webMethods EntireX

IDL Extractor for Integration Server

Version 10.7

October 2020

WEBMETHODS

This document applies to webMethods EntireX Version 10.7 and all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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Software AG IDL Extractor for webMethods Integration Server

The Software AG IDL Extractor for webMethods Integration Server is a wizard that reads a package from the Integration Server and generates a Software AG IDL file from existing services and nodes. Each service results in a program in the IDL file. All parameters of the services are mapped to an IDL alphanumeric data type, available as variable (AV) or fixed (A*n*) length. From EntireX Adapter version 10.5, you can select individual services and nodes; with earlier versions all services and nodes are extracted.

Introduction	Introduction to the IDL Extractor for Integration Server.
Using	Using the IDL Extractor for Integration Server.
IS to IDL Mapping	Mapping Integration Server data types and syntax to Software AG IDL.
Automating IDL Generation	Creating an IDL file can be automated using service `pub.wmentirex.listener:generateIDLfromService`.
Preferences	Describes the Integration Server preferences.

See also *Extracting IDL using the REST API* in the EntireX Adapter documentation.

1 About this Documentation

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Document Conventions

Convention	Description
Bold	Identifies elements on a screen.
`Monospace font`	Identifies service names and locations in the format *`folder.subfolder.service`*, APIs, Java classes, methods, properties.
`Italic`	Identifies: Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
`Monospace font`	Identifies: Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.
|	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the | symbol.
[ ]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [ ] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

Online Information and Support

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- Get the latest Software AG news and announcements.
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- Search the Knowledge Center for technical information and tips.
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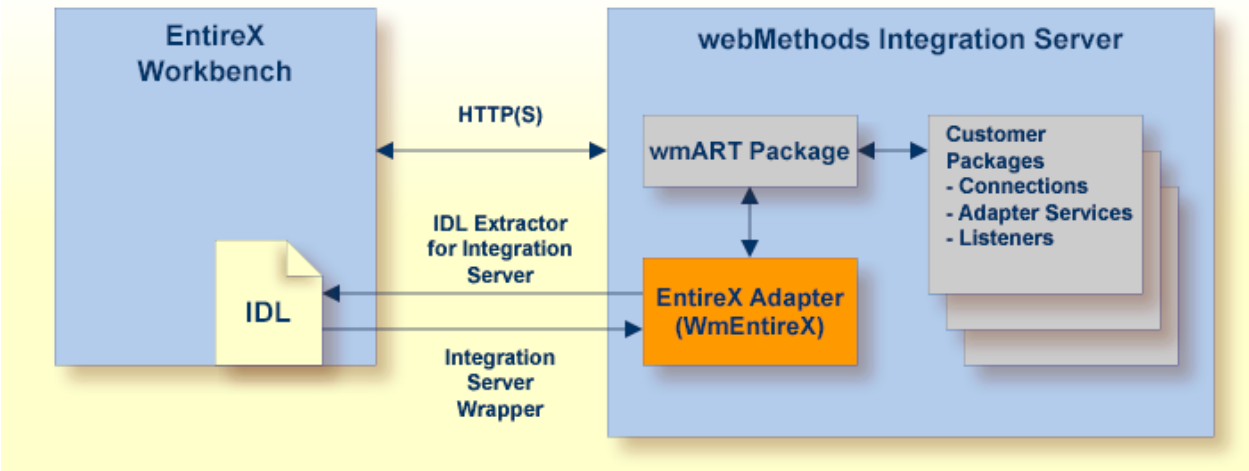
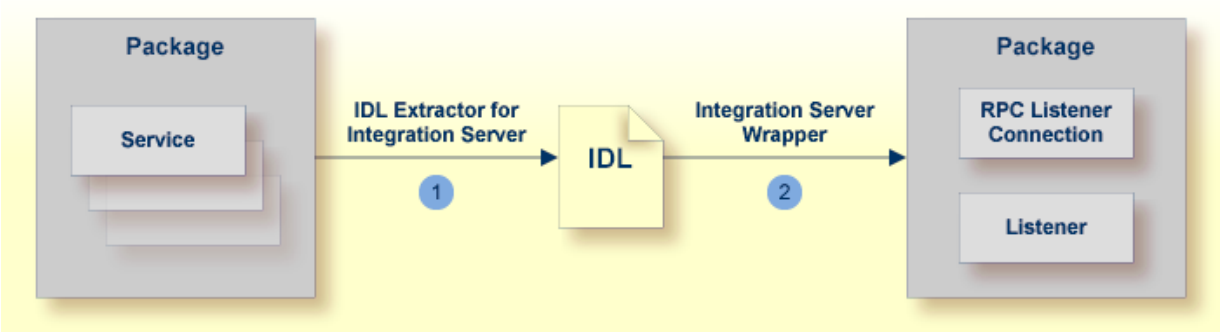
2 Introduction to the IDL Extractor for Integration Server

The Software AG IDL Extractor for webMethods Integration Server is a wizard that reads a package from the Integration Server and generates a Software AG IDL file from existing services and nodes. Each service results in a program in the IDL file. All parameters of the services are mapped to an IDL alphanumeric data type, available as variable (AV) or fixed (A*n*) length. From EntireX Adapter version 10.5, you can select individual services and nodes; with earlier versions all services and nodes are extracted.



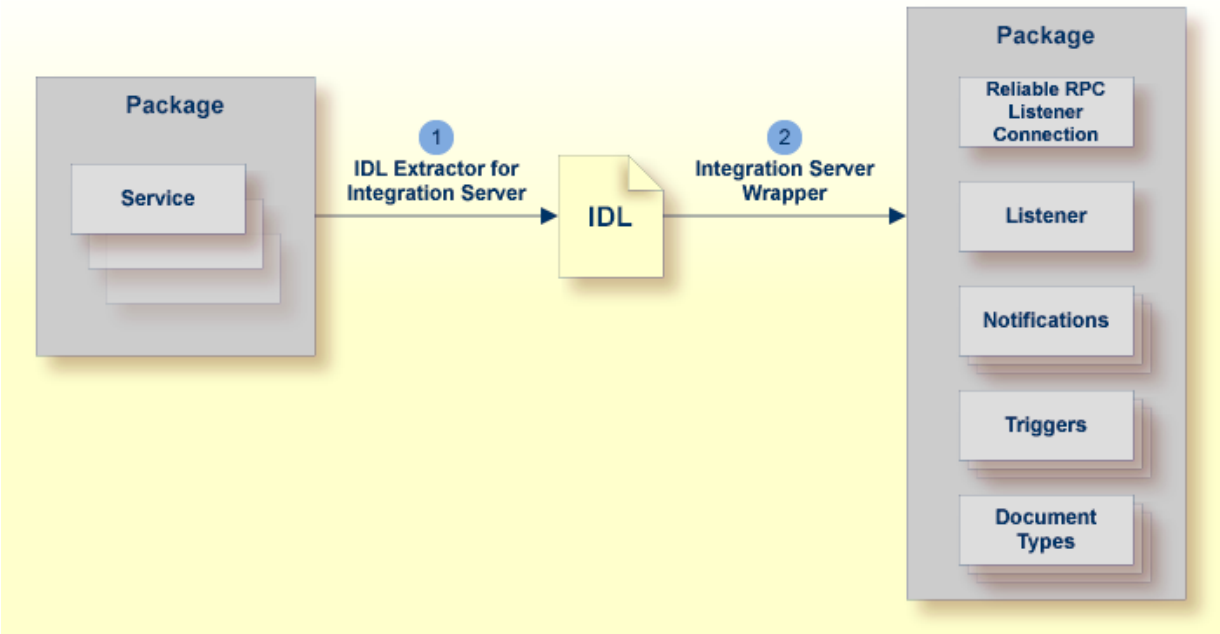
With the Integration Server Wrapper you can generate a server of type "RPC Listener" or "Reliable RPC Listener". See *Using the Integration Server Wrapper*.

- **RPC Listener**



1. See *Using the IDL Extractor for Integration Server*.
2. See *Step 4c: Create a Connection and Related Adapter Listener* in the Integration Server Wrapper documentation.

- **Reliable RPC Listener**



1. See *Using the IDL Extractor for Integration Server*.
2. See *Step 4c: Create a Connection and Related Adapter Listener* in the Integration Server Wrapper documentation.

3 Using the IDL Extractor for Integration Server

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Step 1: Start the IDL Extractor for Integration Server

To start the IDL Extractor for Integration Server

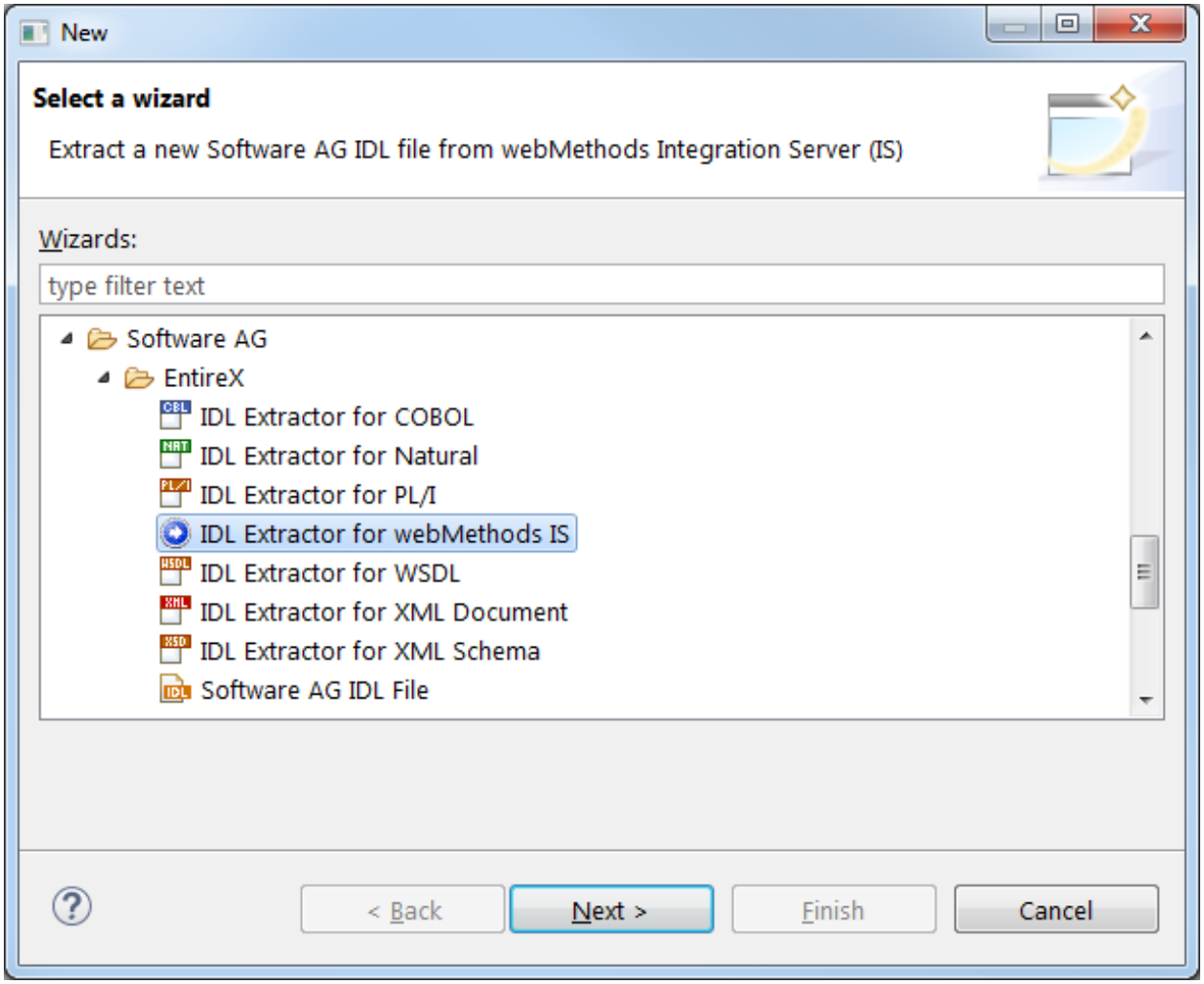
1 The IDL Extractor is a *New Wizard* in Eclipse. Choose **New** from the file menu, select **IDL Extractor for webMethods IS** in the following page and choose **Next**.

Note: You can also choose **New** from the toolbar or context menu of a view showing resources. Also Ctrl-N starts the selection of the *New Wizards*.

2 If you are using the wizard for the first time without any predefined Integration Server connections, continue with ***Step 2a: Connect Designer with Integration Server***.

Or:

If Integration Server connections are already defined (see *Integration Server Connections*), or you want to communicate with an additional Integration Server, continue with ***Step 2b: Connect Designer with Integration Server using an Existing Connection***.


New
Select a wizard
Extract a new Software AG IDL file from webMethods Integration Server (IS)
Wizards:
type filter text
Software AG
EntireX
IDL Extractor for COBOL
IDL Extractor for Natural
IDL Extractor for PL/I
IDL Extractor for webMethods IS
IDL Extractor for WSDL
IDL Extractor for XML Document
IDL Extractor for XML Schema
Software AG IDL File
< Back
Next >
Finish
Cancel

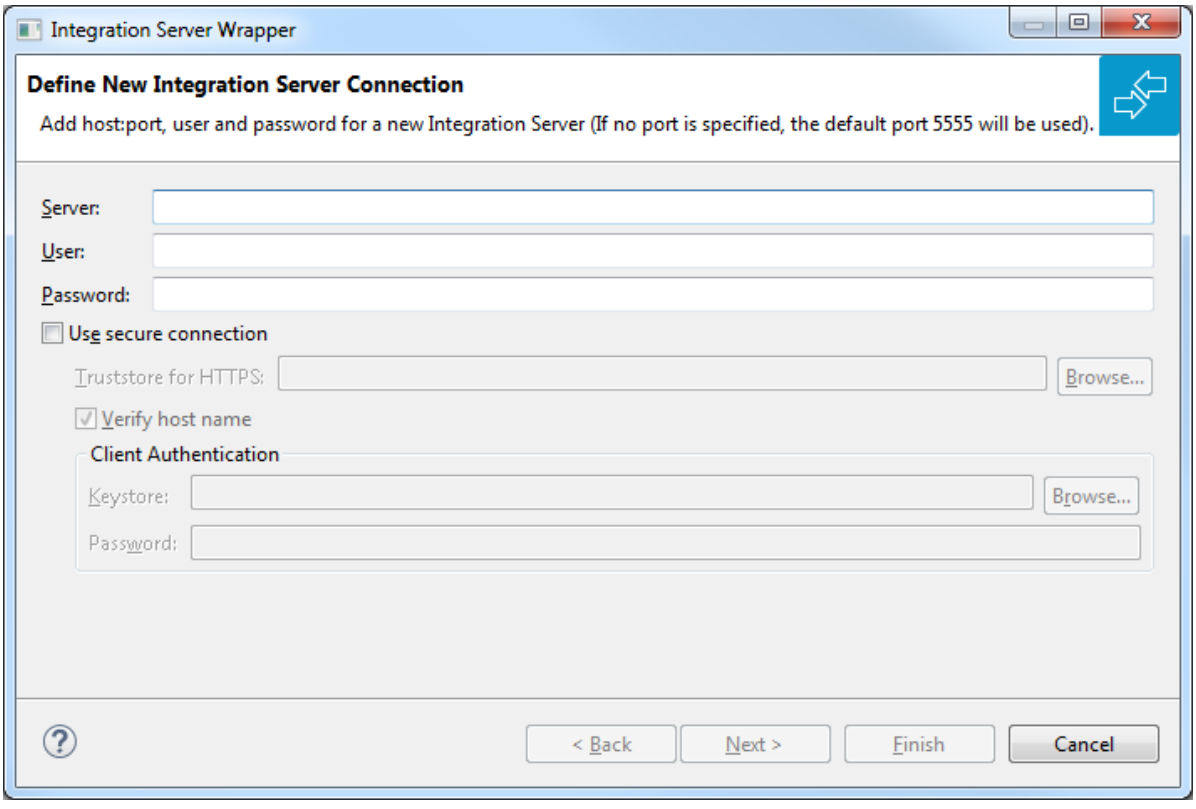
Step 2a: Connect Designer with Integration Server

To create a new Integration Server connection

1 Define the new Integration Server connection on the following wizard page.

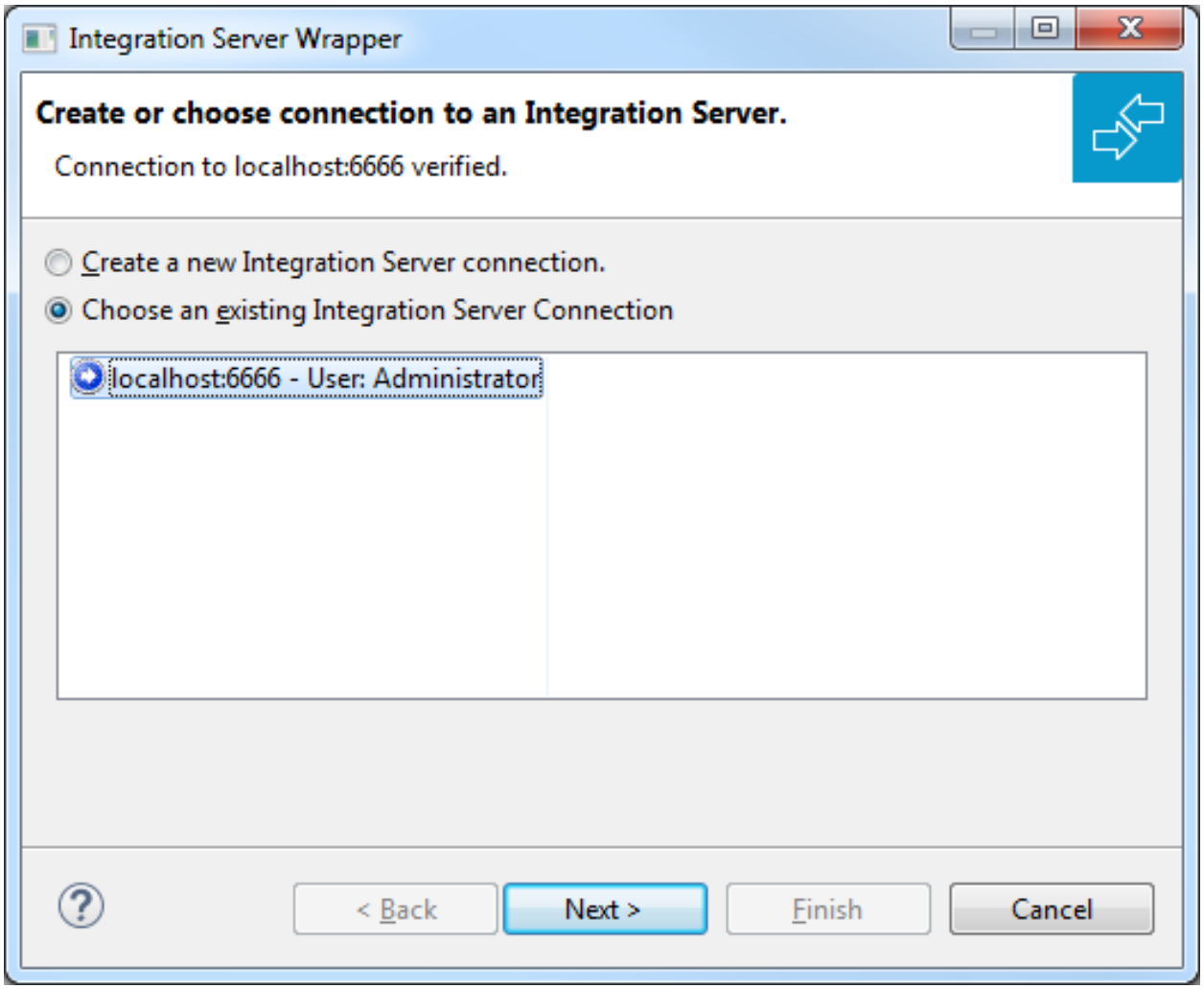
Notes:

1. The only required field is **Server**. Enter the hostname of the Integration Server including an optional port number. If no port number is specified, port number defaults to "5555". The **Integration Server Authentication** can be passed with the **User** and **Password** fields.
2. Optional settings are for secure connections. The **Truststore for HTTPS** contains all signed certificates and must be a valid truststore.
3. The check box **Verify host name** checks that the hostname is entered in the stored certificate.
4. When the Integration Server has **Client Authentication** enabled, you can specify your **Keystore** file and keystore **Password**.
5. For managing Integration Server connections, see *Preferences*.



2 Choose **Next** and continue with *Step 3: Select the Integration Server Package to Extract*.

Step 2b: Connect Designer with Integration Server using an Existing Connection



To use an existing Integration Server connection

1 Select **Choose an existing Integration Server Connection** and an Integration Server connection from the list.

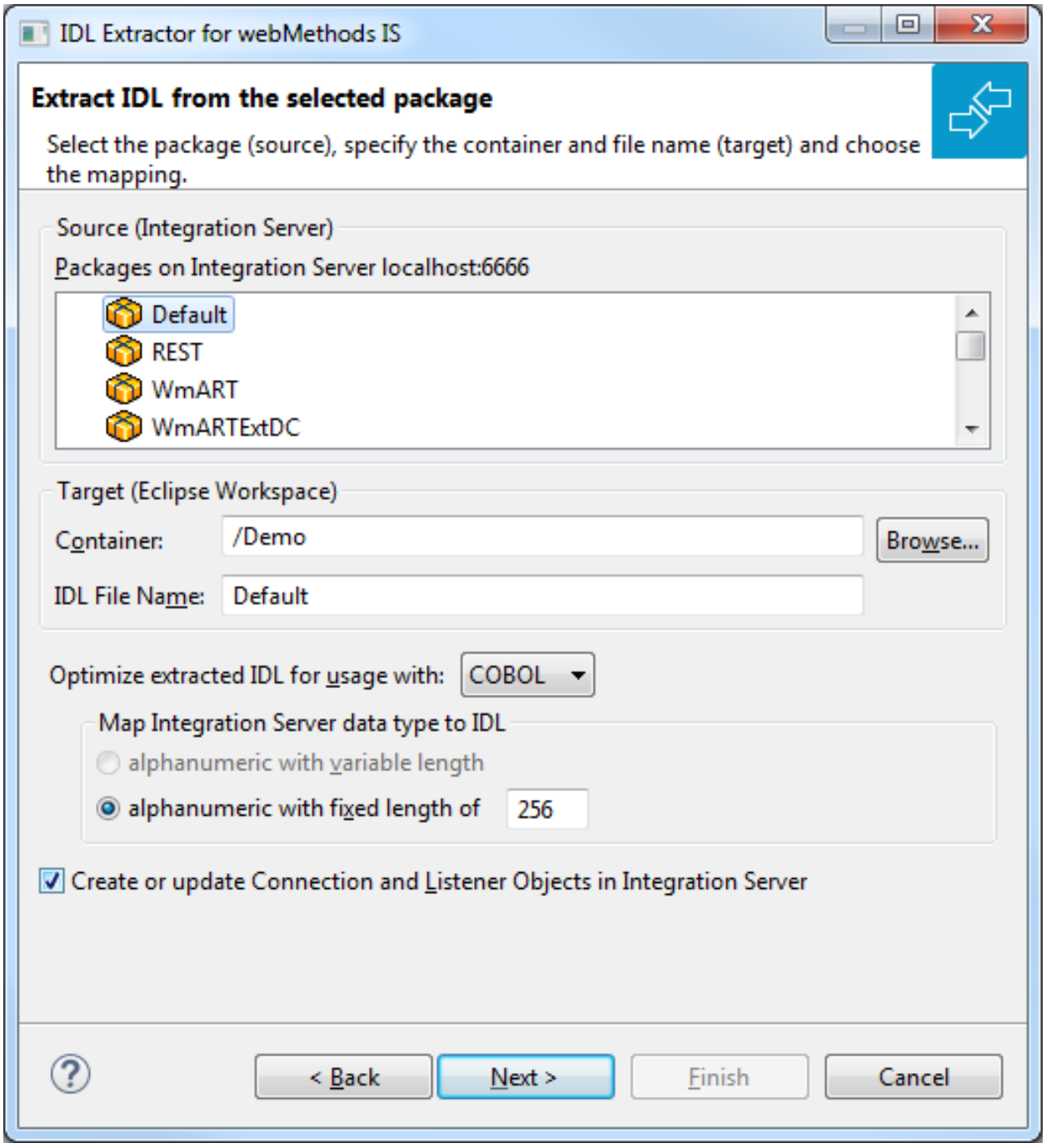
The selected connection is verified by a `ping` command. If the response is valid, the **Next** button is enabled. If invalid, an error message is displayed.

2 Continue with *Step 3: Select the Integration Server Package to Extract*.

To create an additional Integration Server connection

- Select **Create a new Integration Server Connection** and continue with *Step 2a: Connect Designer with Integration Server*.

Step 3: Select the Integration Server Package to Extract



To extract the IDL from the selected package

1 Select the package to extract (from the list indicated by **Source**), for example the package "Default" in the screen above.

2 Specify the target. By default, the wizard tries to find a valid container based on your position in the Navigator or Package Explorer View.

Or:

Choose **Browse...** to select a container from your workspace.

Notes:

1. The IDL file name is based on the selected Integration Server package from the list below, but this is only a proposal and can be changed.
2. If the file name already exists in your container, a warning will be displayed in the title area of the wizard page.
3. If the extension "idl" is not specified, it will be added automatically.

3 Optimize the extracted IDL. Use the combo-box and select the target programming language:

- **COBOL**
  For usage with the COBOL Wrapper. Enter the *default length* for IDL type A(*default-length*) fields which map then to COBOL alphanumeric data items PIC X(*default-length*).
- **Natural**
  For usage with the Natural Wrapper. Choose one option indicated by **Map Integration Server data type to IDL**:
  - alphanumeric with variable length: Extract to IDL Type AV fields which map then to Natural DYNAMIC data types. The interface does not have any length restrictions.
  - alphanumeric with fixed length: Extract to IDL Type A(*default-length*) fields which map then to Natural fixed-length alphanumeric data types. The interface from a Natural point of view is more legacy-like and easier to program, but there are length restrictions.
- **PL/I**
  For usage with the PL/I Wrapper. Enter the *default length* for IDL Type A(*default-length*) fields which map then to PL/I fixed-length alphanumeric fields CHAR (*default-length*).
- **Other**
  For usage with other *EntireX Wrappers*. If you later use wrappers other than the COBOL Wrapper, Natural Wrapper or PL/I Wrapper, no options need to be specified.

4 Clear **Create Listener Objects in Integration Server** to only extract the IDL file from the package.

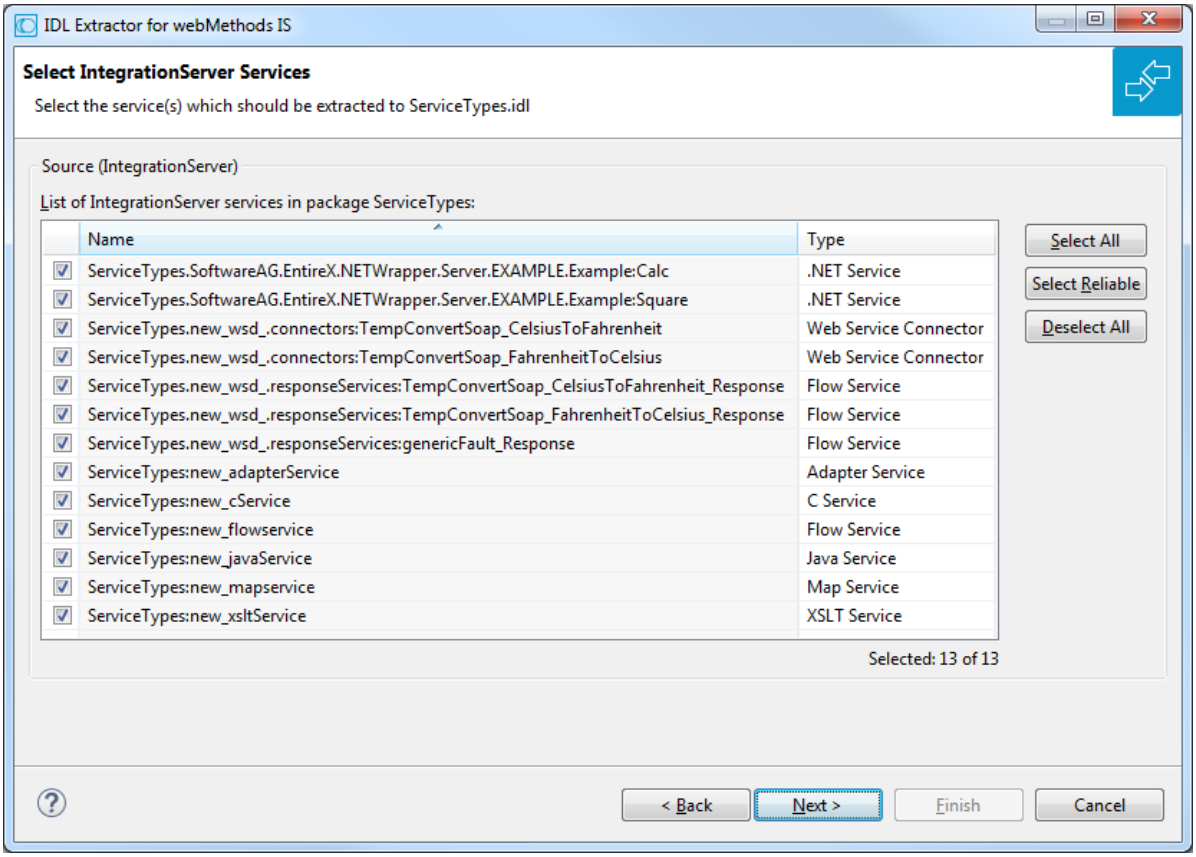
Tip: This is useful if you want to modify the IDL (manually) before generating clients. In this case, the connections and listeners have to be created in a separate step. See *Step 4c: Create a Connection and Related Adapter Listener* in the Integration Server Wrapper documentation.

Note: If your extraction is using an Integration Server with EntireX Adapter version 10.3 or lower, you cannot select a subset of services. Choose **Finish** to store the IDL file in the selected container in the Eclipse Workspace.

Step 4: Select Integration Server Services

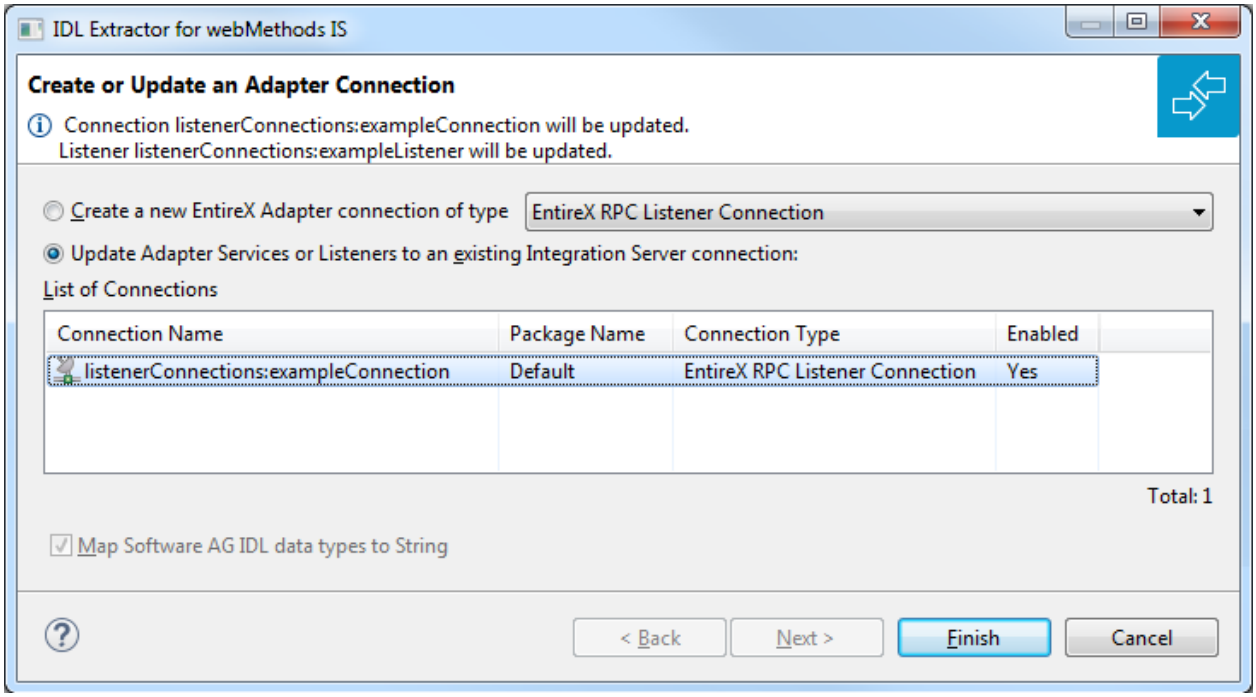
To select Integration Server services

- Choose **Next** to display a page listing the services available in the selected package. Select the services to be extracted from the package. By default all services are selected, but you can reduce the scope by clicking **Select Reliable**. In this case only services with no output parameters are selected. You can also select individual services manually.



Choose **Next** to create or update an Adapter Connection when you have selected the services you want.

Step 5: Create or Update an Adapter Connection



To create a new connection

- Select a **Connection type** and click **Next**.

Notes:

1. An EntireX RPC Listener connection is always available.
2. An EntireX Reliable RPC Listener connection is available if all IDL programs contain only `IN` parameters.
3. An EntireX Direct RPC Listener connection is available if it is enabled by the license for the webMethods EntireX Adapter for Integration Server.

To update an existing connection

- Select a connection from the list of available listener connections and click **Finish**.

Notes:

1. An EntireX RPC Listener connection is always available.

2. An EntireX Reliable RPC Listener connection is available if all IDL programs contain only `IN` parameters.
3. An EntireX Direct RPC Listener connection is available if it is enabled by the license for the webMethods EntireX Adapter for Integration Server.

Step 6: Define a New Listener

To define a listener

1 Select an Integration Server package where the listener will be stored.

2 Specify the names for **Folder Name** (default: *library name*), **Connection Name** (default: *library name*`Connection`) and **Listener Name** (default: *library name*`Listener`).

3 If necessary, edit the Broker settings for the Listener (**Broker ID**, **Server Address**, **User ID**, **Password**, and **Encoding**).

4 **Note:** When creating a connection, a package dependency is added such that the selected package depends on webMethods EntireX (the package `WmEntireX`) with the version currently used.

5 Choose **Finish**.

As a result, the IDL file is stored in the selected container in the Eclipse workspace and the following objects will be created:

- one connection of type EntireX RPC Listener, EntireX Reliable RPC Listener or EntireX Direct RPC Listener
- one listener object

For a connection of type **EntireX Reliable RPC Listener** the following objects will be created in addition for each IDL program:

- one notification object
- one trigger object
- one document type object

4 Mapping Integration Server Data Types to IDL

The signature of an Integration Server service specifies the data types for the parameters of the service. There are three data types: `String`, `Record` and `Object`. Parameters of type `String` are mapped to an IDL alphanumeric data type, parameters of type `Record` to IDL groups. The mapping of parameters of type `Object` has been enhanced in recent versions of the EntireX Adapter. For details see table below.

Integration Server Object Type Java Wrapper Types	Software AG IDL Data Type			
	Adapter Version 10.5	Adapter Version 10.3	Adapter Version 9.12 Fix 1 or 10.1	Adapter Version 9.12 or lower
`java.lang.String`	`A`*n*`, AV, AV`*n*[(1)(3)]	`A`*n*`, AV, AV`*n*[(1)]	`A`*n*`, AV, AV`*n*[(1)]	`A`*n*`, AV, AV`*n*[(1)]
`java.lang.Long`	`N19`	`N19`	`N19`	error
`java.lang.Integer`	`I4`	`I4`	`I4`	error
`java.lang.Short`	`I2`	Input parameter: ignored; Output parameter: `A`*n*`, AV, AV`*n*[(1)]	error	error
`java.lang.Byte`	`I1`	Input parameter: ignored; Output parameter: `A`*n*`, AV, AV`*n*[(1)]	error	error
`java.lang.Float`	`F4`	`F4`	`F4`	error
`java.lang.Double`	`F8`	`F8`	`F8`	error
`java.lang.Boolean`	`L`	`L`	`L`	error
`java.util.Date`	A24 (format 2017-08-15T10:53:35.087Z)	`A`*n*`, AV, AV`*n*[(1)]	error	error

Integration Server Object Type Java Wrapper Types	Software AG IDL Data Type			
	Adapter Version 10.5	Adapter Version 10.3	Adapter Version 9.12 Fix 1 or 10.1	Adapter Version 9.12 or lower
java.math.BigInteger	A*n*, AV, AV*n*[(1)]	Input parameter: ignored; Output parameter: A*n*, AV, AV*n*[(1)]	error	error
java.math.BigDecimal	A*n*, AV, AV*n*[(1)]	Input parameter: ignored; Output parameter:A*n*, AV, AV*n*[(1)]	error	error
byte[]	BV, BV256 (depending on target language)	BV, BV256 (depending on target language)	BV, BV256 (depending on target language)	error
All other wrapper types or record without subcomponents	Input parameter: ignored; output parameter: A*n*, AV, AV*n*[(1)]	Input parameter: ignored; output parameter: A*n*, AV, AV*n*[(1)]	error	error
No wrapper type	BV, BV256 if extracting from EntireX Adapter Service [(4)]; otherwise see above	BV, BV256 if extracting from EntireX Adapter Service [(4)]; otherwise see above	error; or BV, BV256 if extracting from EntireX Adapter Service [(4)]	error; or BV, BV256 if extracting from EntireX Adapter Service [(4)]

Parameters of type String may have an associated context type which is specified in the constraints of the parameter's properties. This content type may influence the data type mapping. The following table shows the mapping.

Integration Server Content Type	Software AG IDL Data Type	
boolean	L	Logical
decimal	N*x*, N*x*.*y* or A*n*, AV, AV*n*	Unpacked decimal or Alphanumeric [(5)]
float	F4	Floating point (small)
double	F8	Floating point (large)
Date	A*n*, AV, AV*n*	Alphanumeric [(1)]
dateTime	A*n*, AV, AV*n*	Alphanumeric [(1)]
base64Binary	A*n*, AV, AV*n*	Alphanumeric [(1)]
byte	I1	Integer (small)
unsignedByte	NU3	Unpacked decimal unsigned
short	I2	Integer (medium)
unsignedShort	NU5	Unpacked decimal unsigned

Integration Server Content Type	Software AG IDL Data Type	
int	I4	Integer (large)
unsignedInt	NU10	Unpacked decimal unsigned
long	N19	Unpacked decimal
unsignedLong	NU20	Unpacked decimal unsigned
integer	N29	Unpacked decimal
positiveInteger	NU29	Unpacked decimal unsigned
nonPositiveInteger	N29	Unpacked decimal
negativeInteger	N29	Unpacked decimal
nonNegativeInteger	NU29	Unpacked decimal unsigned
string	A*n*, AV, AV*n*	Alphanumeric [(2)]
all others	A*n*, AV, AV*n*	Alphanumeric [(1)]

Notes:

1. All parameters of type `String` are mapped to an IDL alphanumeric data type, available as variable (`AV`, `AVn`) or fixed (`An`) length. Which alphanumeric type is used is specified in the wizard page of the IDL Extractor for Integration Server or as a parameter of the generation service.
2. If the content type specifies a length `len`, then `Alen` is used. If the content type specifies a maximum length `max`, then `AVmax` or `Amax` is used, see [(1)] for the choice between `A` versus `Av`. If neither length nor maximum length is specified, the choice is the same as in [(1)].
3. If an input parameter of a service has a default value, this value is shown in the extracted IDL file as a comment. When the Adapter Listener calls this service and no value (or only a value with blanks) is specified by the RPC client, the default value is used as the parameter value.
4. A parameter of an EntireX Adapter service of type `Object` is mapped to an IDL binary data type. Depending on the target language, it is either mapped to `BV` (for `Natural` and `Other`) or to `BV256` (for `COBOL` and `PL/I`).
5. If the content type specifies a total number of digits and a number of fraction digits, then `Nx.y` is used. If only a total number of digits is specified, then `Nx` is used. If no total number of digits is specified, or the total number exceeds the maximum allowed value, or the number of fraction digits exceeds the maximum allowed value, then a string according to [(1)] is used. The maximum allowed value for the total number of digits is 29, for COBOL it is 31. The maximum allowed value for the number of fraction digits is 7, for COBOL it is 31 and for Natural it is 29.

5 Using the Service

pub.wmentirex.listener:generateIDLfromService

Service `pub.wmentirex.listener:generateIDLfromService` generates an IDL file for a given list of Integration Server services. For each service, a program in the IDL file is created. If the IDL file already exists, it is extended with the newly created program definitions. Duplicate definitions for the same program are possible. In this case, the IDL file has to be corrected manually. Note that this service creates/updates only the IDL file. Creating or updating a listener with the definitions of the IDL file has to be done with *Integration Server Wrapper* of the Designer. The following parameters are relevant. Parameter direction can be In or Out:

Parameter	I/O	Description
`serviceName` *`String`*	I	The full name of the Integration Server service (e.g. *`folder1`*`.`*`folder2`*`:`*`service`*). Multiple services can be specified using a semicolon (`;`) as delimiter.
`fileName` *`String`*	I	The name of the IDL file (with extension ".idl"). You cannot specify a folder name. The file is created in the folder *<IntegrationServer_instance>/packages/WmEntireX/resources*.
`libraryName` *`String`*	I	The library name to be used in the IDL file. If the IDL file already exists, this parameter is ignored.
`stringType` *`String`*	I	The IDL data type which is used for string data types. Possible values are `AV`, `AVn`, or `An`. This parameter is optional, default is `AV`.
`language` *`String`*	I	The target language for the RPC clients. Possible values are `COBOL`, `Natural`, `PL/I`, or `Other`.
`result` *`String`*	O	Either a success message if the generation was successful (which includes the full pathname of the IDL file) or an error message.

6 Integration Server Preferences

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The Integration Server preferences are used to manage Integration Server connections. This chapter applies both to the Integration Server Wrapper and the IDL Extractor for Integration Server.

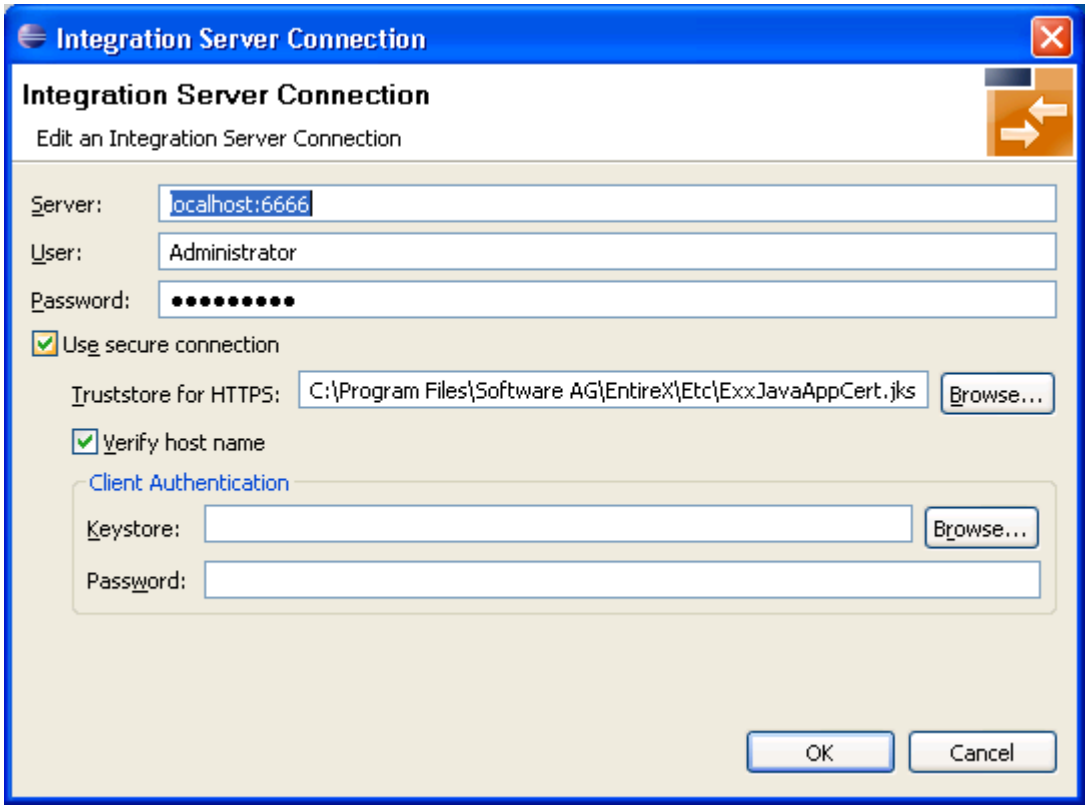
Integration Server Connections

The Integration Server connections are responsible for the HTTP/HTTPS communication to the Integration Server. They are used in the wizards described in *Using the Integration Server Wrapper* and ***Using the IDL Extractor for Integration Server*** and are managed in the Integration Server preferences.

An Integration Server connection contains the following information:

- Server name (required, consists of hostname and optional port number, where the default port number is 5555)
- User name
- Password
- optional parameters for SSL (HTTPS):
  - Truststore (name of the file)
  - Verify hostname
  - Optional parameters for client verification:
    - Keystore (name of the file)
    - Password for the Keystore

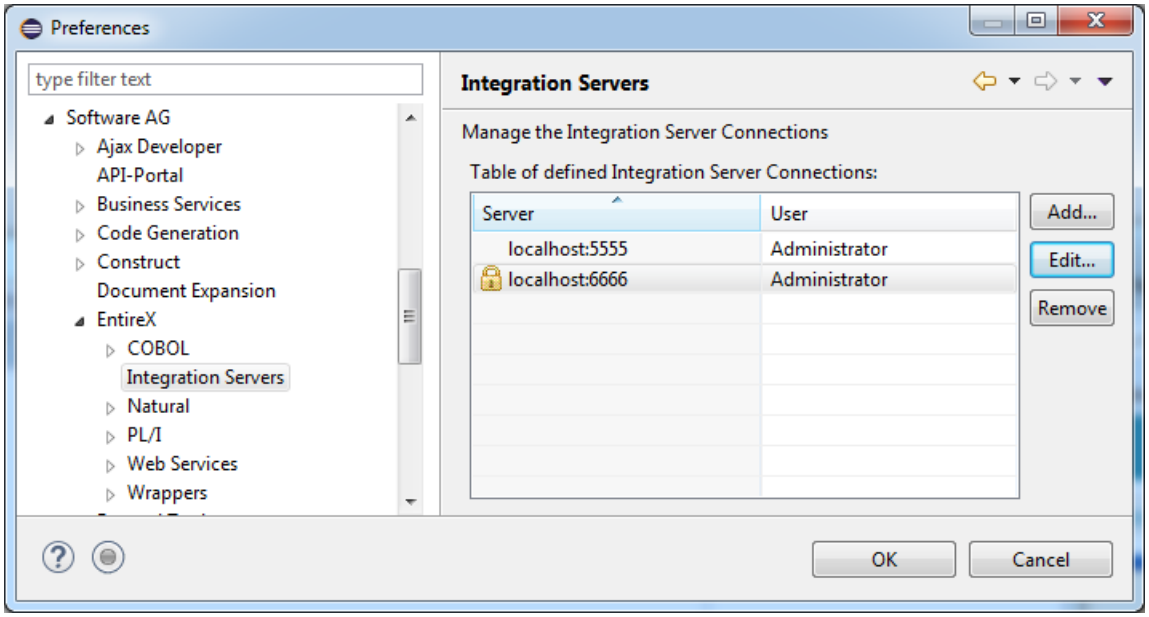
This information can be specified in the following dialog:



Notes:

1. The only required field is **Server**. Enter the hostname of the Integration Server including an optional port number. If no port number is specified, port number defaults to "5555". The **Integration Server Authentication** can be passed with the **User** and **Password** fields.
2. Optional settings are for secure connections. The **Truststore for HTTPS** contains all signed certificates and must be a valid truststore.
3. The check box **Verify host name** checks that the hostname is entered in the stored certificate.
4. When the Integration Server has **Client Authentication** enabled, you can specify your **Keystore** file and keystore **Password**.
5. For managing Integration Server connections, see *Preferences*.

Setting Integration Server Preferences



To add, edit or remove Integration Server connections

- Open the Preferences page and choose **Add...**, **Edit...** or **Remove**.

  All changes in the table will be stored permanently after leaving the preferences with **OK**.

  Caution: The creation of duplicates is forbidden. A duplicate will be detected if server (including port number, for instance the default "5555"), user and truststore file have the same name.