

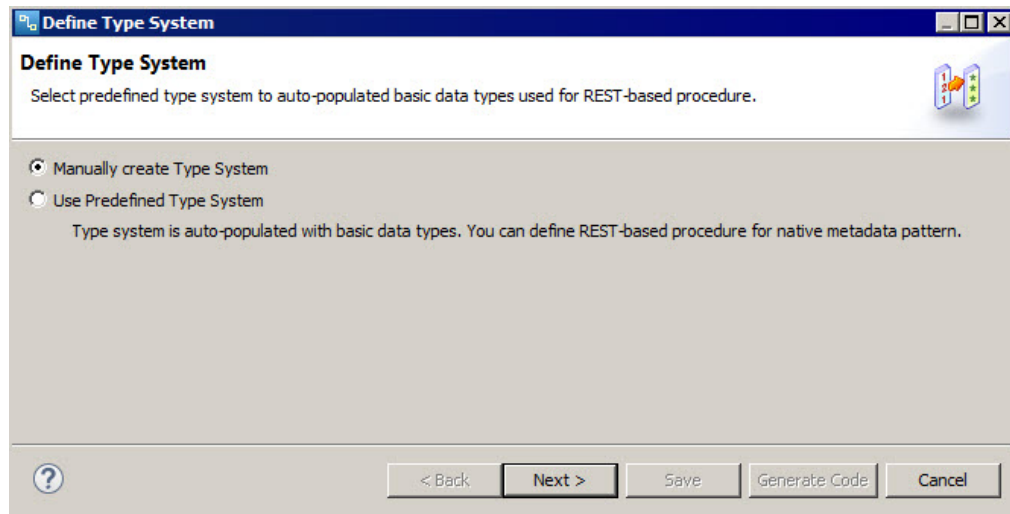
Note: You cannot use the Informatica Connector Toolkit to test attribute dependencies.

Step 3. Define the Adapter Type System

Define the type system to specify the datatypes supported by the data source and how they map to the datatypes supported by the Informatica platform.

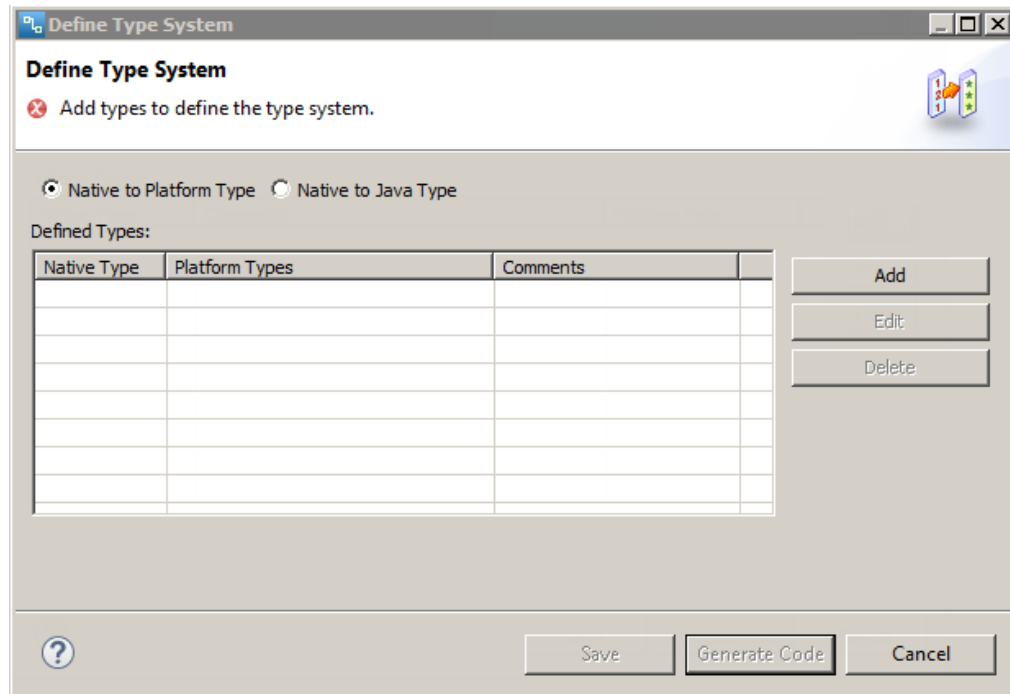
1. In the **Connector Navigator** view, right-click the project and select **Define Typesystem**.

The **Define Type System** dialog box appears.



2. To manually define a type system that matches the data types in the data source, select **Manually Create Type System**.

The **Define Type System** dialog box appears.



3. To map the native data types to the Informatica platform data types, select **Native to Platform Type**.

4. Click **Add** to configure each type system attribute.

The **Add Type** dialog box appears.

- a. Enter the following values for the Timestamp attribute:

Property	Value
Type Name	Timestamp
Comments	Stores a period of time in years, months, days, hours, minutes, and seconds.
Platform Type	Date

Property	Value
Max Scale	6
Default Scale	6
Supported Units	Year, Month, Day, Hour, Minute, and Second.

- b. To map the Informatica Platform DATE data type to the MySQL data type Timestamp as one of the Best Native Type to Write, select Mapped in the DATE row and then select Best Native Type to Write.
- c. Enter the following values for the Double attribute:

Property	Value
Type Name	Double
Comments	A double-precision, floating-point number that is accurate to approximately 15 decimal places. Permissible values are -1.7976931348623157E+308 to -2.2250738585072014E-308, 0, and 2.2250738585072014E-308 to 1.7976931348623157E+308.
Platform Type	Double
Max Precision	15
Default Precision	15
Precision Radix	Decimal
Max Exponent	11
Min Exponent	0
Exponent Radix	Binary

- d. To map the Informatica Platform Double data type to the MySQL data type Double as one of the Best Native Type to Write, select Mapped in the Double row and then select Best Native Type to Write.
- e. Enter the following values for the String attribute:

Property	Value
Type Name	String
Comments	Variable-sized field of characters.
Platform Type	string
Max Length	8000

Property	Value
Default Length	50
Length Unit	characters
Restrictions	Allow Length Modifications and Allow Variable Allocation.

- f. To map the Informatica Platform string type to the MySQL data type String as one of the Best Native Type to read, select Mapped in the String row and then select Best Native Type to Read.
5. Click **Generate Code**.

Step 4. Define Adapter Metadata

Define the MySQL adapter metadata. Create a native metadata definition for the MySQL adapter to read from and write to MySQL data source.

1. In the Connector Navigator view, right-click the project and select **Add Native Metadata Definition**. The **Add Native Metadata Definition** dialog box appears.

2. Enter the native metadata details.

The following table describes the values to enter:

Property	Value
Name	table
Display Name	Table
Description	Represents a MySQL table.
Pattern Type	Record

3. Select **Add Record Extension**.
4. Click **Add** to configure each attribute.

The **Add Attribute** dialog box appears.

a. Enter the following values for the queryHint attribute:

Property	Value
Name	tableType
Display Name	Table Type
Description	Represents the type of record.
Data Type	String
Min Length	0
Max Length	255

b. Click **OK**.

The **Add Native Metadata Definition** dialog box appears.

5. Click **Next**.

The **Native Metadata Field Definition** page displays.

6. Select **Add Field Extension**.
7. Click **Add** to configure each attribute.
 - a. Enter the following values for the isNullable attribute:

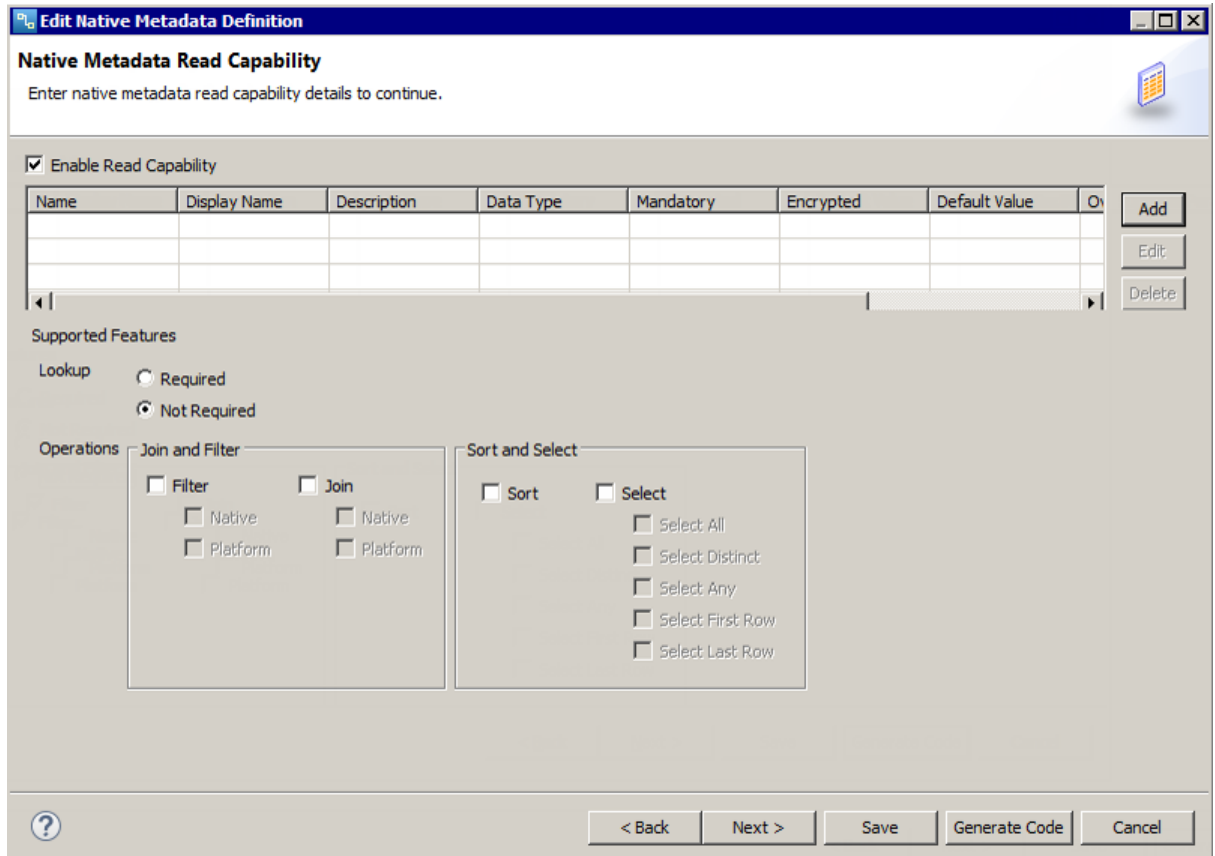
Property	Value
Name	isNullable
Display Name	Is Nullable
Description	Indicates whether the column can contain null values.
Data Type	Boolean
Default Value	True

- b. Enter the following values for the ColumnDefaultValue attribute:

Property	Value
Name	ColumnDefaultValue
Display Name	ColumnDefaultValue
Description	Indicates the default values that the column can contain.
Data Type	String
Min Length	0
Max Length	255

- c. Click **OK**.
The **Native Metadata Field Definition** dialog box appears.

8. Click **Next**.
The **Native Metadata Read Capability** page appears.



9. Select **Enable Read Capability**.
10. Select the following options:
 - **Required** in the **Lookup** section.
 - **Filter** in the **Join and Filter** section.
 - **Platform** as the type of **Filter**.
 - **Sort** in the **Sort and Select** section.

Implement the `initDataAdapter` API in the `MysqlDataAdapter.java` file to add the lookup, filter, and sort logic.

11. Click **Add** to configure each attribute.

The **Add Attribute** dialog box appears.

 - a. Enter the following values for the preSQL attribute:

Property	Value
Name	preSQL
Display Name	Pre-SQL

Property	Value
Description	SQL queries to run before the adapter reads data from the source.
Data Type	String
Min Length	0
Max Length	255
Supports Parameter	Partial Parameterization

- b. Enter the following values for the **rowLimit** attribute:

Property	Value
Name	rowLimit
Display Name	Row Limit
Data Type	Integer
Min Length	0
Max Length	10
Supports Parameter	No
Options	Override Partition

- c. Enter the following values for the **rowLimit** attribute:

Property	Value
Name	postSQL
Display Name	post SQL
Data Type	String
Min Length	0
Max Length	255
Supports Parameter	Partial Parameterization

- d. Enter the following values for the **rowLimit** attribute:

Property	Value
Name	rowOffset
Display Name	Row Offset
Data Type	Integer
Min Length	0
Max Length	0
Supports Parameter	Full Parameterization
Options	Override Partition

- e. Click **OK**.

The **Native Metadata Read Capability** dialog box appears.

12. Click **Next**.

The **Native Metadata Write Capability** page displays.

13. Select **Enable Write Capability**.

14. Click **Add**.

The **Add Attribute** dialog box appears.

- a. Enter the following values for the **truncateTargetTable** attribute:

Property	Value
Name	truncateTargetTable
Display Name	Truncate Target Table
Description	Indicates whether to truncate the target table before starting the write operation.
Data Type	Boolean
Default Value	False

- b. Enter the following values for the partitionID attribute

Property	Value
Name	partitionID
Display Name	Partition ID
Data Type	String
Min Length	0
Max Length	50
Supports Parameter	No
Override Partition	-Override Partition

15. Click **Next**.

The **Native Metadata Partitioning Capability** page appears.

16. To specify partitioning capability for the native metadata object, select the following options:
- Select **Supports Partitioning Capability for Read** to enable the partition capability for the read operation.
 - Select **Dynamic** to specify the partitioning method for the read operation.
 - Select **Supports Partitioning Capability for Write** to enable the partition capability for the write operation.
 - Select **Dynamic** to specify the partitioning method for the write operation.

Extend the `AutoPartitioningMetadataAdapter` class to implement the partition logic.

17. Click **Next**.

The **Import Dialog Box Settings** page appears.

18. To define the import options that appear in the Developer tool when an adapter consumer creates a data object, select the following options:
 - Select the **Allow Multi Select** option to allow the adapter user to select multiple importable objects.
 - Select the **Display Filter By Name** option to display the filter by name option.
 - Select the **Show Entity** option to show the entity details.
19. Click **Generate Code**.

The Informatica Connector generates source code in the Metadata and Runtime folders of the adapter project.
20. In the Metadata folder of the adapter project, double-click the `MySQLMetadataAdapter.java` file to review the source code and update it as required. `MySQLMetadataAdapter.java` contains methods for importing metadata.

Provide code for the following methods:

 - `populateObjectCatalog()`
 - `populateObjectDetails()`

For more information about these methods, see the *Informatica Connector Toolkit API Reference*.

Test Metadata from the Data Source

After you define the native metadata objects, you can test metadata that you import from the data source.

To debug when you test metadata from the data source, use the same debug configuration that you used to test the connection to the data source. You can also set breakpoints in the code that you want to debug.

After you define the debug configuration, you can launch the **Test Metadata** dialog box to test the connection definition and test the metadata import from the data source.

1. In the **Connector Progress** view, select Test<NMOName> under the **Test Metadata** section.

The **Test Metadata** dialog box appears with the connection attributes that you defined for the adapter.
2. Enter values for the connection attributes to connect to the data source.
3. Click **Connect**.

The adapter retrieves the metadata from the data source and the metadata appears in the **Test Metadata** page.
4. Browse and verify the retrieved metadata.
5. Click **Close**.

Step 5. Define Run-Time Interfaces

Use the run-time interfaces available in C to specify how the MySQL adapter reads and writes comments.

1. In the **Connector Progress** view, right-click the project and select **Runtime > Set Up**.

The **Run-time Implementation** wizard appears.
2. Select **Implement in C** and click **Next**.

The **Supported Platforms** page appears.
3. Click **Add**.

The **Add Platform** page appears.

4. Select **NT** as the platform.
5. In the **Compile** section, click **Add**. The **Add Directory** dialog box appears.
 - a. Browse to the location that contains the library files required for the MySQL adapter. For example, browse to `C:\mysql-connector-c-6.1.5-winx64\mysql-connector-c-6.1.5-winx64\include`.
 - b. Click **OK** to add the include paths.
6. Ensure that Visual Studio is selected as the IDE for the run-time project.
7. In the **Link** section, click **Add**. The **Add Library** dialog box appears.
 - a. Browse to the directory that contains the link library files required for the MySQL adapter. For example, browse to `C:\mysql-connector-c-6.1.5-winx64\mysql-connector-c-6.1.5-winx64\lib`.
 - b. Click **OK** to add the library paths.
8. Click **OK** to return to the **Supported Platform** page.
9. Click **Finish**.

The **Run-time Implementation** wizard generates the C project files in the runtime folder.

10. Use Visual Studio to open the C++ project in the Runtime folder of the table NMO and implement the following functions:
 - `INFAADPInitPlugin`
 - `INFAADPDeinitPlugin`
 - `INFAADPInitDataSourceOperation`
 - `INFAADPDeinitDataSourceOperation`
 - `INFAADPInitdataSession`
 - `INFAADPDeinitDataSession`
 - `INFAADPBegindataSession`
 - `INFAADPEndDataSession`
 - `INFAADPDisconnect`
 - `INFAADPConnect`
 - `INFAADPRead`
 - `INFAADPWrite`

For more information about these methods, see the *Informatica Connector Toolkit API Reference*.

Test the Read and Write Capabilities of the Adapter

Before you deploy the adapter in the Informatica domain, you can test the read and write capabilities of the adapter.

After you define the adapter run-time components, you can use the **Test Read** and **Test Write** wizards to test the read and write capabilities of the adapter. After you debug and fix issues in the read and write capabilities of the adapter, you can deploy the adapter in the Informatica domain.

You can test the read and write capabilities of the adapter only for the Windows platform.

Test the Read Capability of the Adapter

When you test the read capability of the adapter, you test the connection definition, metadata of the data source, and operations that the adapter supports. After you specify the test settings and run the test, you can view the result of the read operation, read operation statistics, and the log file.

To debug the code, use the same debug configuration that you used to test the connection and metadata components of the adapter. You can also set breakpoints in the code that you want to debug.

After you define the debug configuration, you can launch the **Test Read** dialog box to test the read capabilities of the adapter.

1. In the **Connector Progress** view, select the native metadata object that appears under **Test Read**.
The **Test Read** dialog box appears with the default JVM environment settings and tracing level. The Informatica Connector Toolkit uses the JVM settings to run the debug configuration.
2. If required, edit the JVM environment settings. Ensure that you use the same port number that appears in JVM settings for the connection properties in the debug configuration.
3. Select the required tracing level. The default is normal. Based on the amount of detail that you require in the log file, you can override the default tracing level.

You can set the following types of tracing level:

None

Does not override the default tracing level.

Terse

Logs initialization information and error messages and notification of rejected data.

Normal

Logs initialization and status information, errors encountered, and skipped rows due to transformation row errors. Summarizes mapping results, but not at the level of individual rows. This is the default tracing level.

Verbose Initialization

In addition to normal tracing, logs additional initialization details, names of index and data files used, and detailed statistics.

Verbose Data

In addition to verbose initialization tracing, logs each row. You can also get detailed statistics on where string data was truncated to fit the precision of a column.

4. Click **Next**.
The connection attributes that you defined for the adapter appears.
5. Enter values for the connection attributes to test the connection to the data source.
6. Click **Connect**.
The **Test Metadata** page appears with the metadata imported from the data source.
7. Select the native metadata objects and the corresponding native metadata fields to test the read operation.
8. Click **Next**.
Based on whether the selected native metadata object supports join and filter operations, the **Join Condition** page or **Filter Condition** page appears.
9. If the native metadata object supports join operation, specify an expression in the **Join Condition** page.

- To specify an Informatica platform expression for the join operation, perform the following steps:
 1. In the **Definition** section, select the native metadata object for which you want to specify the join condition.
 2. To change the join order, click **Move Up** or **Move Down**.
 3. Specify the join type in **Join condition**.
 4. To define a join condition, select values in the **Left Field**, **Operator**, and **Right Field** columns.
 5. To add additional join conditions, click **Add**.
 6. To remove a join condition, select the join condition and click **Remove**.
 - To specify a native expression for the join operation, enter the expression in the **Definition** section.
10. If the native metadata object supports filter operation, select the **Configure Filter** option in the **Filter Condition** page and specify the filter condition.
- To specify an Informatica platform expression for the filter operation, perform the following steps:
 1. In the **Definition** section, click **Add** to add an Informatica platform expression.
 2. In the **Field** column, select the field to use in the expression.
 3. In the **Operation** column, select a conditional operator to use in the expression.
 4. In the **Value** column, enter a value for the conditional expression.
 - To specify a native expression for the filter operation, enter the expression in the **Definition** section.
11. After you specify expressions for the native metadata object, click **Next**.
The **Read Capability** page appears.
12. Specify values for the read capability attributes and then click **Run**.
The **Result** page appears. You can view the result of the read operation, read operation statistics, and the log file in the **Result** page.
13. Click **Close**.

Test the Write Capability of the Adapter

When you test the write capability of the adapter, you test the components of the adapter and write sample data to the data source. After you specify the test settings and run the test, you can view the result of the write operation, write operation statistics, and the log file.

To debug the code, use the same debug configuration that you used to test the connection and metadata components of the adapter. You can also set breakpoints in the code that you want to debug.

After you define the debug configuration, you can launch the **Test Write** dialog box to test the write capabilities of the adapter.

1. In the **Connector Progress** view, select the native metadata object that appears under **Test Write**.
The **Test Write** dialog box appears with the default JVM environment settings and tracing level. The Informatica Connector Toolkit uses the JVM settings to run the debug configuration.
2. If required, edit the JVM environment settings. Ensure that you use the same port number that appears in JVM settings for the connection properties in the debug configuration.
3. Select the required tracing level. The default is normal. Based on the amount of detail that you require in the log file, you can override the default tracing level.

You can set the following types of tracing level:

None

Does not override the default tracing level.

Terse

Logs initialization information and error messages and notification of rejected data.

Normal

Logs initialization and status information, errors encountered, and skipped rows due to transformation row errors. Summarizes mapping results, but not at the level of individual rows. This is the default tracing level.

Verbose Initialization

In addition to normal tracing, logs additional initialization details, names of index and data files used, and detailed statistics.

Verbose Data

In addition to verbose initialization tracing, logs each row. You can also get detailed statistics on where string data was truncated to fit the precision of a column.

4. Click **Next.**

The connection attributes that you defined for the adapter appears.

5. Enter values for the connection attributes to test the connection to the data source.**6. Click **Connect**.**

The **Test Metadata** page appears with the metadata imported from the data source.

7. Select a native metadata object to test the write operation.

The metadata of the native metadata object along with the data type, scale, and precision appears in the **Test Write** page.

8. Select the columns to which you want to write data.**9. Click **Next**.**

The **Test Data** page appears.

10. In the Test Data page, you can load test data from a file or you can generate test data.

- To load the test data from a file, perform the following steps:

1. Select the **Load from a File** option. You must load a comma-delimited TXT file or CSV file.

Note: The date and time data types in the file must have the following timestamp format:
MM/DD/YYYY hh24:mm:ss

2. Click **Browse** and select the file that contains the test data.

- To generate test data, perform the following steps:

1. Select the **Auto generate data** option.
2. Enter the number of rows to generate. You can specify a maximum of 1000 rows.
3. Click **Generate**. The test data appears in the **Data Preview** section.
4. If required, you can edit the test data that appears in the **Data Preview** section.

11. After you load a test data file or generate test data, click **Next.**

The **Write Capability** page appears.

12. Specify values for the write capability attributes and then click **Run.**

The **Result** page appears. You can view the result of the write operation, write operation statistics, and the log file in the **Result** page.

13. Click **Close**.

Informatica Connector Toolkit Eclipse Plug-in Tip

Use the following tip when you create an adapter.

Use the Project Explorer view to view the artifacts and packages that the Informatica Connector Toolkit Eclipse Plug-in generates.

To display the **Project Explorer** view, click **Window > Show View > Other**. Then, expand the **General** folder, select **Project Explorer view**, and click **OK**.

CHAPTER 4

Publishing and Installing an Adapter

This chapter includes the following topics:

- [Publishing and Installing an Adapter Overview, 38](#)
- [Publish or Deploy the Adapter, 39](#)
- [Manually Install the PowerCenter Adapter, 40](#)

Publishing and Installing an Adapter Overview

In this lesson, you will publish and install the MySQL adapter in the Informatica client and server installation directories.

Lesson Concepts

Publish the adapter project to bundle the server and client artifacts. The server and client bundles contain the files that Informatica requires to create connection objects and access the source data.

Install the server and client bundles in the Informatica client and server installation directories. To install the server and client bundles, you can use the publish wizard or you can run the installation scripts.

After you install the server and client bundles, the Data Integration Service can connect to the adapter data source and you can create adapter data source connections in the Developer tool and Administrator tool.

Lesson Objectives

In this lesson, you complete the following task:

- Publish the MySQL adapter.
- Install the MySQL adapter.

Lesson Prerequisites

Before you start this lesson, complete the following prerequisite:

- Install the Informatica Connector Toolkit. For more information, see [“Installing the Informatica Connector Toolkit Overview” on page 11](#).
- Create a Connector. For more information, see [“Creating an Adapter Overview” on page 14](#).

Lesson Timing

Set aside 10 minutes to complete this lesson.

Publish or Deploy the Adapter

You can use the Informatica Connector Toolkit to publish the adapter or to deploy the adapter on local Informatica services and client.

1. In the **Connector Navigator** view, right-click the project and select **Publish**.

The **Publish Informatica Connector** dialog box appears.

The screenshot shows the 'Export/Publish Informatica Connector' dialog box. The title bar reads 'Export/Publish Informatica Connector'. The main heading is 'Export and Publish Settings' with the instruction 'Provide the export and publish settings for the connector.' Below this, there is a text box for 'Export Location' containing 'C:\Users\surg\Desktop\Insta_Conn\deploy' and a 'Browse...' button. The 'Version' is set to '1.0.0'. Under the 'Export Connector' section, there are three checkboxes: 'Informatica Cloud', 'PowerCenter', and 'Specify Plugin ID'. Below these are input fields for 'Plugin ID' (200001), 'Plugin Version' (1), and a dropdown for 'PowerCenter Version' (10.1.1). The 'Publish Connector' section has a checkbox for 'Publish connector on local Informatica services and client (Restarts Informatica services)'. Below it are 'Local Server' and 'Local Client' fields with 'Browse...' buttons, and an 'Upgrade' checkbox. At the bottom, there are navigation buttons: '< Back', 'Next >', 'Finish' (highlighted), and 'Cancel'.

2. If you want to publish the adapter, click **Browse** to configure a location to publish the adapter. The **Publish Location** defaults to the adapter project workspace.
3. To install the adapter on local Informatica services and client machine, complete the following tasks:
 - a. Select **Publish connector on local Informatica services and client**.
 - b. Click **Browse** to configure the local Informatica services and client installation directories.
 - c. If you need to reinstall the connector or install a newer version of the connector, select **Upgrade**.
4. To view a summary of the artifacts included in the client and server bundles, click **Next**.
5. Click **Finish**.

If you select the option to deploy the adapter, the Informatica Connector Toolkit installs the MySQL adapter on the local Informatica services and the Informatica client. The Data Integration Service can connect to the MySQL database and you can create MySQL connections in the Developer tool and Administrator tool. When

you display the list of available connection types on the Administrator and Developer tools and the command line, the MySQL connection appears in the list.

Note: By default, you can use the Informatica Connector Toolkit to build connector for Informatica Intelligent Cloud Services. If you want to publish a connector developed using Informatica Connector Toolkit versions earlier than 10.2 HotFix 1, set **YES** as the value of the `CTK_ADAPTER` system environment variable. For example, `CTK_ADAPTER =YES`.

The default value of the `CTK_ADAPTER` system environment variable is set to **NO**.

Manually Install the PowerCenter Adapter

You can manually install the PowerCenter adapter on Windows or Linux after you build the adapter using the Informatica Connector Toolkit.

Install the PowerCenter Adapter on Windows (Optional)

To install the adapter on Windows, deploy the adapter to the Informatica services and client installation directories. You must also register the adapter to the Informatica services installation directory. If you use the **Publish connector on local Informatica services and client** option to deploy the adapter, you do not need to complete these steps.

After you use the Informatica Connector Toolkit to export the adapter, perform the following steps to manually install the adapter:

1. Shut down the Informatica domain and Informatica Developer tool applications on which you plan to deploy the adapter files.
2. Perform the following steps to deploy and register the adapter to the server installation directory:
 - a. Copy the `installServer.bat` file and the server folder from the publish location to the machine in which you have installed Informatica services.
 - b. Launch a command window and navigate to the location of the `installServer.bat` file.
 - c. Run following command in the command window: `installServer.bat [InformaticaInstallationDir]`
For example, `installServer.bat C:\Informatica\10.4.0`
 - d. If you need to reinstall the adapter or install a newer version of the adapter, run the following command in the command window: `installServer.bat [InformaticaInstallationDir] true`
3. Perform the following steps to deploy the adapter files to the client installation directory:
 - a. Copy the `installClient.bat` file and the client folder from the publish location to the machine in which you have installed Informatica client.
 - b. Launch a command window and navigate to the location of the `installClient.bat` file.
 - c. Run following command in the command window: `installClient.bat [InformaticaClientInstallationDir]`
For example, `installClient.bat C:\Informatica\10.4.0\clients`

- d. Run the following adapter registry file:

For a Windows 32-bit system: `m/c:<adapter>.reg`

For a Windows 64-bit system: `m/c: <adapter>_64.reg`

The generated adapter registry file is deployed in the following location:

`<deploy>\Informatica_PowerCenter\client\PowerCenterClient\client\bin`

4. Start the Informatica domain.

The Data Integration Service can connect to the MySQL database and you can create MySQL connections in the Developer tool and Administrator tool. The MySQL connection appears when you display the list of available connection types in the Administrator tool, the Developer tool, and the command line.

Install the PowerCenter Adapter on Linux

To install the adapter on Linux, you must copy the adapter plugins and third-party jars to the installation directory. Then, register the adapter to the PowerCenter Repository Service.

To manually install the adapter on Linux, perform the following steps:

1. Copy the adapter plugins from the following directory:

`/deploy/Informatica_PowerCenter/server/server/connectors/cci/plugins`

2. Paste the adapter plugins to the following directory:

`<Installation_Directory>/server/connectors/cci/plugins`

3. Register the adapter plugin available in the following directory to the PowerCenter Repository Service:

`/deploy/Informatica_PowerCenter/server/server/bin/Plugin`

The Data Integration Service can connect to the MySQL database and you can create MySQL connections in the Developer tool and Administrator tool. The MySQL connection appears when you display the list of available connection types in the Administrator tool, the Developer tool, and the command line.

APPENDIX A

Frequently Asked Questions

This appendix includes the following topic:

- [Informatica Connector Toolkit Frequently Asked Questions, 42](#)

Informatica Connector Toolkit Frequently Asked Questions

Review the frequently asked questions to answer questions you might have when you use the Informatica Connector Toolkit to develop an adapter.

Can I use the Developer tool to debug an adapter?

Yes. You can use the Developer tool to debug the adapter client components such as connection or metadata.

1. Navigate to the Developer client folder. For example, `C:\Informatica\version\clients\DeveloperClient`.
2. Edit the `developerCore.ini` file and add the following Eclipse remote debug options:

```
-Xdebug  
-Xrunjdpw:transport=dt_socket,server=y,suspend=n,address=portnumber
```
3. Launch the Eclipse IDE and create a **Remote Java Application** debug configuration.
4. Set the connection type as Standard (Socket Attach), and specify the host and port numbers to connect for debugging.
5. Launch the Developer tool.
6. Run the debug configuration in Eclipse after setting required breakpoints in the source files you wish to debug.

Can I use the Administrator tool to debug an adapter?

Yes. You can use the Administrator tool to debug the adapter server components.

1. From the Administrator tool, select the Data Integration Service from the navigator and click the **Properties** view.
2. Edit the **Execution Options** and set the **Launch Jobs as Separate Process** option to false.
3. Select the **Processes** view.
4. From **Service Process Properties** section, edit **Advanced Properties**.

5. Append the following Eclipse remote debug options to JVM Command Line Options:

```
-Xdebug  
Xrunjdwp:transport=dt_socket,server=y,suspend=n,address=<portnumber>
```
6. Launch the Eclipse IDE and create a **Remote Java Application** debug configuration.
7. Set the connection type as Standard (Socket Attach), and specify the host and port number defined in the previous step.
8. Restart the Data Integration Service.
9. Run the debug configuration in Eclipse after setting required breakpoints in the source files you wish to debug.

What is the class-loading pattern of the third-party libraries in the Developer tool?

The Developer tool uses the OSGi-based framework for class loading. The Informatica Connector Toolkit adds the third-party libraries that the metadata class requires to the metadata adapter bundle class path. If the bundle class path is not in use in third-party libraries, analyze the class loading pattern and load classes to match the OSGi class loading pattern.

What is the class-loading pattern of the third-party libraries in the Data Integration Service?

The Data Integration Service uses a custom class loader and child first strategy to load the third-party libraries for the adapter. The Data Integration Service loads all the classes present in `services/shared/*` directories. Resolve conflicts if the Data Integration Service has loaded classes that conflict with the third-party libraries.

What must I do if I get the message asking me to check the JDK version even if JDK version 1.8 is installed on the machine?

In the Eclipse IDE, navigate to **Window > Preferences > Java > Compiler** and set **Compiler compliance level** to 1.8.

When I generate code for native metadata, I get an error message that project description files are out of sync with the file system. Does this error impact code generation?

No. This error does not impact code generation. If you still want to resolve this error, you can select the **Refresh using native hooks or polling** option from the **Window > Preferences > General > Workspace** menu in the Eclipse IDE. If you choose to refresh using native hooks or polling, there may be considerable delay in generating code.

Is there a log file that I can refer when I encounter errors while I generate code or publish the adapter?

Refer to the `<adapter_name>_codebuilder.log` file for any errors that you encounter when you generate code or publish the adapter. The `<adapter_name>_codebuilder.log` file is available in the `<Eclipse workspace>/<adapter project>` folder.

Can I use the Informatica Connector Toolkit to upgrade an adapter?

Yes. The Informatica Connector Toolkit supports upgrade of an adapter. Use the **Upgrade** option in the **Publish Informatica Connector** wizard to reinstall or upgrade the adapter.

Can I use the Informatica Connector Toolkit to deploy an adapter on a worker node?

No. You must manually run the `installServer.bat` command to deploy the adapter on a worker node. The `installServer.bat` command uses the following syntax:

```
installServer infa_server_home upgrade skipregistration
```

Argument	Description
<code>infa_server_home</code>	Indicates the Informatica services installation directory.
<code>upgrade</code>	True if you want to reinstall the adapter, false otherwise.
<code>skipregistration</code>	True if you do want to skip registration of this adapter. Set this argument to true if you deploy an adapter on a worker node.

After I published an adapter, what must I do if I made changes only to the connection attributes, record extensions, field extensions, read capability, or write capability extensions?

If you added attributes, use the **Upgrade** option in the **Publish Informatica Connector** wizard to republish the adapter. The Informatica Connector Toolkit supports upgrade of an adapter only if the changes are additive. If you renamed or deleted any of the existing attributes, uninstall Informatica services, re-create the domain, and then install the adapter.

What must I do if the changes that I made to the run-time project are not reflected?

Shutdown the domain, delete the `work_dir` directory from `<InformaticaServicesInstallationDirectory>/services`, and then restart the domain.

What must I do if the Informatica domain is not available after I deploy the adapter?

Ensure that no Informatica services are running in the domain and then redeploy the adapter.

What must I do if the changes that I made to connection attributes or metadata attributes are not reflected in the Developer tool?

Run the `developerCore.exe` command with the `-clean` option.

How to enable a Cloud Data Integration connector developed using Informatica Connector Toolkit to use the proxy server?

To enable a Cloud Data Integration connector developed using Informatica Connector Toolkit to use the proxy server, see <https://kb.informatica.com/howto/6/Pages/22/564235.aspx>.

Can I use the adapters built for Big Data Management to run on the Spark engine?

Yes. You can use the adapters built for Big Data Management to run on the Spark engine.

Do I make any changes to adapters built for Big Data Management to run on the Spark engine?

No. You do not have to make any changes to adapters built for Big Data Management to run on the Spark engine.

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