

Server Mapping Files for COBOL

Server mapping enables the RPC server to correctly support special COBOL syntax such as `REDEFINES`, `SIGN LEADING` and `OCCURS DEPENDING ON` clauses, `LEVEL-88` fields, etc. If one of these elements is used, the IDL Extractor for COBOL automatically extracts a server mapping file in addition to the IDL file (interface definition language). Also, the COBOL Wrapper may generate a server mapping file for RPC server generation. The server mapping is used at runtime to marshal and unmarshal the RPC data stream. There are client-side mapping files (EntireX Workbench files with extension `.cvm`) and server-side mapping files (Workbench files with extension `.svm`). If you have not used server-side mapping, we recommend you use client-side mapping.

This chapter describes the handling of server mapping files (EntireX Workbench files with extension `.cvm` or `.svm`) for COBOL and covers the following topics:

- Server Mapping Files in the EntireX Workbench
- How to Set the Type of Server Mapping Files
- When is a Server Mapping File Required?
- Migrating Server Mapping Files
- Source Control of Server Mapping Files
- Comparing Server Mapping Files

See also *Server-side Mapping Files* in the RPC server documentation for z/OS (CICS, Batch, IMS) | Micro Focus | CICS ECI | IMS Connect | BS2000/OSD | z/VSE (CICS, Batch).

Server Mapping Files in the EntireX Workbench

This section covers the following topics:

- Introduction
- Client-side Mapping
- Server-side Mapping

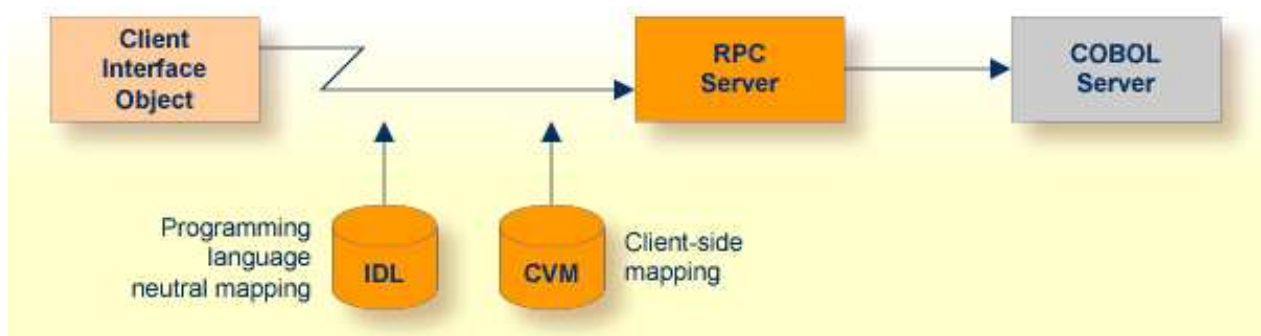
Introduction

The following rules apply to a server mapping file for COBOL in the EntireX Workbench:

- The mapping file is of type client-side or server-side. Use one type or the other; they cannot be combined. See *How to Set the Type of Server Mapping Files*.
- Mapping files have the extension `.cvm` or `.svm`.
- The mapping file has to relate to an appropriate IDL file. Always keep the IDL file and the mapping file together in the same folder.

- The mapping file is created if required by the COBOL Wrapper | Extractor. See *When is a Server Mapping File Required?*.
- If an IDL file has a corresponding mapping file, at least one of the IDL programs in the IDL file requires server-mapping information to correctly call the target server. For those IDL programs, there is a server mapping (corresponding to a line) in the server mapping file.
- If there is an IDL file but no corresponding mapping file, there is no IDL program that requires server mapping information.

Client-side Mapping

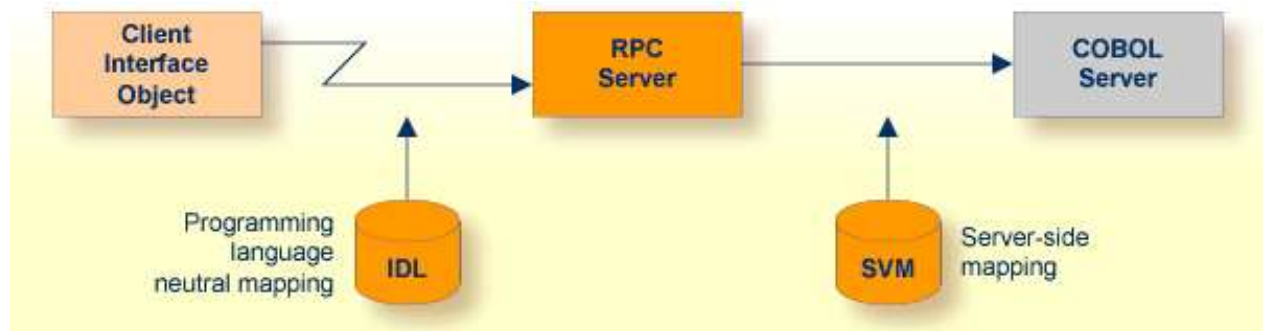


The following rules apply to client-side mapping:

- Client-side mapping files have the extension .cvm in the EntireX Workbench.
- The mapping files are generated when the EntireX Workbench is in client-side mapping mode, see *How to Set the Type of Server Mapping Files*.
- Handling of client-side mapping is easier than server-side mapping. This can be an important criterion, for example if the RPC server is hosted in a mainframe environment and you do not have access to mainframe development resources. The following tasks are not required:
 - deploying the server mapping files to the RPC server
 - setting up a server-side mapping container in the mainframe environment
 - change management of server-side mapping files in the mainframe environment
- The mapping is wrapped into the client interface objects when an RPC client is generated. The client-side mapping must be available before you create any RPC client component, that is, the COBOL server program must be extracted or generated first.
- The mapping is sent during runtime to the target RPC server with the RPC request.
- Only point-to-point connections are allowed. The RPC client with the client-side mapping in its client interface object can only call one specific target COBOL server program. If you want to replace the COBOL server program by another implementation, for example Java, you need to rebuild all the RPC clients without the client-side mapping wrapped into their client interface object.
- Client-side mapping files are not supported by RPC clients generated with the *DCOM Wrapper* and *COBOL Wrapper*. Use server-side mapping files instead. See *Server-side Mapping*.

- To use client-side mapping, all EntireX components involved must be version 9.7 or higher.

Server-side Mapping



The following rules apply to server-side mapping:

- Server-side mapping files have the extension `.svm` in the EntireX Workbench.
- The files are generated when the workbench is in server-side mapping mode, see *How to Set the Type of Server Mapping Files*.
- The files have to be deployed to the RPC server. See *Deploying Server-side Mapping Files to the RPC Server* in the RPC server documentation for z/OS (CICS, Batch, IMS) | Micro Focus | CICS ECI | IMS Connect | BS2000/OSD | z/VSE (CICS | Batch).

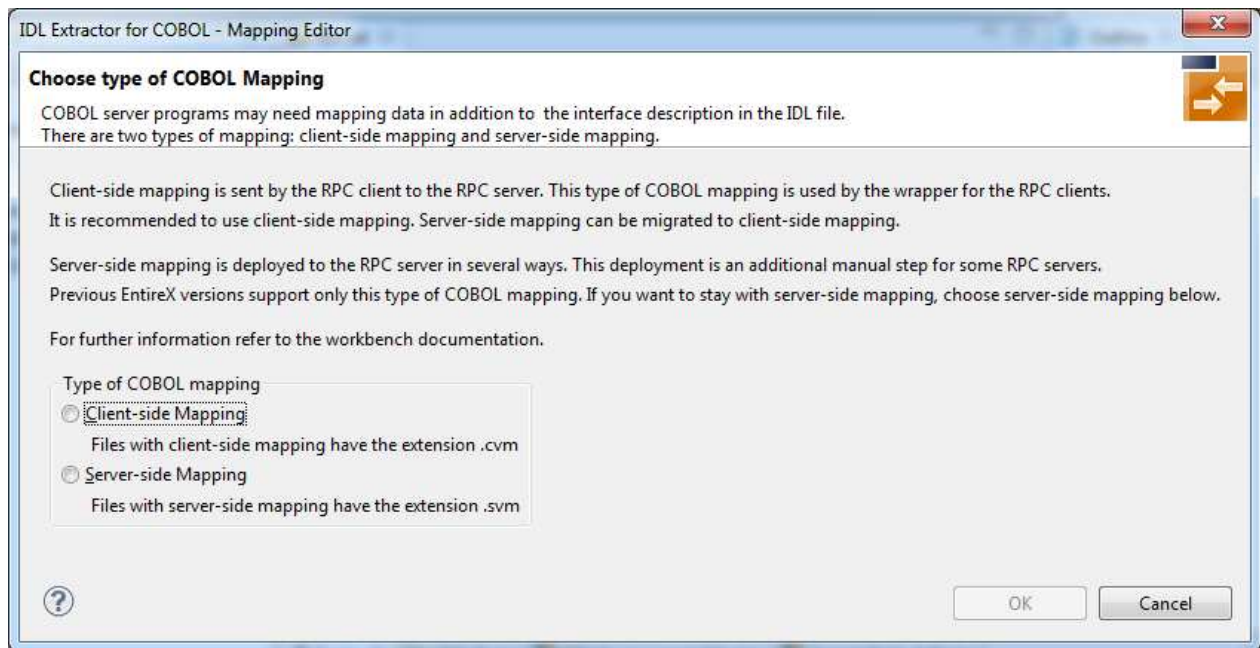
Note:

For IMS Connect and CICS ECI connections with the webMethods EntireX Adapter for Integration Server, server-side mapping files are not deployed. They are wrapped into the Integration Server connection - the same as client-side mapping files. For RPC connections, the server-side mapping files must be deployed to the target RPC server. See the EntireX Adapter documentation under <http://documentation.softwareag.com> > *webMethods Product Line*.

- Server-side mapping is read at runtime by the RPC server from the server-side mapping container, see *Server-side Mapping Files in the RPC Server* in the RPC server documentation for z/OS (CICS, Batch, IMS) | Micro Focus | CICS ECI | IMS Connect | BS2000/OSD | z/VSE (CICS, Batch)
- Flexible connections are possible: the RPC client can call any target server program as long as the IDL interface matches. You do not need to rebuild the RPC clients when replacing the COBOL server program by a different implementation, for example Java, as required with client-side mapping files.
- Server-side mapping files can be migrated to client-side mapping files, see *Migrating Server Mapping Files*.

How to Set the Type of Server Mapping Files

Every EntireX Workbench (Eclipse) workspace is either in client-side mapping mode (generating EntireX Workbench server mapping files with extension `.cvm`) or server-side mapping mode (generating workbench server mapping files with extension `.svm`) for COBOL mapping. If this decision has not yet been taken for a workspace and the COBOL Wrapper | Extractor is called, you are prompted with the following pop-up to choose the type for COBOL mapping:



For more information on handling the different types of COBOL mapping, see *Server Mapping Files in the EntireX Workbench*.

In *client-side* mapping mode, it is not possible to modify server-side mapping files (EntireX Workbench files with extension .svm). This means that if there is a related server-side mapping file available for an IDL file, you cannot use the

- *IDL Extractor for COBOL* to extract an additional interface or modify an existing one
- *COBOL Wrapper* to generate an RPC Server

You have to migrate the server-side mapping files first. See *Migrating Server Mapping Files*.

In *server-side* mapping mode, it is not possible to modify client-side mapping files (EntireX Workbench files with extension .cvm). This means that if there is a related client-side mapping file available for an IDL file, you cannot use the

- *IDL Extractor for COBOL* to extract an additional interface or modify an existing one
- *COBOL Wrapper* to generate an RPC Server

Later on, you can readjust the mode in the **Preferences** of the respective tool. See *IDL Extractor for COBOL Preferences* or *Generation Settings - Preferences* in the COBOL Wrapper documentation.

When is a Server Mapping File Required?

- IDL Extractor for COBOL
- COBOL Wrapper

IDL Extractor for COBOL

A server mapping file (workbench file with extension .cvm or .svm) is generated by the *IDL Extractor for COBOL* if the COBOL server program is of a specific interface type, contains specific COBOL syntax, or the IDL interface is redesigned (Suppress, Set constant, etc.) in the *COBOL Mapping Editor*. The type of server mapping (server-side with extension .svm or client-side with extension .cvm) is defined in a preference that applies to the entire EntireX Workbench (Eclipse) workspace. See *How to Set the Type of Server Mapping Files*.

Interface Type	COBOL Syntax	COBOL Mapping Editor	Server Mapping Required	More Information
CICS DFHCOMMAREA and In different to Out	all		yes	<p><i>CICS with DFHCOMMAREA Calling Convention - In different to Out under COBOL Mapping Editor in the IDL Extractor for COBOL documentation ⁽¹⁾ and the following COBOL server examples for CICS input message different to the CICS output message:</i></p> <ul style="list-style-type: none"> ● <i>Example 2: Redefines</i> ● <i>Example 3: Buffer Technique</i> ● <i>Example 4: COBOL SET ADDRESS Statements</i>
CICS Channel Container	all		yes	<i>CICS with Channel Container Calling Convention</i>
CICS Large Buffer	all		yes	<i>CICS with DFHCOMMAREA Large Buffer Interface</i>
IMS MPP (IMS Connect)	all		yes	<i>IMS MPP Message Interface (IMS Connect)</i>
IMS BMP	all		yes	<i>IMS BMP with Standard Linkage Calling Convention</i>
Micro Focus	BINARY clause		yes	<i>Micro Focus with Standard Linkage Calling Convention</i>
CICS Channel Container, CICS Large Buffer, IMS MPP (IMS Connect)	OCCURS clause	Set Arrays (Fixed <-> Unbounded)	yes	<i>Tables with Fixed Size and example COBOL Server Using Data Length to Process a Variable Number of Array Elements for CICS Channel Container) CICS Large Buffer (Same Different) ⁽¹⁾ IMS MPP (IMS Connect).</i>

Interface Type	COBOL Syntax	COBOL Mapping Editor	Server Mapping Required	More Information
all	OCCURS DEPENDING ON clause		yes	<i>Tables with Variable Size - DEPENDING ON Clause</i> under <i>COBOL to IDL Mapping</i> in the IDL Extractor for COBOL documentation
all	REDEFINES clause		yes	<i>REDEFINE Clause</i>
all	TRAILING [SEPARATE] clause		yes	<i>SIGN LEADING and TRAILING SEPARATE Clause</i>
all	LEADING [SEPARATE] clause		yes	<i>SIGN LEADING and TRAILING SEPARATE Clause</i>
all	ALIGNED RIGHT attribute		yes	
all	all	Rename of program, Set to constant	yes	<i>COBOL Mapping Editor</i> and example <i>COBOL Server with Multiple Functions</i> for CICS Channel Container CICS Large Buffer (Same Different) ⁽¹⁾ IMS MPP (IMS Connect) IMS BMP Batch Micro Focus.
all	all	Suppress	yes	<i>COBOL Mapping Editor</i>
other combinations			no	

Notes:

1. COBOL server programs use either the same data structure on input and output or overlay the input data structure with a different output data structure. See *COBOL Mapping Editor*.

COBOL Wrapper

A server mapping file (EntireX Workbench file with extension .cvm or .svm) is generated by the *COBOL Wrapper* if an RPC server is generated ⁽¹⁾ and at least one IDL program meets the criteria in the table below. The type of server mapping (server-side with extension .svm or client-side with extension .cvm) is defined in a preference that applies to the entire EntireX Workbench (Eclipse) workspace. See *How to Set the Type of Server Mapping Files*.

Interface Type	IDL Type	COBOL Wrapper	Server Mapping Required	More Information
CICS Large Buffer	all		yes	<i>CICS with DFHCOMMAREA Large Buffer Interface</i> under <i>COBOL Server Interface Types</i> in the COBOL Wrapper documentation
CICS Channel Container	all		yes	<i>CICS with Channel Container Calling Convention</i>
IMS BMP	all		yes	<i>IMS BMP with Standard Linkage Calling Convention</i>
Micro Focus	I2 or I4		yes	<i>Micro Focus with Standard Linkage Calling Convention IDL Data Types</i>
all	IDL unbounded array		yes	<i>array-definition</i> under <i>Software AG IDL Grammar</i> in the IDL Editor documentation
all	IDL unbounded group		yes	<i>group-parameter-definition</i>
all	all	IDL program name is not a valid COBOL name and is therefore adapted, or the COBOL program name is customized	yes	<i>Customize Automatically Generated Server Names</i> under <i>Generating COBOL Source Files from Software AG IDL Files</i> in the COBOL Wrapper documentation
other combinations			no	

(1) Server mapping files are never generated for RPC clients.

Migrating Server Mapping Files

This section covers the following topics:

- Introduction
- Step 1: Rename the Server-side Mapping File
- Step 2: Remove the Server-side Mapping Files on Target RPC Server
- Step 3: Rebuild and Deploy all RPC Clients

Introduction

Server-side mapping files (EntireX Workbench files with extension .svm) can be migrated to client-side mapping files (EntireX Workbench files with extension .cvm).

Note:

Client-side mapping files are not supported by RPC clients generated with the *DCOM Wrapper* and *COBOL Wrapper*.

All EntireX components involved in the migration must be version 9.7 or higher:

- the target RPC server z/OS (CICS | Batch | IMS), CICS ECI, IMS Connect, Micro Focus)
- the webMethods EntireX Adapter. See EntireX Adapter documentation under <http://documentation.softwareag.com> > *webMethods Product Line*
- the RPC client runtimes

Step 1: Rename the Server-side Mapping File

Rename the extension .svm to .cvm in the EntireX Workbench. This results in a client-side mapping file.

Step 2: Remove the Server-side Mapping Files on Target RPC Server

Remove the server-side mapping files in the server-side mapping container of the target RPC server. See *Undeploying Server-side Mapping Files to the RPC Server* in the RPC server documentation for z/OS (CICS, Batch, IMS) | Micro Focus | CICS ECI | IMS Connect.

Note:

For IMS Connect and CICS ECI connections with webMethods EntireX Adapter for Integration Server, this step is not required.

Step 3: Rebuild and Deploy all RPC Clients

1. Re-create (wrap, build, compile etc.) all involved RPC clients ⁽¹⁾ using the related IDL file to wrap the client-side mapping files into the client interface objects. See *EntireX Wrappers*.
2. Test the RPC clients with client-side mapping files.
3. If necessary, re-deploy the RPC clients with client-side mapping files.

⁽¹⁾ This includes all variants of RPC connections of the webMethods EntireX Adapter. See *webMethods Integration Server Wrapper*.

Source Control of Server Mapping Files

Because server mapping files (EntireX Workbench files with extension .cvm or .svm) contain text data only, a server mapping file is text-based (although it is not intended for human consumption). Therefore, you can include it in your source control management together with the IDL file and the COBOL source(s) as a triplet that should always be kept in sync.

Comparing Server Mapping Files

For server mapping files (EntireX Workbench files with extension .cvm or .svm), you can use a third party file/text compare tool to check if two files are identical.

A server mapping entry (corresponding to a line in a server mapping file) contains a creation timestamp at offset 276 (decimal) in the format *YYYYMMDDHHIISST*. The precision is 1/10 of a second.