

Administering Business Services

This section describes the procedures to administer business services. The following topics are covered:

- Configure the Natural Plug-in
 - Define Security for Domains
 - Audit Security Exceptions for a Connection
 - Audit Domains
 - Audit Business Services
 - Deploy a Domain to Another Repository
 - Deploy a Business Service to Another Repository
 - Access the Communication Log Report
 - Generate a Natural Client
-

Configure the Natural Plug-in

Before using the Natural plug-in for Natural Business Services the first time, you must set up appropriate domain and step library chains. During installation, some domains and steplib chains are automatically installed (for example, the DEMO domain and the DEMO steplib chain). We recommend that you also set up a project domain and steplib chain.

This section covers the following topics:

- Create and Maintain Steplib Configurations
- Create and Maintain Domain Definitions

Create and Maintain Steplib Configurations

This section describes how to create a new step library configuration (steplib chain) and edit an existing steplib chain. A steplib chain identifies where your business service libraries reside on the server. To locate and execute business service modules, you must set up a steplib chain and link it to your business service domain. For more information on steplibs, see Step 1: Define the Steplib Chain.

The following topics are covered:

- Create a New Steplib Configuration
- Modify an Existing Steplib Configuration

Create a New Steplib Configuration

► To create a new steplib configuration:

1. Open the **Business Services** explorer.

For information, see Access Business Services.

2. Expand the **Business Services** node.
3. Expand the **Configuration** node.
4. Open the context menu for **Steplibs**.
5. Select **Add New Steplib Configuration**.

The **StepLib Chain - New** window is displayed. For example:

Name	DBID	FNR
▶	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0

6. Type the name of the steplib chain in Steplib name.
7. Type the names of each library in your steplib chain in the space provided.

Optionally, you can type the database ID (DBID) and file number (FNR) for each library. Your steplib chain can contain up to eight libraries. By default, the FNAT SYSTEM library will be added to the list of libraries in the new steplib chain. If the DBID and FNR are blank, the default FUSER (or FNAT if a SYS* library is specified) will be used.

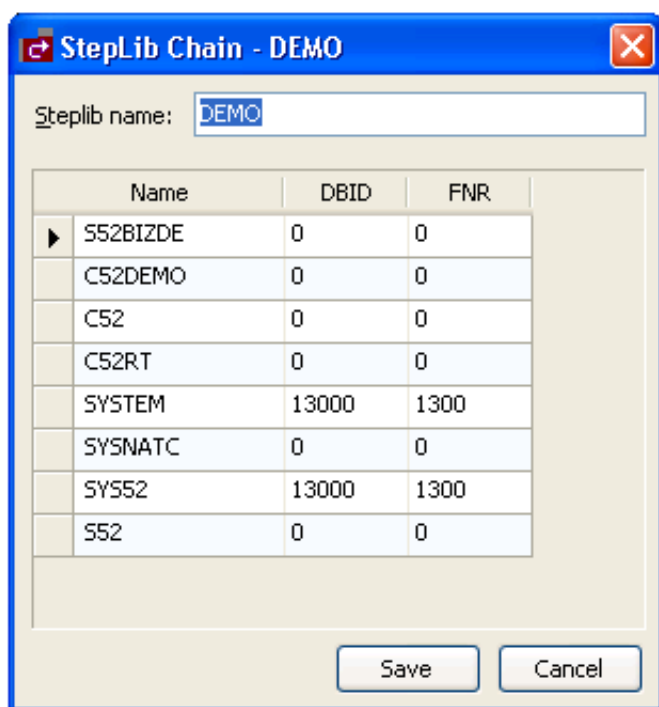
8. Select **Add** to add the new steplib configuration.

Modify an Existing Steplib Configuration

► To modify an existing steplib configuration:

1. Expand the **Steplibs** node in the **Business Services** explorer.
2. Open the context menu for the steplib configuration you want to edit.
3. Select **Edit**.

The **StepLib Chain - SteplibName** window is displayed. For example:



Use this window to:

Task	Procedure
Remove a library from the steplib configuration	Select the library name and select Delete .
Add a library to the steplib configuration	Type the library name and, optionally, DBID and FNR values. Note: You can only add a steplib configuration when there are less than eight libraries listed in the window.

4. Select **Save** to save changes to the steplib configuration.

Note:

If the steplib chains are not step up before using the Business Service wizard, the wizard may not be able to find required modules.

Create and Maintain Domain Definitions

This section describes how to create a new domain and edit an existing domain. Domains are used to group related business services. For more information on domains, see Step 2: Define the Domain.

The following topics are covered:

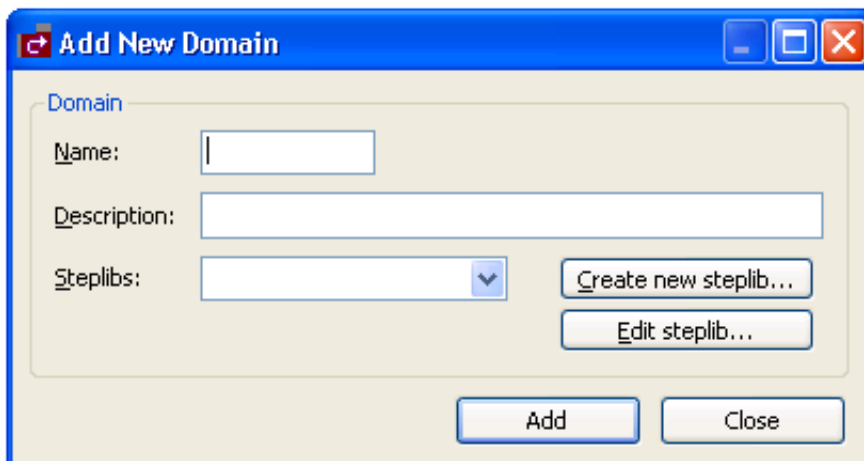
- Create a New Domain
- Modify an Existing Domain

Create a New Domain

▶ **To create a new domain:**

1. Open the context menu for **Domains** in the **Business Services** explorer.
2. Select **Add New Domain**.

The **Add New Domain** window is displayed. For example:



The screenshot shows a dialog box titled "Add New Domain". It has a standard Windows-style title bar with a plus icon on the left and minimize, maximize, and close buttons on the right. The main content area is titled "Domain" and contains three input fields: "Name:" (a single-line text box), "Description:" (a multi-line text box), and "Steplibs:" (a dropdown menu). To the right of the "Steplibs:" dropdown are two buttons: "Create new steplib..." and "Edit steplib...". At the bottom of the dialog are two buttons: "Add" and "Close".

Use this window to name the new domain, provide a description of the domain, and select a steplib chain. Optionally, you can:

Task	Procedure
Create a new steplib configuration	Select Create new steplib . The New Steplib window is displayed. For information, see Create a New Steplib Configuration.
Modify an existing steplib configuration	Select Edit steplib . The Edit Steplib window is displayed. For information, see Modify an Existing Steplib Configuration.

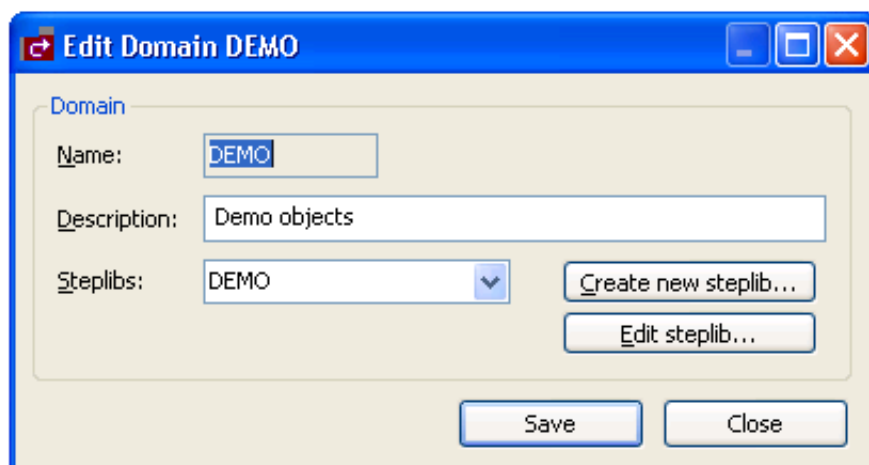
3. Type the name of the domain in **Name**.
4. Type a brief description of the domain in **Description**.
5. Select at least one steplib chain from **Steplibs**.
6. Select **Add** to add the new domain.

Modify an Existing Domain

▶ To modify an existing domain definition:

1. Open the context menu for the domain you want to edit in the **Business Services** explorer.
2. Select **Edit**.

The **Edit Domain *DomainName*** window is displayed. For example:



Use this window to:

Task	Procedure
Change the description of the domain	Type a new description in Description .
Select another steplib chain to use for this domain	Select the new steplib chain in Steplibs .
Create a new steplib configuration	Select Create new steplib . The New Steplib window is displayed. For information, see Create a New Steplib Configuration.
Modify an existing steplib configuration	Select Edit steplib . The Edit Steplib window is displayed. For information, see Modify an Existing Steplib Configuration.

3. Select **OK** to save changes to the domain definition.

Define Security for Domains

Security is applied to a domain by associating the domain with a group. Access can then be granted or revoked at a domain, business service, and/or method level. In addition, the **Disable** option can be used to temporarily disable access to a business service without permanently affecting the security settings.

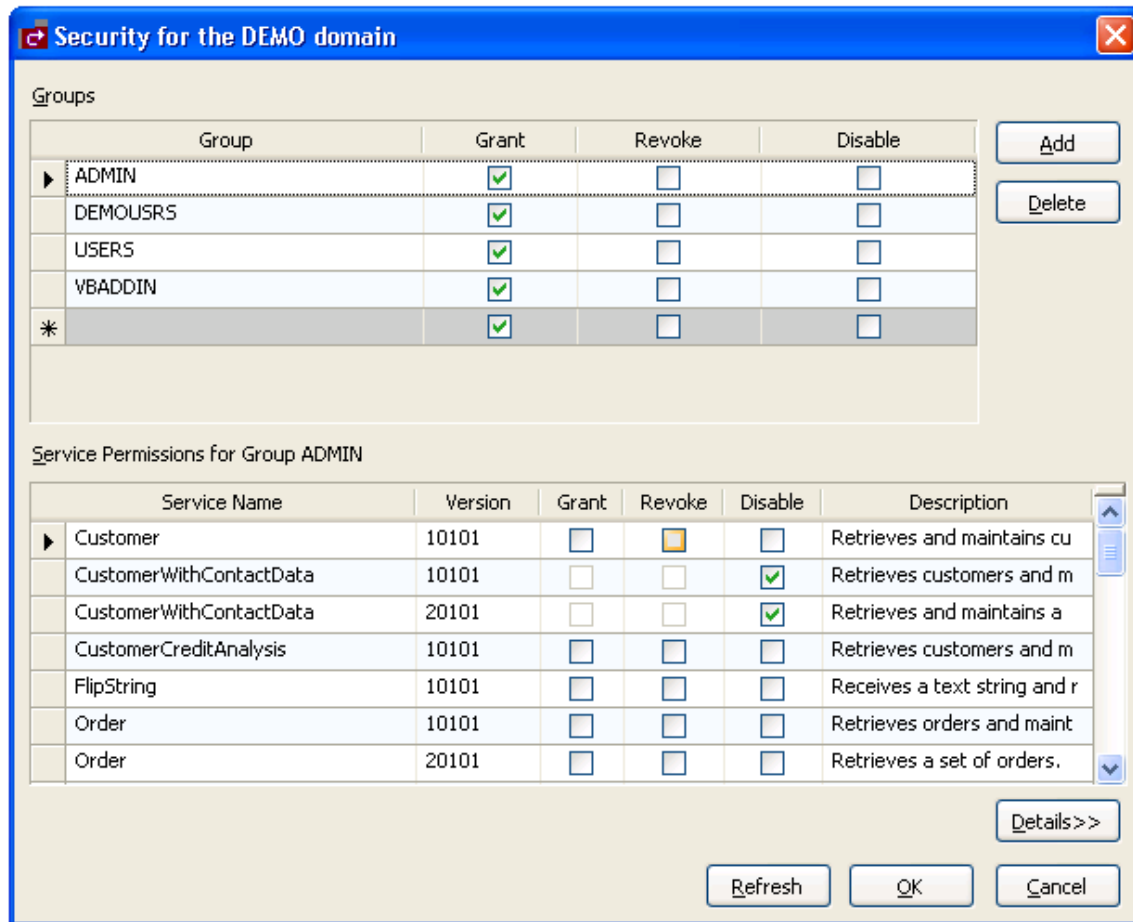
Note:

For more information on defining security, see Server Security Overview.

To define security for a domain:

1. Open the context menu for the domain you want to secure in the **Business Services** explorer.
2. Select **Security**.

The **Security** window is displayed. For example:



This window displays the groups, business services, and methods for the selected domain. (Use the scroll bar to display the methods.)

Tip:

The methods displayed in this window are used by the business service selected in Service Name (the Customer service in the example above). If you are applying method-level security, ensure that you have selected the correct service.

Note:

To return all settings to their original settings when the window was displayed, select **Refresh**.

3. Select **Grant**, **Revoke**, or **Disable** at the group, service and/or method level for the selected domain.

Note:

The **Disable** option temporarily revokes access to a method. When the method is enabled, the previous settings are restored.

If the methods are not displayed, select **Details**.

4. Select **OK** to save the security settings.

Add a Security Group

You can also use the **Security** window to add a security group to the domain.

To add a security group to the domain:

1. Type the name of the group on an empty line in the Groups section.

The empty line is indicated with an asterisk (*).

2. Select **Add**.

The security group is added to the domain.

Delete a Security Group

You can also use the **Security** window to remove a security group from the domain.

To delete (remove) a security group from the domain:

1. Select the group in the Groups section.

2. Select **Delete**.

A confirmation window is displayed.

3. Select **Yes**.

The security group is removed from the domain.

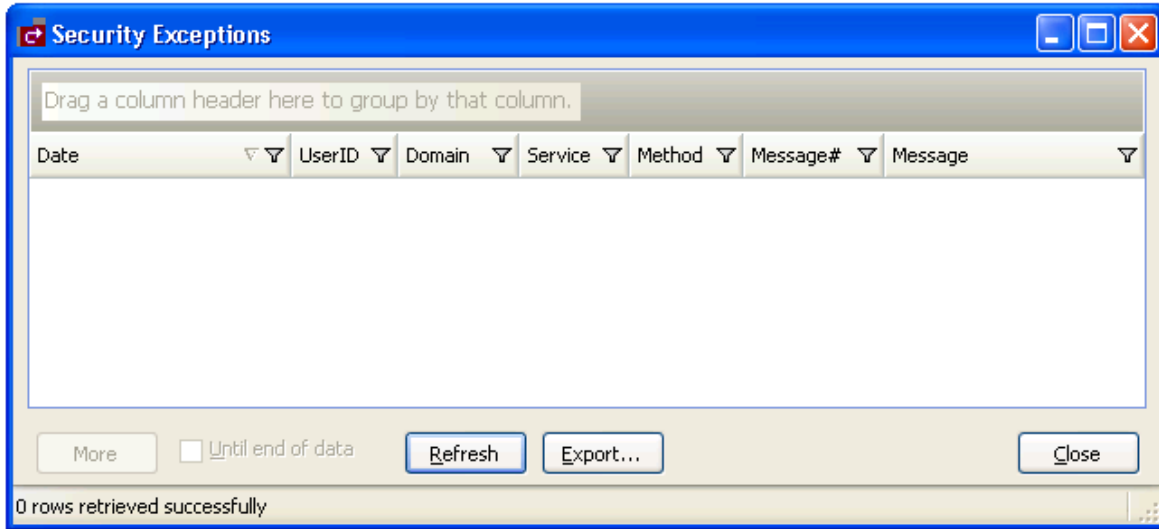
Audit Security Exceptions for a Connection

You can display information on security exceptions for a connection.

To audit security exceptions for a connection:

1. Select **Business Services > Security Audit** on the **Tools** menu.

The **Security Exceptions** window is displayed. For example:



Use this window to display the date of each audit activity, the user ID of the user who performed the action, and the domain, service, and method names. You can also use it to display the message number and text for each exception. Optionally, you can use this window to:

Task	Procedure
Group the results by column	Drag the column heading to the shaded area.
Rearrange the columns	Drag the column heading to the far left of this window (for example, to sort by domain, drag the Domain heading to the left of the Date heading).
Filter the information based on a column heading	Select "Custom" in the column you want to filter and specify the filter criteria in the window that is displayed. For information, see Filter Security Exceptions.
Export the security exceptions to a work file	Select Export and specify the location of the work file.

2. Select **All** in **Date**.
3. Select **Refresh**.

All security exceptions for all dates are displayed.

Note:

If there is more information than can be displayed in one window, select **More** to display the additional activities.

4. Select **Close** to close the **Security Exceptions** window.

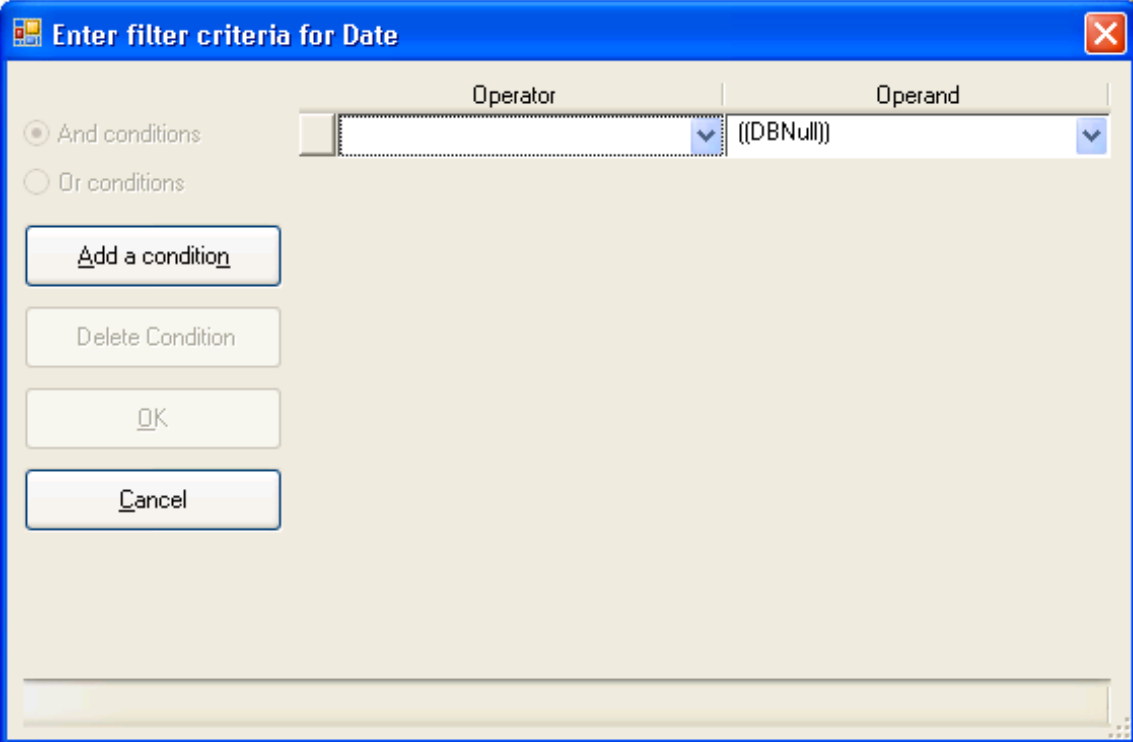
Filter Security Exceptions

You can filter the security exceptions based on any column heading. For this example, the information is filtered based on the Date heading.

▶ **To filter the security exceptions information by date:**

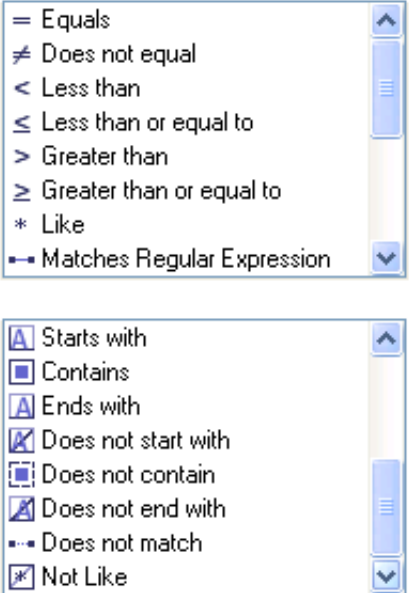
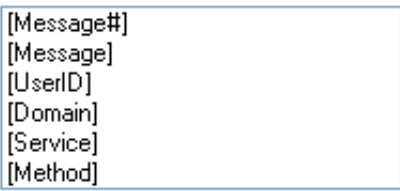
1. Select **Custom** in **Date**.

The **Enter Filter Criteria for Date** window is displayed. For example:



Operator	Operand
	((DBNull))

The options in this window are:

Option	Description
Operator	<p>Search criteria for the operator. The search criteria are:</p> 
Operand	<p>Search criteria for the operand. The search criteria are based on the operator. For example, if you select < Less than in Operator, the following operands are available:</p> 
And conditions	<p>If there is more than one condition, this option indicates whether to display audit information that matches all conditions.</p> <ul style="list-style-type: none"> ● For information on adding a new condition, see Add a Condition. ● For information on deleting a condition, see Delete a Condition.
Or conditions	<p>If there is more than one condition, this option indicates whether to display audit information that matches any condition.</p>

2. Select **OK**.

The **Security Exceptions** window displays the audit information that matches the search criteria.

Add a Condition

▶ To add a condition:

1. Select **Add a condition**.

An input field is displayed for the operator and operand. For example:

	Operator	Operand
<input checked="" type="radio"/> And conditions	>= Greater than or equal to	2007-06-01
<input type="radio"/> Or conditions		((DBNull))

[Date] >= '2007-06-01'

2. Select the operator for the condition in **Operator**.
3. Select the operand for the condition in **Operand**.
4. Select one of the following:
 - **And conditions**
This option displays the security exceptions that match all conditions.
 - **Or conditions**
This option displays the security exceptions that match any condition.
5. Select **OK**.

The **Security Exceptions** window is displayed, showing the security exceptions that match the search criteria.

Delete a Condition

▶ To delete a condition:

1. Select the operator/operand condition you want to remove.
2. Select **Delete a condition**.

The condition is removed from the **Enter Filter Criteria for Date** window.

3. Select **OK** to close the window.

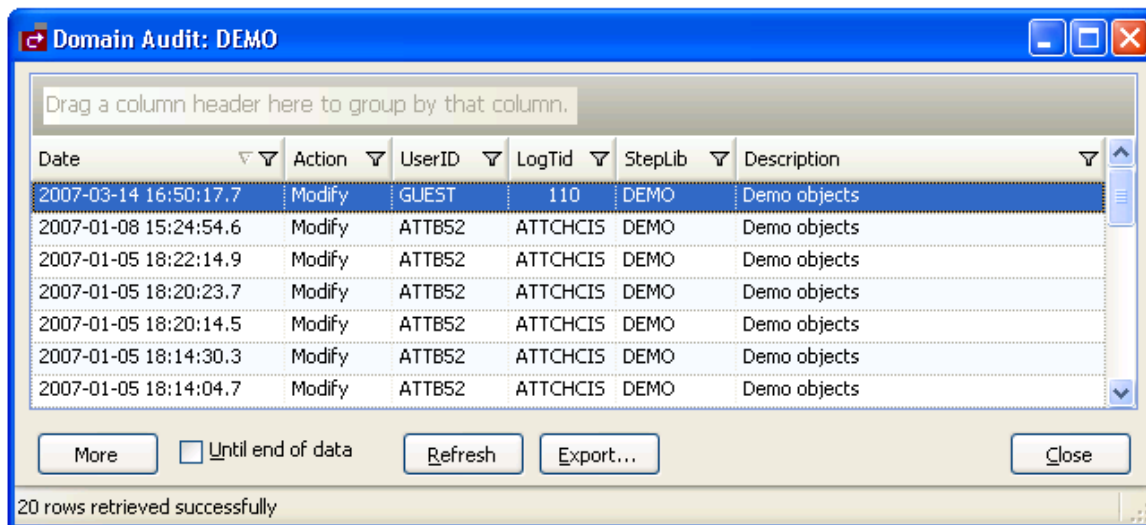
Audit Domains

You can display audit information on activities in a domain.

▶ To audit a domain:

1. Open the context menu for the domain you want to audit in the **Business Services** explorer.
2. Select **Audit**.

The **Domain Audit** window is displayed. For example:



Use this window to display the date of each audit activity, the action performed, and the user ID of the user who performed the action. You can also use it to display the terminal ID for the log file, the names of the steplibs, and a brief description of the domain. Optionally, you can use this window to:

Task	Procedure
Group the results by column	Drag the column heading to the shaded area.
Rearrange the columns	Drag the column heading to the far left of this window (for example, to sort by domain, drag the Domain heading to the left of the Date heading).
Filter the information based on a column heading	Select "Custom" in the column you want to filter and specify the filter criteria in the window that is displayed. For information, see Filter Security Exceptions.
Export the security exceptions to a work file	Select Export and specify the location of the work file.

Note:

If there is more information than can be displayed in one window, select **More** to display the additional activities.

3. Select **Close** to close the **Domain Audit** window.

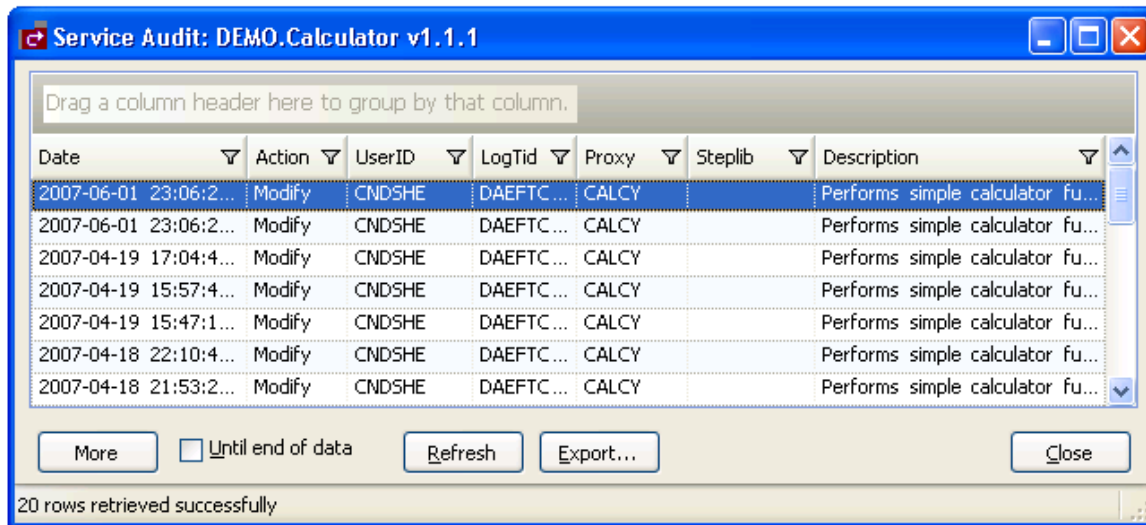
Audit Business Services

You can display audit information on activities in a business service.

To audit business services:

1. Open the context menu for the business service you want to audit in the **Business Services** explorer.
2. Select **Audit**.

The **Service Audit** window is displayed. For example:



Use this window to display the date of each audit activity, the action performed, and the user ID of the user who performed the action. You can also use it to display the terminal ID for the log file, the names of the subprogram proxies and steplib, and a brief description of each business service. Optionally, you can use this window to:

Task	Procedure
Group the results by column	Drag the column heading to the shaded area.
Rearrange the columns	Drag the column heading to the far left of this window (for example, to sort by domain, drag the Domain heading to the left of the Date heading).
Filter the information based on a column heading	Select "Custom" in the column you want to filter and specify the filter criteria in the window that is displayed. For information, see Filter Security Exceptions.
Export the security exceptions to a work file	Select Export and specify the location of the work file.

3. Select **Close** to close the **Service Audit** window.

Deploy a Domain to Another Repository

You can deploy all business services in a specified domain to another repository.

▶ To deploy all business services in a domain to another repository:

1. Open the context menu for the domain you want to deploy in the **Business Services** explorer.
2. Select **Deploy**.

The **Deploy Services** window is displayed. For example:

The screenshot shows the 'Deploy Services' window with the following content:

Current Repository Info: Database 13000, File 1336

Deployment Parameters

Domain:

Specific service:

Deploy associated subprograms Replace linked steplib data

Target Repository Information

Database number: File number:

Replace existing business services

Target Natural Objects Target Predict Target Natural Security

Natural Object Parameters

Library name:

Database number: File number:

Replace existing Natural objects

XREF Options: ▼

Code Type

Source and compiled Compiled only Source only

Buttons:

This window displays information about the current repository, as well as the name of the domain you selected. Optionally, you can use this window to:

Task	Procedure
Update the steplib data in the domain	See Replace Linked Steplib Data.
Replace the current business services in the domain with updated services	See Replace Updated Business Services.

Note:

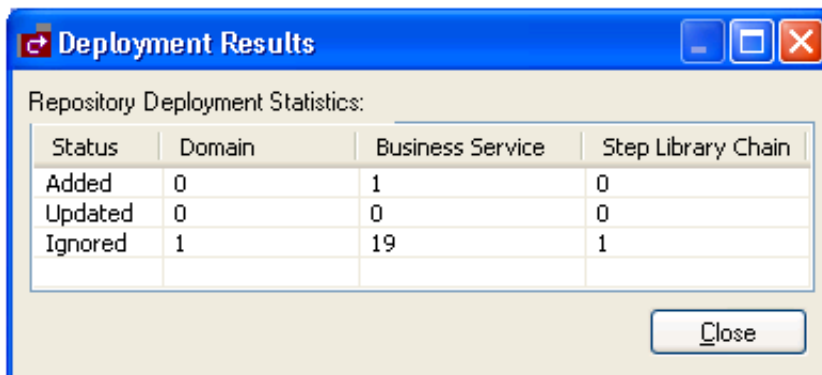
If an option is left blank in this window, it is assumed that the option is the same in both the source and target environment. For example, if **Library name** is blank, the Natural modules in the source library will be deployed to the library with the same name in the target FUSER file.

3. Type the database and file number for the target repository in the appropriate fields.

Use the target repository database and file numbers for LFILE 136.

4. Select **Deploy**.

The **Deployment Results** window is displayed. For example:



5. Select **Close**.

Replace Linked Steplib Data

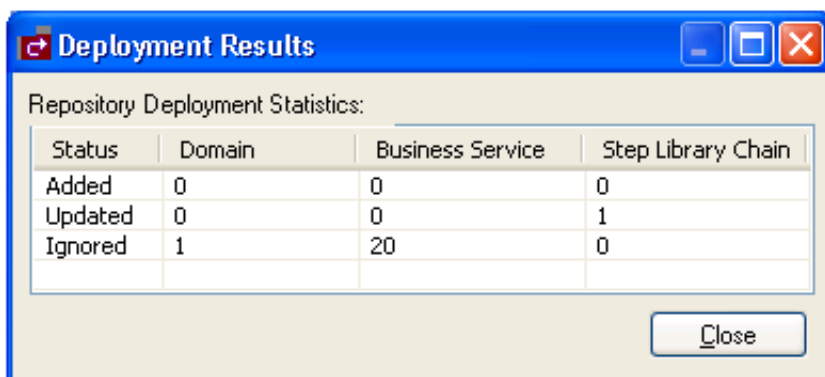
▶ To replace linked steplib data for a domain:

1. Select **Replace linked steplib data** in the **Deploy Services** window.
2. Type the database and file number for the target repository in the appropriate fields.

Use the target repository database and file numbers for LFILE 136.

3. Select **Deploy**.

The **Deployment Results** window is displayed. For example:



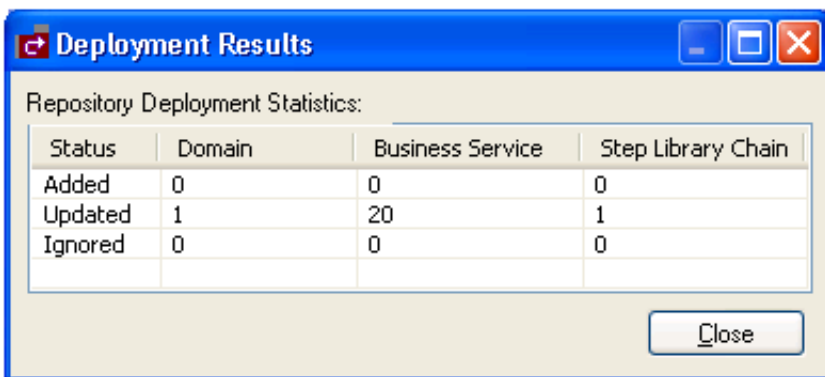
4. Select **Close**.

Replace Updated Business Services

► **To replace updated business services in the domain:**

1. Select **Replace existing business services** in the **Deploy Services** window.
2. Type the database and file number for the target repository in the appropriate fields.
Use the target repository database and file numbers for LFILE 136.
3. Select **Deploy**.

The **Deployment Results** window is displayed. For example:




Note:

If the **Replace** option was not selected and the domain already exists in the target library, it will not be replaced.

4. Select **Close**.

Deploy a Business Service to Another Repository

You can deploy the business service information in the **Business Service** repository or, optionally, deploy the subprograms associated with the service to a Natural environment.

 **To deploy a business service to another repository:**

1. Open the context menu for the business service the **Business Services** explorer.

For information, see *Access Business Services*.

2. Select **Deploy**.

The **Deploy Services** window is displayed. For example:

Deploy Services

Current Repository Info: Database 13000, File 1336

Deployment Parameters

Domain: DEMO

Service: Calculator

Deploy associated subprograms Replace linked steplib data

Target Repository Information

Database number: File number:

Replace existing business services

Target Natural Objects | Target Predict | Target Natural Security

Natural Object Parameters

Library name:

Database number: File number:

Replace existing Natural objects

XREF Options: Maintain all

Code Type

Source and compiled Compiled only Source only

Deploy Close

This window displays the name of the domain and business service you selected, as well as information about the current repository. Optionally, you can use this window to:

Task	Procedure
Deploy the subprograms associated with the business service to another environment	See Deploy Associated Subprograms.
Replace the linked steplib data in the domain	See Replace Linked Steplib Data.
Replace the current business service in the domain with the updated service	See Replace Updated Business Service. Note: If this option is not selected and the business service exists in the target library, it will not be replaced.

Note:

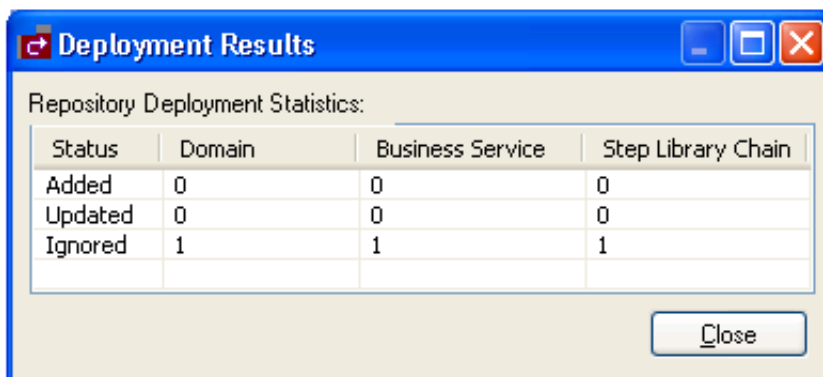
If an option is left blank in this window, it is assumed that the option is the same in both the source and target environment. For example, if **Library name** is blank, the Natural modules in the source library will be deployed to the library with the same name in the target FUSER file.

3. Type the database and file number for the target repository in the appropriate fields.

Use the target repository database and file numbers for LFILE 136.

4. Select **Deploy**.

The **Deployment Results** window is displayed. For example:



In this example, one domain, business service, and steplib chain were ignored. This indicates that the business service existed in the target repository and was not replaced.

Note:

You can deploy more than one service at a time if you do not select the **Deploy associated subprograms** button.

5. Select **Close**.

Deploy Associated Subprograms

You can deploy the subprograms associated with the business service to another environment.

Basically, a business service is defined by the methods it provides to users, the subprogram proxies that expose each of the methods, and the logical organization of libraries (steplibs) that host the Natural objects that implement the methods. This definition is stored in the NBS repository represented by LFILE 136. The repository also contains details about the name, version, and domain that uniquely identify each service, as well as a description of each method exposed by the service. Although the repository contains the service definitions, the Natural objects that implement the functionality are stored in steplibs within the FUSER or FNAT file.

In addition to the service definition, a service deployment may need to copy XREF information for each Natural object associated with the service. The XREF information is stored in the Predict FDIC file and the requirement to include the XREF information in the deployment is defined in the Natural Security FSEC file used in the target environment. Additionally, since the deployment function invokes the Natural SYSMAIN utility to copy the data to the target environment, the Password and Cipher options (for Target Predict and Target Natural Security information) were included to maintain consistency.

When you select **Deploy associated subprograms** in the **Deploy Services** window, the target setting tabs become active. For example:

Current Repository Info: Database 13000, File 1336

Deployment Parameters

Domain:

Service:

Deploy associated subprograms Replace linked steplib data

Target Repository Information

Database number: File number:

Replace existing business services

Target Natural Objects | Target Predict | Target Natural Security

Natural Object Parameters

Library name:

Database number: File number:

Replace existing Natural objects

XREF Options: ▼

Code Type

Source and compiled Compiled only Source only

Deploy Close

The tabs for the target settings are:

- Target Natural Objects
- Target Predict
- Target Natural Security

Target Natural Objects

Specify the following target settings for Natural objects:

Target Setting	Description
Library name	Name of the Natural library in which to copy all Natural objects that implement the business service being deployed.
Database number	Database ID for the FUSER (or FNAT) file that will store the Natural objects (subprograms, data areas, etc).
File number	File number for the FUSER (or FNAT) file that will store the Natural objects.

Optionally, you can use the **Target Natural Objects** tab to:

Task	Procedure
Replace existing Natural objects with the ones you are deploying	Select Replace existing Natural objects .
Maintain cross-reference data using an alternate method	Select another setting in XREF options . The cross-reference options are: <ul style="list-style-type: none"> ● Maintain all ● Do not maintain (except when deleting) ● Maintain and document in Predict ● Maintain whenever exists
Only deploy the object code for Natural objects	Select Compiled only .
Only deploy the source code for Natural objects	Select Source only .

Target Predict

The following example shows the settings on the **Target Predict** tab:

Deploy Services

Current Repository Info: Database 13000, File 1336

Deployment Parameters

Domain:

Service:

Deploy associated subprograms Replace linked steplib data

Target Repository Information

Database number: File number:

Replace existing business services

Target Natural Objects **Target Predict** Target Natural Security

Predict Parameters

Database number: File number:

Password:

Cipher:

Specify the following target settings for Predict:

Target Setting	Description
Database number	Database ID for the FDIC file that will store the XREF data.
File number	File number for the FDIC file.
Password	Password for the FDIC file.
Cipher	Cipher key for the FDIC file.

Target Natural Security

The following example shows the settings on the **Target Natural Security** tab:

Deploy Services

Current Repository Info: Database 13000, File 1336

Deployment Parameters

Domain: DEMO

Service: Calculator

Deploy associated subprograms Replace linked steplib data

Target Repository Information

Database number: File number:

Replace existing business services

Target Natural Objects Target Predict Target Natural Security

Natural Security Parameters

Database number: File number:

Password:

Cipher:

Deploy Close

Specify the following target settings for Natural Security:

Target Setting	Description
Database number	Database ID for the FSEC file that contains the XREF requirements.
File number	File number for the FSEC file.
Password	Password for the FSEC file.
Cipher	Cipher key for the FSEC file.

Replace Linked Steplib Data

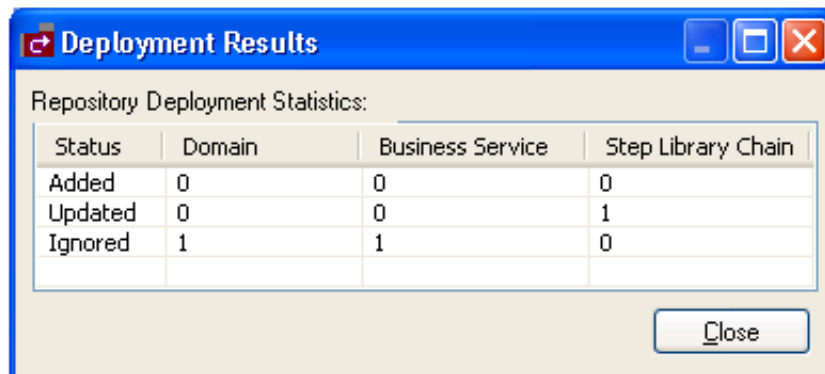
► To replace the linked steplib data for the business service:

1. Select **Replace linked steplib data** in the **Deploy Services** window.
2. Type the database and file number for the target repository in the appropriate fields.

Use the target repository database and file numbers for LFILE 136.

3. Select **Deploy**.

The **Deployment Results** window is displayed. For example:



In this example, the **Replace updated business service** option was not selected and the domain and business service were not replaced.

4. Select **Close**.

Replace Updated Business Service

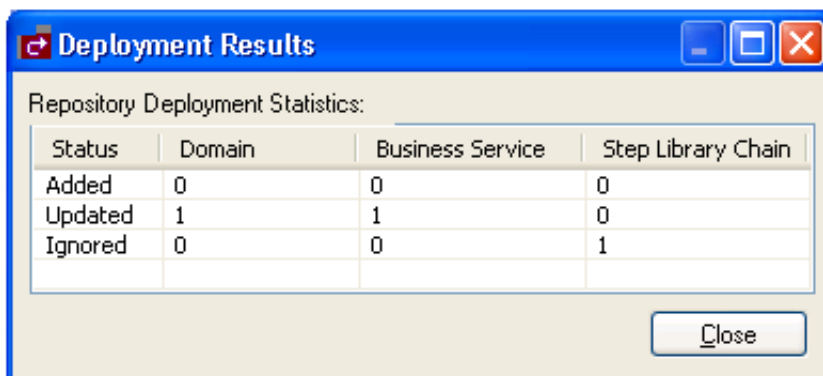
► To replace the existing business service with an updated version:

1. Select **Replace existing business services** in the **Deploy Services** window.
2. Type the database and file number for the target repository in the appropriate fields.

Use the target repository database and file numbers for LFILE 136.

3. Select **Deploy**.

The **Deployment Results** window is displayed. For example:



In this example, the **Replace linked steplib data** option was not selected and the linked steplib data was not replaced.

4. Select **Close**.

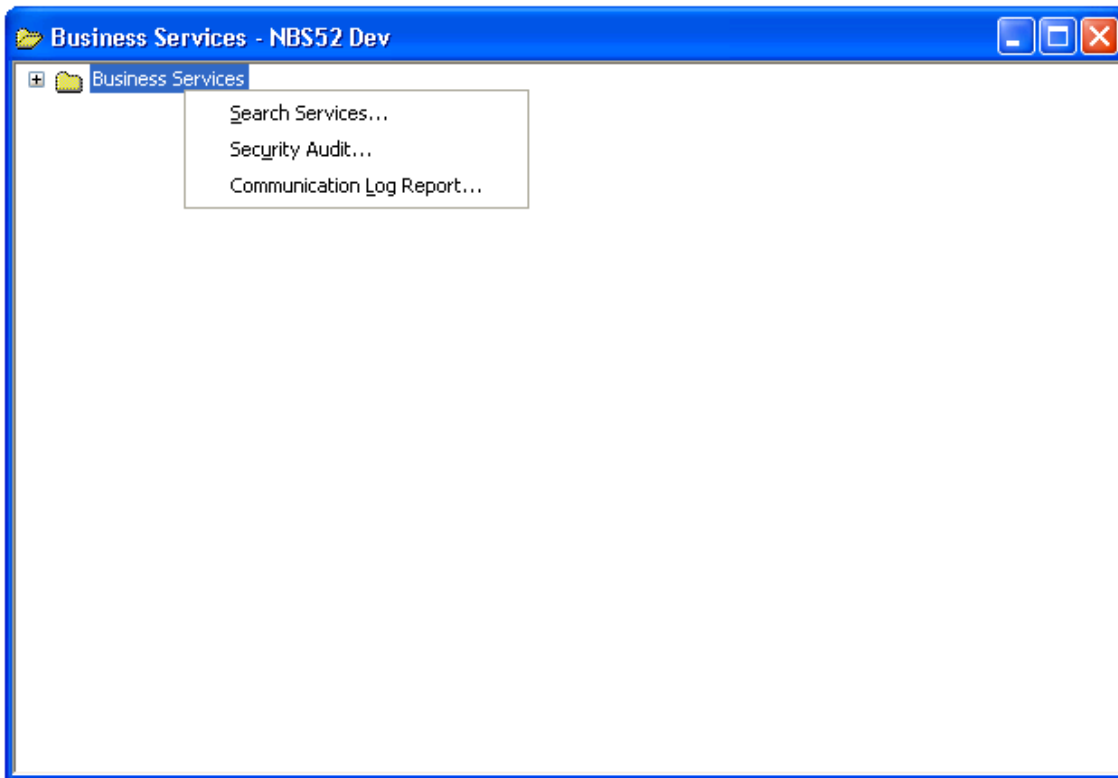
Access the Communication Log Report

A connection may have problems communicating with the server. If so, you can access the Communication Log report and view the status and error messages for the connection.

▶ To access the Communication Log report:

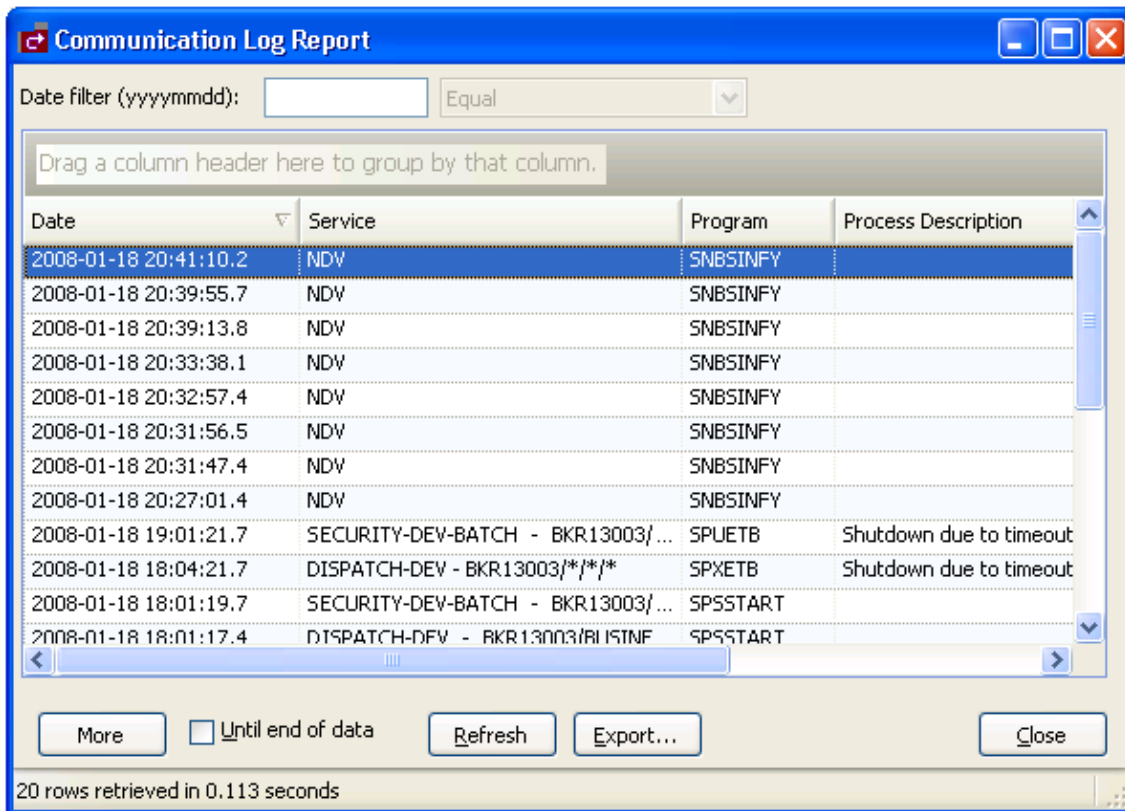
1. Open the context menu for the connection in the **Business Services** explorer.

For example:



2. Select **Communication log report**.

The **Communication Log Report** window is displayed. For example:



This window shows the first 20 communication status and error messages in descending order by date (the default). To sort by another column, drag that column header to the area indicated.

Note:

All services that do not use the NDV (Natural Development Server) use the EXX (EntireX) middleware.

Optionally, you can use this window to:

Task	Procedure
Restrict the list of messages displayed	Type the date and select the search criteria. For example, to display messages for January 11, 2008, enter "20080111" in Date , select Equal , and then select Refresh .
Display the next 20 messages	Select More .
Display all messages	Select Until end of data and then select More .
Export the log report to a spreadsheet (for example, Microsoft Excel)	Select Export . A window is displayed to select the file location and enter a file name.

3. Select **Close** to close the window.

Note:

This log is also available on the server by logging onto SYSBIZ, entering "MENU SA MS" on the command line, and then pressing PF4.

Generate a Natural Client

You can generate a Natural client for a business service. A Natural client is a subprogram proxy that allows a business service to be consumed in a Natural environment.

▶ **To generate a Natural client:**

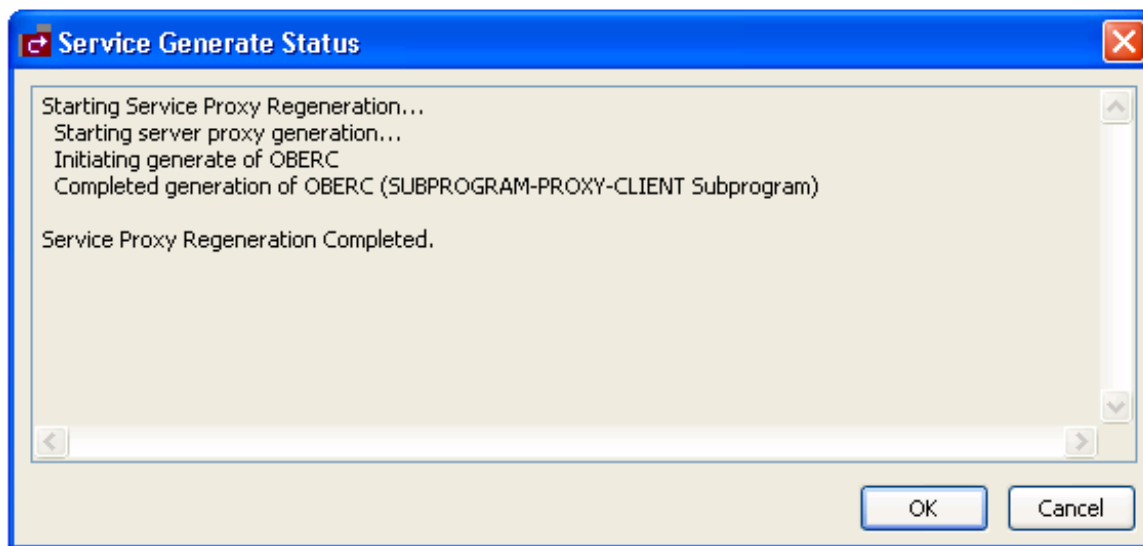
1. Open the context menu for the business service in the **Business Service** repository.

Note:

For information on the **Business Service** repository, see Using the Business Service Repository.

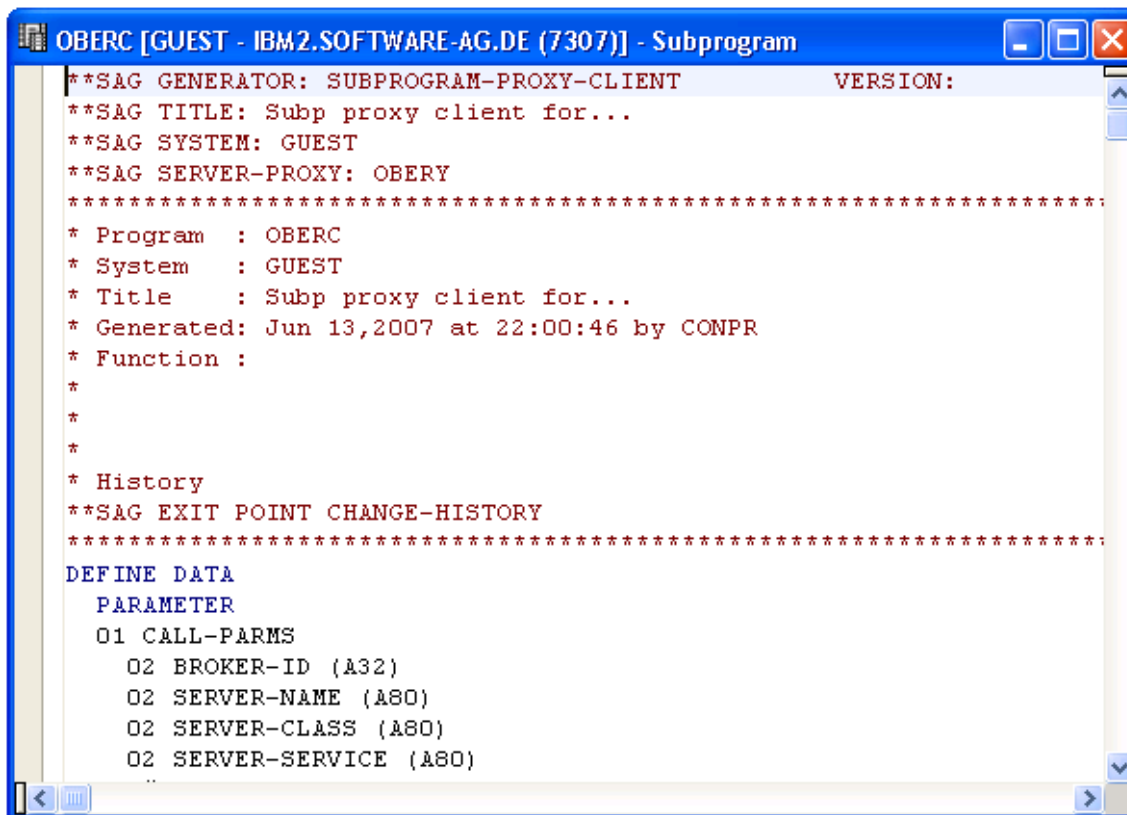
2. Select **Generate Natural Client**.

The **Service Generate Status** window is displayed. For example:



3. Select **OK**.

To view the generated subprogram proxy client, open the subprogram in the program editor. For example:



```
OBERC [GUEST - IBM2.SOFTWARE-AG.DE (7307)] - Subprogram
**SAG GENERATOR: SUBPROGRAM-PROXY-CLIENT          VERSION:
**SAG TITLE: Subp proxy client for...
**SAG SYSTEM: GUEST
**SAG SERVER-PROXY: OBERY
*****
* Program   : OBERC
* System    : GUEST
* Title     : Subp proxy client for...
* Generated: Jun 13,2007 at 22:00:46 by CONPR
* Function  :
*
*
* History
**SAG EXIT POINT CHANGE-HISTORY
*****
DEFINE DATA
  PARAMETER
  01 CALL-PARMS
    02 BROKER-ID (A32)
    02 SERVER-NAME (A80)
    02 SERVER-CLASS (A80)
    02 SERVER-SERVICE (A80)
```