

# Deploying the Administration Subsystem

This section describes the steps to deploy the Business Service Administration subsystem in development and production environments. The following topics are covered:

- Introduction
  - Sample Deployment Scenario
  - Create the Sample Deployment Scenario
  - Data Transfer Utilities
  - Layout of the Export Users and Groups Work File
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## Introduction

Deploying a business service is similar to distributing a traditional Natural application. However, the Natural Business Services runtime environment must be installed on each machine. This installation includes:

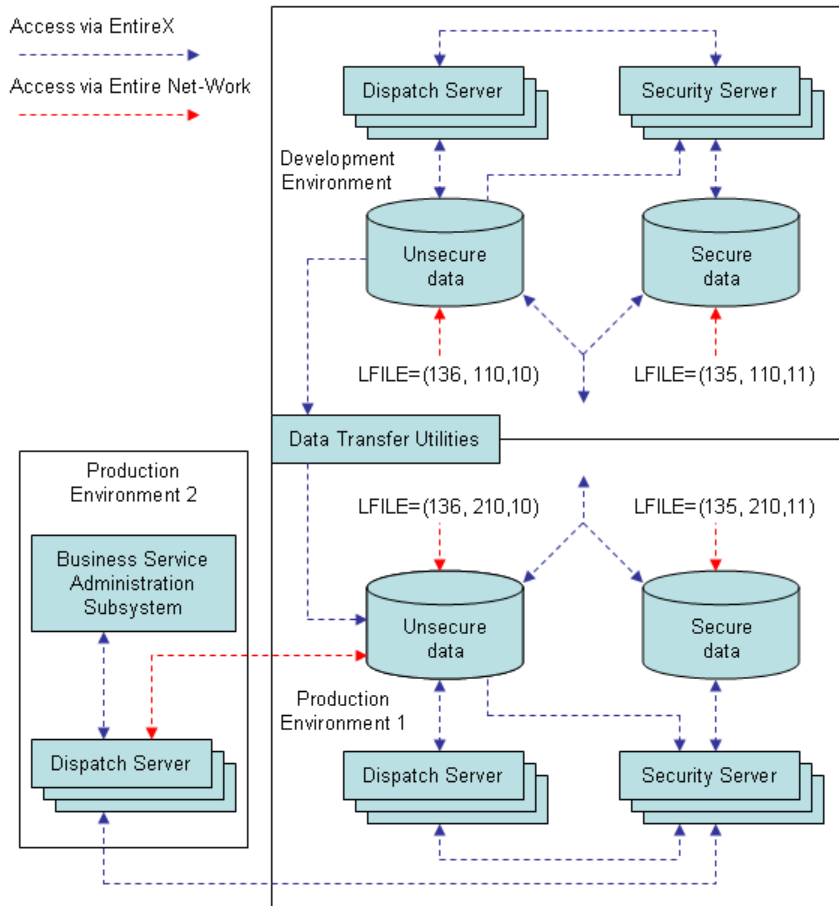
- All modules related to the Administration subsystem.
- All modules related to the Natural Business Services dispatch, security, and attach servers.
- One or more copies of the system files.
- At least one dispatch, security, and attach server.

Each runtime environment accesses the same centrally-located data by means of direct calls through one of the following:

- Entire Net-Work
- EntireX configured to use TCP/IP as the network transport protocol
- Natural Business Services security server (in the case of secure data)

## Sample Deployment Scenario

The following diagram shows a scenario with one development and two production environments, one of which is on a remote machine. The Administration subsystem is installed on both machines, and Production environment 1 contains a copy of the Natural Business Services system files. In this scenario, Entire Net-Work is installed on both machines. EntireX is installed on the machine with both the Development environment and Production environment 1.



The sample scenario shows the option of having Natural Security installed on the machine that houses the Development environment and Production environment 1 to control users' access to secure data. To use Natural Security on the remote machine, another copy of Natural Security must be installed on that machine, a security server is required, and both copies of the Natural Security software must be configured to update the Natural Business Services system files with security information.

## Create the Sample Deployment Scenario

This section describes the prerequisites and tasks involved in setting up the sample scenario shown in the previous section. Refer to the following steps when planning your own deployment strategy:

- Step 1: Install Software in Production Environments
- Step 2: Install Natural Business Services on Each Machine
- Step 3: Copy Natural Business Services System Files
- Step 4: Set up the System File Database in Entire Net-Work (Optional)
- Step 5: Define and Start an Attach Server
- Step 6: Define and Start Dispatch and Security Servers

- Step 7: Transfer Domains to Production Environment
- Step 8: Transfer Group and User Tables (Optional)

## Step 1: Install Software in Production Environments

Ensure that the following software is installed in the production environments:

- EntireX must be installed on one or more machine. In the sample scenario, it is installed on the machine containing both development and production environments.
- Either Entire Net-Work must be installed on every PC that will use the business service, or EntireX must be installed and configured to use TCP/IP as the network transport protocol.
- If you are not using EntireX configured for TCP/IP, Entire Net-Work must be installed on each server machine.
- Natural must be installed on each server machine.
- Adabas must be installed on each server machine.

### Notes:

1. For information on product versions, see Prerequisites.
2. For information on installing and configuring these products, see their respective installation guides.

## Step 2: Install Natural Business Services on Each Machine

The Business Service Administration subsystem defines and manages Natural Business Services servers and maintains Administration subsystem data. You can access a full set of queries and log data in the subsystem.

Natural Business Services must be installed on each computer. The sample scenario in Sample Deployment Scenario shows the Administration subsystem installed on the machine that hosts the Development environment and Production environment 1 and on the remote computer that houses Production environment 2.

For information on installing Natural Business Services, see:

- Natural Business Services Installation on Mainframes
- Natural Business Services Installation on Unix
- Natural Business Services Installation on Windows

## Step 3: Copy Natural Business Services System Files

In the example scenario, Production environment 1 shares the Administration subsystem with the Development environment. While it is possible to share the Natural Business Services system files between development and production environments, most organizations will want to create separate copies of these files to better ensure the integrity of their production data.

The files are accessed through logical file numbers, and they can be installed using any available physical file numbers. You can assign the logical file settings dynamically using the LFILE parameter, or you can link them into the Natural nucleus using the NTFILE parameter. Both files must be accessible from the Natural Business Services dispatch server, security server, and Administration subsystem.

### Logical File 135

Logical file 135 contains all information concerning users, their security privileges, and the security cache. This information is stored separately from other dispatch server information to allow this sensitive data to be enciphered, if desired.

### Logical File 136

Logical file 136 contains all information used by Natural Business Services, except the user and security information stored on logical file 135.

## Step 4: Set up the System File Database in Entire Net-Work (Optional)

If the environment uses Entire Net-Work for its network transport protocol, ensure that the network administrator has set up the Natural Business Services system file database so that it is accessible to all appropriate clients.

## Step 5: Define and Start an Attach Server

At runtime, an attach server launches other servers as they are needed. If possible, configure your system so that an attach server is started as part of the operating system activation process.

### Tip:

The attach server can automatically initiate multiple dispatchers during startup. For information, see *Initiate Multiple Dispatchers During Startup*.

### Start an Attach Server as a Started Task

Typically, you start attach servers in an online environment, which is resource intensive. If desired, you can start an attach server as a started task. Although you will be starting the server from the console, as opposed to from within Natural Business Services, you can continue to use all other features in the Business Service Administration system.

#### To run an attach server as a started task:

1. Set up the appropriate JCL. For example:

```
//*****
//*
//ADA148 EXEC PGM=ADA148,REGION=2000K,PARM='922'
//STEPLIB DD DISP=SHR,DSN=OPS.COMN.LOAD
// DD DISP=SHR,DSN=RZDBA.DB922.NEWLOAD
// DD DISP=SHR,DSN=RZDBA.DB922.LOAD
//SYSUDUMP DD SYSOUT=X
//DDCARD DD *
ADARUN PROGRAM=USER,DATABASE=13001,MODE=MULTI,SVC=249
//DDPRINT DD SYSOUT=*
//DDDRUCK DD SYSOUT=*
//*
//ATTCHPRD EXEC PGM=NATSPE31,REGION=7000K,
```



The dispatch server communicates with the security server to validate users and check their privileges and requests for business services. At least one Natural Business Services security server must be available to an environment. It can be installed on any machine that has access to the Business Service Administration subsystem data. However, to minimize network traffic, the Natural Business Services security server should run in the same location as the Administration subsystem data.

Normally, dispatch and security servers are started up automatically on demand by an attach server.

**Note:**

For information on defining servers, see *Defining and Managing Servers*.

**Under Natural Security**

Natural Business Services security servers can be configured to work with Natural Security so that you can use Natural Security users and groups instead of Natural Business Services tables. If you are using Natural Security, the dispatch and security servers must have access to Natural Security data. When Natural Security is operating, the dispatch server makes calls to Natural Security to help determine client authorizations, and the dispatch server “impersonates” the client when executing business service requests.

**Step 7: Transfer Domains to Production Environment**

Decide which business services you want to make available in the production environments and identify their domains. To export and import domains, use the Domain Transfer utilities in the Business Service Administration subsystem. When you use the utilities to copy the table data from one environment to another, the domains, business service definitions and, optionally, the step library chains are also copied.

**Note:**

For information on importing and exporting domains, see *Transfer Domains, Business Services, and Step Library Chains*.

**Step 8: Transfer Group and User Tables (Optional)**

If users and groups have already been defined in the production environments, you can omit this step. Otherwise, use the Export Groups and Import Groups utilities to copy this data to your production environments.

If you use the Export and Import Groups utilities, the permissions that grant access between groups and domains are not transferred. You must define security definitions in the Business Service Administration subsystem for the business services you are distributing.

**Tip:**

To make a mirror image copy of the Natural Business Services system files, use ADAULD to unload and ADALOD to reload.

**Notes:**

1. For information on exporting and importing groups, see *Transfer Groups and Associated Users*.
2. For information on defining security definitions, see *Setting Business Service Security Options*.

## Data Transfer Utilities

The data transfer utilities allow you to copy domains (which include business services and step library chains) and groups (which include associated users) between one Natural Business Services system file and another. These utilities copy data to and from either a work file or a PC file, depending on the definition of the WORK parameter in your NATPARM.

This section describes how to use the data transfer utilities in the Business Service Administration subsystem. The following topics are covered:

- Transfer Domains, Business Services, and Step Library Chains
- Transfer Groups and Associated Users
- Use the Data Transfer Utilities in Batch Mode

### Transfer Domains, Business Services, and Step Library Chains

Use the Export Domains and Import Domains utilities to transfer domains, business services, their associated Natural subprograms, and step library chains from one Administration subsystem file to another. These utilities copy the following:

- Domain definitions
- Definitions for all business services with which the domain is associated, such as the service descriptions, methods, and subprogram proxy names associated with the business service definition
- Natural subprograms associated with the business services (optional)
- Step library chains associated with the domain (optional when importing domains)

This section covers the following topics:

- Access the Domain Transfer Utilities
- Export Domains, Business Services, and Step Library Chains
- Import Domains, Business Services and Step Library Chains

### Access the Domain Transfer Utilities

#### To access the domain transfer utilities:

1. Enter "AA" in Function on the **Business Service Administration Subsystem** main menu.

The **Application Administration** main menu is displayed.

2. Enter "MM" in Function.

The **Application Administration Maintenance** menu is displayed.

3. Enter "DT" in Function.

The **Transfer Domains** menu is displayed. For example:

```

BS_XFER2      ***** Business Service Administration Subsystem *****      CDLAYMN1
Feb 14,08          - Transfer Domains Menu -                               09:39 PM

                Functions
                -----
                XD   Export Domains
                ID   Import Domains

                ?   Help
                .   Terminate
                -----

Function ..... _

Command ..... _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      help retrn quit          flip                                main

```

4. Enter the code for the utility you want to access in Function.

The window for that utility is displayed.

## Export Domains, Business Services, and Step Library Chains

▶ **To export domains, business services, and step library chains:**

1. Enter "XD" in Function on the **Transfer Domains** menu.

The **Export Domains** window is displayed. For example:

```

BS_EXDOM                                           BSEXDOM0
Domains..... From..... _____
                Thru..... _____

* Business Service... _____
Latest version..... _
Associated Subprograms _ Dest. Library _____ XREF _
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11
      help retrn quit          flip

```

### Tip:

You can invoke the Export utility in batch mode by entering "BS\_EXDOM" at the Next prompt.

2. Specify the following options:



Field	Description
Domains  From  Thru	Domain(s) from which to export data. <ul style="list-style-type: none"> <li>● To export one domain, type the name of the domain in From.</li> <li>● To export a range of domains, type the name of the first domain in From and the name of the last domain in Thru.</li> <li>● To export all domains with the same initial characters, type the characters followed by an asterisk (*) in From.</li> <li>● To export all domains up to and including a specific domain, type the name of the domain in Thru.</li> </ul>
Business service	Business service to export, along with the associated domain and step library chains. <ul style="list-style-type: none"> <li>● To export a business service, type the name of the domain containing the service in From and the name of the business service in Business service. By default, all versions of the business service are exported.</li> <li>● To export all business services with the same initial characters from the specified domain, type the characters followed by an asterisk (*) in Business service.</li> </ul> <p><b>Note:</b> Business services can only be exported from one domain at a time; you cannot use an asterisk (*) in From or specify a domain name in Thru.</p> <p><b>Tip:</b> When exporting a business service, select the service from the help window. This ensures the correct spelling and case of the service name. In addition, the name of the domain is retrieved.</p>
Latest version	To only export the business service(s) with the highest version number, select this field. <p><b>Note:</b> The latest version number does not necessarily indicate the one with the most recent timestamp.</p>
Associated Subprograms	To export the Natural subprograms that implement the selected business services, select this field. <p><b>Note:</b> The Natural SYSOBJH utility is used internally to export the associated subprograms; you must have access to this utility to export these subprograms.</p>
Dest. Library	To override the name of the destination library, type the new name in this field (by default, the source library name is used).

Field	Description
XREF	To export XREF information for each Natural object associated with the services, select this field.

- Press Enter to export the selected data.

If you are exporting to a PC file, the Download window is displayed to specify the file in which to load the data. You can repeat steps 2 and 3 as many times as required. The selected services are exported one after the other to work file 2 and the associated subprograms are exported to work file 1 (when Associated Subprograms is selected). A report will be routed to your logical printer 1.

A report listing the unloaded associated subprograms is saved as a text member named NBSDPLOY in the WORKPLAN library in the FUSER file (in batch mode, the report is printed in SYSOUT or the console).

- Enter "." in From or press PF2 (retrn) to terminate the export operation and return to the **Transfer Domains** menu.

#### Note:

After the data has been successfully exported, a confirmation message is displayed. If the operation was not successful, a message describing the problem is displayed.

## Import Domains, Business Services and Step Library Chains

You can import any domain that has been exported using the Export Domains utility.

### To import domains, business services, and step library chains:

- Enter "ID" in Function on the **Transfer Domains** menu.

The **Import Domains** window is displayed. For example:

```

BS_IMDOM                                BSIMDOM0

Import Domains..... _  <OR>   Scan input file..... _

Domain..... _____

* Bus. Service... _____

Replace steplib chains _
Associated Subprograms _ Replace option _ XREF _ Dest. Library _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF1
      help  retrn quit          flip                                mai

```

#### Tip:

You can invoke the Import utility in batch mode by entering "BS\_IMDOM" at the prompt.

- Specify the following options:

Field	Description
Import Domains	To import domain data to the current library, select this field.

Field	Description
Scan input file	To only create a report of the data to be imported, select this field. The report lists the steplib chains, domains, and interfaces (business service definitions) and is written to the default device for Report 1 as set up by your system administrator.
Domain	<p>To import a single business service, enter the name of the domain containing the service in this field and the name of the business service in the Bus. Service field. Wildcard characters are not supported.</p> <p>The domain name is combined with the name in the Bus. Service field to create a “filter” that uniquely identifies a business service in the input workfile. The resulting filter can be used by either the Import Domains or Scan input file function.</p> <p><b>Note:</b> If you select this field, you cannot select the Associated Subprograms field.</p>
Bus. Service	<p>Name of the business service to import or scan from the specified domain. Wildcard characters are not supported.</p> <p><b>Note:</b> This field must be specified in combination with the Domain field.</p>
Replace steplib chains	To not replace step library chains in the target environment if they have the same names as those being imported, select this field.
Associated Subprograms	<p>To import the Natural subprograms that implement the selected business services, select this field.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. If you select this field, you cannot select the Domain/Bus. Service fields.</li> <li>2. The Natural SYSOBJH utility is used internally to import the associated subprograms; you must have access to this utility to import the subprograms.</li> </ol>
Replace option	<p>To replace existing data with imported data, select this field.</p> <p><b>Note:</b> To select this option, you must provide valid input for the SYSOBJH utility (for example, " ", "A", "E", or "O"). For more information, see the Natural Utilities documentation.</p>
XREF	<p>To import XREF information for each Natural object associated with the services, select this field.</p> <p><b>Note:</b> To select this option, you must provide valid input for the SYSOBJH utility (for example, " ", "N", "X", "Y", "F", or "D"). For more information, see the Natural Utilities documentation.</p>

Field	Description
Dest. Library	To override the name of the destination library, type the new name in this field (by default, the source library name is used).

3. Press Enter.

If your NATPARM specifies a PC file, the Upload Data window is displayed to specify the file to be uploaded or scanned. If your NATPARM specifies a work file, the import utility uses that work file. Business services are imported from work file 2 and the associated subprograms are imported from work file 1 (when Associated Subprograms is selected). A report will be routed to your logical printer 1.

A report listing the associated Natural subprograms (previously unloaded using the Export utility) is saved as a text member named NBSDPLOY in the WORKPLAN library in the FUSER file (in batch mode, the report is printed in SYSOUT or the console).

#### Notes:

1. After the data has been successfully imported or scanned, a confirmation message is displayed. If the operation was not successful, a message describing the problem is displayed.
2. The business service data is not synchronously loaded with the associated subprograms. If the execution is cancelled, the loaded business service data may be out of synch with the subprogram data. If this occurs, restart the import process from the beginning.
3. The option to create a filter using the Domain and Bus. Service names does not affect the loading or scanning of steplib records, since these are independent objects. Regardless of the filter, all steplib records will be loaded or scanned.

## Transfer Groups and Associated Users

Use the Export Groups and Import Groups utilities to copy groups and their associated users from one Business Service Administration subsystem file to another. This section covers the following topics:

- Access the Group Transfer Utilities
- Export Groups and Associated Users
- Import Groups and Associated Users

### Access the Group Transfer Utilities

#### To access the group transfer utilities:

1. Enter "SA" in Function on the **Business Service Administration Subsystem** main menu.

The **System Administration** main menu is displayed.

2. Enter "MM" in Function.

The **System Administration Maintenance** menu is displayed.

3. Enter "DT" in Function.

The **Transfer Groups** menu is displayed. For example:

```

BS_XFER      ***** Business Service Administration Subsystem *****      CDLAYMN1
Feb 14,06                - Transfer Groups Menu -                          09:42 PM

                                Functions
                                -----
                                XG   Export Groups
                                IG   Import Groups

                                ?   Help
                                .   Terminate
                                -----

Function ..... _

Command ..... _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      help retrn quit                flip                                main

```

4. Enter the code for the utility you want to access in Function.

The window for that utility is displayed.

## Export Groups and Associated Users

### ▶ To export groups and associated users:

1. Enter "XG" in Function on the **Transfer Groups** menu.

The **Export Groups** window is displayed. For example:

```

                                Export Groups
BS_EXGRP                                BSEXGRP0

                                Groups
                                From..... _____
                                Thru..... _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---
      help retrn quit                flip

```

2. Specify the following options:

Field	Description
Groups	Group(s) from which to export data. Wildcard characters are supported.
From	<ul style="list-style-type: none"> <li>To export one group, type the name of the group in From.</li> </ul>
Thru	<ul style="list-style-type: none"> <li>To export a range of groups, type the name of the first group in From and the name of the last group in Thru.</li> <li>To export all groups up to and including a specific group, type the name of the group in Thru.</li> </ul>

- Press Enter to start the export process.

If you are exporting to a PC file, the Download window is displayed to specify the file into which the data is to be transferred.

After the data is exported, a confirmation message is displayed. If the operation was not successful, a message describing the problem is displayed.

## Import Groups and Associated Users

You can import any group that has been exported using the Export Groups utility.

### ▶ To import groups and associated users:

- Log onto the library to which you want to import the groups.
- Invoke the Administration subsystem.
- Access the **Transfer Groups** menu.
- Enter "IG" in Function on the **Transfer Groups** menu.

The **Import Groups** window is displayed. For example:

```

                                Import Groups
BS_IMGRP                                BSIMGRP0

  Import groups.....: _
  Scan input file.....: _
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---
  help  retrn quit          flip

```

- Specify the following options:

Field	Description
Import groups	To import group data to the current library, select this field.
Scan input file	To only create a report of the data to be imported, select this field. The report lists the groups and users in the data file and is written to the default device for Report 1 as set up by your system administrator.

6. Press Enter.

If your NATPARM specifies a PC file, the Upload Data window is displayed to locate and select the file to be imported or scanned. If your NATPARM specifies a work file, the import utility uses the data from that work file.

After the data is imported or scanned, a confirmation message is displayed. If the operation was not successful, a message describing the problem is displayed.

## Use the Data Transfer Utilities in Batch Mode

### To invoke a data transfer utility in batch mode:

- Enter one of the following commands at the Next prompt:

Utility	Command
Export Domains	BS_EXDOM
Import Domains	BS_IMDOM
Export Groups	BS_EXGRP
Import Groups	BS_IMGRP

The following JCL examples call the data transfer utilities in batch mode:

- Export Domains Example
- Import Domains Example
- Import Business Service Example
- Export Groups Example
- Import Groups Example

### Export Domains Example

```

. . .
//CMPRT01 DD SYSOUT=X
//CMWKF01 DD DSN=DEV.DOMAINS.TEMP,DISP=( ,CATLG),UNIT=SYSDA,
//          DCB=(RECFM=VB,LRECL=4624,BLKSIZE=4628),
//          SPACE=(CYL,(5,2),RLSE)
//SYSIN    DD *
GLOBALS IM=D
LOGON SYSBIZ
BS_EXDOM <from domain> <to domain>

```

## Import Domains Example

```
. . .
//DDCARD DD *
ADARUN MODE=MULTI,DBID=019,PROG=USER,SVC=247
//CMPRT01 DD SYSOUT=X
//CMWKF01 DD DSN=DEV.DOMAINS.TEMP,DISP=SHR
//CMSYNIN DD *
//SYSIN DD *
GLOBALS IM=D
LOGON SYSBIZ
BS_IMDOM X,,X << --- use this to replace steplibs
BS_IMDOM X,,, << --- use this to not replace steplibs
BS_IMDOM X,X, << --- use this to only scan the import file
```

### Note:

If you mark the Replace Steplibs and Scan Import file options, the report indicates which steplibs were replaced.

## Import Business Service Example

```
//SYSOUT DD SYSOUT=&SYSOUT
//*
//CMWKF01 DD DSN=EXPRT.SUBPGM,DISP=SHR
//CMWKF02 DD DSN=EXPRT.DOMAINS,DISP=SHR
//*
//CMPRINT DD SYSOUT=X
//CMPRT01 DD SYSOUT=X
//*
//CMSYNIN DD *
LOGON SYSBIZ
BS_IMDOM
X,,MYDOMAIN,MYSERVICE,X,,,Y
.
FIN
/*
```

## Export Groups Example

```
. . .
//CMPRT01 DD SYSOUT=X
//CMWKF01 DD DSN=DEV.DOMAINS.TEMP,DISP=(,CATLG),UNIT=SYSDA,
// DCB=(RECFM=VB,LRECL=4624,BLKSIZE=4628),
// SPACE=(CYL,(5,2),RLSE)
//SYSIN DD *
GLOBALS IM=D
LOGON SYSBIZ
BS_EXGRP <from group> <to group>
```

## Import Groups Example

```
. . .
//DDCARD DD *
ADARUN MODE=MULTI,DBID=019,PROG=USER,SVC=247
//CMPRT01 DD SYSOUT=X
//CMWKF01 DD DSN=DEV.GROUPS.TEMP,DISP=SHR
//CMSYNIN DD *
//SYSIN DD *
```



```

GLOBALS IM=D
LOGON SYSBIZ
BS_IMGRP X,, << --- use this to import groups
BS_IMGRP,X, << --- use this to only scan the import file

```

## Layout of the Export Users and Groups Work File

To import table data from external systems, such as an in-house security system, you can create your own export utility. This utility will copy your data into a transfer file that conforms to the import file specifications expected by the Business Service Import Groups utility. To help create this module, Natural Business Services supplies the BSSI\_EX1 module in the SYSBIZ library as a sample template for a program that uses the work file definitions.

The work file is configured into variable length record types, with each record consisting of a line in an ASCII file. Lines are separated by CR+LF characters. The following types of records are supported:

- Header record
- Group record
- User record

Each record is identified by a record ID. The information contained in each record must strictly follow the guidelines outlined in the following tables with regard to data values and relative positioning within the record.

### Header Record

This record must be the first record in the work file. It identifies the version of the utility that created the file and the version of the Natural Business Services system file from which data was exported. The Header record fields are:

Field	Value	Length	Start Position	End Position	Description
Record Type	<H	2	1	2	Start of Header record
Utility Version	5.5.1	10	3	12	Version of export utility
Data Version	0551	4	13	16	Version of Natural Business Services system file
Reserved		139	17	155	Reserved for future use
Record Type	H>	2	156	157	End of Header record

### Group Record

Group records contain the information found in the Natural Business Services Groups table. The Group record fields are:

Field	Value	Length	Start Position	End Position	Description
Record Type	<G	2	1	2	Start of Group record
Group ID		8	3	10	Unique Group ID
Group Name		50	11	60	Descriptive group name
Record Type	G>	2	61	62	End of Group record

## User Record

User records contain the information found in the Natural Business Services Users table. When creating an export file for both groups and users, ensure that Group records are copied to the work file before User records.

### Note:

The Groups Export utility copies User records to the work file in an encrypted format. If you write your own export utility to create an export work file, passwords cannot be encrypted because the Import Groups utility cannot decrypt the password before updating the User table.

The User record fields are:

Field	Value	Length	Start Position	End Position	Description
Record type	<U	2	1	2	Start of User record
User ID		8	3	10	Unique user ID
Password		40	11	50	User password
User name		50	51	100	User name
Debug library		8	101	108	Name of valid Natural library
Debug module derive method	T or U	1	109	110	Derive method for debug text members: timestamp (T) or user ID (U)
User language	1-60	3	111	113	Valid Natural *Language value, zero-filled, right-justified
Linked group count	1-10	3	114	116	Number of groups user is linked to, zero-filled, right-justified (must correspond to the number of entries in the following field)
Linked group IDs		80	117	196	Each Group ID written to the work file in a previous group record, redefined into 10 occurrences of eight bytes each, left-justified within eight bytes
Record type	U>	2	197	198	End of User record