Software

webMethods EntireX

Adapter Services Wrapper for Natural

Version 9.5 SP1

November 2013

webMethods EntireX

This document applies to webMethods EntireX Version 9.5 SP1.

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

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Document ID: EXX-EEXXNATADAPTERSERVICES-95SP1-20140628

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Adapter Services Wrapper for Natural

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The Adapter Services Wrapper for Natural enables webMethods Integration Server to call Natural subprograms. The interface of the Natural subprograms is extracted and connections and adapter services are generated in Integration Server.

This document covers the following topics:

Introduction Introduction to the Adapter Services Wrapper for Natural.

Using Using the Adapter Services Wrapper for Natural.

Common EntireX Workbench Documentation

- RPC Environment Manager in the IDL Extractor for Natural documentation
- RPC Environment Monitor in the IDL Extractor for Natural documentation
- EntireX and your webMethods Integration Server Applications
- Integration Server Wrapper
- IDL Extractor for Integration Server

Introduction to the Adapter Services Wrapper for Natural

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As a developer of webMethods Integration Server services (formerly webMethods ESB) you use this wrapper to connect Natural subprograms with adapter services. At runtime, the adapter services use EntireX RPC connections or EntireX Direct RPC connections to call Natural subprograms via Natural RPC server. Connection type Reliable RPC is supported if there are inbound parameters only. For EntireX RPC connections, an EntireX Broker is used.

At design time, the **Service Development** perspective with the **Package Navigator** is used to start the wizard, which extracts the interface definitions from Natural subprograms and generates adapter connections and adapter services in one step.



The "Adapter Services from Natural" wizard is an "Eclipse New Wizard". It supports extraction of the interface definition from Natural subprograms from a Natural RPC server or local files.

The wizard can extract subprograms in one library. Each subprogram corresponds to an adapter service and the library corresponds to an adapter connection. If the interface of one subprogram is modified, the extraction has to include all subprograms from the first extraction. If a connection is overwritten, all adapter services that depend on this connection are deleted before creating the new connection and the new adapter services.

Using the Adapter Services Wrapper for Natural

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Generating an Adapter Service from an Existing Natural RPC Environment	19
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This chapter describes how to use the Adapter Services Wrapper for Natural.

Prerequisites

- 1. webMethods Integration Server with connections and services generated.
- 2. The Service Development feature in Software AG Designer. This is installed with Software AG Installer into Software AG Designer.
- 3. The Natural subprograms in source or object form available through a Natural RPC server or as local files.

Generating an Adapter Service from a New Natural RPC Environment

This section covers the following topics:

- Step 1: Start the Adapter Services Wrapper for Natural Wizard
- Step 2: Create a New RPC Environment
- Step 3: Edit RPC Environment
- Step 4: Select Natural Library from RPC Environment (Optional)
- Step 5: Select Natural Subprogram from RPC Environment
- Step 6: Redesign the Interface for Natural Subprograms (Optional)
- Step 7: Create New Adapter Services

Step 1: Start the Adapter Services Wrapper for Natural Wizard

Usually, the wizard is started from the context menu of a folder in the **Package Navigator**. This view opens when the **Service Development** perspective opens:

🖨 Service Developn	nent - Eclipse SDH	(
<u>File E</u> dit <u>N</u> avigate S	ie <u>a</u> rch <u>P</u> roject <u>R</u> un	<u>W</u> indow <u>H</u> elp			
	፼ ☆・0	• 94 • 🛷 •	12-5		
Package Navigator	×				
Default	□ 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	2 ~			
🗉 🍈 WmART	New		<u> </u>	Adapter Notification	
🗄 🍈 WmARTExtl	Expand		S	Adapter Service	
	Find	Ctrl+F	N	Adapter Services from	Natural
I WmFlatFile	🔡 Open Administra	tion View	24	Broker/Local Trigger	
🗉 🍈 WmISExtDO	🔗 Refresh		1	Document Type	
🕀 🧑 WmPublic	Copy	Ctrl+C	2 ~	Flat File Schema	
terion wm1omcat	😽 Cut	Ctrl+X		Flow Service	
E MmXSLT	💼 Paste	Ctrl+V		1 Oldel 1MS Trigger	
Ť	💢 Delete	Delete	ەر <u>ت</u> رىچا	Java Service	
	Rename	F2		Package	
	Export from Serv	/er		REST Resource	
	Lock for Edit	Ctrl+I	ø	Specification	ble
	Unlock	Ctrl+U	101	Web Service Descripto)r
	Lock Properties				Resource
	Find <u>D</u> ependents Find <u>R</u> eferences In <u>s</u> pect Pipeline I	: Ctrl+Shi Ctrl+Shi References	ft+D ft+R		
	Generate Code				
	View as <u>H</u> TML				
	Properties	Alt+Ente	er		

As an alternative, you can start the wizard with one of the following options:

- Choose **File > New**.
- Choose the "New" icon from the toolbar.
- Choose **New** from a context menu in another view.
- Press Ctrl-N.

🚰 New	
Select a wizard Generate a new Adapter for Natural	
<u>W</u> izards:	
Image: Stress of the second secon	
(?) < Back Next > Finish	Cancel

Choose Next and continue with Step 2: Create a New RPC Environment.

Step 2: Create a New RPC Environment

If no RPC environments are defined, you only have the option to **Create a New RPC Environment**. The RPC environments are managed in the *Preferences*.

Select an RPC Environment This Wizard will help you to extract interfaces from selected Natural subprograms.
The Natural subprograms can be located in the local file system or can be accessed remotely via an RPC environment. © <u>Create a new RPC environment</u> O <u>U</u> se existing RPC environment:
File Incalhost@NATSRV2800 Modify the selected RPC environment
(?) < <u>Back</u> <u>Next</u> > <u>Einish</u> Cancel

Choose **Create a new RPC Environment** and press **Next** to create a new RPC environment. Continue with *Step 3: Edit RPC Environment*.

Note: The folder **File** and the RPC environment **localhost@NATSRV2800** (default RPC server for NaturalONE) are available only if NaturalONE plugins are installed.

Step 3: Edit RPC Environment

🔀 IDL Extractor for Natural					
Edit RPC Environment Define a new RPC Environment.					
Broker Parameters Broker ID: * ibm2:3762 Server Address: * RPC/NPC42X6/CALLNAT Timeout (Seconds): 60 EntireX Authentication	RPC Server Authentication				
User ID: Password:	RPC User ID:				
Extractor Settings Enter names, or use filter for range of values (wildcards * and ? on any position, < and > as final character only). Library Name: NRPC* Program Name: CO> Wrapper Settings Saye locally Sayre remotely Target Library Name: *					
Environment Name Default (ibm2:3762@RPC/NPC42X6/CALLNAT) Other: ibm2:3762@RPC/NPC42X6/CALLNAT					
•	< Back Next > Finish Cancel				

Define the new RPC environment on this page. Required fields are **Broker ID**, **Server Address** and the **Environment Name**. The timeout value must be in the range 1-9999 seconds (default: 60).

The EntireX Authentication fields apply to the broker.

The **RPC Server Authentication** fields apply to the RPC server. If the Natural RPC Server operates under Natural Security,

- your user ID and password must be defined in Natural Security. If the Natural Security user ID or password differs from the broker user ID and password, use RPC Server Authentication otherwise use EntireX Authentication for both.
- access to the Natural system library SYSIDL is required

Note: Users who do not have access rights to the Natural system library SYSIDL are not allowed to extract IDL from your Natural environment.

With **Extractor Settings**, specify the Natural library and program name from which you want to extract. You have the following options to select a range of Natural libraries and programs:

- wildcard asterisk "*" (any position) to list libraries or program names matching any sequence of characters.
- wildcard question mark "?" (any position) to list libraries or program names matching any single character.
- wildcard greater than ">" (final character only) to list libraries or program names after.
- wildcard lower than "<" (final character only) to list libraries or program names before.
- no wildcard to extract from the given library or program. If the library or program does not exist, an error message will be displayed.

Any Natural RPC Server can be used. Only Natural libraries that reside in the FUSER system file of the Natural RPC Server can be accessed. Special configuration is required only for operating system IBM i; see *Natural RPC Server Configuration for the IDL Extractor for Natural* in the IBM i administration documentation.

Press Next to continue.

- If Library Name (using any wildcards) matches one Natural library only, continue with Step 5: Select Natural Subprogram from RPC Environment.
- If Library Name matches more than one Natural library, continue with Step 4: Select Natural Library from RPC Environment (Optional).

Step 4: Select Natural Library from RPC Environment (Optional)

All Natural libraries that reside in the FUSER system file of the Natural RPC Server and that match the specification in the **Extractor Settings** are listed here. See *Step 3: Edit RPC Environment*. This step is skipped if exactly one Natural library matches the specification. In this case continue with *Step 5: Select Natural Subprograms from RPC Environment* under *Extracting Software AG IDL File from a New Natural RPC Environment* in the IDL Extractor for Natural documentation.

Z	
Select a Library	
The interfaces will be extracted from Natural subprograms located in the selected li	ibrary.
List of Natural libraries:	
Name	
NRPCCLNT	
NRPCCONV	
NRPCCUST	
NRPCKSP	
NRPCTEST	
NRPC1130	
NRPC1140	
NRPC2010	
NRPC2020	
NRPC2030	
	Total: 10
? < <u>B</u> ad	ck Next > Einish Cancel

Only Natural libraries from the Natural User System file (*FUSER*) are displayed. If the Natural RPC server operates under Natural Security, Natural libraries are displayed only if you are allowed to access the library. This means that if a library is people-protected and you do not have access rights, it is not displayed. See also **RPC Server Authentication** under *Step 3: Edit RPC Environment*.

Select the Natural library from the list and choose **Next** to continue with *Step 5: Select Natural Subprogram from RPC Environment*.

Step 5: Select Natural Subprogram from RPC Environment

All Natural subprograms that match the specification in the Extractor Settings are listed here. See *Step 3: Edit RPC Environment*.

12					
Select Natural Subpro The interfaces will be extra pages.	ograms acted from the selected N	Jatural subprograms. Opt	ionally redesign the interfaces on the	e following	
pages. Source (Natural) List of Natural subprogram ✓ CONVVHC ✓ EXAMRDEF ▲ SENDMAIL ▲ SENDPOST ▲ SENDPOST	ms contained in library NR Saved 2006-09-27 16:13:29 2010-10-20 15:22:11 2010-01-22 15:10:23 2010-10-11 15:28:29 ources (recommended) faces (set IN/OUT/INOUT bjects tters in parameter names	EPCTEST: Compiled 2006-09-27 16:13:29 2010-10-20 15:22:11 2009-09-30 15:03:53 2008-11-10 12:30:02 2009-09-30 15:04:36 2010-10-11 15:28:29 T, select REDEFINEs, sup with underscore	Status Source and object in sync. Source and object in sync. No source available. Source modified after compilation. No source available. Source and object in sync. Selected: press parameters etc.)	Select All Deselect All	
Target (Eclipse Workspace) Container: [WaturalProjects File Name: NRPCTEST Save selected sources locally on Finish					
?			< Back Next > Fin	nish Cancel	

In the **Source** pane select at least one program from the list of Natural subprograms (CALLNATs). You can also choose **Select All** or **Deselect All**.

In the **Extraction Settings** pane, specify whether the IDL is to be extracted from Natural subprogram sources or compiled objects. The following restrictions apply:

Extract from Natural sources (recommended)

Extracting from a source is only possible if the compiled object and source are in sync. For example, in the screen above, source extraction is not possible for

- SENDMAIL, because there is no source, only an object
- SENDPOST, because the source is modified after last compilation

Extract from Natural objects

Extracting from an object is always possible.

Check **Redesign the interfaces** if you want to design the extracted interfaces to the Natural subprograms. The **Next** button will be enabled. See *Redesigning the Extracted Interface* in the IDL Extractor for Natural documentation. If you do not check **Redesign the interfaces**, refer to *Natural to IDL Mapping* in the IDL Extractor for Natural documentation for default mappings.

Check **Replace special characters in parameter names with underscore** to substitute the special characters '\$', '#', '&', '@', '/' by underscores. See also *Extracting IDL Parameter Names* in the IDL Extractor for Natural documentation in *Natural to IDL Mapping* in the IDL Extractor for Natural documentation.

If multiple Natural subprograms have been selected in the Natural subprogram selection step, redesign the next interface. The amount of subprograms extracted so far is indicated by the fraction next to the title (current/total).

If only one Natural subprogram has been selected or no further one has to be redesigned, continue with *Step 7: Create New Adapter Services*.

Step 6: Redesign the Interface for Natural Subprograms (Optional)

In this step, you can redesign the interface. This includes:

- Extracting Multiple Interfaces
- Extracting Natural REDEFINES
- Extracting IDL Directions (IN, OUT, INOUT)
- Setting Natural Parameters to Constants
- Suppressing Natural Parameters
- Renaming a Program



Use this page for the following tasks:

- Define the direction of parameters in the extracted interface. Choose Map to In, Map to Out or Map to InOut for each parameter on level 1.
- Define which parameters redefined in the Natural PDA are part of the extracted interface. Choose Map to In, Map to Out or Map to InOut for the REDEFINE base parameter or any REDEFINE path.
- Hide or suppress unneeded parameters in the extracted interface. Choose Suppress.
- Set parameters to constants and hide or suppress them in the extracted interface. Choose Set Constant.

This page consists of the following main parts:

Top line

The top line contains the current Natural subprogram and the IDL library name. The combo box can be used as quick navigation if more than one Natural subprogram is selected.

Middle

The middle part contains a tab item for each interface (IDL program) extracted from the Natural subprogram.

Note: It is possible to extract more than one interface (IDL program) from a Natural subprogram. To create, rename and remove interfaces, use the toolbar on the right side of tab folder.

lcon	Function	Description
÷	Create	Creates a new interface (IDL program) based on the original parameters of the Natural subprogram.
	Duplicate	Creates a new interface (IDL program) based on the current interface (active tab). All modifications of the current interface are copied.
øb	Rename	Change the name of the current interface (active tab). The name must be unique.
×	Remove	Removes the current interface (active tab). At least one interface must exist.
Ŧ	Expand All	Expands the Natural and IDL tree.
Ē	Collapse All	Collapse the Natural and IDL tree.

Middle left

Input pane. The parameters of the Natural subprogram to extract from. For each Natural subprogram parameter you can choose one of the operations **Map to In**, **Map to Out**, **Map to InOut**, **Suppress** and **Set Constant**. Additionally for REDEFINEs, a quick fix is available (icons on the left side of the pane) to choose which parameters redefined in the Natural PDA are part of the extracted interface.

Notes:

- 1. The mapping operations **Map to In**, **Map to Out**, **Map to InOut**, **Suppress** and **Set Constant** are also available in the context menu of the Natural parameter tree.
- 2. Natural parameters that are suppressed or set to constant in the interface are rendered in italic type. For example, in the screen above, FUNCTION (A3) is set to constant; FILLER1(A4) and FILLER2(A60) are suppressed; FUNCTION-DATA(A161) and its first REDEFINE path are implicitly suppressed because the second REDEFINE path with prefix MOD-DATA-2-R2 is selected.
- 3. The value for Natural parameters set to constant are displayed behind the parameter in the Natural parameter tree (e.g. in the screen above, FUNCTION (A3) [MOD]).
- 4. Natural parameters mapped in the interface are displayed with a green tick ().

Middle right

Output pane. The extracted interface (IDL).

Bottom

Reference. The Natural subprogram source and its PDA sources, each displayed in a separate tab.

Tips:

- The panes can be resized.
- To enlarge parameter lists, use the vertical bars on the side.
- You can close the bottom pane if it is not needed by clicking on the triangle next to Natural Subprogram Source. In this way, you have more space for viewing the upper panes.

Use the quick navigation or choose **Next** to continue. If multiple Natural subprograms have been selected in the Natural subprogram selection step, redesign the next interface. The amount of subprograms extracted so far is indicated by the fraction next to the title (current/total).

If multiple Natural subprograms have been selected in the Natural subprogram selection step, redesign the next interface. The amount of subprograms extracted so far is indicated by the fraction next to the title (current/total).

If only one Natural subprogram has been selected or no further one has to be redesigned, continue with *Step 7: Create New Adapter Services*.

Step 7: Create New Adapter Services

After you have defined the interfaces for the selected Natural subprograms, the wizard asks for the webMethods ESB, the package and the namespace (folder) for the new connection and the services.

The **Connection Name** default is *<library name*>Connection. Adapter services have the same name as the corresponding Natural subprograms. You cannot change the services names within this wizard.

The default **Connection Type RPC Connection**. If there are inbound parameters only, you can also specify connection type **Reliable RPC Connection**.

If the connection or adapter services already exist in this webMethods ESB, you can overwrite them by checking **Overwrite existing Objects in Integration Server**.

🞽 New Adaj	oter Services from Natural					
Create New	Adapter Services					
Select a packa	Select a package, name a folder and a connection, and complete the page.					
Select the pa	rent namespace					
Server	Default					
URL	localhost:5555	Package Default				
Namespace	Demo					
- AL						
	ault		~			
□	Default					
± 6	WMART					
	WmAssetPublisher					
	WmBPEL					
E 👰	WmClearCase					
	WmDB					
	WmEntireX					
	WmHathle WmTSEvrDC					
	WINISEXCOL					
			<u>×</u>			
Connection N	ame: CalcConnection					
-						
Connection	Туре					
RPC Cor	nection OReliable RPC Connection					
Services to be	e generated:					
CALC			~			
			~			
Overwrite	existing Objects in Integration Server					
0			Const 1			
\odot						

The result of the generation step is visible in the Package Navigator:



Generating an Adapter Service from an Existing Natural RPC Environment

- Step 1: Start the Adapter Services Wrapper for Natural Wizard
- Step 1: Start the Adapter Services Wrapper for Natural Wizard

Step 1: Start the Adapter Services Wrapper for Natural Wizard

Usually, the wizard is started from the context menu of a folder in the **Package Navigator**. This view opens when the **Service Development** perspective opens:

🖨 Service Developn	nent - Eclipse SDK			
<u>File E</u> dit <u>N</u> avigate S	e <u>a</u> rch <u>P</u> roject <u>R</u> un <u>W</u> ind	ow <u>H</u> elp		
i 📬 • 🖬 🛱 🌢	i 🞒 i 🏇 • 🖸 • 🎴	• 🛷 • 🖢		
Package Navigator				
🗄 🍈 WmART	New		Adapter Notification	
WmARTExti	Expand Find	Ctrl+F	Adapter Service Adapter Services from Natural	
WmFlatFile WmFlatFile WmFlatFile WmISExtDC WmPublic WmTomcat WmVC5 WmXSLT	Image: Copy of Ctrl+C Image: Copy of Ctrl+C Image: Copy of Ctrl+X Image: Ctrl+X Image: Copy of Ctrl+X Image: Ctrl+X Image: Ctrl+X Image: Ctrl+X	 Broker/Local Trigger Document Type Flat File Schema Flow Service Folder JMS Trigger Java Service Package REST Resource Specification 		
	Lock for Edit Unlock	Ctrl+L Ctrl+U	Web Service Descriptor	olo
	Lock Properties		Resource	
	Find <u>D</u> ependents Find <u>R</u> eferences In <u>s</u> pect Pipeline Referen	Ctrl+Shift+D Ctrl+Shift+R ices		
	<u>G</u> enerate Code			
	View as <u>H</u> TML			
	P <u>r</u> operties	Alt+Enter		

As an alternative, you can start the wizard with one of the following options:

- Choose **File > New**.
- Choose the "New" icon from the toolbar.
- Choose **New** from a context menu in another view.
- Press Ctrl-N.

Tew E	
Select a wizard Generate a new Adapter for Natural	*
<u>W</u> izards:	a
Image: Software AG I	
A Back Next > Einish Control Contr	Cancel

Choose Next and continue with Step 2: Select an RPC Environment.

Step 1: Start the Adapter Services Wrapper for Natural Wizard

If RPC environments are defined, you can select an existing one. RPC environments are managed in the *Preferences*.

Select an RPC Environment This Wizard will help you to extract interfaces from selected Natural subprograms.	↓
The Natural subprograms can be located in the local file system or can be accessed remotely via an RPC environment. O <u>C</u> reate a new RPC environment O <u>U</u> se existing RPC environment:	
File Iocalhost@NATSRV2800 ibm2:3762@RPC/NRPC42X6/CALLNAT	
Modify the selected RPC environment	
(?)	Cancel

Select **Use existing RPC environment** and select the appropriate RPC environment from the list below.

If **Modify the selected RPC environment** is checked, the selected RPC environment can be modified before extraction starts.

Press Next to continue.

- If Modify the selected RPC environment is *checked*, continue with Step 3: Edit RPC Environment above.
- If Modify the selected RPC environment is not checked and the Natural library name matches one Natural library only (using any wildcard defined in Step 3: Edit RPC Environment), continue with Step 5: Select Natural Subprogram from RPC Environment above.
- If Modify the selected RPC environment is not checked and the Natural library name matches more than one Natural library, continue with Step 4: Select Natural Library from RPC Environment (Optional) above.
 - **Note:** The folder **File** and the RPC environment **localhost@NATSRV2800** (default RPC server for NaturalONE) are available only if NaturalONE plugins are installed.

Preferences

Use the *RPC Environment Manager* in the IDL Extractor for Natural documentation to manage RPC environments.

Use the preference page for the IDL Extractor for Natural to manage the default values relevant for *Step 5: Select Natural Subprogram from RPC Environment*. See *Preferences* under *Using the Software AG IDL Extractor for Natural*.