



**Tutorial: Mobile Business Object
Development**

Sybase Unwired Platform 2.1

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Contents

Sybase Unwired Platform Tutorials	1
Task Flow	3
Getting Started	5
Installing Sybase Unwired Platform	5
Starting Unwired Platform Services	6
Starting Sybase Unwired WorkSpace	6
Connecting to Sybase Control Center	6
Learning the Basics	7
Developing Database Mobile Business Objects	9
Connecting to the Sample Database	9
Creating the SUP101 Mobile Application Project	11
Creating Database Mobile Business Objects	12
Creating a Relationship Between Mobile Business Objects	14
Deploying the Database Mobile Business Objects	17
Learn More about Sybase Unwired Platform	21
Index	23

Contents

Sybase Unwired Platform Tutorials

The Sybase® Unwired Platform tutorials demonstrate how to develop, deploy, and test mobile business objects, device applications, and mobile workflow packages. You can also use the tutorials to demonstrate system functionality and train users.

- Learn mobile business object (MBO) basics, and create a mobile device application:
 - *Tutorial: Mobile Business Object Development*
- Create native mobile device applications:
 - *Tutorial: BlackBerry Application Development*
 - *Tutorial: iOS Application Development*
 - *Tutorial: Windows Mobile Application Development*
- Create a mobile workflow package:
 - *Tutorial: Mobile Workflow Package Development*

The tutorials demonstrate a cross section of basic functionality, which includes creating MBOs, and using various Sybase Unwired WorkSpace development tools, independent development environments, and device types. Tutorial projects are available if you want the finished tutorial without going through the steps.

Task Flow

Sybase Unwired WorkSpace Eclipse tutorials explain how to develop, deploy, and run a mobile application.

Table 1. Eclipse tutorials

Task	Goals	Steps required to complete the task
Getting Started	<ul style="list-style-type: none"> • Install all required WorkSpace components and external resources. • Start Unwired Server. • Open the Mobile Development perspective, and become familiar with the views of the perspective and the Mobile Application Diagram. 	<ul style="list-style-type: none"> • <i>Installing Sybase Unwired Platform</i> on page 5 • <i>Starting Unwired Server</i> on page 6 • <i>Starting Sybase Unwired WorkSpace</i> on page 6 • <i>Connecting to Sybase Control Center</i> on page 6 • <i>Learning the Basics</i> on page 7 <hr/> <p>Note: These tasks are prerequisites for all the other tutorials. You need to perform them only once.</p>
Developing Database Mobile Business Objects	<ul style="list-style-type: none"> • Create a mobile application project and a connection to the database. • Create two mobile business objects, and create a relationship between them. • Deploy the mobile business objects to Unwired Server. 	<ul style="list-style-type: none"> • <i>Creating the SUP101 Mobile Application Project</i> on page 11 • <i>Connecting to the Sample Database</i> on page 9 • <i>Creating Database Mobile Business Objects</i> on page 12 • <i>Creating a Relationship Between Mobile Business Objects</i> on page 14 • <i>Deploying the Database Mobile Business Objects</i> on page 17

Task Flow

Getting Started

Install and learn about Sybase Unwired Platform and its associated components.

Complete the following tasks for all tutorials, but you need to perform them only once.

1. *Installing Sybase Unwired Platform*

Install Sybase Unwired Platform.

2. *Starting Unwired Platform Services*

Start Unwired Server and the sample database.

3. *Starting Sybase Unwired WorkSpace*

Start Unwired WorkSpace.

4. *Connecting to Sybase Control Center*

Open the Web-based Sybase Control Center administration console to manage Unwired Server and its components.

5. *Learning the Basics*

Learn about Sybase Unwired WorkSpace and how to access help (optional).

Installing Sybase Unwired Platform

Install Sybase Unwired Platform.

Before starting this tutorial, be sure you have all the requisite Unwired Platform components installed. For complete installation instructions, see:

- *Release Bulletin for Sybase Mobile SDK*
- *Installation Guide for Sybase Mobile SDK*
- *Release Bulletin for Runtime*
- *Installation Guide for Runtime*
- Install Sybase Mobile SDK, which includes:
 - Development support for Native Object API applications, HTML5/JS Hybrid (Mobile Workflow) applications, and OData SDK applications.
 - Sybase Unwired WorkSpace, the Eclipse-based development environment for MBOs and Mobile Workflows.
- Install Unwired Platform Runtime:
 - Data Tier (included with single-server installation)
 - Unwired Server

Starting Unwired Platform Services

Start Unwired Server and the sample database.

Click **Start > Programs > Sybase > Unwired Platform > Start Unwired Platform Services**.

The Unwired Server services enable you to access the Unwired Platform components and resources.

Starting Sybase Unwired WorkSpace

Start Unwired WorkSpace.

Select **Start > Programs > Sybase > Unwired Platform > Unwired WorkSpace**.

The Sybase Unwired WorkSpace opens in the Mobile Development perspective. The Welcome page displays links to product information, and to the product.

Next

To read more about Sybase Unwired WorkSpace concepts and tasks, select **Help > Help Contents** from the main menu.

Connecting to Sybase Control Center

Open the Web-based Sybase Control Center administration console to manage Unwired Server and its components.

From Sybase Control Center, you can:

- View servers and their status
- Start and stop a server
- View server logs
- Deploy a mobile application package
- Register devices
- Set role mappings

For information on configuring, managing, and monitoring Unwired Server, select **Help > Online Documentation**.

1. Select **Start > Programs > Sybase > Sybase Control Center**.

Note: If the Sybase Control Center service does not open, make sure that the Sybase Unified Agent service is started. See the *Installation Guide for Runtime*.

2. In the Sybase Control Center Authentication window, log in by entering the supAdmin user name and the password that was specified during the Unwired Server installation.

Logging in to Sybase Control Center allows you access to Unwired Platform administration features that you are authorized to use.

Learning the Basics

Learn about Sybase Unwired WorkSpace and how to access help (optional).

Prerequisites

Start Unwired WorkSpace.

Task

1. In the Welcome page, click any of the links to explore the Unwired WorkSpace environment.
2. To enter the Sybase Unwired WorkSpace development environment, click **Start Development** or close the Welcome tab.

The default Mobile Development perspective provides ready access to most of the tools you need to create, update, and manage mobile business objects (MBOs). This table describes the main windows and views of the Mobile Development perspective. Note that not all the views are open initially; some views become available only after you begin developing your MBOs:

View or Window	Description
WorkSpace Navigator	A view of mobile application projects. Each project folder includes resources and data source references to which the MBOs are bound, personalization keys, and so on. Use this view to review and modify MBO-related properties.
Enterprise Explorer	A view of enterprise back-end resources, such as database servers, SAP® servers, and Sybase Unwired Server.

View or Window	Description
Mobile Application Diagram	<p>A graphical editor for designing mobile business objects. A Mobile Application Diagram is associated with each project.</p> <p>Use the Mobile Application Diagram to create MBOs (including attributes and operations), then define relationships with other MBOs. You can:</p> <ul style="list-style-type: none"> • Create MBOs in the Mobile Application Diagram using Palette icons and menu selections. Either bind to a data source now or or defer binding. For example, using a top-down approach, you might model your MBOs before creating the data sources to which they bind. • Drag items from Enterprise Explorer and drop them onto the Mobile Application Diagram to create the MBO – quickly creates the operations and attributes automatically based on the data source of the items. This is sometimes called a bottom-up approach.
Palette	A view from which you can drag controls onto an open Mobile Application Diagram and define their attributes, operations, and relationships to your application.
Properties	A view that shows the properties of the object currently selected in the Mobile Application Diagram, and lets you edit them. You cannot create an MBO from the Properties view, but generally, most development and configuration is performed here.
Outline	An outline of the file that is currently open in an editor, listing structural elements. The contents are editor-specific.
Problem	A view that displays problems, errors, or warnings.

3. To access the online help, click **Help > Help Contents** in the main menu bar.
4. Expand any of the documents that appear in the left pane.

Some documents are for Sybase Unwired Platform, while others are for the Eclipse development environment.

Developing Database Mobile Business Objects

Create two mobile business objects, each using a database as its data source, create a relationship between the two MBOs, and deploy them to Unwired Server.

Prerequisites

Complete the tasks in *Getting Started*.

Task

Develop the database mobile business objects by completing the following tasks, in order.

1. *Connecting to the Sample Database*

Use the default database connection profile to test and connect to the sample database.

2. *Creating the SUP101 Mobile Application Project*

Create a Mobile Application project to store the mobile business objects and resources you are developing.

3. *Creating Database Mobile Business Objects*

Create two mobile business objects, each from a database object.

4. *Creating a Relationship Between Mobile Business Objects*

Create a relationship between mobile business objects to associate related data and maintain data synchronization on the device.

5. *Deploying the Database Mobile Business Objects*

Deploy the project that contains the database mobile business objects to the server.

Connecting to the Sample Database

Use the default database connection profile to test and connect to the sample database.

Installing Sybase Unwired Platform also installs a sample database, `sampledb`, which you can use to create and test mobile business objects (MBOs). A default connection profile (My Sample Database), included with the installation, is configured to access the `sampledb` database.

Sybase Unwired Platform Services can start the database automatically, depending on your license type: Sybase Unwired Platform Development Edition normally starts the database automatically. However, if you are running Deployment Edition, you must start the database manually.

Sybase Unwired Platform development edition servers normally start the database automatically. However, the Personal Edition requires you to start the database manually.

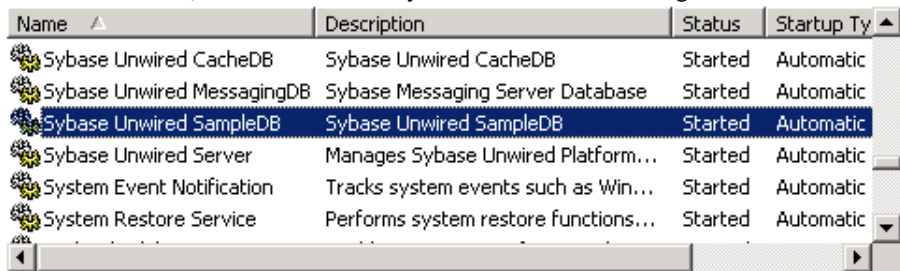
In this task you connect to the sample database using the default connection profile, after starting the database, if necessary. This task is required for all tutorials, but you need to perform it only once.

1. In the Enterprise Explorer, expand **Database Connections**.
2. Right-click **My Sample Database** and select **Ping**.
 - If the ping fails, go the next step to correct the problem.
 - If the ping succeeds, click **OK** and go to Step 4.

Ping confirms whether the sample profile can connect to the sample database.

3. If the ping fails, verify that Unwired Platform Services, including the Sybase Unwired sample database, are running:
 - a) On your Windows desktop, open the Services window.
For example (using the the Windows XP Classic View), click **Start > Settings > Control Panel**. In the Control Panel, double-click **Administrative Tools**, then double-click **Services**.

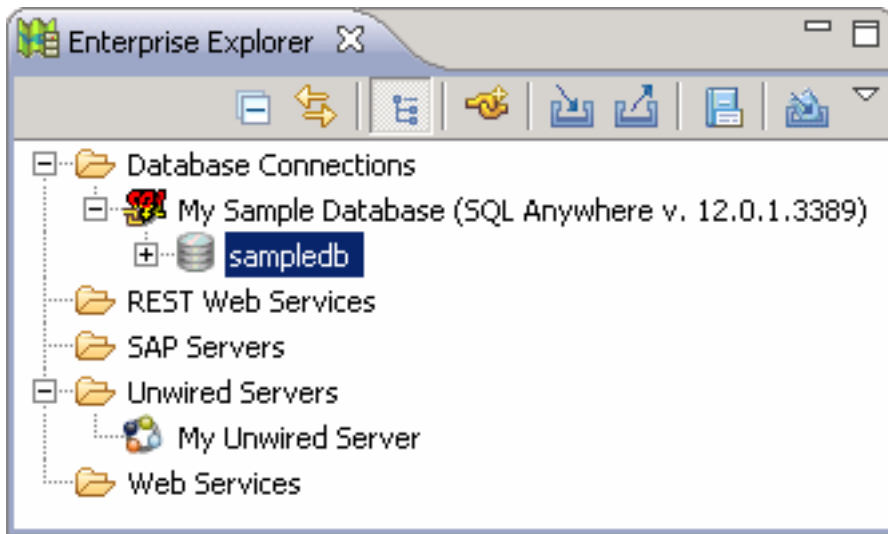
Your installation options (for example, license type, whether or not you installed a cluster, and so on) determine which Sybase services are running.



Name	Description	Status	Startup Ty
Sybase Unwired CacheDB	Sybase Unwired CacheDB	Started	Automatic
Sybase Unwired MessagingDB	Sybase Messaging Server Database	Started	Automatic
Sybase Unwired SampleDB	Sybase Unwired SampleDB	Started	Automatic
Sybase Unwired Server	Manages Sybase Unwired Platform...	Started	Automatic
System Event Notification	Tracks system events such as Win...	Started	Automatic
System Restore Service	Performs system restore functions...	Started	Automatic

- b) In the Services window, check the Status column of the Sybase Unwired SampleDB service. If the status is not Started, right-click the service and select **Start**.
 - c) Go back to Step 2.
4. Right-click **My Sample Database** and select **Connect**.

In Enterprise Explorer, the Database Connections folder contains the `samp1edb` database.



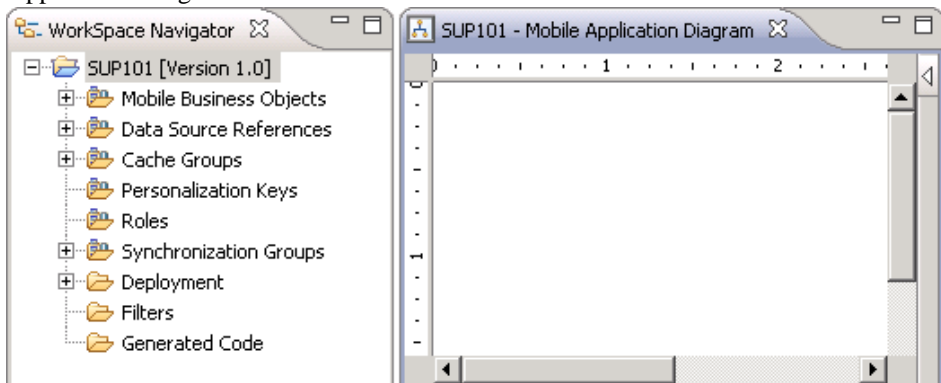
Creating the SUP101 Mobile Application Project

Create a Mobile Application project to store the mobile business objects and resources you are developing.

Several tutorials use the SUP101 Mobile Application project to store mobile business objects.

1. Click **File > New > Mobile Application Project** to create the project.
2. In the New Mobile Application Project window, enter SUP101 as the Project Name and click **Finish**.

The SUP101 project is added to the WorkSpace Navigator and opens in the Mobile Application Diagram.



3. Right-click in the Mobile Application Diagram and select **Switch developer profile > Advanced**.

Unwired WorkSpace provides two developer profiles, basic and advanced. The default basic profile provides most of the features you need. However, the tutorial requires additional features, like configuring code generation, that the advanced profile provides.

Creating Database Mobile Business Objects

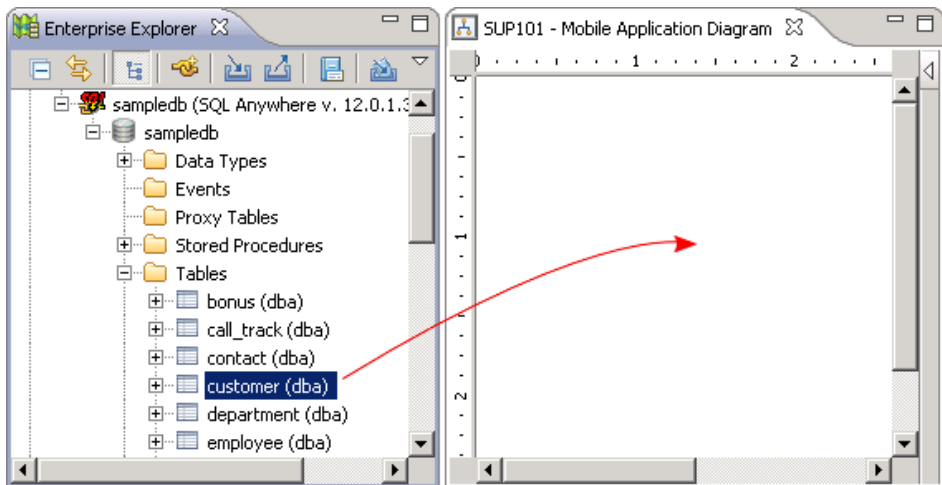
Create two mobile business objects, each from a database object.

Prerequisites

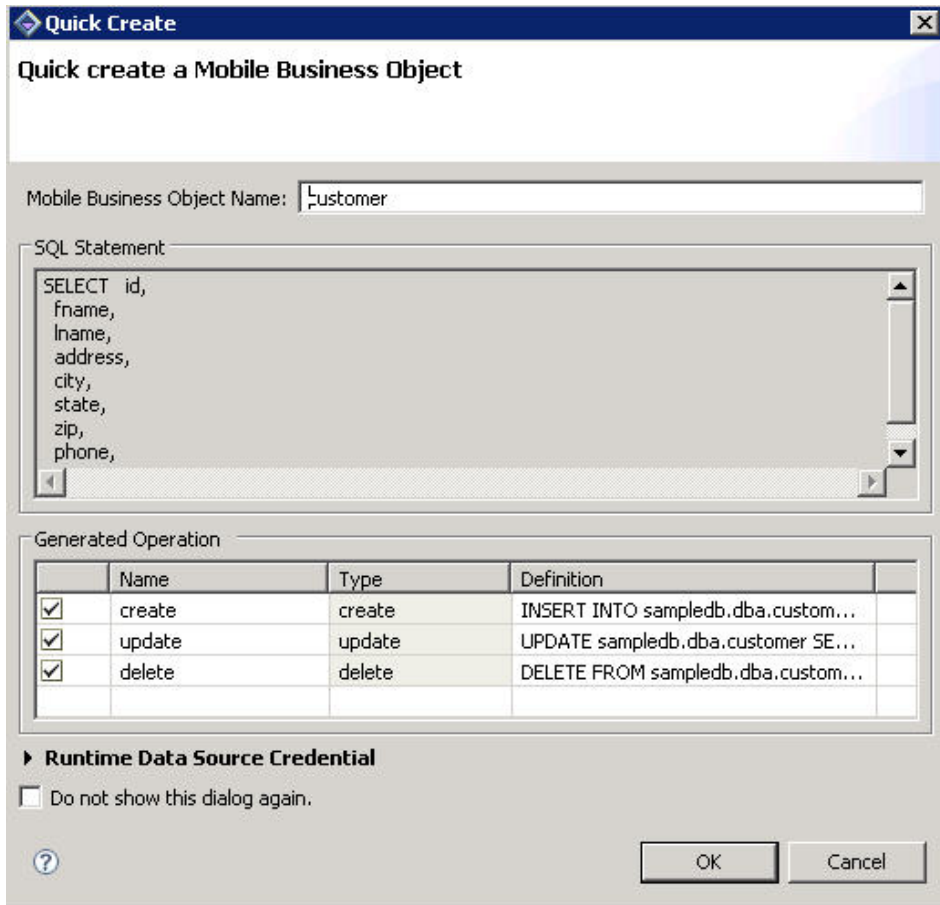
Complete *Connecting to the Sample Database* on page 9 and *Creating the SUP101 Mobile Application Project* on page 11.

Task

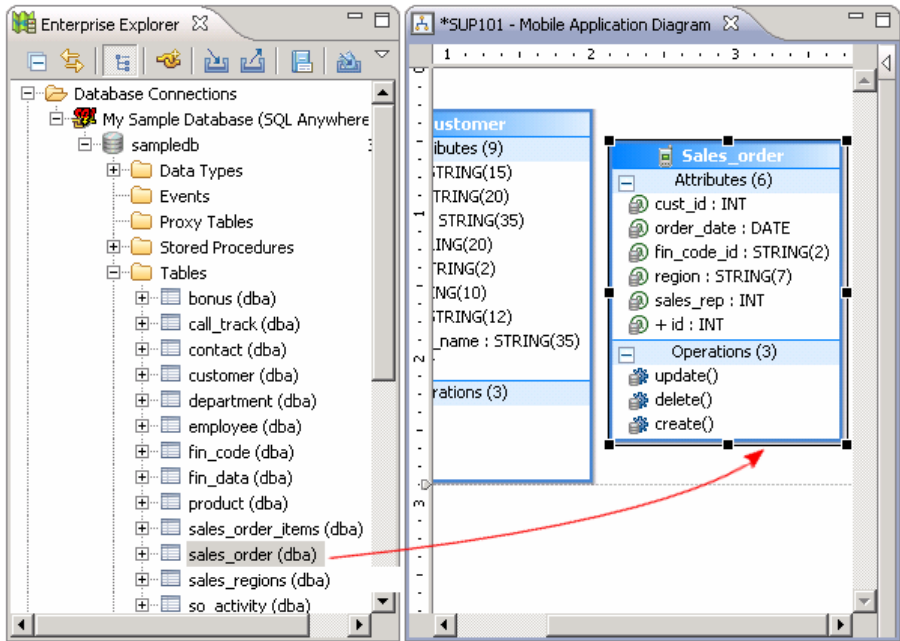
1. Open the SUP101 mobile application project if it is not already open:
In WorkSpace Navigator, right-click the SUP101 folder and select **Open in Diagram Editor**.
2. In Enterprise Explorer, expand Database Connections/My Sample Database. If the `sampledb` database folder is not listed, right-click My Sample Database and select **Connect**. Enter SQL as the password if prompted.
3. Expand `sampledb\Tables`.
4. Drag the `customer` table from the Enterprise Explorer to the Mobile Application Diagram.



5. In the Quick Create wizard, accept the defaults and click **OK**.



6. Create another MBO from the `sales_order` table:
 - a) Drag the `sales_order` table from Enterprise Explorer to the Mobile Application Diagram.
 - b) In the Quick Create wizard, accept the defaults and click **OK**.
The Mobile Application Diagram displays the customer and `sales_order` MBOs.



7. Click **File > Save**.

Creating a Relationship Between Mobile Business Objects

Create a relationship between mobile business objects to associate related data and maintain data synchronization on the device.

Prerequisites

Complete *Creating Database Mobile Business Objects* on page 12.

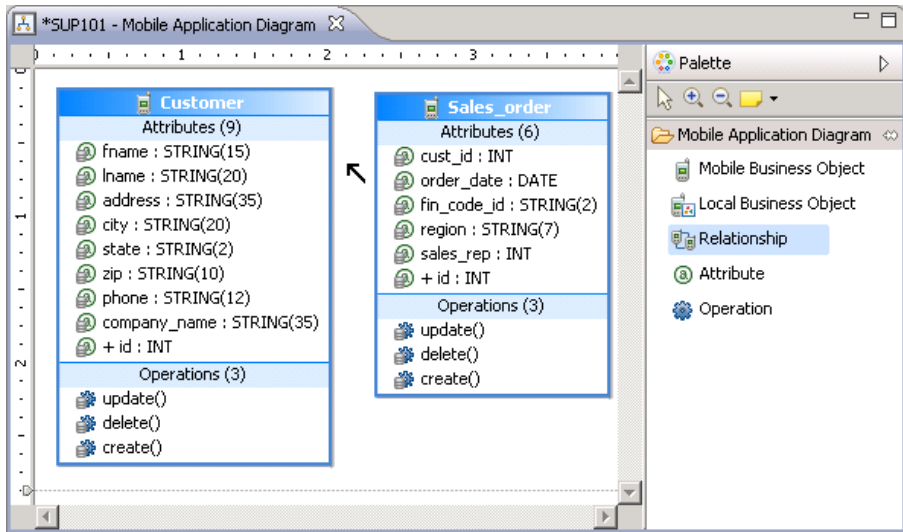
Task

In this step, you create a relationship between the customer and sales_order MBOs.

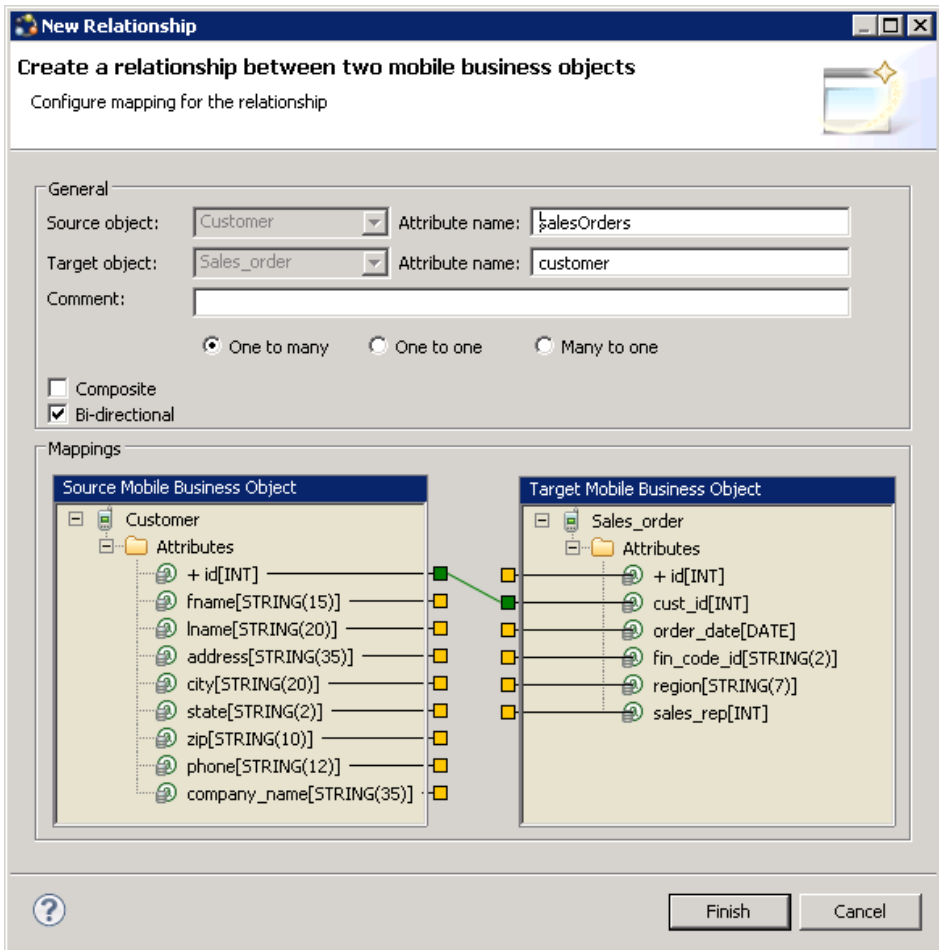
1. Create a link between the two MBOs:

a) In the Palette, click **Relationship**.

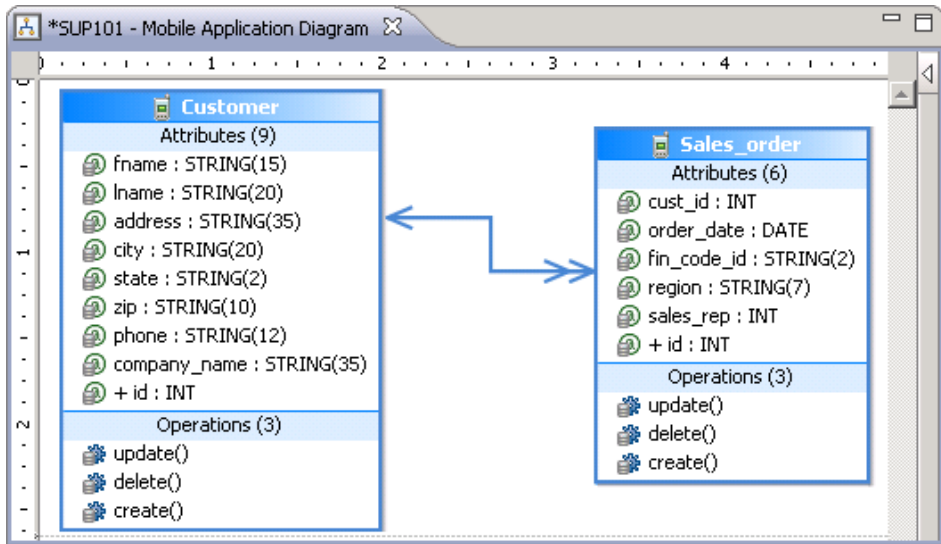
When you hover over any part of the Mobile Application Diagram, the cursor changes to a relationship arrow. If the cursor does not change, click **Relationship** again.



- b) In the Mobile Application Diagram, drag the mouse from the customer MBO to the sales_order MBO to draw a relationship link.
2. In the New Relationship wizard, define the relationship between the MBOs:
 - a) In the General section, accept the default settings.
 - b) In the Mappings section, drag the mouse to draw a line from the **id** attribute in the Source Mobile Business Object to the **cust_id** attribute in the Target Mobile Business Object.
Alternatively, click each attribute in turn to draw the line.



3. Click **Finish** to close the New Relationship wizard.
In the Mobile Application Diagram, a connection arrow links the customer and sales_order MBOs.



4. Select **File > Save**.

Deploying the Database Mobile Business Objects

Deploy the project that contains the database mobile business objects to the server.

Prerequisites

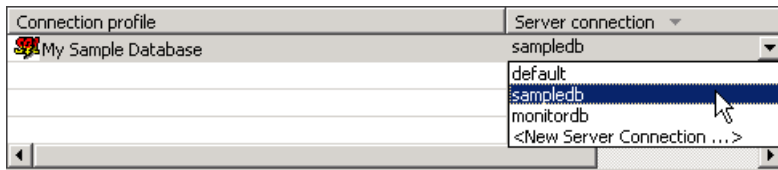
- *Getting Started* on page 5
- *Creating Database Mobile Business Objects* on page 12

Task

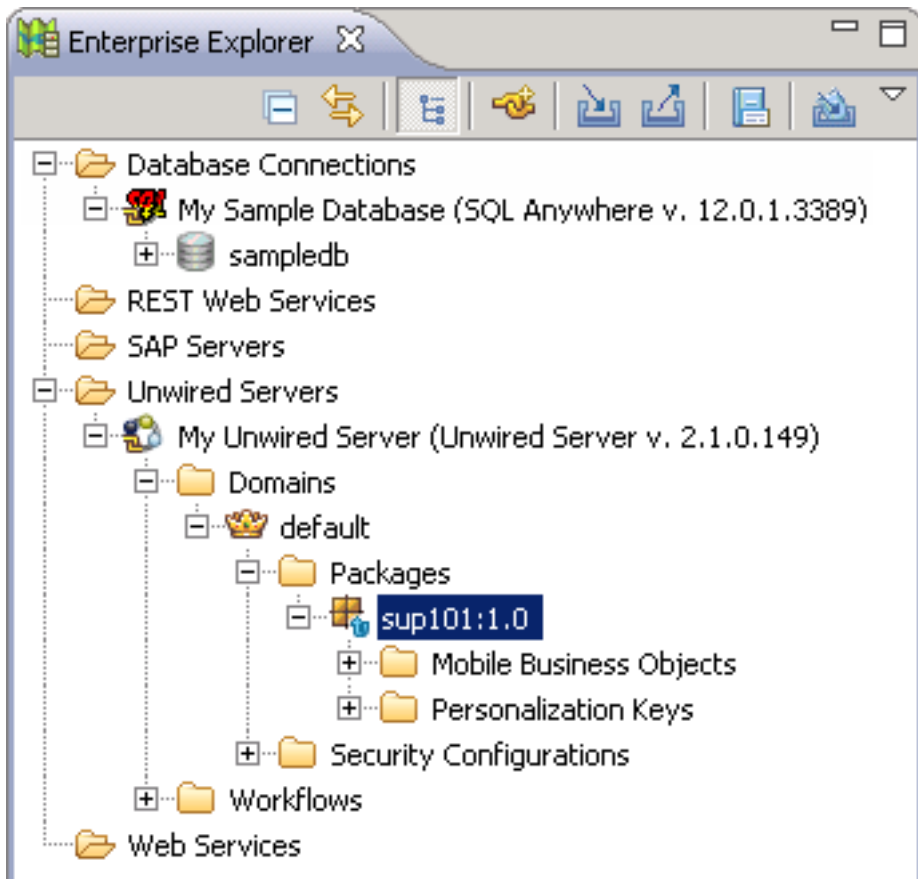
1. Right-click in the SUP101 Mobile Application Diagram and select **Deploy Project**.
2. In the Deploy Mobile Application Project wizard, accept the defaults (including **Replication-based**), and click **Next**.
3. In the Contents page, select the **Customer** and **Sales_order** MBOs and click **Next**.
4. In the Package Jars page, click **Next**.
5. In the Target Server page, select **My Unwired Server** from the list of available servers, then click **Connect**. Accept the default Domain and Security configuration settings, and click **Next**.
6. If you have multiple server connections, the Server Connection Mapping page opens. Choose a server connection:
 - If the runtime database connection is on your local machine, select **sampledb**.

Developing Database Mobile Business Objects

- If the runtime database connection is on a remote machine, select **New Server Connection**, which allows you to create a connection from an existing template.



7. Click **Next**.
8. In the Save as a Deployment Profile, accept the default settings and click **Finish** to close the Deploy Mobile Application Project wizard. The Executing Deployment window closes when the deployment finishes.
9. In the Deployment Status window, click **OK**.
10. In the Enterprise Explorer, you can see the deployed project in **Unwired Servers > Domains > default > Packages > SUP101:1.0**. The two MBOs you deployed are in the Mobile Business Objects subfolder.



Developing Database Mobile Business Objects

The MBOs are now available for access by device applications or for deploying in a production environment. You will use this project in other *Getting Started* tutorials.

Learn More about Sybase Unwired Platform

Once you have finished, try some of the other samples or tutorials, or refer to other development documents in the Sybase Unwired Platform documentation set.

Check the Sybase Product Documentation Web site regularly for updates: access <http://sybooks.sybase.com/nav/summary.do?prod=1289>, then navigate to the most current version.

Tutorials

Try out some of the other getting started tutorials available on Product Documentation to get a broad view of the development tools available to you.

Tutorial Projects

Tutorial projects are available for download, if you want the finished tutorial without going through the steps. Download tutorial projects from: <http://www.sdn.sap.com/irj/sdn/mobile?rid=/webcontent/uuid/40ea4956-b95c-2e10-11b3-e68c73b2280e>.

Samples

Sample applications are fully developed, working applications that demonstrate the features and capabilities of Sybase Unwired Platform.

Check the SAP Development Network (SDN) Web site regularly for new and updated samples: <https://cw.sdn.sap.com/cw/groups/sup-apps>.

Online Help

See the online help that is installed with the product, or the Product Documentation Web site.

Developer Guides

Learn about using the API to create device applications:

- *Developer Guide: BlackBerry Native Applications*
- *Developer Guide: iOS Native Applications*
- *Developer Guide: Windows and Windows Mobile Native Applications*
- *Developer Guide: Mobile Workflow Packages*

Customize and automate:

- *Developer Guide for Unwired Server Management API* – customize and automate system administration features.
- *Developer Guide: Unwired Server* – customize and automate server-side implementations for device applications, and administration, such as data handling.

Javadoc and HeaderDoc are also available in the installation directory.

Learn More about Sybase Unwired Platform

Index

A

articles 21

B

basics, learning 7

BlackBerry 1

C

changing developer profile 11

connecting to Sybase Control Center 6

creating

 database connection profile 9

 Mobile Application Diagram 11

 mobile application project 11

 New Mobile Application Project wizard 11

 relationship between MBOs 14

 sampledb 9

creating MBOs

 database 12

D

database MBOs

 creating 12

 relationship, creating 14

database mobile business object 9

deploying

 mobile business objects 17

developer profile

 advanced 11

 basic 11

E

Eclipse Studio Edition

 Sybase Unwired WorkSpace 6

Enterprise Explorer, defined 7

G

getting started

 Sybase Unwired Platform 5

Sybase Unwired WorkSpace 7

 tutorial projects 1

 tutorials 1

goals 3

H

help, online 7

I

installing

 Sybase Unwired Platform 5

iOS 1

M

MBOs

 See also: mobile business objects 12

 database, creating 12

Mobile Application Diagram, defined 7

mobile application project, creating 11

mobile application projects

 deploying 17

mobile business object, developing 9

mobile business objects

 See also: MBOs 12

 database, creating 12

 deploying 17

O

online help, accessing 7

P

Palette, defined 7

Properties view, defined 7

R

relationships between MBOs, creating 14

Index

S

samples 21

servers

 Unwired Server, starting 6

starting

 Sybase Control Center 6

 Sybase Unwired WorkSpace 6

 Unwired Server 6

Sybase Control Center 6

 connecting to 6

Sybase Unwired Platform

 getting started 5

 installing 5

 learning more about 21

Sybase Unwired WorkSpace

 getting started 7

 starting 6

T

task flow 3

tutorial projects 21

tutorials 21

U

Unwired Server 6

 changing developer profile 17

 deploying MBOs to 17

 developer advance profile 17

W

Windows Mobile 1

WorkSpace Navigator, defined 7