



NATURAL

Natural
SYSRPC Utility
Version 3.1.6 for Mainframes



This document applies to Natural Version 3.1.6 for Mainframes and to 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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SYSRPC Utility - Overview

This documentation describes the Natural SYSRPC utility which is used to maintain remote procedure calls.

New Features with Natural RPC Version 5.1

With Natural RPC (Remote Procedure Call) Version 5.1, the Service Directory maintenance function provides new features. This documentation covers both the new features of the Service Directory under Natural RPC 5.1 and the previous features under Natural RPC 3.1.

For a summary of the new features, see Natural RPC Version 5.1.1 in the Natural 3.1.6 Release Notes for Mainframes.

Related topics:

- For information on how to apply the SYSRPC utility functions to establish a framework for communication between server and client systems, refer to the Natural RPC (Remote Procedure Call) documentation.
- For an explanation of expressions relevant to the SYSRPC utility see also Definition of Terms in the overview page of the Natural RPC documentation.

The SYSRPC Utility documentation covers the following topics:

 Basic Functionality	Invoking and terminating SYSRPC and commands, functions and options provided.
 Service Directory Maintenance: RPC 5.1 RPC 3.1	Maintaining client/server connections.
 Stub Generation	Generating client stubs.
 Parameter Maintenance	Modifying Natural RPC settings.
 Server Command Execution: RPC 5.1 RPC 3.1	Ping and Terminate.
 Remote Directory Maintenance	Maintaining client/server connections for a remote directory server.

SYSRPC - Basic Functionality

This section covers the following topics:

- Invoking SYSRPC
 - Terminating SYSRPC
 - Help
-

Invoking SYSRPC

There are two ways of invoking the SYSRPC utility:

To invoke SYSRPC online from a Natural library

- Enter the direct command SYSRPC.
The Client Maintenance screen of the SYSRPC utility appears.

To invoke SYSRPC online from the Natural Main Menu

1. Select Maintenance and Transfer Utilities.
The corresponding menu is displayed.
2. Select Maintain Remote Procedure Calls.
The Client Maintenance screen of the SYSRPC utility appears.

From the Client Maintenance screen, you can invoke all functions available for RPC maintenance:

- Service Directory Maintenance
(under Natural RPC 5.1 or Natural RPC 3.1)
- Stub Generation
- Parameter Maintenance
- Server Command Execution
(under Natural RPC 5.1 or Natural RPC 3.1)
- Remote Directory Maintenance

See the corresponding sections for a description of these functions.

Terminating SYSRPC

To exit the SYSRPC main menu

- In the Code field, enter a period (.).
Or choose PF3/Exit.

Help

To invoke the online help function, choose PF1/Help.

SYSRPC - Service Directory Maintenance

Only applicable to Natural RPC Version 5.1.

The Service Directory Maintenance function is used to maintain a service directory in order to connect the client's calling program to a subprogram on a server. The service information is stored in the subprogram NATCLTGS.

Attention:

NATCLTGS is stored in the library SYSRPC. We strongly recommend that you move the generated subprogram NATCLTGS to the application library (or one of its STEPLIBs) used by the server.

For further information on how to apply the Service Directory Maintenance function, refer to Specifying RPC Server Addresses as described in Operating a Natural RPC Environment in the Natural RPC documentation.

This section covers the following topics:

- Service Directory Concept
- Invoking Service Directory Maintenance
- Fields
- Commands and PF Keys
- Defining Logical Node Names and Services

Service Directory Concept

The Service Directory Maintenance has a hierarchical structure with a cascading list to assign subordinate to superior fields. The highest hierarchical level is node and the lowest program. You cannot enter node, server, library and program in the same line. If you do so, a corresponding error message occurs. You need to enter the value of a subordinate field in the lines below the superior field. You can assign several servers to a node, several libraries to a server and several programs to a library.

The Service Directory Maintenance screen provides a maximum of 500 lines for input.

In Example 1 below, two servers are defined for one node. Both servers are connected to the same node: ETB045. The remote CALLNAT to Subprogram SUB1 is executed on Server NRPC001, whereas Subprograms SUB2 and SUB3 are executed on Server NRPC002.

The server names specified here must be identical to the server names used in the Natural parameter module of the server tasks: see the parameter SRVNAME in NTRPC Macro in the Natural Parameter Reference documentation. Analogously, the node name in the service directory must be identical to the node name specified for the server tasks: see the parameter SRVNODE in NTRPC Macro in the Natural Parameter Reference documentation.

Location Transparency

The location transparency is a concept where physical node names can be replaced by logical names or a combination of physical node and server names can be replaced by logical services.

Logical node names and logical services are defined with EntireX and are assigned to physical node and server names at Natural runtime.

In Example 1 below, *LOCTRAN in the field Node indicates that field Server contains the logical service NRPC001-LOGICAL. LOGBROKER=NODE in the field Node indicates the logical node name.

Related Topics:

- Defining Logical Node Names and Services below.
- Using Location Transparency in Operating a Natural RPC Environment in the Natural RPC documentation.
- The relevant sections in the EntireX documentation.

Invoking Service Directory Maintenance

Attention:

The Service Directory Maintenance function invokes the Natural editor. As a result, data stored in the source work area may be lost when invoking Service Directory Maintenance. A corresponding message will warn you not to delete any existing entries unintentionally: choose PF12 to cancel the function or choose ENTER to confirm the action and clear the source work area.

 **To invoke the Service Directory Maintenance function**

1. In the Code field of the Client Maintenance screen, enter **SM**.
A window appears saying "Existing service definitions found" (does not appear if the Service Directory is empty).
2. In the Code field, enter **A** (default) to append a new definition,
Or enter **I** to ignore existing services (all existing service definitions will be deleted).

The default view of the Service Directory is displayed as shown in Example 1 below.

Example 1 - Default View of Service Directory

15:32:25	*** NATURAL Remote Procedure Call ***					2002-05-24
	Service Directory					SYSRPC
	Node	Tr.	Server	Logon	Library	Program
1	ETB045_____	B	_____	—	_____	_____
2	_____	—	NRPC001_____	N	_____	_____
3	_____	—	_____	—	SYSTEM_	_____
4	_____	—	_____	—	_____	SUB1_____
5	_____	—	NRPC002_____	Y	_____	_____
6	_____	—	_____	—	SYSTEM_	_____
7	_____	—	_____	—	_____	SUB2_____
8	_____	—	_____	—	_____	SUB3_____
9	*LOCTRAN_____	—	_____	—	_____	_____
10	_____	B	NRPC001-LOGICAL_	N	_____	_____
11	_____	—	_____	—	SYSTEM_	_____
12	_____	—	_____	—	_____	SUB1_____
13	LOGBROKER=NODE	B	_____	N	_____	_____
14	_____	—	NRPC002_____	N	_____	_____
15	_____	—	_____	—	SYSTEM_	_____
16	_____	—	_____	—	_____	SUB2_____
Command ==>						
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---						
Help LocTr Exit < -H +H -P +P Top Bot> Canc						

Example 2 - Extended Node/Server View of Service Directory

14:48:33	*** NATURAL Remote Procedure Call ***			2002-05-29
	Service Directory			SYSRPC
	Node	Tr.	Server	Logon
1	ETB045_____	B	_____	-
2	_____	-	NRPC001_____	N
3	_____	-	_____	-
4	_____	-	_____	-
5	_____	-	NRPC002_____	Y
6	_____	-	_____	-
7	_____	-	_____	-
8	_____	-	_____	-
9	*LOCTRAN_____	-	_____	-
10	_____	B	NRPC001-LOGICAL_____	N
11	_____	-	_____	-
12	_____	-	_____	-
13	LOGBROKER=NODE_____	B	_____	N
14	_____	-	NRPC002_____	N
15	_____	-	_____	-
16	_____	-	_____	-
Command ==>				
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---				
Help LocTr Exit < -H +H -P +P Top Bot> Canc				

Fields

The Service Directory screen contains the following input fields (one entry per line):

Field	Description						
Node	<p>The name of the node to which the remote CALLNAT is sent. See also Definition of Terms in the Natural RPC documentation.</p> <p>Maximum input:</p> <table> <tr> <td>Default view of the Service Directory:</td> <td>16 characters,</td> </tr> <tr> <td>Extended node/server view of the Service Directory:</td> <td>32 characters,</td> </tr> <tr> <td>Using the window Location Transparency (see PF2 below):</td> <td>192 characters.</td> </tr> </table>	Default view of the Service Directory:	16 characters,	Extended node/server view of the Service Directory:	32 characters,	Using the window Location Transparency (see PF2 below):	192 characters.
Default view of the Service Directory:	16 characters,						
Extended node/server view of the Service Directory:	32 characters,						
Using the window Location Transparency (see PF2 below):	192 characters.						
Server	<p>The name of the server on which the CALLNAT is to be executed. See also Definition of Terms in the Natural RPC documentation.</p> <p>Maximum input:</p> <table> <tr> <td>Default view of the Service Directory:</td> <td>16 characters,</td> </tr> <tr> <td>Extended node/server view of the Service Directory:</td> <td>32 characters,</td> </tr> <tr> <td>Using the window Location Transparency (see PF2 below):</td> <td>192 characters.</td> </tr> </table>	Default view of the Service Directory:	16 characters,	Extended node/server view of the Service Directory:	32 characters,	Using the window Location Transparency (see PF2 below):	192 characters.
Default view of the Service Directory:	16 characters,						
Extended node/server view of the Service Directory:	32 characters,						
Using the window Location Transparency (see PF2 below):	192 characters.						
Library	The name of the library on which your client application is running. SYSTEM is also allowed.						
Program	The name of the remote subprogram to be accessed from the client.						
Logon	<p>Initiates a Natural logon to the server.</p> <p>This is possible on server or node level and applies to all definitions made on a hierarchically lower level.</p> <p>For example, if the LOGON option has been set for a certain server, it applies to all associated library and subprogram definitions.</p> <p>Possible values are:</p> <table> <tr> <td>Y</td> <td>If set to Y (Yes), the client initiates a Natural logon to the server with the library name of the current library on the client, regardless of the library specified in the Service Directory.</td> </tr> <tr> <td>N</td> <td>If set to N (No) or, if no value is entered, no logon is initiated.</td> </tr> <tr> <td>blank</td> <td></td> </tr> </table> <p>After the remote CALLNAT has been executed (successfully or not), the server library is reset to its previous state. For more information, see Using the Logon Feature in the Natural RPC documentation.</p> <p>See also Server Command Execution.</p>	Y	If set to Y (Yes), the client initiates a Natural logon to the server with the library name of the current library on the client, regardless of the library specified in the Service Directory.	N	If set to N (No) or, if no value is entered, no logon is initiated.	blank	
Y	If set to Y (Yes), the client initiates a Natural logon to the server with the library name of the current library on the client, regardless of the library specified in the Service Directory.						
N	If set to N (No) or, if no value is entered, no logon is initiated.						
blank							
Tr.	<p>Transport method. Possible values are:</p> <table> <tr> <td>B</td> <td>EntireX Broker ACI protocol. Default Value.</td> </tr> <tr> <td>C</td> <td>Only applies to OpenVMS: Entire Net-work CSCI protocol.</td> </tr> </table>	B	EntireX Broker ACI protocol. Default Value.	C	Only applies to OpenVMS: Entire Net-work CSCI protocol.		
B	EntireX Broker ACI protocol. Default Value.						
C	Only applies to OpenVMS: Entire Net-work CSCI protocol.						

Commands and PF Keys

Below is information on:

- Line Commands
- Direct Commands and PF Keys

Line Commands

The line commands available to edit the Service Directory screen are listed below.

Enter a line command at the beginning of a line, that is, overwrite the sequential number and choose ENTER.

See also To copy or move a block of lines below and the direct command RESET.

Line Command	Function
A	Copies/moves the block of line marked with CC or MM (see below) below the line in which the command was entered.
CC	Delimits a block of lines to be copied.
D	Deletes the line marked.
DD	Delimits and deletes a block of lines. Delimit a block of lines by entering the command in the first and the last line of the block and choose ENTER to execute the command.
I	Inserts five empty lines below the line in which the command was entered.
MM	Delimits a block of lines to be moved.
P	Copies/moves the block of lines marked with CC or MM above the line in which the command was entered.

To copy or move a block of lines

1. At the beginning of the line where the block starts, enter CC or MM.
2. At the beginning of the line where the block ends, enter CC or MM.
3. Choose ENTER.
The line commands disappear, the sequence numbers are displayed again and the block has been marked.
4. Go to the beginning of the line where you want to place the block and enter A (after) to copy or move the block **below** this line.
Or enter P (prior) to copy or move the block **above** this line.
Note that you can only execute A or P on lines with at least one field filled.
5. Choose ENTER.

Direct Commands and PF Keys

The following direct commands and PF keys are available in the Service Directory screen:

Direct Command	PF Key	Function
<u>EXPIRATION</u>		<p>The remote directory data are loaded at runtime. The expiration time determines the period of validity of this data. If directory data are requested after the expiration time set, they will automatically be reloaded. If expiration time is set to 0 seconds, the remote directory data will not be reloaded.</p> <p>With the direct command EXPIRATION, enter an expiration time in seconds, for example, EXPIRATION 86400. Maximum is an 8-digit number.</p> <p>If you do not provide a parameter with the command, the Expiration Time window appears where you can display or modify the current time.</p>
RESET		Resets the marks set with the line commands CC, MM and DD as described in Line Commands above. Note that you must first remove the erroneous line command(s) entered.
	PF1	Invokes the editor online help.
	PF2	Invokes the Location Transparency window where you can define a logical node name or a logical service as described in Defining Logical Node Names and Services below.
	PF3	Exit. Prompts you to save modifications and exit the Service Directory screen.
<	PF4	<p>Displays the extended view of the fields Node and Server. The extended node/server view does not display the fields Library and Program as shown in Example 2 above.</p> <p>Choose PF11 to switch back to the default view.</p>
-H	PF5	Scrolls half a page backward/forward.
+H	PF6	
-P	PF7	Scrolls one page backward/forward.
+P	PF8	
TOP	PF9	Scrolls to the beginning of the list.
BOT	PF10	Scrolls to the end of the list.
>	PF11	Switches back to the default view of the Service Directory (see Example 1) if the extended view of the fields Node and Server view was invoked earlier by choosing PF4.
<u>CANCEL</u>	PF12	Exits the Service Directory screen without saving any modification.

Defining Logical Node Names and Services

Logical node names or logical services can only be defined for node or server fields that already contain any values.

Note that defining a logical service, the original (physical) node name will be replaced by *LOCTRAN and it is **not** possible to automatically convert back logical node names or logical services. To remove logical names and services, see below.

 **To define a logical service**

- Place the cursor at a Server field and choose PF2/LocTr.
The window "Location Transparency - Logical Service" appears.
- If desired, modify the existing values.
- Choose ENTER.
The window Server Type Conversion appears and provides the following two options:
 - Enter Y (Yes) to confirm the conversion.
The value in the field Node that relates to the specified server is replaced by *LOCTRAN. This indicates that a node/server combination was converted into a logical service.
 - Enter any character (except Y) or do not enter any value to cancel the function.
The physical node and server names are retained.

 **To define a logical node name**

- Place the cursor at a Node field and choose PF2/LocTr.
The window "Location Transparency - Logical Node Name" appears with the preset value of LOGBROKER=*name*
where *name* denotes the logical Broker name.
If desired, modify *name* (but do not modify LOGBROKER=).
- Execute or cancel the function:
 - Choose ENTER to confirm the conversion.
The physical node name was converted into a logical name.
 - Choose PF12 to cancel the function.
The physical node name is retained.

 **To remove a logical node name or logical service**

- For a logical node name: in the Node field, remove the string LOGBROKER=.

For a logical service: delete the logical service and insert a physical server(s) by using the line commands **D** and **I** as described in the relevant section above.

SYSRPC - Service Directory Maintenance

Only applicable to Natural RPC Version 3.1.

The Service Directory Maintenance function is used to maintain a service directory in order to connect the client's calling program to a subprogram on a server. The service information is stored in the subprogram NATCLTGS.

Attention:

NATCLTGS is stored in the library SYSRPC. We strongly recommend that you move the generated subprogram NATCLTGS to the application library (or one of its STEPLIBs) used by the server.

For further information on how to apply the Service Directory Maintenance function refer to Specifying RPC Server Addresses as described in Operating a Natural RPC Environment in the Natural RPC documentation.

This section covers the following topics:

- Invoking Service Directory Maintenance
 - Fields
 - Commands and PF Keys
-

Invoking Service Directory Maintenance

Attention:

The Service Directory Maintenance function invokes the Natural editor. As a result, data stored in the source work area may be lost when invoking Service Directory Maintenance. A corresponding message will warn you not to delete any existing entries unintentionally: choose PF12 to cancel the function or choose ENTER to confirm the action and clear the source work area.

 **To invoke the Service Directory Maintenance function**

1. In the Code field of the Client Maintenance screen, enter **SM**.
A window appears saying "Existing service definitions found" (does not appear if the Service Directory is empty).
2. In the Code field, enter **A** (default) to append a new definition,
Or enter **I** to ignore existing services (all existing service definitions will be deleted).
The Service Directory screen, similar to the one below, is displayed:

10:56:08	*** NATURAL Remote Procedure Call ***				2001-03-09
	Service Directory				SYSRPC
	NODE	SERVER	LIBRARY	PROGRAM	LOGON
1	ETB045__	_____	_____	_____	-
2	_____	NRPC001_	_____	_____	-
3	_____	_____	SYSTEM__	_____	-
4	_____	_____	_____	SUB1____	-
5	_____	NRPC002_	_____	_____	-
6	_____	_____	SYSTEM__	_____	-
7	_____	_____	_____	SUB2____	-
8	_____	_____	_____	SUB3____	-
9	_____	_____	_____	SUB4____	-
10	_____	_____	_____	_____	-
11	_____	_____	_____	_____	-
12	_____	_____	_____	_____	-
13	_____	_____	_____	_____	-
14	_____	_____	_____	_____	-
15	_____	_____	_____	_____	-
16	_____	_____	_____	_____	-
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---					
Help Exit -H +H -P +P TOP BOT Canc					

The Service Directory Maintenance has a hierarchical structure with a cascading list to assign subordinate to superior fields. The highest hierarchical level is node and the lowest program. You cannot enter node, server, library and program in the same line. If you do so, a corresponding error message occurs. You need to enter the value of a subordinate field in the lines below the superior field. You can assign several servers to a node, several libraries to a server and several programs to a library.

The Service Directory Maintenance screen provides a maximum of 500 lines for input.

On the Service Directory screen above, two servers are defined for one node. Both servers are connected to the same node ETB045. The remote CALLNAT to subprogram SUB1 is executed on server NRPC001, whereas subprograms SUB2, SUB3 and SUB4 are executed on server NRPC002.

The server names specified here must be identical to the server names used in the Natural parameter module of the server tasks: see the parameter SRVNAME in NTRPC Macro in the Natural Parameter Reference documentation. Analogously, the node name in the service directory must be identical to the node name specified for the server tasks: see the parameter SRVNODE in NTRPC Macro in the Natural Parameter Reference documentation.

Fields

The Service Directory screen contains the following input fields (one entry per line):

Field	Description
NODE	The name of the node to which the remote CALLNAT is sent. See also Definition of Terms in the Natural RPC documentation.
SERVER	The name of the server on which the CALLNAT is to be executed. See also Definition of Terms in the Natural RPC documentation.
LIBRARY	The name of the library on which your client application is running. SYSTEM is also allowed.
PROGRAM	The name of the remote subprogram to be accessed from the client.
LOGON	<p>Initiates a Natural logon to the server.</p> <p>This is possible on server or node level and applies to all definitions made on a hierarchically lower level.</p> <p>For example, if the LOGON option has been set for a certain server, it applies to all associated library and subprogram definitions.</p> <p>Possible values are:</p> <p>Y If set to Y (Yes), the client initiates a Natural logon to the server with the library name of the current library on the client, regardless of the library specified in the Service Directory.</p> <p>N If set to N (No) or, if no value is entered, no logon is initiated.</p> <p>blank</p> <p>After the remote CALLNAT has been executed (successfully or not), the server library is reset to its previous state. For more information, see Using the Logon Feature in the Natural RPC documentation.</p> <p>See also Server Command Execution.</p>

Commands and PF Keys

Below is information on:

- Line Commands
- Direct Commands and PF Keys

Line Commands

The line commands available to edit the Service Directory screen are listed below.

Enter a line command at the beginning of a line, that is, overwrite the sequential number and press ENTER.

See also To copy or move a block of lines below and the direct command RESET.

Line Command	Function
A	Copies/moves the block of line marked with CC or MM (see below) below the line in which the command was entered.
CC	Delimits a block of lines to be copied.
D	Deletes the line marked.
DD	Delimits and deletes a block of lines. Delimit a block of lines by entering the command in the first and the last line of the block and press ENTER to execute the command.
I	Inserts five empty lines below the line in which the command was entered.
MM	Delimits a block of lines to be moved.
P	Copies/moves the block of lines marked with CC or MM above the line in which the command was entered.

 **To copy or move a block of lines**

1. At the beginning of the line where the block starts, enter CC or MM.
2. At the beginning of the line where the block ends, enter CC or MM.
3. Press ENTER.
The line commands disappear, the sequence numbers are displayed again and the block has been marked.
4. Go to the beginning of the line where you want to place the block and enter A (after) to copy or move the block **below** this line.
Or enter P (prior) to copy or move the block **above** this line.
Note that you can only execute A or P on lines with at least one field filled.
5. Press ENTER.

Direct Commands and PF Keys

The following direct commands and PF keys are available in the Service Directory screen:

Direct Command	PF Key	Function
RESET		Resets the marks set with the line commands CC, MM and DD as described in Line Commands above. Note that you must first remove the erroneous line command(s) entered.
	PF1	Help. Invokes the editor online help for the Service Directory
	PF3	Prompts you to save modifications and exit the Service Directory screen.
	PF12	Cancel. Exits the Service Directory screen without saving any modification.
+P	PF8	Scrolls one page forward/backward.
-P	PF7	
+H	PF6	Scrolls half a page forward/backward.
-H	PF5	
TOP	PF9	Scrolls to the beginning of the list.
BOT	PF10	Scrolls to the end of the list.

SYSRPC - Stub Generation

The Stub Generation function is used to generate client stub subprograms. Though stubs are actually not required if automatic Natural RPC execution is used, it may be advantageous to generate them anyway.

For more details, see Stubs and Automatic RPC Execution in the section Operating a Natural RPC Environment in the Natural RPC documentation.

This section covers the following topics:

- Invoking Stub Generation
 - Fields
-

Invoking Stub Generation

Attention:

The Stub Generation function invokes the Natural editor. As a result, data stored in the source work area may be lost when invoking Stub Generation. A corresponding message will warn you not to delete any existing entries unintentionally: choose PF12 to cancel the function or choose ENTER to confirm the action and clear the source work area.

Invoking and using the Stub Generation function

1. In the Code field of the Client Maintenance screen, enter **SG**.
The Generate Client Stub Routine window appears.
2. Enter the name of the stub subprogram to be generated.
The name of the stub subprogram must be the same as the name of the remote CALLNAT program.
The name of the library is preset with SYSRPC and cannot be changed.
We strongly recommend that you move the generated stub to the application library (or one of its STEPLIBs) used by the client.
3. Choose Compression Type 0, 1 or 2 (default is 1); see Using Compression as described in Operating a Natural RPC Environment in the Natural RPC documentation.
4. Choose ENTER.
 - If the subprogram specified in Step 2 already exists in the library specified, a corresponding window is displayed:
Specify **N** (No) and choose ENTER if you do not want to generate a new stub.
You will be returned to the Client Maintenance screen.
Specify **Y** (Yes) and choose ENTER.
The parameter data area of the existing subprogram is displayed in the Stub Generation screen.
 - If the subprogram specified in Step 2 does not exist, an empty Stub Generation screen is displayed.
5. Add or modify the parameters to be used in the stub subprogram.
On the Stub Generation screen, the same editor and line commands apply that are valid for the Service Directory Maintenance function (see the relevant section for Natural RPC Version 5.1 or Natural RPC Version 3.1).
6. Choose ENTER to generate the stub subprogram and to exit.
The stub subprogram is generated in the library specified in Step 2.
If the stub was generated in the library SYSRPC, you must move the stub to the application library or steplib using the appropriate Natural transfer utility (SYSMAIN, SYSTRANS or SYSOBJH). Note that you may have to recatalog the stub sources in the target environment.

Fields

The following fields are provided in the Stub Generation screen:

Field	Description
Attr	The attribute which specifies the parameter as: M (modifiable field), O (output field) or I (input field).
Type	Natural data type, such as N (numeric). Data types C and Handle are not allowed.
Len	Length of the variable. Natural data types A are restricted to 253 bytes, data types B are restricted to 126 bytes. Dynamic variables are not allowed.
Prec	Only applies to data types N (numeric) and P (packed). Optional. Precision of the variable, that is, number of digits after the decimal point.
1./2./3. Dim	Only applies to arrays. Optional. First, second and third dimension of the variable.

Example:

The following example shows 4 modifiable parameters that correspond to the following variable definitions in a Natural program:

```

DEFINE DATA
PARAMETER
1 #X001(A10)
1 #X002(I4)
1 #P003(P5.2)
1 #X004(A100/5,4)
    
```

Stub Generation							
	Attr	Type	Len	Prec	1. Dim	2. Dim	3. Dim
1	M	A	10				
2	M	I	4				
3	M	P	5	2			
3	M	A	100		5	4	1

SYSRPC - Parameter Maintenance

Applies to client sessions only.

The Parameter Maintenance function is used to dynamically (within a session) modify some of the RPC profile parameters set in the NATPARM parameter module.

Attention:

The parameter modifications are retained as long as the user session is active; they are lost when the session is terminated. Static settings are made using the Natural profile parameters.

This section covers the following topics:

- Invoking Parameter Maintenance
 - Fields
-

Invoking Parameter Maintenance

To invoke and use the Parameter Maintenance function

1. In the Code field of the Client Maintenance screen, enter **PM**.
The Client Parameter Maintenance screen appears.
2. Modify the values of the input fields (see below).
3. Choose PF3/Exit to save modifications and exit the Client Parameter Maintenance screen.
Or choose PF12/Cancel to exit without saving any parameter modifications.
The SYSRPC Client Maintenance screen appears.

Fields

The fields below are provided to specify profile parameters.

For further information on profile parameter settings, see NTRPC Macro in Parameter Modules in the Natural Parameter Reference documentation.

Field	Explanation
Timeout	<p>Specifies the number of seconds the client is to wait for an RPC server response.</p> <p>See the profile parameter TIMEOUT as described in the Natural Parameter Reference documentation.</p>
Try Alternative Servers	<p>Specifies whether an RPC client is to try to execute a service on an alternative server (ON) or not (OFF). See also Using an Alternative Server in the Natural RPC documentation.</p> <p>See the profile parameter TRYALT as described in the Natural Parameter Reference documentation.</p>
Compression for AUTORPC = ON	<p>Specifies the compression type for an automatically generated RPC call; see Using Compression as described in the Natural RPC documentation.</p> <p>See the profile parameter COMPR as described in the Natural Parameter Reference documentation.</p> <p>For more information on automatic RPC execution, see Working with Automatic Natural RPC Execution (Natural RPC documentation).</p>
(Server) Node Classification	<p>There are two types of server nodes classified by their node names:</p> <p>ACI Pattern Nodes which can be addressed via the EntireX Broker ACI protocol. (Broker)</p> <p>CSCI Pattern Applies to OpenVMS only. Nodes which can be addressed via the Entire Net-work CSCI protocol.</p> <p>See the profile parameter ACIPATT in the Natural Parameter Reference documentation.</p>

SYSRPC - Server Command Execution

Only applicable to Natural RPC Version 5.1.

The SYSRPC utility provides the server execution commands Ping and Terminate. They are used to control active servers that have been defined in the Service Directory. The Ping command sends an internal message to verify a server connection. Terminate sends an internal message to terminate a server.

Below is information on:

- Invoking Server Command Execution
- Pinging a Server
- Terminating a Server

Invoking Server Command Execution

▶ To invoke Server Command Execution

- In the Code field of the Client Maintenance screen, enter **XC**.
The default view of the Server Command Execution screen appears and displays the current definitions as shown in Example 1:

Example 1 - Default View

14:09:38	*** NATURAL Remote Procedure Call ***	2002-06-12
	Server Command Execution	SYSRPC
	Node	Server
1	ETB045	Message
2		NRPC001
3		NRPC002
4	*LOCTRAN	
5		NRPC001-LOGICAL
6	LOGBROKER=NODE	
7		NRPC002
<hr/> Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--- Help ERR Exit < -H +H -P +P TOP BOT> Canc		

The Server Command Execution screen provides two views:

- The default view which displays the columns Node, Server and Message. The fields under the column Message are truncated and display a maximum of 8 characters.
- The extended view of the fields under the column Message which provide a maximum of 50 characters to display more of the message text. The extended view does not display the column Node and the fields under the column Server are truncated and display a maximum of 16 characters (default view shows 30 characters).
- To activate the extended view of the Server Command Execution screen:
 - Choose PF4.
 - Or, in the command line, enter the less than (<) sign.

A screen is displayed similar to Example 2:

Example 2 - Extended Message View

```

14:14:08          *** NATURAL Remote Procedure Call ***          2002-06-12
                   Server Command Execution                      SYSRPC

      Server      Message
1
2      NRPC001      Natural RPC Server 5.1.1.0 on WNT-x86
3      NRPC002
4
5      NRPC001-LOGICAL
6
7      NRPC002

-----
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  ERR  Exit  <   -H   +H   -P   +P   TOP  BOT>   Canc
    
```

- To switch back to the default view of the Server Command Execution screen:
 - Choose PF11.
 - Or, in the command line, enter the greater than (>) sign.

 **To ping a server**

- In the Code field of the Client Maintenance screen, enter **XC**.
The default view of the Server Command Execution screen is displayed.
- In the empty column between the sequence number and the column Node, in the line(s) which belong to the server(s) to be pinged, enter the command **PI** as shown in Example 3:

Example 3 - Pinging a Server

```

09:49:41          *** NATURAL Remote Procedure Call ***          2002-06-13
                   Server Command Execution                      SYSRPC

      Node      Server      Message
1      ETB045
2      pi      NRPC001
3      NRPC002
4      *LOCTRAN
5      pi      NRPC001-LOGICAL
6      LOGBROKER=NODE
7      NRPC002
    
```

- Choose ENTER.
The server(s) returns the message: "*Server V.R.S.PL on operating system*", where

Server denotes the type of server;
V.R.S.PL is the 1-digit version, *R* the 1-digit release, *S* the 1-digit system maintenance level and *PL* the 1- or 2-digit patch level of the server;
operating system denotes on which operating system the server runs.

Example message: Natural RPC Server 5.1.1.0 on WNT-x86.

- To display more of the message text which appears truncated on the default view of the Server Command Execution screen:
 - Choose PF4.
 - Or, in the command line, enter the less than (<) sign.

Terminating a Server

You can terminate a server from the default or extended view of the Server Command Execution screen. Below is an example of how to terminate a server from the default view.

To terminate a server

1. In the Code field of the Client Maintenance screen, enter **XC**.
The default view of the Server Command Execution screen is displayed.
2. In the empty column between sequence number and column Node, in the line(s) which belongs to the server(s) to be terminated, enter the command **TE**; this is similar to entering the command **PI** as show in Example 3 above.
3. Choose ENTER.

The server returns the message: "Terminating *Server V.R.S.PL* on *operating system*", where

Server denotes the type of server;
V.R.S.PL is the 1-digit version, *R* the 1-digit release, *S* the 1-digit system maintenance level and *PL* the 1- or 2-digit patch level of the server;
operating system denotes on which operating system the server runs.

Example message: Terminating Natural RPC Server 5.1.1.0 on WNT-x86.

4. To display more of the message text which appears truncated on the default view of the Server Command Execution screen:
 - Choose PF4.
 - Or, in the command line, enter the less than (<) sign.

If the LOGON option has been set for a server or a node, logon data (user ID, password and library name) are sent to the server with the TE terminate command, as is usual for the CALLNAT. The Security Token Data window pops up to request user ID and password if no Natural Security is installed on the client side and no logon data are set with the USR1071P user exit for the current Natural session.

If LOGONRQ=ON (see also Using Natural RPC with Natural Security in the Natural RPC documentation) has been set on the server side, logon data must be sent from the client with the TE terminate command.

If Natural Security is installed on the server, the logon data transferred must enable a logon to the library SYSRPC.

Terminating a Server with Replicates

When you are running a server with replicates you must terminate each replicate separately using the TE or Terminate command as described above.

Alternatively, the server can be terminated with the EntireX Broker Control Center or the EntireX System Management Hub.

SYSRPC - Server Command Execution

Only applicable to Natural RPC Version 3.1.

The SYSRPC utility provides the server execution commands Ping and Terminate. They are used to control active servers that have been defined in the Service Directory. The Ping command sends an internal message to verify a server connection. Terminate sends an internal message to terminate a server.

Below is information on:

- Pinging a Server
- Terminating a Server

Pinging a Server

▶ To ping a server

- In the Code field of the Client Maintenance screen, enter **XC**.
A screen appears which shows you the current definitions (see the sample screen below).
- In the empty column between sequence number and Node, in the line(s) which belong to the server(s) to be pinged, enter the command **PI**.

Example screen:

16:45:55		*** NATURAL Remote Procedure Call ***	2001-02-22
		Server Command Execution	SYSRPC
	NODE	SERVER	Message
1	ETB045		
2	pi	NRPC2301	
3	pi	NRPC2302	
4	pi	NRPC2302	
5	ETB050		
6	pi	NRPC3000	

- Choose ENTER.
The server(s) returns the message: "*Server V.R.S.PL on operating system*", where

Server denotes the type of server;
V.R.S.PL is the 1-digit version, *R* the 1-digit release, *S* the 1-digit system maintenance level and *PL* the 1- or 2-digit patch level of the server;
operating system denotes on which operating system the server runs.

Example message: Natural RPC Server 5.1.1.0 on WNT-x86.

Terminating a Server

▶ To terminate a server

1. In the Code field of the Client Maintenance screen, enter **XC**.
A screen appears which shows you the current definitions
2. In the empty column between sequence number and Node, in the line(s) which belongs to the server(s) to be terminated, enter the command **TE**.
The server returns the message: "*Terminating Server V.R.S.PL on operating system*", where

Server denotes the type of server;
V.R.S.PL is the 1-digit version, *R* the 1-digit release, *S* the 1-digit system maintenance level and *PL* the 1- or 2-digit patch level of the server;
operating system denotes on which operating system the server runs.

Example message: Terminating Natural RPC Server 5.1.1.0 on WNT-x86.

If the LOGON option has been set for a server or a node, logon data (user ID, password and library name) are sent to the server with the TE terminate command, as is usual for the CALLNAT. The Security Token Data window pops up to request user ID and password if no Natural Security is installed on the client side and no logon data are set with the USR1071P user exit for the current Natural session.

If LOGONRQ=ON (see also Using Natural RPC with Natural Security in the Natural RPC documentation) has been set on the server side, logon data must be sent from the client with the TE terminate command.

If Natural Security is installed on the server, the logon data transferred must enable a logon to the library SYSRPC.

Terminating a Server with Replicates

When you are running a server with replicates you must terminate each replicate separately using the TE or Terminate command as described above.

Alternatively, the server can be terminated with the EntireX Broker Control Center or the EntireX System Management Hub.

SYSRPC - Remote Directory Maintenance

The Remote Directory Maintenance function is used to maintain a remote directory in order to connect the client's calling program to a subprogram on a server.

For further information on how to apply the Remote Directory Maintenance function, refer to Specifying RPC Server Addresses (Operating a Natural RPC Environment), Using a Remote Directory Server (RDS), and Definition of Terms as described in the Natural RPC documentation.

This section covers the following topics:

- Invoking Remote Directory Maintenance
- Fields
- Commands and PF Keys

Invoking Remote Directory Maintenance



Warning:
If you create a new RDS directory by entering Code C (see below), the existing file will be overwritten.

▶ To invoke and use the Remote Directory Maintenance function

1. In the Code field of the Client Maintenance screen, enter **RD**.
 A window appears.
2. Enter **C** to create a directory.
 Or enter **M** to modify a directory.
 A window appears.
3. Enter an expiration time in seconds (see also Expiration Time below).
 An editor screen appears similar to the one below:

```

-----S 01-----Columns 001 072
====>
***** NODE      L T      SERVER      L T      LIBRARY      L T      PROGRAM      L T
***** ***** top of data *****
000001 ETB01      Y B      NRPC2301      SYSTEM      SUB1
000002                                     SUB2
000003                                     NRCP2301      SYSTEM      SUB3
000004                                     NRPC2302      SYSTEM      SUB4
000005                                     SUB5
000006                                     SUB6
000007 ETB01      NRPC2301  Y          SYSTEM      SUB7
000008                                     SUB1          Y
000009                                     SUB2
000010                                     NRCP2301      SYSTEM      SUB3
000011                                     NRPC2302      SYSTEM      SUB4
000012                                     SUB5
000013 ETB01      Y          NRPC2301      SYSTEM      SUB6
000014                                     SUB1          Y
000015                                     SUB2

000016 ETB01      Y          NRPC2301      SYSTEM      SUB3
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help      Quit  Save  Find  Chng  Up    Down      Canc
    
```

Expiration Time

The remote directory data are loaded at runtime. The expiration time determines the period of validity of this data. If directory data are requested after the expiration time set, they will automatically be reloaded. If expiration time is set to 0 seconds, the remote directory data will not be reloaded.

Note:

If you create a new directory (Code C), to invoke an input line, enter the line command **I** at the beginning of the line "top of data". See also Line Commands below.

Fields

The fields contained in the editor screen of the Remote Directory Service maintenance are identical to the fields described in Fields in the section Service Directory Maintenance for Natural RPC Version 5.1 or Natural RPC Version 3.1. The field **L** is the equivalent to the field LOGON.

In addition to the fields provided in the Service Directory Maintenance, the field **T** (Transport) appears. Valid entries are: **C** for CSCI (OpenVMS only), and **B** for Broker.

Commands and PF Keys

Below is information on:

- Line Commands
- Direct Commands and PF Keys

Line Commands

The line commands available in the editor screen of the Remote Directory Service maintenance are listed below. For further information see Editor Line Commands in the Software AG Editor documentation.

Enter a line command at the beginning of a line, that is, overwrite the sequential number and choose ENTER.

See also To copy or move a block of lines below and the direct command RESET.

Line Command	Function
A	Copies/moves a block of lines marked with C, CC, M or MM (see below) below the line in which the command was entered.
B	Copies/moves a block of lines marked with C, CC, M or MM above the line in which the command was entered.
C	Marks a single line to be copied.
CC	Delimits a block of lines to be copied.
D(<i>n</i>)	Deletes one or <i>n</i> lines beginning with the line in which the command was entered. <i>n</i> can be in the range from 1 to 9.
DD	Marks and deletes a block. Delimit the block of lines by entering the command in the first and last line of the block, and choose ENTER to execute the command.
I(<i>n</i>)	Inserts one or <i>n</i> empty lines below the line in which the command was entered. <i>n</i> can be in the range from 1 to 9.
M	Moves a single line below the line in which the command was entered.
MM	Delimits a block of lines to be moved.

 **To copy or move a block of lines**

1. At the beginning of the line where the block starts, enter CC or MM.
2. At the beginning of the line where the block ends, enter CC or MM.
3. Choose ENTER.
The lines are marked, the message "Block is pending" occurs.
4. Go to the beginning of the line where you want to place the block and enter **A** (after) to copy or move the block **below** this line,
Or enter **B** (before) to copy or move the block **above** this line.
5. Choose ENTER.

Direct Commands and PF Keys

The direct commands and PF Keys available in the editor screen of the Remote Directory Service maintenance are listed below. For further information on direct commands, see Editor Line Commands in the Software AG Editor documentation.

Direct Command	PF Key	Function
RESET		Resets the marks set with the line commands CC, MM, DD (see Line Commands above) or with the direct command CHANGE (see below).
TOP		Scrolls to the beginning of the list.
BOT		Scrolls to the end of the list.
FIND <i>string</i>		Scans the editor for a <i>string</i> of characters, for example: FIND ETB1. Choose PF5 to scan for the next occurrence. See also FIND in the section Main Commands in the Software AG documentation.
CHANGE <i>string1 string2</i>		Replaces character <i>string1</i> by <i>string2</i> , for example: CHANGE ETB1 ETB2. Choose PF6 to replace the next occurrence. See also CHANGE in the section Main Commands in the Software AG documentation.
	PF1	Help. Invokes the editor online help for the Service Directory
	PF3	Quit. Exits the remote directory service screen screen.
	PF4	Saves modifications.
	PF5	Find. Scans for the next occurrence of the character string defined with the direct command FIND (see above).
	PF6	Change. Replaces the next occurrence of the character string defined with the direct command CHANGE (see above).
	PF7	Up. Scrolls one page backward.
	PF8	Down. Scrolls one page forward.
	PF12	Cancel. Exits the Service Directory screen without saving modifications.