

# **webMethods EntireX**

## **Installation under IBM i**

Version 10.1

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This document applies to webMethods EntireX Version 10.1 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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## Installing EntireX under IBM i

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RPC Server	How to install the RPC Server for IBM i (see note).
EntireX Broker Stubs	How to install the EntireX Broker stubs under IBM i.



**Note:** The EntireX RPC Server for IBM i of EntireX version 7.1.1 running under IBM i (AS/400) will no longer be supported in the next version of EntireX. We strongly recommend using the new *RPC Server for AS/400* or the EntireX Adapter. See also *Connection Parameters for AS/400 Connections*.

### Related Literature

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- *Administering Broker Stubs under IBM i*
- *EntireX RPC Server Return Codes*
- *Administering the RPC Server*
- *Using the C Wrapper*
- *Using the COBOL Wrapper*
- *Using EntireX RPC for RPG under IBM i*
- *Using EntireX RPC for CL under IBM i*

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# 1 About this Documentation

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## Document Conventions

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Convention	Description
<b>Bold</b>	Identifies elements on a screen.
Monospace font	Identifies service names and locations in the format <i>folder.subfolder.service</i> , APIs, Java classes, methods, properties.
<i>Italic</i>	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 (...).

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## **Data Protection**

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Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

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## 2 Installing the EntireX RPC Server under IBM i

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**Note:** The EntireX RPC Server for IBM i of EntireX version 7.1.1 running under IBM i (AS/400) will no longer be supported in the next version of EntireX. We strongly recommend using the new *RPC Server for AS/400* or the EntireX Adapter. See also *Connection Parameters for AS/400 Connections*. This chapter refers to the deprecated RPC Server for IBM i.

The EntireX RPC Server for IBM i enables you to call server programs written in all ILE-based languages, for example C, COBOL, RPG. This chapter describes how to install this (deprecated) RPC server under IBM i

See *Platform Coverage* for full platform information.

The implementation under IBM i is based on the UNIX code, therefore, use the UNIX parameters for the IBM i environment, see *Setting up Broker Instances*. However, some features provided under UNIX are not supported under IBM i, see *Features Currently not Supported*.

## Features Currently not Supported

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Secure Sockets Layer (SSL) is not supported with this deprecated RPC server. For SSL transport we recommend using the new RPC Server for AS/400 instead. See *Using SSL/TLS with the RPC Server* in the RPC Server for AS/400 documentation.

## Installation Steps

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**Note:** *vrsp* stands for the current version, release, service pack, and optionally a patch level.

Installation comprises the following steps:

- [Step 1: Check the Product Library](#)
- [Step 2: Copy the Installation Kit to Disk](#)
- [Step 3: Verify the Contents of the \\*SAVF File](#)

- [Step 4: Restore the \\*SAVF File](#)

### Step 1: Check the Product Library

A successful Broker ACI installation on your IBM i machine is a prerequisite to install the RPC server. Software AG recommends you to keep the RPC server environment in the library EXX, in which your Broker ACI was installed.

If this library does not yet exist, create it with the command `CRTLIB EXX`.

### Step 2: Copy the Installation Kit to Disk

The product is delivered in a data set with the name `../OS400/EXPvrsp` on your EntireX installation DVD.

#### ➤ To copy the installation file to your IBM i disk

- 1 Use the command `CRTSAVF` to create an empty IBM i \*SAVF file, named `EXP vrsp`, on your IBM i machine in a library of your choice.
- 2 Use FTP to transfer the unzipped PC file `EXP vrsp` to the corresponding IBM i save file using the FTP option "binary".

**Step 3: Verify the Contents of the \*SAVF File**

➤ To verify the contents of the \*SAVF file `EXPvrsp`

- Use the IBM i command `DSPSAVF`. The command should display the following objects:

Object	Type	Description	
XSERVER	*PGM	RPC server program.	
STR_RPCSRV	*PGM	Sample RPC server starting procedure.	
EXPCRTLOG	*PGM	Sample procedure to create the physical log file.	
EXPRUNTIME	*SRVPGM	RPC server runtime module.	
EXPMSG	*MSG	EntireX Messages.	
H_EXP	*FILE (PF-SRC)	Header include files for sample C programs. Rename to H before use.	
QCLSRC	*FILE (PF-SRC)	Sources of build procedures .	
		<b>Member</b>	<b>Description</b>
		SERVER_CFG	RPC server configuration to be used by the server startup procedure.
		STR_RPCSRV	Sample procedure to submit/start an RPC server.
		EXPCRTLOG	Procedure to create the physical log file.
EXAMPLE	*SAVF	Save file containing RPC server and RPC client examples.	

## Step 4: Restore the \*SAVF File

### > To restore the \*SAVF file

- Use the command RSTLIB:

```
RSTLIB SAVLIB(EXPvrsp) DEV(*SAVF) SAVF(yoursavlib/EXPvrsp) RSTLIB(EXX)
```

where *yoursavlib* denotes the library into which you transferred the save file during [Step 2](#).

In addition to the Broker ACI installation, the product library EXX should now contain the objects listed in [Step 3](#).

Software AG recommends you not having user objects in this library. Copy modified samples to the user libraries. Source samples mentioned here may change, therefore check all associated program objects for the latest version.

The EntireX RPC server for IBM i is now installed and ready to use.

## Installation Verification

The verification is based on the EntireX RPC calculation example CALC in the IDL file *example.idl*, which is common for all platforms. The IBM i library EXAMPLE provides programs that allow you to test a COBOL RPC client and to run the RPC server with a COBOL or a C application service.

The verification comprises the following steps:

- [Step 1: Restore the EXAMPLE Library](#)
- [Step 2: Verify the RPC COBOL Client](#)
- [Step 3: Verify the RPC Server using COBOL](#)
- [Step 4: Verify the RPC Server using C](#)



**Note:** RPG source examples are currently not provided for the installation verification.

### Prerequisite for all verifications:

The service program EXA (type \*SRVPGM, the Broker ACI/stub) must be available in your library list. You can accomplish this task by adding EXX, where the Broker ACI and the RPC server are usually installed, to your library list.

**Step 1: Restore the EXAMPLE Library**

Before you can begin the verification, you must restore the IBM i library EXAMPLE from the save file EXAMPLE that you downloaded to library EXX during [Step 3](#).

To restore the \*SAVF example file, use the command RSTLIB:

```
RSTLIB SAVLIB(EXAMPLE) DEV(*SAVF) SAVF(EXX/EXAMPLE) RSTLIB(EXAMPLE)
```

The newly created library EXAMPLE should contain the following objects:

Object	Type	Used by example	Description
CALC	*PGM	COBOL server, see <a href="#">Step 3: Verify the RPC Server using COBOL</a>	COBOL server calculation engine (created with BIND_CALC).
CALC_RPG	*PGM	RPC server	RPG Server calculation engine (created with BIND_RCALC).
CALCCLIENT	*PGM	COBOL client, see <a href="#">Step 2: Verify the RPC COBOL Client</a>	COBOL client calculation dialog (created with BINDCCALC). Contains the modules CCALCMAIN, CCALCMENU, CCALC and RPCSRVI.
CRT_CBLMOD	*PGM	all COBOL	Procedure to compile/create COBOL modules.
CRT_C_SRV	*PGM	all C	Procedure to create modules and service programs of DEXAMPLE and EXAMPLE for the RPC Server for C. It demonstrates how to <ul style="list-style-type: none"> <li>■ compile the interface object (for example DEXAMPLE in our sample),</li> <li>■ compile a server (for example EXAMPLE in our sample)</li> </ul>
BIND_CALC	*PGM	COBOL server, see <a href="#">Step 3: Verify the RPC Server using COBOL</a>	Procedure to compile and bind the COBOL server.
BIND_CCALC	*PGM	COBOL client, see <a href="#">Step 2: Verify the RPC COBOL Client</a>	Procedure to compile and bind the COBOL client.
BIND_RCALC	*PGM	RPG Server	Procedure to compile and bind the RPG Server.
STR_RPCSRV	*PGM	all servers	Procedure to start the EntireX RPC server.
X_DEXAMPLE	*SRVPGM	C Server, see COBOL client, see <a href="#">Step 4: Verify the RPC Server using C</a>	C Server interface object. To use it, rename to DEXAMPLE.

Object	Type	Used by example	Description	
X_EXAMPLE	*SRVPGM	C Server, see COBOL client, see <a href="#">Step 4: Verify the RPC Server using C</a>	C Server implementation file. This service contains the application logic of the programs CALC, HELLO and POWER. To use it, rename to EXAMPLE.	
CCALCMENU	*FILE (DSPF)	COBOL client, see <a href="#">Step 2: Verify the RPC COBOL Client</a>	COBOL client dialog screen.	
CALC	*MODULE	COBOL client, see <a href="#">Step 2: Verify the RPC COBOL Client</a>	COBOL server calculation engine.	
QCBLLSRC	*FILE (PF-SRC)	all COBOL	COBOL sources for Client and Server.	
			<b>Member</b>	<b>Description</b>
			CALC	COBOL server calculation engine.
			CCALCMENU	COBOL client display file.
			CCALCMAIN	COBOL client dialog program.
			CCALC	COBOL client stub derived from CobolClient1.tpl.
			RPCSRVI	COBOL client Broker Service derived from CobolClient2.tpl.
ERXCOMM	RPC Communication Area copybook to be copied by CALCMAIN, CCALC and RPCSRVI.			
	*FILE (PF-SRC)	all	CL procedures for compiling, binding and building.	
			<b>Member</b>	<b>Description</b>
			BIND_CALC	Procedure to compile and bind the COBOL server.
			BIND_CCALC	Procedure to compile and bind all COBOL client modules.
			BIND_RCALC	Procedure to compile and bind the RPG server.
			CRT_C_SRV	Procedure to create modules and service programs of DEXAMPLE and EXAMPLE for the C server.
CRT_CBLMOD	Compile COBOL modules.			
QCSRC	*FILE (PF-SRC)	all C	Sources for C Server.	
			<b>Member</b>	<b>Description</b>
			DEXAMPLE	Server interface object for C Server.

Object	Type	Used by example	Description				
			EXAMPLE   C server implementation file.				
H	*FILE (PF-SRC)	all C	C header files. It contains the generated header CEXAMPLE.h.				
QRPGLESRC	*FILE (PF-SRC)	all RPG	RPG sources for server. <table border="1" data-bbox="802 426 1317 514"> <thead> <tr> <th>Member</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>CALC_RPG</td> <td>RPG server calculation engine.</td> </tr> </tbody> </table>	Member	Description	CALC_RPG	RPG server calculation engine.
Member	Description						
CALC_RPG	RPG server calculation engine.						

## Step 2: Verify the RPC COBOL Client

In your EntireX network environment, the RPC server program `CALC` must be available for calculating figures. Examples of a `CALC` server program are provided in COBOL. You can also access the sample `CALC` programs installed on your IBM i computer as described in [Step 3](#) and [Step 4](#) below.

### ➤ To verify the COBOL client

- 1 Add the sample library `EXAMPLE` to your library list.
- 2 Call program `CALCCLIENT`.

A menu similar to the following will be displayed:

```

Calculator Menu
-----
Operation: ± (type + - * / to calculate or
              type . to terminate)
Operand 1:  _____
Operand 2:  _____
Result:    _____

Broker-ID: localhost:1971   Server: SRV1

```

- 3 Specify the ID of the remote Broker and the name of the server that provides the `CALC` program. Specify the figures you want to compute and press **Enter**. If the Broker connection fails, you will receive an appropriate error message.

The following modules/files are bound to program `CALCCLIENT`:

Object	Description
CCALCMAIN	The main program logic.
CCALCMENU	The menu display file.
CCALC	The client stub derived from <i>CobolClient1.tpl</i> .
RPCSRVI	The client runtime derived from <i>CobolClient2.tpl</i> .
ERXCOMM	RPC communication area copybook.
EXA	The Broker ACI (stub).

All sources are located in the file `EXAMPLE/QCBLLESRC`.

Use the procedure `BIND_CCALC` to recompile and rebind the modules.



**Note:** Program `CALCCLIENT` expects the server program `CALC` to be located in a library named `EXAMPLE` (as specified in the client stub `CCALC`). If your `CALC` program is located in a different library, you must adjust member `EXAMPLE/QCBLLESRC(CCALC)`. Modify all occurrences of the string "EXAMPLE" to your library name and adapt the associated string length. Then compile and rebind the `CALCCLIENT` program.

### Step 3: Verify the RPC Server using COBOL

To verify the RPC server under IBM i, you can use the COBOL server program `CALC` located in library `EXAMPLE`. When requested by a client process, it provides the four basic arithmetic operations addition, subtraction, multiplication and division.

#### » To verify the Server sample written in COBOL

- 1 Edit the RPC server configuration file `EXAMPLE/QCLSRC(RPCSRV_CFG)`.

You must at least modify the `BrokerID=Localhost:1971` of the remote Broker where you want to register your server and the `ServerName=SRV1` that identifies your service.

- 2 Start the procedure `EXAMPLE/STR_RPCSRV`. It will submit the RPC server named `XSERVER` to a batch queue.

If you want to extend the `SBMJOB` parameters, you can modify/recompile the procedure `EXAMPLE/QCLSRC(STR_RPCSRV)`.



**Note:** The RPC server can only be started as a batch job for multithreading reasons. `ALWMLTTHD=*YES` is a very important parameter for allowing multiple threads. The configuration file `RPCSRV_CFG` described in the previous step will be passed to the `XSERVER`.

- 3 Using the IBM i command `WRKACTJOB`, you should find a job named `RPCSERVER` in your active-job list.
- 4 Use a calculator client process to send a request to your server. As remote client you can run a Java test generated from the Workbench `example.idl`. Or run the IBM i sample `CALCCLIENT` from your IBM i machine as described in [Step 2: Verify the RPC COBOL Client](#).

The RPC server will find and access the COBOL based sample program `CALC` in your library `EXAMPLE` and pass the computed result back to the client. Server stubs are not required for application servers written in COBOL and RPG.

For more details on the server access logic, see *Administering the RPC Server*.

## Step 4: Verify the RPC Server using C

### ➤ To verify the server sample written in C

- 1 Edit the RPC server configuration file `EXAMPLE/QCLSRC(RPCSRV_CFG)`.

You must at least modify the `BrokerID=Localhost:1971` of the remote Broker where you want to register your server and the `ServerName=SRV1` that identifies your service.

- 2 Start the procedure `EXAMPLE/STR_RPCSRV`. It will submit the RPC server named `XSERVER` to a batch queue.

If you want to extend the `SBMJOB` parameters, you can modify/recompile the procedure `EXAMPLE/QCLSRC(STR_RPCSRV)`.



**Note:** The RPC server can only be started as a batch job for multithreading reasons. `ALWMLTTHD=*YES` is a very important parameter for allowing multiple threads. The configuration file `RPCSRV_CFG` described in the previous step will be passed to the `XSERVER`.

- 3 Using the IBM i command `WRKACTJOB`, you should find a job named "RPCSERVER" in your active-job list.
- 4 Rename the C server interface object `X_DEXAMPLE` to `DEXAMPLE` and the C application `X_EXAMPLE` to `EXAMPLE`.



**Note:** under IBM i, a service program of type `*SRVPGM` is equivalent to the UNIX term "shared library".

For more details on the naming convention of servers and interface objects written in C, see *Using the C Wrapper*.

- 5 Use a calculator client process to send a request to your server. As remote client you can run a Java test program generated from the Workbench `example.idl`.

The RPC server will search for the shared libraries `Dlibrary` (the server interface object) and `library` which contains the program functions, e.g. `CALC`. In our sample case, `library` denotes `EXAMPLE`.

The section *Administering the RPC Server* describes in detail how the RPC server distinguishes between calling a shared library with a server interface object and a COBOL or RPG program.



# 3 Installing EntireX Broker Stubs under IBM i

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This chapter describes how to install the Broker stub under IBM i.

See *Platform Coverage* for full platform information.

The implementation on IBM i is based on the UNIX code, therefore, use the UNIX parameters for the IBM i environment, see *Setting up Broker Instances*. However, some features provided under UNIX are not supported under IBM i, see *Features Currently not Supported* below.

## Features Currently not Supported

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Secure Sockets Layer (SSL) is currently not supported.

## Installation Steps

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**Note:** *vrsp* stands for the current version, release, service pack, and optionally a patch level.

The installation comprises the following steps:

- [Step 1: Create a Product Library](#)
- [Step 2: Copy the Installation Data Set to Disk](#)
- [Step 3: Verify the Contents of the \\*SAVF File](#)
- [Step 4: Restore the \\*SAVF File](#)

### Step 1: Create a Product Library

We recommend that you keep the EntireX Broker environment in an IBM i library named *EXX*.

If this library does not yet exist, create it with the IBM i command `CRTLIB EXX`.

### Step 2: Copy the Installation Data Set to Disk

The product is delivered in a data set with the name `../OS400/EXAvrsp` and is stored on your EntireX installation DVD. The data set must be transferred to a `*SAVF` file on your machine. To do this, use the command `CRTSAVF` to create the empty save file `EXAvrsp` in a library of your choice. Then use FTP to transfer the unzipped PC data set to the save file using the FTP option “binary”.

### Step 3: Verify the Contents of the \*SAVF File

To verify the content of the \*SAVF file EXA<sub>vrsp</sub>, use the command DSPSAVF. This command will display the following objects:

Object	Type	Description
EXA	*SRVPGM	EntireX Broker ACI (stub).
EXXZCOMP	*SRVPGM	EntireX Compression Version 7.1.1.
TRANPOT	*SRVPGM	EntireX TCP/IP Transport Version 7.1.1.
X_SECUEXIT	*SRVPGM	EntireX Security Version 7.1.1 (to use, rename it). See <i>Using the Security Exit</i> .
ZLIB	*SRVPGM	zlib compression.
BCOC, BCOCBL, BCOCRPG	*PGM	Client example programs in C, COBOL and RPG.
BCOS, BCOSBL, BCOSRPG	*PGM	Server example programs in C, COBOL and RPG.
EXABCOC	*PGM	Start BCOC client sample program (edit first; read the note under <i>Test Procedures</i> ).
EXABCOCSEC	*PGM	Start BCOC client sample program with Security (edit first; read the note under <i>Test Procedures</i> ).
EXABCOS	*PGM	Start BCOS server sample program (edit first; read the note under <i>Test Procedures</i> ).
EXABCOSSEC	*PGM	Start BCOS server sample program with Security (edit first; read the note under <i>Test Procedures</i> ).
CRT_CBLMOD	*PGM	Compile a COBOL source to an ILE module.
CRT_CM0D	*PGM	Compile a C source to an ILE module.
CRT_RPGMOD	*PGM	Compile an RPG source to an ILE module.
EXABNDPGM	*PGM	Sample: Bind user main program with the EXA service program (the Broker ACI).
EXASETENV	*PGM	Sample: Set environment variables for EXA.
EXACRTLOG	*PGM	Create a physical LOG file.
BCOC, BCOCBL, BCOCRPG	*MODULE	Client example modules in C, COBOL and RPG.
BCOS, BCOSBL, BCOSRPG	*MODULE	Server example modules in C, COBOL and RPG.
EXASRC	*FILE (PF-SRC)	Example source file (sample programs and procedures).
H_EXA	*FILE (PF-SRC)	Include files for sample C programs. Rename to H before use.
QCBLLSRC	*FILE (PF-SRC)	COBOL copybooks for sample COBOL programs.
QRPGLESRC	*FILE (PF-SRC)	RPG copybooks for sample RPG programs.
QSRVSRV	*FILE (PF-SRC)	Export definitions for data and procedures.

## Step 4: Restore the \*SAVF File

To restore the \*SAVF file use the command RSTLIB:

```
RSTLIB SAVLIB(EXAvrsp) DEV(*SAVF) SAVF(EXAvrsp) RSTLIB(EXX)
```

After you have restored the save file, the product library EXX should at least contain the objects listed in step 3.

Software AG recommends you not putting user objects in this library. Copy modified samples to the user libraries. CL samples mentioned here may change, therefore check all associated program objects for the latest version.

The EntireX Broker ACI for IBM i is now installed and ready to be bound to a user-developed application environment.

## Verifying the Installation of the Broker Stubs

---

This package contains test programs (BCOS, BCOC) and example programs for binding (LINKPGM).

### Test Programs

There are two types of programs to test the connection to the remote Broker.

- BCOS, BCOSCBL and BCOSRPG

These programs act as servers. When they have been registered with the remote Broker, they wait for incoming calls from the client programs BCOC, BCOCBCL and BCOCRPG, respectively, and respond immediately.

- BCOC, BCOCBCL and BCOCRPG

These programs act as clients. They attach in non-conversational mode to one service and send data to the registered server programs BCOS, BCOSCBL and BCOSRPG, respectively.

The file EXASRC contains the sources of the programs listed above; they are available in C, COBOL (...CBL) and RPG (...RPG).

Prerequisite for the test is a running remote Broker. To proceed, you need to know the Broker ID (*brokerid*), the port number (*portno*) and, optionally, the API (ACI) version of your Broker kernel (*APIversion*).

1. In two interactive sessions, set the \*CURLIB to library EXX.
2. Check that the log file in library EXX exists. If it does not exist, create it using the example program EXACRTLOG.

3. In session 1, execute the command:

```
Call BCOS ('-b brokerid: portno ' '- APIversion ')
```

4. In session 2, execute the command:

```
Call BCOC ('-b brokerid: portno ' '- APIversion ')
```

The steps above use the C samples, the samples for COBOL and RPG (see the program names above) can be used with the same parameters. The COBOL and RPG samples have less screen output than the C sample.

With Broker Kernel API Version 6 and the Broker ID Localhost, the screen output of BCOC will look similar to this:

```
CLIENT: ETB Version 2
CLIENT: Number of repeats (10)
CLIENT: Broker ID Localhost:3930
CLIENT: Broker ID pcba12:6099
CLIENT: Using default class ACLASS
CLIENT: Using default server ASERVER
CLIENT: Using default service ASERVICE
CLIENT: Maximum stub ACI version: 7
CLIENT: Maximum kernel ACI version: 6
CLIENT: Kernel Version 6.2.1.00 Platform UNIX

CLIENT: Using ACI version: 6
Request issued (9, 2037)
Request issued (8, 2037)
Request issued (7, 2037)
Request issued (6, 2037)
Request issued (5, 2037)
Request issued (4, 2037)
Request issued (3, 2037)
Request issued (2, 2037)
Request issued (1, 2037)
Request issued (0, 2037)
CLIENT: Test successfully performed
Press ENTER to end terminal session.
```

The screen output of BCOS will look similar to this:

```

SERVER: ACI Version 6
SERVER: Number of repeats (10)
SERVER: Broker ID Localhost:3930
SERVER: Using default class ACLASS
SERVER: Using default server ASERVER
SERVER: Using default service ASERVICE
SERVER: Maximum stub ACI version: 7
SERVER: Maximum kernel ACI version: 6
SERVER: Kernel Version 6.2.1.00 Platform UNIX

SERVER: Using ACI version: 6
Incoming data (2037, 9)
Incoming data (2037, 8)
Incoming data (2037, 7)
Incoming data (2037, 6)
Incoming data (2037, 5)
Incoming data (2037, 4)
Incoming data (2037, 3)
Incoming data (2037, 2)
Incoming data (2037, 1)
Incoming data (2037, 0)
SERVER: Test successfully performed
Press ENTER to end terminal session.

```

If it does, the test with the remote Broker was successful.

### Test Procedures

To perform the test programs, you can also modify and use the sample procedures located in the source file EXASRC:

Procedure	Description	Programs called.
EXABCOC	Client test procedure	<u>BCOC</u> , BCOCCL, BCOCRPG.
EXABCOCSEC	Client test procedure with Security parameters	<u>BCOC</u> only.
EXABCOS	Server test procedure	<u>BCOS</u> , BCOSCL, BCOSRPG.
EXABCOSSEC	Server test procedure with Security parameters	<u>BCOS</u> only.

 **Note:** By default, all procedures call the “C” flavor of the client and server programs, i.e. BCOC and BCOS.

To call the relevant COBOL (BCOCCBL, BCOSCBL) or RPG (BCOCRPG, BCOSRPG) programs, you must modify the procedures listed above accordingly. After having adjusted the Broker ID, Broker Version and Security parameters, you must compile the sources and bind the created modules to executable \*PGM programs. For compiling, use the procedure CRT\_CM0D, CRT\_CBLMOD or CRT\_RPGMOD. For binding, use the procedure EXABNDPGM.

All sample programs incorporate the ACI Broker control block definitions during compilation. The relevant include file and copybooks are located in:

Include source file	Copy member	Description
H	ETBCDEF	C ACI definitions for BCOS and BCOC.
	ETBCINF	Broker API definitions for Command/Info Services using C. See <i>Broker Command and Information Services</i> .
QCBLLSRC	COBDEF	COBOL ACI definitions for BCOSCBL and BCOCBBL.
	COBINF	Broker API definitions for Command/Info Services using COBOL. See <i>Broker Command and Information Services</i> .
QRPGLESRC	RPGDEF	RPG ACI definitions for BCOSRPG and BCOCRPG.

## Upgrading from Version 5.3, 6.1 and 6.2

### Step 1: Make a Backup

Make a backup of the existing version in library EXX.

### Step 2: Install Latest EntireX ACI Version

Perform the steps listed in [Installation Steps](#) above.

All program and sample files in the library EXX will be replaced.

### Step 3: Bind the Application with latest ACI Version

All application server programs that use the Broker stub (ACI) must be rebound with the server program EXA.

To perform this step, you can use the command CRTPGM (see CL example EXABNDPGM).

Using command DSPPGMREF (Display Program Reference) you can display the service programs that are currently referenced to your application.

If you use Natural RPC, you must rebound the Natural Broker Wrapper program NXWRAPPR located in your library NXW<sub>vrs</sub>.

