IBM® DB2® Warehouse Manager

Managing ETI•EXTRACT® Conversion Programs with DB2 Warehouse Manager

Version 7

IBM® DB2® Warehouse Manager

Managing ETI•EXTRACT® Conversion Programs with DB2 Warehouse Manager

Version 7

Third Edition (2001)

This edition replaces and makes obsolete the previous edition, SC26-9467-01. The technical changes for this edition are indicated by a vertical bar to the left of a change.

This edition applies to Version 7 of Data Warehouse Center, and to any subsequent releases until otherwise indicated in new editions or technical newsletters. Make sure you are using the correct edition for the level of the product.

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About this book

This book describes how to set up and implement integration between DB2 Warehouse Manager and ETI•EXTRACT®.

Any information concerning ETI•EXTRACT is based on information provided by ETI (Evolutionary Technologies International). IBM makes no representation or warranty concerning the performance of ETI products.

Data Warehouse Center is the component of DB2 that you use to do warehousing tasks.

The warehouse function as included with Data Warehouse Center is sufficient to schedule and run conversions created by ETI•EXTRACT. DB2 Warehouse Manager is only a prerequisite if the function offered by the Information Catalog Manager is required.

Who should read this book

This book is intended for the administrators and data warehouse designers who want to build a data warehouse that contains both data that is managed by ETI•EXTRACT and data managed by Data Warehouse Center or want to use Data Warehouse Center to schedule and monitor data conversion programs that are generated by ETI•EXTRACT. It is also intended for administrators who manage their metadata using Information Catalog Manager.

Prerequisite knowledge

You must be familiar with the Data Warehouse Center, Information Catalog Manager, and ETI•EXTRACT before you configure and use the interoperation features described in this document. Specifically, you must know how to do the tasks listed in the following table:

Table 1. Prerequisite knowledge of related products.

Product	Task	For more information, see....
ETI•EXTRACT	User tasks	*ETI•EXTRACT Tool Suite: Administration Guide*
	Conversion tasks	*ETI•EXTRACT Tool Suite User's Guide*

Table 1. Prerequisite knowledge of related products. (continued)

Product	Task	For more information, see....
Information Catalog Manager	Create an information catalog in the Information Catalog Manager	*Information Catalog Manager Administration Guide*
	Exchange synchronized metadata between the Data Warehouse Center and Information Catalog Manager	*Information Catalog Manager Administration Guide*
Data Warehouse Center	Define a Data Warehouse Center agent site	*Data Warehouse Center Administration Guide* and the Data Warehouse Center online help
	Create, promote, run, and monitor processes	*Data Warehouse Center Administration Guide* and the Data Warehouse Center online help
	Modify parameters for Data Warehouse Center programs	*Data Warehouse Center Administration Guide* and the Data Warehouse Center online help

How to send your comments

Your feedback is important in helping to provide accurate and high-quality information. If you have any comments about this book or any other Data Warehouse Center documentation, visit the following Warehouse Manager web site:

```
http://www.ibm.com/software/data/db2/warehouse/
```

Click on Support, then Give Us Feedback. There you will find a feedback page where you can enter and submit your comments.

If you have comments about ETI•EXTRACT or its documentation, please contact:

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Chapter 1. Planning your ETI•EXTRACT-Data Warehouse Center solution

ETI•EXTRACT automatically extracts, transforms, and migrates existing data from legacy and operational systems into new applications, datamarts and warehouses, bridges and interfaces. This software interoperates with the DB2 Data Warehouse Center to provide a comprehensive data warehousing solution that allows you to leverage existing investments in legacy systems.

The interoperation between the Data Warehouse Center and ETI•EXTRACT gives you a single point of control from which to view all the processes in the data warehouse. ETI•EXTRACT generates all the conversion programs needed to collect, transform, and load data into target systems. The Data Warehouse Center then imports the execution plan for these programs and uses the plan to run and monitor the programs.

How the products work together

ETI offers an accelerator, ETI•Meta Scheduler for DB2 Warehouse Manager, that generates a version of the execution plan for use by the Data Warehouse Center. The accelerator transfers this execution plan to the workstation containing the Data Warehouse Center administrative client.

The Data Warehouse Center then generates steps that correspond to each instruction in the execution plan for the Data Warehouse Center.

For example, you have a data conversion that does the tasks shown in Table 2. For each task in the execution plan, the Data Warehouse Center generates one step.

Table 2. Sample data conversion

Step	Task	Type of instruction in execution plan	Generated step
1	Queries an unsorted personnel file	QUERY	Query Personnel
2	Queries an unsorted salary database	QUERY	Query Salary
3	Sorts the results of the query of the personnel file on the EMP-ID field	SORT	Sort Personnel

Table 2. Sample data conversion (continued)

Step	Task	Type of instruction in execution plan	Generated step
4	Deletes the unsorted temporary file containing the results of the personnel file query	DELETE	Delete Personnel Temp File
5	Sorts the results of the query of the salary database on the EMP-ID field	SORT	Sort Salary
6	Deletes the unsorted temporary file containing the results of the salary database query	DELETE	Delete Salary Temp File
7	Merges the sorted data, based on the EMP-ID field	MERGE	Merge Sorted Data
8	Deletes the temporary file containing the sorted personnel data	DELETE	Delete Personnel Temp File
9	Deletes the temporary file containing the sorted salary data	DELETE	Delete Salary Temp File
10	Populates an employee database with the merged data	POPULATE	Populate Employee Database
11	Deletes the temporary file containing the merged data	DELETE	Delete Merged Data

The Data Warehouse Center maintains the sequencing of the execution plan by using the Starts on Success task flow function. In Table 2 on page 1, the Query Personnel step corresponds to the first instruction in the execution plan. Data Warehouse Center starts the Query Personnel step. After the Query Personnel step finishes processing, it starts the Query Salary step, and so on.

Figure 1 on page 3 shows how the steps in the ETI•EXTRACT data conversion correspond to the steps generated by the Data Warehouse Center.
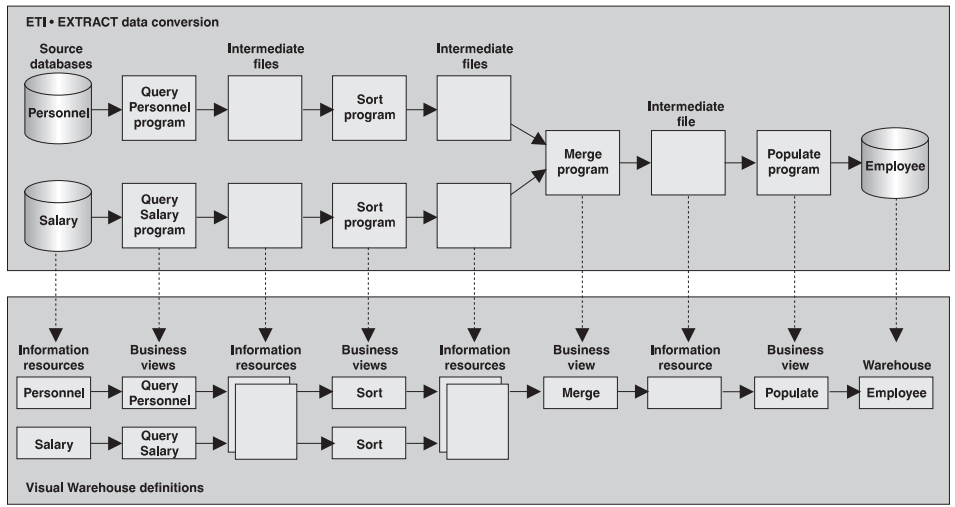
ETI • EXTRACT data conversion

Source databases		Intermediate files		Intermediate files			Intermediate file		

Personnel → Query Personnel program → [ ] → Sort program → [ ] →

Salary → Query Salary program → [ ] → Sort program → [ ] →

→ Merge program → [ ] → Populate program → Employee

Visual Warehouse definitions

Information resources	Business views	Information resources	Business views	Information resources	Business view	Information resource	Business view	Warehouse

Personnel → Query Personnel → [ ] → Sort → [ ] → Merge → [ ] → Populate → Employee

Salary → Query Salary → → Sort →

Figure 1. Relationship between an ETI•EXTRACT data conversion and Data Warehouse Center definitions. For clarity, the figure does not include any delete steps that the Data Warehouse Center would generate.

The steps that the Data Warehouse Center generates use Data Warehouse Center programs to start the ETI•EXTRACT conversion programs. For example, the QUERY program for the personnel file is a COBOL program running on an OS/390™ host. The Data Warehouse Center supplies a Data Warehouse Center program, ETIEXMVS, that submits the JCL that ETI•EXTRACT generates for the QUERY program to an OS/390 system to run and receives the JES log file on the agent site. The personnel QUERY step uses the ETIEXMVS program to start the QUERY program on OS/390. Figure 2 on page 4 illustrates this example.
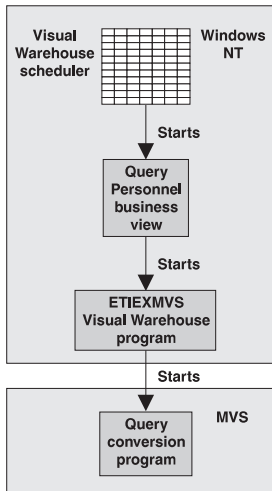
Figure 2. Relationship between a step, a Data Warehouse Center program, and an ETI•EXTRACT conversion instruction.

In Figure 2, the Data Warehouse Center scheduler starts the step at the scheduled time. The step starts a Data Warehouse Center program, ETIEXMVS, which in turn starts the program for an ETI•EXTRACT conversion instruction on an OS/390 system.

You can also use the Data Warehouse Center to add steps that are related to the steps generated from the ETI•EXTRACT execution plan. For example, if you want to create a datamart that summarizes salary data by job title for your Human Resources department, you can create a step that uses the Employee database as a source and the database for the datamart as a target.

ETI•EXTRACT conversion specifications and schemas contain information about enterprise data that is critical for administrators and users who need to understand the lineage of the data in the data warehouse. The conversion specifications and schemas contain information about databases, records, elements, and the relationships (joins and mappings) between those entities. The conversion specifications and schemas also contain information about the transformations of the data from its source format to its target format.

Hardware and software requirements

You must have the required hardware and software for the following products:
- DB2 Universal Database Enterprise Edition Version 7 (or later)
- DB2 Warehouse Manager Version 7
- ETI•EXTRACT Release 4.1.0 (or later) is required

- The Data System Library® product for Shared Objects, Release 4.1.0 (or later) is required
- The Data System Library product for Tcl Functions, Release 1.0.16 (or later) is required
- The ETI•Meta Scheduler™, Release 4.0.0 (or later) is required

In addition, you must have FTP and Telnet software installed on the workstation that is to contain the Data Warehouse Center administrative client:

- If you want to automate the remote import of metadata, you need Hummingbird Exceed 5 or later for FTP and Telnet support between the Data Warehouse Center and ETI•EXTRACT computers. Hummingbird Exceed 7 is required if Windows 2000 is being used.
- If you do not want to install Hummingbird Exceed, you can install any FTP daemon, however, you will not be able to automate the remote importing of metadata. Instead, you must transfer the metadata and then manually import it as described in "Transferring files without importing metadata" on page 20.
- If you want to run conversion programs on your OS/390 system, TCP/IP 3.2 or above must be installed on OS/390. Verify that the FTP service is enabled before running the conversion programs.

Chapter 2. Setting up ETI•EXTRACT and Data Warehouse Center

To set up ETI•EXTRACT and the Data Warehouse Center to work together, do the following tasks:

- Install and configure prerequisite products
- Enable FTP and Telnet support
- Modify the Data Warehouse Center template for FTP support

Installing and configuring prerequisite products

You must install and configure the prerequisite products before you can set up integration between ETI•EXTRACT and the Data Warehouse Center. Complete the tasks summarized in Table 3, and see the documentation listed for each task for more information.

Table 3. Summary of installation and configuration tasks

Product	Tasks	For more information, see....
DB2 UDB Enterprise Edition Version 7 and DB2 Warehouse Manager	Install the Data Warehouse Center administrative client on the same workstation as the Information Catalog Manager. The user ID for the control database must match the user ID for the information catalog if it is to be used for the metadata transferred from ETI•EXTRACT. However, the warehouse control database and the information catalog can be in the same or different databases.	*DB2 Extended Enterprise Edition Quick Beginnings*
	The AIX agent must be at the same release level as the Data Warehouse Center.	For instructions on installing the AIX agent, see the *DB2 Warehouse Manager Installation Guide*

Table 3. Summary of installation and configuration tasks (continued)

Product	Tasks	For more information, see....
Information Catalog Manager Version 7	Install the Information Catalog Manager on the same workstation as the Data Warehouse Center administrative client.	*DB2 Warehouse Manager Installation Guide*
	Create an information catalog for the metadata that is transferred from ETI•EXTRACT. The user ID for the information catalog must match the user ID that is to be used to log on to the Data Warehouse Center. However, the warehouse control database and the Information Catalog Manager information catalog can be in the same or different databases.	*Information Catalog Manager Administration Guide*
Information Catalog Manager Version 7 (optional)	If end users require access to the metadata for the data sources and target, each end user must install the Information Catalog Manager.	*DB2 Warehouse Manager Installation Guide*

Table 3. Summary of installation and configuration tasks (continued)

Product	Tasks	For more information, see....
ETI•EXTRACT Release 4.1.0 (or later)	Install ETI•EXTRACT on Windows NT or UNIX	*ETI•EXTRACT Installation Guides for Windows and UNIX*
	Install the ETI•MetaScheduler ™Installation Guide	*ETI•Meta Scheduler™ Installation Guide*
	Customize the ETI•EXTRACT Executive to connect to all remote hosts referenced in the conversions you plan to register with the Data Warehouse Center. Check connectivity from the ETI•EXTRACT host to the Data Warehouse Center server workstation.	*ETI•EXTRACT Tool Suite User's Guide*
	Perform the Master User tasks for the data sources and targets.	*ETI•EXTRACT Tool Suite User's Guide*
Hummingbird Exceed 5 or later[1]	Install Hummingbird Exceed on the same workstation as the Data Warehouse Center server and Information Catalog Manager.	"Enabling FTP and Telnet support on the Data Warehouse Center workstation".

1. If you are using an FTP daemon other than Hummingbird Exceed, refer to the product documentation for a list of configuration tasks. If you are using Windows 2000, you must use Hummingbird Exceed v7.

Enabling FTP and Telnet support on the Data Warehouse Center workstation

The ETI Meta Scheduler for DB2 Warehouse Manager uses FTP and Telnet to transfer metadata to the Data Warehouse Center and Information Catalog Manager. You must install and configure Hummingbird Exceed on the workstation where the Information Catalog Manager, and the Data Warehouse Center server or Data Warehouse Center administrative client is installed to set up FTP and Telnet connectivity to the workstation. You must enable FTP and Telnet support before you invoke the register or transfer functions of the ETI Meta Scheduler. The ETI Meta Scheduler for DB2 Warehouse Manager runs ETI•EXTRACT Executive scripts that use FTP and Telnet to transfer files

to the workstation where the Information Catalog Manager and Data Warehouse Center are installed, and to remotely import metadata into the Information Catalog Manager and Data Warehouse Center.

Installing Hummingbird

1. To install Hummingbird, select **Custom install** and click on **Next**.
2. Select **Yes** and click on **Next**.
3. Accept the default directories offered to you and click on **Next**.
4. Deselect all features, then select **Inetd**. You should get All x Server Related Components by default. Click on **Next**.
5. Click on **Finish** when on the Summary page.
6. Choose to register later.
7. Accept the default keyboard file and click on **Next**.
8. Leave the password blank and click on **Next**. Answer **No** to the prompt.
9. Answer **No** to the shortcut question.
10. Skip the tuning of the x server.

FTP is used to transfer files from ETI·Extract to the Data Warehouse Center and the Information Catalog Manager. Telnet is used to invoke the interchange programs to convert metadata from ETI·Extract to the Data Warehouse Center and the Information Catalog Manager, and to communicate run messages back to the Meta Scheduler. After you install Hummingbird, you must enable FTP and Telnet support:

1. Select **Start** —> **Settings** —> **Control Panel**.
2. Double-click the **HCL Inetd** icon (see Figure 3).

Figure 3. HCL Inetd icon.

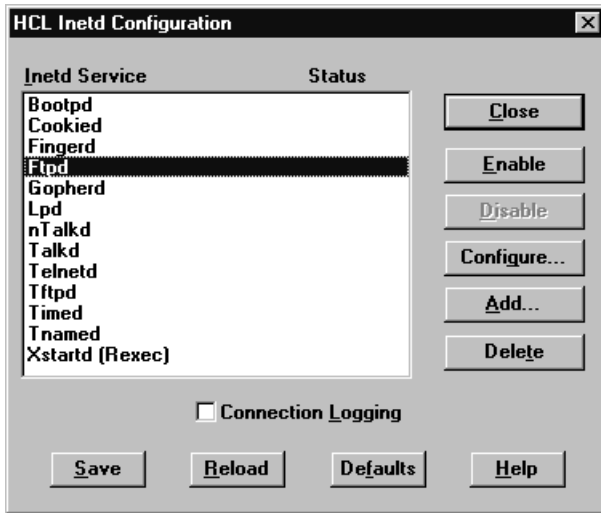The HCL Inetd Configuration window opens (see Figure 4 on page 11).

Figure 4. HCL Inetd Configuration window.

3. Select **Ftpd**.
4. Click **Enable**.
5. Select **Telnetd**.
6. Click **Enable**.

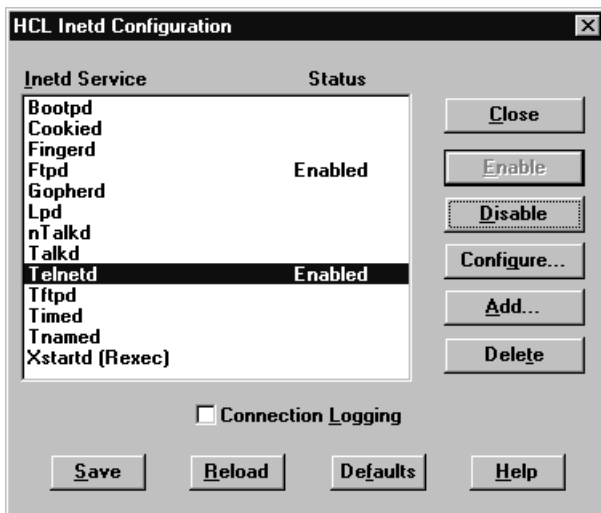   Figure 5 shows Ftpd and Telnetd with the status Enabled.

Figure 5. Ftpd and Telnetd enabled in HCL Inetd Configuration window.

7. Click **Save**.

8. Click **Close**.

You also must specify the directory that is to contain the files transferred from ETI•EXTRACT to the Information Catalog Manager and Data Warehouse Center. This directory is associated with a Windows NT user ID specified on the EXTRACT export panel. On the ETI side, it is specified in the Register Conversion or Transfer Conversion options in the Tools pull-down menu found on the Displaying Worksets panel.

To specify the directory:
1. Select **Start —> Programs —> Administrative Tools —> User Manager**.
   The User Manager window opens.
2. Select the user ID you use to log on to Data Warehouse Center.
3. Select **User —> Properties**.
   The User Properties window opens.
4. Click **Profile**.
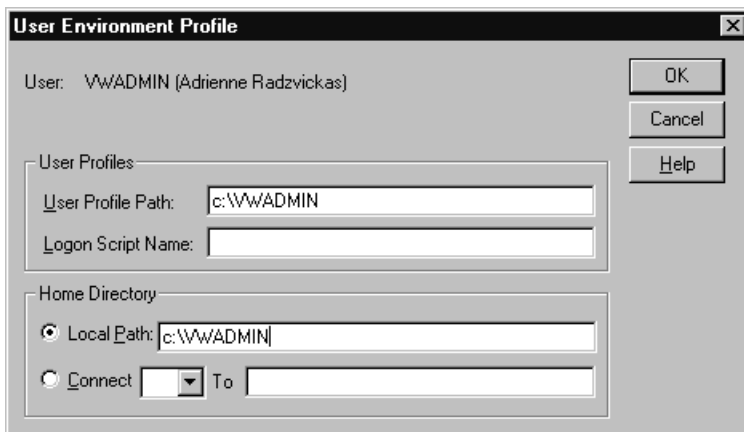   The User Environment Profile window opens (see Figure 6).

Figure 6. User Environment Profile window.

5. In the **User Profile Path** field, type the name of the default directory to use for FTP and Telnet services.

   The ETI•MetaScheduler for DB2 Warehouse Manager transfers files to a subdirectory of this default directory. You specify the subdirectory for a data conversion when you register the data conversion. For example, if you specify `c:\DB2ADMIN` as the default directory and `etidir` as the subdirectory for the data conversion, ETI•EXTRACT will transfer files to `c:\DB2ADMIN\etidir`. The etidir is specified on the EXTRACT support panel.

6. In the **Local Path** field, type the same name you typed in the **User Profile Path** field.

Modifying the Data Warehouse Center template for FTP support

The Data Warehouse Center installs a JCL template for transferring files using FTP. If you plan to use an FTP GET or PUT command to transfer files from an OS/390 host to another remote host, you need to modify the account information in this template for your OS/390 system. To modify the template:

1. Find the ftp.jcl file on each agent site that you intend to use:
   - On Windows NT, the file is in the \SQLLIB\templates directory,
   - On AIX, the file is in the /usr/lpp/IWH/templates directory. Log on with a root ID to complete the following tasks.

2. Copy the file as systemname.ftp.jcl, where systemname is the name of the OS/390 system. Create a copy of this file for each OS/390 system on which you plan to run ETI•EXTRACT conversion programs.

   For example, if you want to run ETI•EXTRACT conversion programs on STLMVS1, create a copy of the file called STLMVS1.ftp.jcl.

3. Use a text editor to modify the account information to match the standard account information for your OS/390 system. Do not modify other parts of the JCL.

   Table 4 shows the JCL template included with the Data Warehouse Center.

Table 4. FTP JCL template

```
//[USERID]A  JOB , 'PUT/GET',
//           CLASS=A,
//           USER=&SYSUID,
//           NOTIFY=&SYSUID,
//           TIME=(,30),
//           MSGCLASS=H
//STEP1 EXEC PGM=FTP,PARM='( EXIT'
//INPUT DD DSN=[FTPFILE],DISP=SHR
//OUTPUT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
```

Do not modify any parameters contained in brackets, such as [USERID] and [FTPFILE].

Chapter 3. Implementing ETI•EXTRACT-Data Warehouse Center integration

To implement a data conversion that is to be managed by the Data Warehouse Center, do the following tasks:

Use ETI•EXTRACT to:

- Create a conversion specification.
- Generate the conversion programs.
- Run the conversion programs to test them.
- Register the conversion specification with the Data Warehouse Center.

Use the Data Warehouse Center and Information Catalog Manager to do the following tasks:

1. Add your Data Warehouse Center user ID to the supplied security group if this is the first time a conversion specification has been registered with the Data Warehouse Center. See "Adding your user ID to the generated security group" on page 22. **Note:** This can be done only after the Register function of the ETI Meta Scheduler has been run.
2. Modify the Data Warehouse Center steps to access remote hosts by supplying passwords for them and, optionally, changing the agent site from the default agent site.
3. Promote the steps.
4. Run the steps to test the integration.
5. Schedule the steps for production.

Creating and running a conversion with ETI•EXTRACT

When you use ETI•EXTRACT with Data Warehouse Center, you follow the same procedures to create a conversion specification as you would to use ETI•EXTRACT alone. However, the ETI•EXTRACT Conversion Editor generates an execution plan file that is tailored for the Data Warehouse Center. It contains the metadata about the data conversion that the Data Warehouse Center requires to generate steps. The Conversion Editor also generates three job control scripts for each conversion program: one that compiles, links and runs the conversion program, one that compiles the conversion program and one that runs the conversion program.

Table 5 on page 16 lists the files that the Conversion Editor creates. *Conversion* is the name of the conversion specification, and *instruction* is the job control

script for a conversion program.

Table 5. Files generated by ETI•EXTRACT for the Data Warehouse Center

Task	Execution plan	Job control scripts	
		JCL	**SH**
Transfer,compile, link, and run the conversion programs.[1]	*conversion*plan.exm	*instruction*.jcl	*instruction*.sh
Transfer,compile, and link the conversion programs[2]	*conversion*planc.exm	*instruction*.jcc	*instruction*c.sh
Run the conversion programs[2]	*conversion*plane.exm	*instruction*.jce	*instruction*e.sh
Provide metadata about the conversion for Data Warehouse Center	*vw_conversion*plan.vw[3] [5]	N/A	N/A
Provide metadata about the sources and targets for the information catalog	*conversion*.MDIS[4][5]	N/A	N/A

1. This is the format that the ETI•EXTRACT Executive generally uses for testing.
2. This is the format the ETI•EXTRACT uses for testing the compile and link of the conversion programs separately from running the conversion programs.
3. This file is transferred to the Data Warehouse Center in "Registering a conversion specification" on page 18 or "Transferring files without importing metadata" on page 20.
4. This file is created and transferred to the Information Catalog Manager in "Registering and transferring conversion specifications with the Data Warehouse Center" on page 17.
5. These files are transferred to the Data Warehouse Center without registering them in "Transferring files without importing metadata" on page 20.

ETI•EXTRACT does not generate different COBOL and C programs for the Data Warehouse Center. (The extensions of the COBOL and C programs are the same as for any other release of ETI•EXTRACT.)

To confirm that the files have been created:

1. From the Workset Browser, select the **Files** tab.
2. Select the conversion from the list.
3. Click the arrow next to the conversion to see the list of files.

Recommendation: Generate, compile, link, and run the conversion programs before transferring the metadata for the conversion to the Data Warehouse Center.

To run the conversion programs, do one of the following procedures:

- Invoke the ETI•EXTRACT Executive from the Workset Browser:
  1. From the Workset Browser, select the **Conversions** tab.
  2. Select the conversion to execute.
  3. Select **Tools —> Execute Conversion**.
  4. Select the conversionplanc.exm file.
  5. Compile and link the conversion programs corresponding to the conversionplanc.exm file.
  6. Select the conversionplane.exm file.
  7. Run the conversion programs corresponding to the conversionplane.exm file.

- Invoke the ETI•EXTRACT Executive from a UNIX® command prompt. Type the following information on one line:

  ```
  ex_run -o db_pathname -w workset_pathname -c conversion_name. major_version -
  ```

  where:
  - db_pathname is the pathname of the oodb in the ETI•EXTRACT metastore database (for example: /export/home/MetaStore/conversion_name/oodb)
  - workset_pathname is the pathname of the Workset, starting at the System Workset
  - conversion_name is the name of the conversion specification to execute
  - major_version is the version of the conversion specification to execute

Registering and transferring conversion specifications with the Data Warehouse Center

ETI•EXTRACT registers a conversion specification with the Data Warehouse Center. Files are transferred between ETI•EXTRACT and the Data Warehouse Center, then imported into the information catalog and the Data Warehouse Center by the program, FLGNMVE0. For more information, see *ETI•Meta Scheduler for DB2 Warehouse Manager.*

If you encounter problems in registering a conversion specification with the Data Warehouse Center, you also can specify that the files be transferred without importing the metadata into the information catalog and the Data Warehouse Center. This method enables you to verify that the file transfer between the ETI•EXTRACT host and the workstation containing the Data Warehouse Center administrative client is working correctly. If you choose the transfer option, you must manually import the files into the information catalog and the Data Warehouse Center before you can use the conversion. See "Transferring files without importing metadata" on page 20.

If you are using an FTP daemon other than Hummingbird Exceed, you cannot register a conversion specification with the Data Warehouse Center. You must use the transfer option and then manually import the files.

If you intend to use the same values for multiple conversion specifications, you can set default values for fields by clicking on Browsing Worksets —> Options —> Register Tool —> Register Conversion, or Transfer Conversion.

ETI•EXTRACT creates the *conversion*.mdis file, where *conversion* is the name of the conversion specification for which you are registering files, in the mdis_export directory under the MetaStore's root directory. ETI•EXTRACT transfers the *conversion*.mdis file and the *vw_conversion*plan.vw file to the warehouse directory and, if registering the conversion, invokes the Data Warehouse Center program, FLGNMVE0.

The Data Warehouse Center then imports metadata about the sources and targets from the MDIS file into the Information Catalog Manager. It imports metadata about the sequence of conversion programs to run and the inputs and outputs for the conversion programs into the Data Warehouse Center.

Registering a conversion specification

To confirm that the files were successfully transferred and the metadata was successfully imported into the Data Warehouse Center and Information Catalog Manager, read the messages in the following log files:

- For the Data Warehouse Center:

  `Program Files\SQLLIB\logging\vw_conversionplan.log`

- For Information Catalog Manager:

  `Program Files\SQLLIB\logging\conversion.MDIS.LOG`

where:

- *Program Files\SQLLIB\logging* is the directory set by the VWS_LOGGING environment variable
- *conversion* is the name of the conversion specification

To view the Data Warehouse Center definitions that were generated from the ETI•EXTRACT metadata, complete the steps in "Adding your user ID to the generated security group" on page 22. After completing that task, you should see new sources and a subject with new steps.

Figure 7 shows an example of database objects generated in an information catalog from ETI•EXTRACT metadata. CensusIn and CensusOut are ETI•EXTRACT database objects.
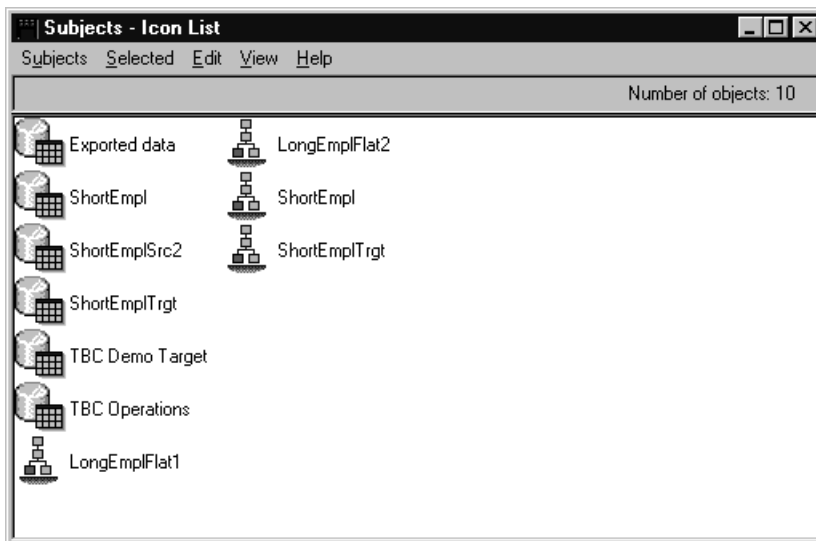

Figure 7. ETI•EXTRACT database objects in an information catalog.

Note: By default, the ETI•EXTRACT metadata defines all non-relational databases as hierarchical databases. To override the default, specify a value for the MDIS_db_type conversion property (in order of precedence) on the database, on the schema, or on the Data Access System object in ETI (DAS), which sets the default. The allowable values are RELATIONAL, HIERARCHICAL, FILE, or NETWORK. These values are case-sensitive.

For more information about setting the MDIS_db_type conversion property, see *ETI•MetaScheduler for DB2 Warehouse Manager*.

To view the objects within a database, double-click the icon for the database. Figure 8 on page 20 shows an example tree structure of objects within a database. (In Figure 8 on page 20, the tree is expanded to show the transformation objects.)
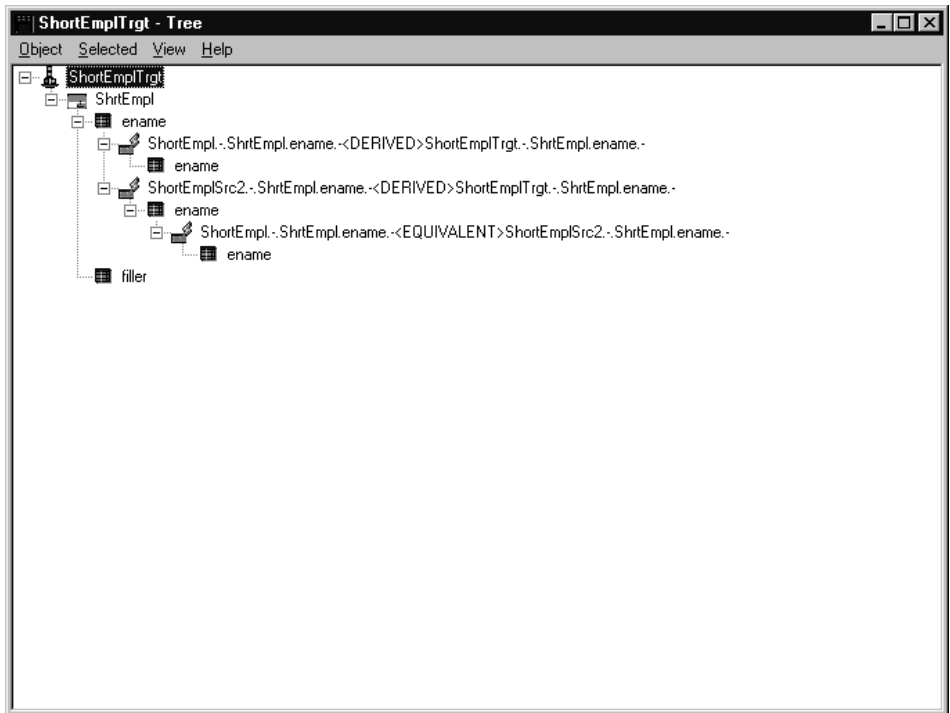
Figure 8. ETI•EXTRACT transformation objects in an information catalog.

Note: The Data Warehouse Center generates processes each time a conversion specification is registered with Data Warehouse Center. If you have previously registered the conversion specification, the Data Warehouse Center generates a second process with a different time stamp from the original set. If you replaced a set of conversion programs with a new process and then re-registered the conversion specification, delete the old process. If you have changed the location where the original set of conversion programs is stored and want to manage the original programs separately from the new programs, you can keep both sets of steps for versioning purposes.

Transferring files without importing metadata

To confirm that the files have been transferred, verify the following files exist on the target directory. An example is shown below:

c:\dwadmin\etidir:

- *conversion*.mdis
- vw_conversionplan.vw

where *conversion* is the name of the conversion specification for which you are transferring files.

After the files have been transferred, you can manually import the metadata from the files into the information catalog and the Data Warehouse Center.

To import the metadata manually:

1. (Optional) Log on with a user ID for which you specified the default directory for FTP and Telnet services. (See "Enabling FTP and Telnet support on the Data Warehouse Center workstation" on page 9.)

2. Type the following command on a DOS command line (omit the carriage return):

   ```
   FLGNMVE0.exe exec_plan MDISFile VWUser VWPass VWControl DGUser DGPass
   DGCatalog
   ```

   where:

   exec_plan
   The path and name of the transferred conversionplan.vw file. For the path, you can specify either the full path or a subdirectory of the directory set by the HOMEDRIVE and HOMEPATH environment variables. If you specify the full path, also specify the full path for the MDISFile parameter; if you specify the subdirectory, also specify the subdirectory for the MDISFile parameter.

   For example, if the following environment variables are set:
   - HOMEDRIVE = c:
   - HOMEPATH = \DB2ADMIN
   - Data Warehouse Center directory set in ETI•EXTRACT = etidir

   you can specify either the full path name as
   `c:\DB2ADMIN\etidir\conversionplan.vw` or the subdirectory as
   `etidir\conversionplan.vw`.

   MDISFile
   The path and name of the transferred conversion.mdis file. For the path, you can specify either the full path or a subdirectory of the directory set by the HOMEDRIVE and HOMEPATH environment variables. If you specify the full path, also specify the full path for the exec_plan parameter; if you specify the subdirectory, also specify the subdirectory for the exec_plan parameter.

   For example, if the following environment variables are set:
   - HOMEDRIVE = c:
   - HOMEPATH = \DB2ADMIN
   - Data Warehouse Center directory set in ETI•EXTRACT = etidir

   you can specify either the full path name as
   `c:\DB2ADMIN\etidir\conversion.mdis` or the subdirectory as
   `etidir\conversion.MDIS`.

VWUser
The user ID to use to log on to the Data Warehouse Center, which must match the user ID to use for the information catalog

VWPass
The password to use to log on to the Data Warehouse Center, which must match the password to use for the information catalog

VWControl
The name of the warehouse control database in which to import the run-time metadata

DGUser
The name of the user ID to use to access the information catalog, which must match the user ID to use for the Data Warehouse Center

DGPass
The name of the password to use to access the information catalog, which must match the password to use for the Data Warehouse Center

DGCatalog
The name of the information catalog in which to import the end-user metadata

Adding your user ID to the generated security group

You must add your user ID to the ETI Definition Default security group in order to see the new objects that were generated after you registered a conversion. The ETI Definition Default security group is added the first time the FLGNMVE0 utility is run either manually or as a result of invoking the Register function in ETI·Extract.

To add your user ID to the security group:

1. From the Data Warehouse Center window, expand **Administration, Warehouse Users and Groups**, then right-click on **Warehouse Groups —> Refresh**.

   The ETI Definition Default Group is displayed in the Warehouse Groups window (see Figure 9 on page 23).
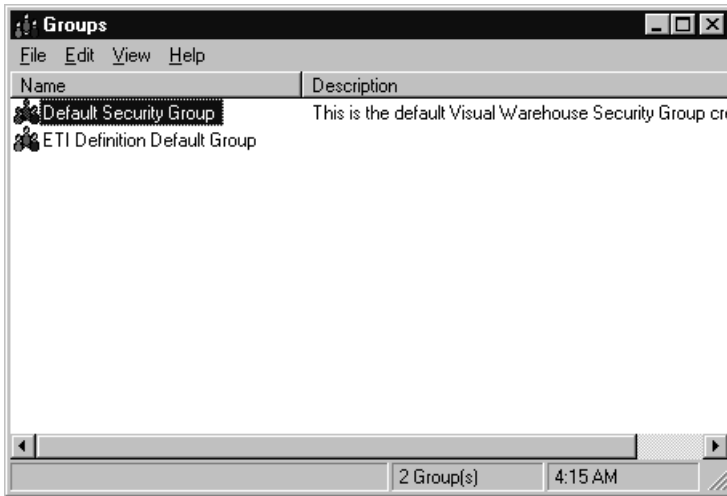
Figure 9. ETI Definition Default Group in Groups window

2. Right-click on the **ETI Definition Default Group** →**Properties**. The Properties- ETI Default Group window is displayed. See Figure 10 on page 24
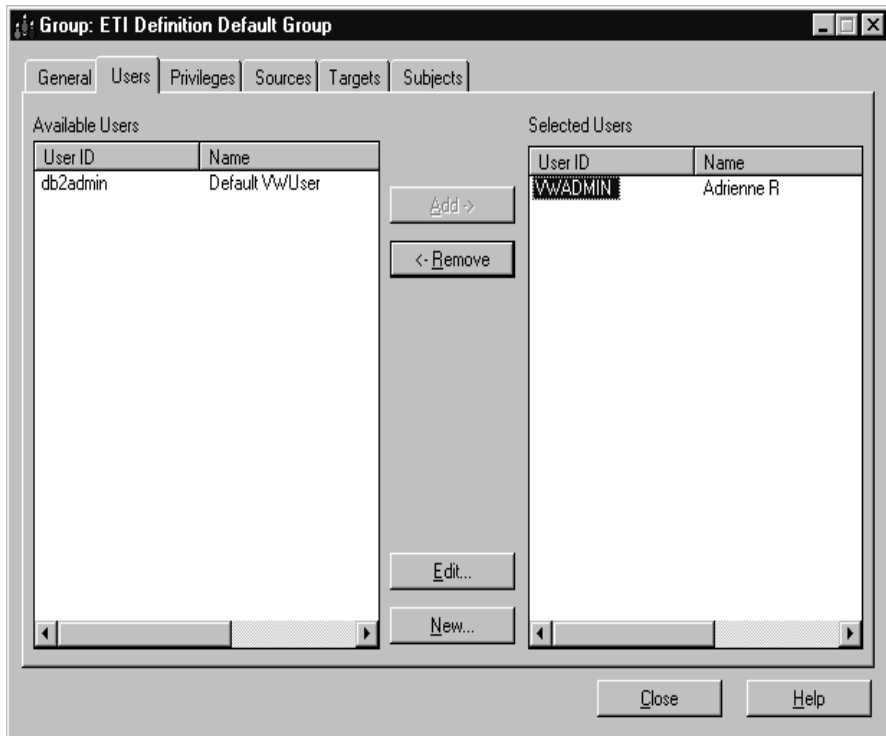
Figure 10. Adding a user ID to the ETI Definition Default Group. In this example, etiuser is the user ID under which the user has logged on to the Data Warehouse Center.

3. Click on the **Warehouse Users** tab, highlight the chosen user in the **Available warehouse users** window and click on the > arrow to move it into the **Selected warehouse users** window. Click **OK**.
4. From the Data Warehouse Center desktop, click on **View —> Refresh**.
5. Click on the Warehouse Sources folder. You will see new sources in the right pane.

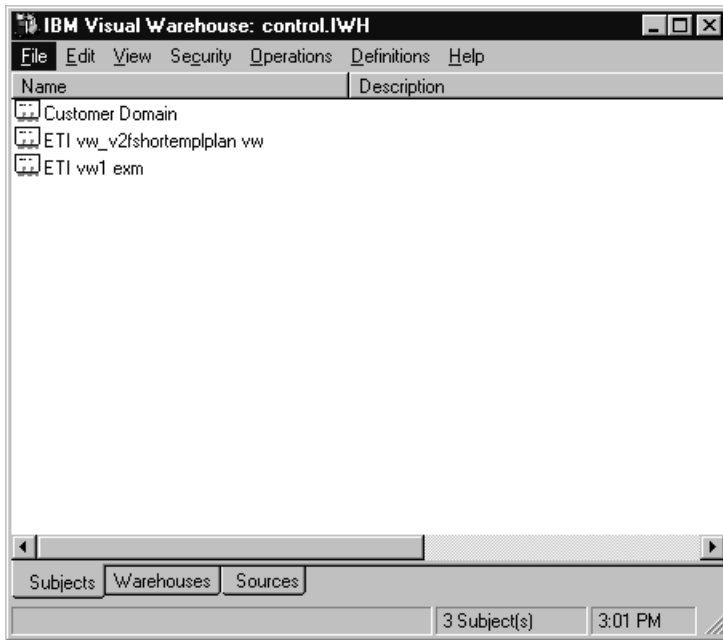   Figure 11 on page 25 shows an example of the sources.

Figure 11. Generated sources in the Data Warehouse Center desktop

6. To view the new steps from the Data Warehouse Center window, expand **Subject Areas**, the desired subject, **Processes**, then click on the selected process.

The Steps List window opens, displaying the new steps. Figure 12 on page 26 shows an example of the steps.

Figure 12. Generated steps for the ETI vw_BevCoCensusDAplan.vw

Modifying the steps to access remote hosts

Some of the generated steps require a user ID and password for the remote OS/390 or UNIX host where the ETI•EXTRACT conversion program resides. The Data Warehouse Center passes the user ID and password to the Data Warehouse Center program it uses to access the remote host. The user ID is generated as part of the step definition, but the password is not. You must supply a value if a password is required.

By default, the generated steps use the default warehouse agent site. If you want to use an agent site other than the default, you can select another agent site from those Windows NT, OS/390 or AIX agent sites you have defined to the Data Warehouse Center.

To modify the steps to access remote hosts:

1. Supply the password for the remote host on which the conversion program resides.
2. Optionally, change the agent site to use from the default value.

Specifying generated file names

Some programs do not create message files; specify - as the **Property Value** to prevent the program from terminating.

1. From the Data Warehouse Center window expand **Subject Areas**, expand the desired subject, expand **Processes**, click on the desired process, and a list of objects will appear in the process window.
2. Right-click on the desired step, select **Properties**, and select the **Parameters** tab.
3. Type - in each **Parameter Value** field corresponding to the parameter that defines the file that will not be created.

Supplying the password for the remote host

To view and modify the user ID and password:

Right-click a step name in the Step window, choose **Properties** —> **Parameters**.You see the list of parameters that the Data Warehouse Center program requires (see Figure 13 on page 28).
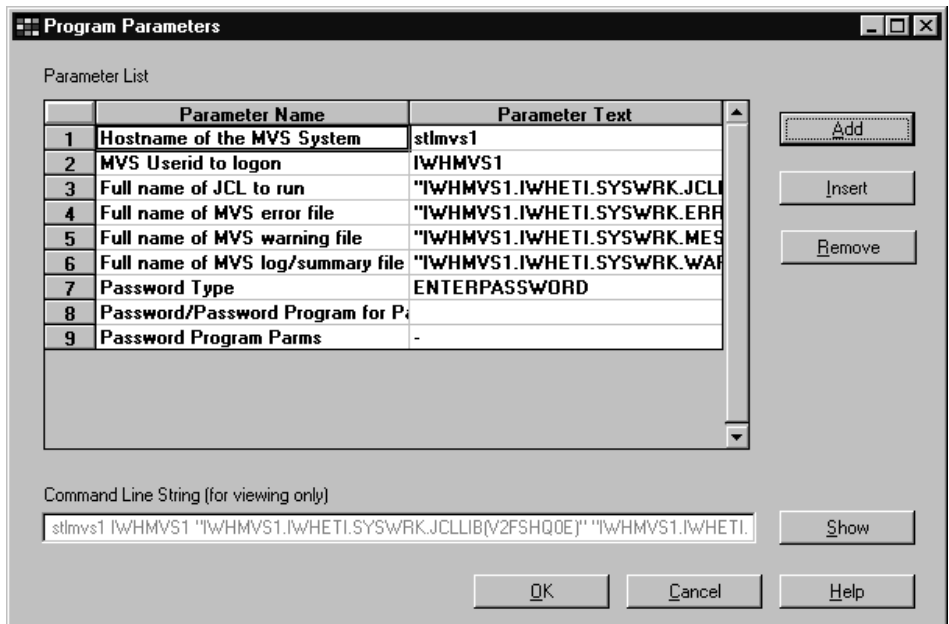
Figure 13. Parameters for the ETI Query Data Warehouse Center program

If the Password Type is...	Do this
ENTERPASSWORD	Supply a password. Type the password in the **Parameter Value** field corresponding to the Password/Password Program for Password parameter.

If the Password Type is...	Do this
GETPASSWORD	If the value of the **Password Type** field is GETPASSWORD, and you have written a program that supplies passwords, you can call the program instead of typing the password in this window.
	The password program must reside on the agent site that is selected for the step. It must write a file that contains the password to use in the first line of the file. It must return 0 if it runs correctly.
	In the **Parameter Value** field corresponding to the Password/Password Program for Password parameter, type the path and name of your password program. In the **Parameter Value** field corresponding to the Password Program Parms parameter, type the values to pass to your password program. The parameter list must be in enclosed in double quotation marks (""). The first parameter in the list must be the path and file name of the file that the password program creates during execution.
PASSWORDNOTREQUIRED	Type - in the Parameter Value field corresponding to the Password/Password Program for Password Parameter. Also, type - in the Parameter Value field corresponding to the Password Program Parms parameter.

Setting the highest acceptable return code

In some cases a program will set a return code higher than 0 that should be interpreted as a successful execution of the program. For example, the merge instructions in an ETI•EXTRACT conversion may set the return code to a 4 which indicates a normal program ending. A return code higher than 0 can be defined as a normal program ending by specifying the value for the ???? parameter name: Highest JES Return Code to Indicate Success.

1. From the Data Warehouse Center window expand **Subject Areas**, the desired subject, and **Processes**. Click on the desired process and a list of objects will appear in the process window.
2. Right-click on the desired step, select **Properties**, and select the **Parameters** tab.
3. Type the highest return code that is to be treated as a normal program completion in the Parameter Value field corresponding to the Highest Return Code for Normal Completion parameter.

Selecting the warehouse agent site

To select a warehouse agent site other than the default:

1. In the Process window, select a step by right-clicking it, then, right-click on **Properties** —> **Processing Options**.
2. Select a Windows NT, OS/390, or AIX agent site from the **Agent site** list.
3. Click **OK**.

Running the steps to test the integration

Before you can run the steps, you must promote each step to at least test mode and then to production mode. In test, each step must be manually started. After the steps have been promoted to production, they will cascade and run automatically from the scheduler:

1. In the Step window, right click on a step.
2. Select **Mode —> Production**.

   The Data Warehouse Center promotes the step. The mode of the step changes to production. Repeat this process for each step.

In DB2 Warehouse Manager Version 7 a step can be promoted directly from development to production mode.

To test the steps:

1. Double-click on a process to display the sequence of the steps in a process model chart.

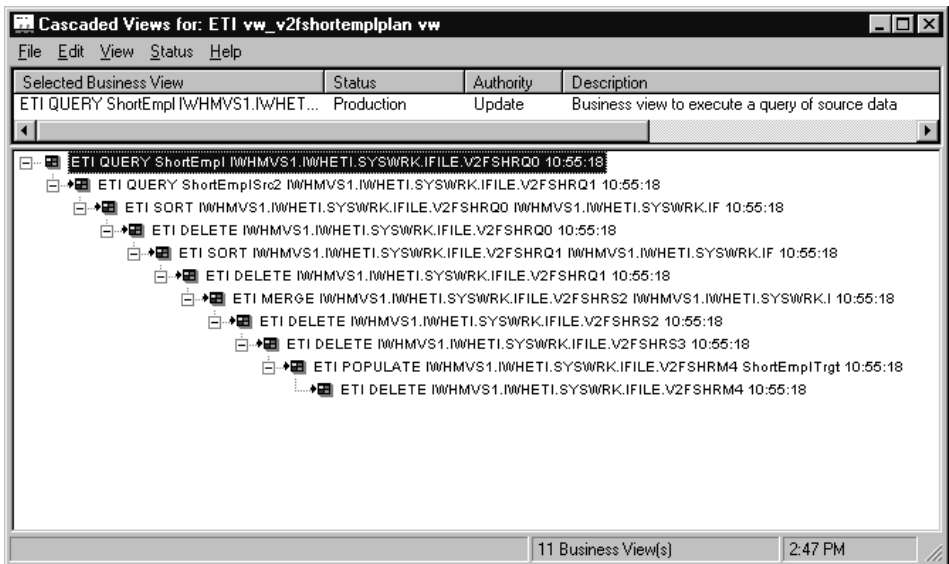   Figure 14 shows an example of a process model chart.

Figure 14. Process model chart. The step with QUERY as part of its name is the one to start manually.

2. Note the name of the first step in the tree. It will have QUERY as part of the name; this is the step you will start manually.

3. From the Data Warehouse Center desktop, select **Warehouse —> Work in Progress.**

4. Click on **Run New Step**.

   The Run New Step window displays a list of steps (see Figure 15).

Figure 15. Manually starting a step

5. Select the step you noted in step 2 from the **Available steps** window.

6. Click on >> to move the step to the **Selected steps** window. Click on **OK**.

7. If the step runs with errors, see Table 6 on page 36.

Scheduling the steps for production

After you test the steps, specify the schedule for the Data Warehouse Center to automatically run the steps. You need to specify the schedule on only the first step in the process model chart. When the first step in the process model chart finishes processing, it will start the next step, and so on.

To specify the schedule:

1. From the step window, right-click on the step that has QUERY as part of its name.

2. Select **Mode —> Test**.

   The Data Warehouse Center demotes the step to test mode.

3. Right-click on the step again.

4. Select **Schedule.**

5. Enter the **Interval, Frequency, Day, Start,** and **End**values, then click on **Add** (see Figure 16 on page 32).
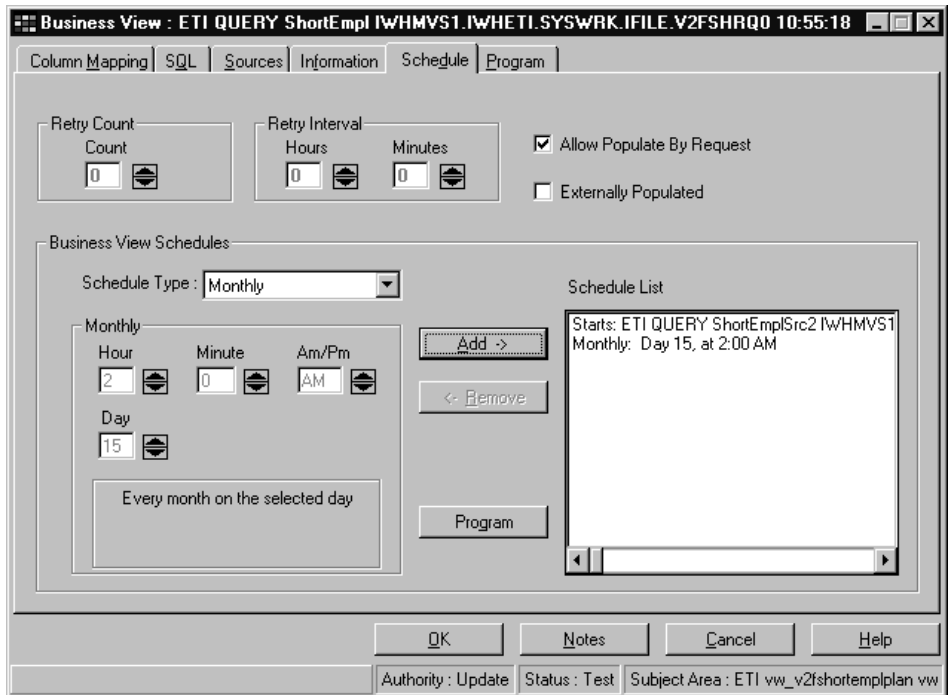
Figure 16. Schedule screen

For the schedule to take effect, you must promote the step to production mode:

1. In the step window, right-click on the step that has QUERY as part of its name.
2. Select **Mode —> Production**.

The Data Warehouse Center promotes the step; its mode changes to production. The step will now run at the scheduled time. The Data Warehouse Center Show Log window under **Work in Progress** will display the status of each step.

Publishing the business metadata in the Information Catalog Manager

You can publish information about the data sources, targets, and the mappings between them used in the ETI•EXTRACT data conversion from the Data Warehouse Center. After the first publishing, the metadata in the Information Catalog Manager is kept current through synchronization. If you want end users to view the intermediate transformations of the data from its

source format to its target format, you can also publish information about the steps that the Data Warehouse Center generates from the ETI•EXTRACT metadata.

For instructions on publishing information about the steps, see the information about synchronized metadata exchange in the *Information Catalog Manager Administration Guide*.

Chapter 4. Troubleshooting common problems

This chapter gives tips for troubleshooting problems that involve both ETI•EXTRACT and the Data Warehouse Center:

- Registering a conversion specification with the Data Warehouse Center does not result in generated steps
- Transferring files between ETI•EXTRACT and the Data Warehouse Center fails
- Running a step fails

For related reference information, see the following appendixes:

- "Appendix A. ETI•EXTRACT execution plan files" on page 39
- "Appendix B. Return codes for Data Warehouse Center programs" on page 47

Registering a conversion specification with the Data Warehouse Center does not result in generated steps

If registering a conversion specification with the Data Warehouse Center fails, do the following steps:

1. Determine whether the files were transferred to the target directory.

   If the files were not transferred, read the error messages in the status window that ETI•EXTRACT displays during the transfer. Check the ex-run.log on the ETI GUI machine.

   If the files were transferred, but metadata was not imported into the Data Warehouse Center, verify that you have added your user ID to the ETI Definition Default security group, as described in "Adding your user ID to the generated security group" on page 22.

2. Read the messages in vw_conversionplan.msg, the result message file. This file contains the directory with the result trace file and import log files. The directory is set by the VWS_LOGGING system environment variable.

3. Check the traces in vw_conversionplan.trc, the result trace file. If the result message and trace files indicate a problem during the import of metadata:

   - For the Information Catalog Manager, read the messages in the conversion.MDIS.LOG file.

   - For the Data Warehouse Center, read the messages in the conversionplan.log file.

Table 6. Trace and message files on the Data Warehouse Center workstation

Type	Name	Location
Conversion result message file	*conversion*plan.msg	*VWS_LOGGING*[1] on the Data Warehouse Center workstation[2]
Conversion result trace file	*conversion*plan.trc	*VWS_LOGGING*[1] on the Data Warehouse Center workstation[2]
Information Catalog Manager import log file	*conversion*MDIS.LOG	*VWS_LOGGING*[1] on the Data Warehouse Center workstation[2]
Data Warehouse Center import log file	*conversion*plan.log	*VWS_LOGGING*[1] on the Data Warehouse Center workstation[2]
Data Warehouse Center program log file	trc-*xx*-*date*-*time*.log, where: • *xx* identifies the Data Warehouse Center program (ex, dl, or rc) • *date* is the date in mmddyy format • *time* is the time in hhmmss format	• On a Windows NT agent site, *VWS_LOGGING*[1] • On an AIX agent site, the /var/IWH directory

[1] VWS_LOGGING is the directory set by the VWS_LOGGING system environment variable. If not specified, the default is Program Files\SQLLIB\logging.

[2] The Data Warehouse Center workstation contains the Data Warehouse Center administrative client.

Transferring files between ETI•EXTRACT and the Data Warehouse Center fails

If the transfer of files fails, use the ETI•EXTRACT Executive to verify that you can use FTP and Telnet to transfer files from the ETI•EXTRACT host to the workstation containing the Data Warehouse Center administrative client.

For more information on using the Executive, see the chapter on the ETI•EXTRACT Executive in the *ETI•EXTRACT Tool Suite User's Guide*.

Running a step fails

When a generated step fails during processing, use the Work in Progress —> Work —> Show Log window to determine whether the Data Warehouse Center program failed during processing. If the value of the **RC1** field is 8410, check the value of the **RC2** field. If the value is nonzero, do the following tasks:

1. Look up the explanation of the RC2 code in "Appendix B. Return codes for Data Warehouse Center programs" on page 47.

2. Look at the log file for the Data Warehouse Center program.

   On Windows NT, the file is in the directory set by the VWS_LOGGING environment variable, which has a default value of Program Files\SQLLIB\logging.

   On AIX, use the VWS_LOGGING variable with the default to the /var/IWH directory.

   On both operating systems, the file is called trc-xx-date-time.log, where:

   • xx identifies the Data Warehouse Center program (ex, dl, or rc)

   • date is the date the Data Warehouse Center program created the log file in mmddyy format

   • time is the time the Data Warehouse Center program created the log file in hhmmss format

   To find the most recent log file, sort the files by the date and time.

3. If the step corresponds to conversion programs on OS/390, look at the JES log file that is in the same directory as the trc and ftp log files. The JES log file is a copy of the file produced on the OS/390 system.

Appendix A. ETI•EXTRACT execution plan files

The information in this appendix is intended for troubleshooting purposes only. Refer to it when an ETI•EXTRACT conversion fails to run successfully.

When you register a conversion specification with the Data Warehouse Center, ETI•EXTRACT sends the execution plan to the Data Warehouse Center. An execution plan is a set of instructions that the Data Warehouse Center uses to generate steps that manage the ETI•EXTRACT data conversion. Occasionally, ETI•EXTRACT or the Data Warehouse Center will fail to run these instructions properly.

The execution plan is generated in the same directory where the programs are generated for a given conversion. The name of the execution plan is *conversion*plan.vw.

To view the execution plan files:
1. Open the Workset Browser.
2. Select the **Files** tab.
3. Double-click the name of the execution plan.

   A text editor displays the contents of the file.

You can also use a common text editor to view the execution plan files.

Instruction types

The Data Warehouse Center execution plan file is organized in a comma-delimited format. It lists the instruction types that are used and the parameters that define the instruction types. There are seven instruction types. Table 7 on page 40 lists each instruction type, describes its function, and lists the parameters that define it. The parameters are listed in the order that they are passed. For more information on parameters, see "Parameters" on page 41.

Table 7. Instruction types

Instruction Type	Function	Parameters
COMMENT/END_COMMENT	Inserts comments, usually conversion specifications, into the execution plan. Comments contain metadata about the execution plan that you might find useful. Anything that appears between the comma after COMMENT and before END_COMMENT is a comment. Comments can be multiple lines and can include any imbedded characters. The Data Warehouse Center does not act on information contained in a COMMENT/END_COMMENT instruction type as it does a parameter. Instead, the Data Warehouse Center uses this information as the long description in a subject area. COMMENT is always paired with END_COMMENT.	None.
LOGIN	Logs on to a remote system.	CurrentHost[1], RemoteHost[1], RemoteHostOS, RemoteAccount, PasswordType, RemotePasswordCommand, RemotePasswordCommandArgs
LOGOUT	Logs off from a remote system	CurrentHost[1], RemoteHost
GET	Copies a file from a remote system and stores it in a temporary file on the local system. This instruction type is limited to intermediate files only.	CurrentHost[1], File, RemoteHost, RemoteFile, RecordLength, TransferMode, RemoteHostOS, RemoteAccount, PasswordType, RemotePasswordCommand, RemotePasswordCommandArgs

Table 7. Instruction types (continued)

Instruction Type	Function	Parameters
PUT	Copies a file from a temporary file on the local system and stores it on a remote system. This instruction type is limited to intermediate files only.	CurrentHost[1], File, RemoteHost, RemoteFile, RecordLength, TransferMode, RemoteHostOS, RemoteAccount, PasswordType, RemotePasswordCommand, RemotePasswordCommandArgs
RUN	Runs a program on your local system.	*Instruction*, CurrentHost[1], Program, Input(n), Output(n), LogFile, ErrorFile, SummaryFile, ProgExt(n), PasswordType, RemotePasswordCommand, RemotePasswordCommandArgs
DELETE	Deletes a file on your local system. It is limited to intermediate files only.	CurrentHost[1], File

1. The system that is the current host switches during the execution of the plan. The current host initially is the system on which the plan is executing. After the LOGIN instruction is issued, however, the current system is the system that ETI•EXTRACT has logged on to (and the remote system is the system on which the plan is executing). After the LOGOUT instruction is issued, the current system switches back to the system on which the plan is executing.

   In the example in "Sample Data Warehouse Center execution plan" on page 44, minerva is the system on which the plan is executing. The LOGIN instruction logs on to funafuti, which is the current system until the LOGOUT instruction is issued. After the LOGOUT instruction is issued, minerva is the current host.

Parameters

An instruction type defines a general action, such as logging on to a remote system, running a program, or deleting a file. Parameters define the instruction type. For example, the parameters for a DELETE instruction type tell the instruction type the name of the system that the file is on and the name of the file to delete. Table 8 on page 42 lists the names of the parameters and the areas they define in the instruction type. The parameters are listed alphabetically by name.

Table 8. Parameter descriptions

Parameter	Defines
CurrentHost	The host name of the local system.
ErrorFile	The name and location of the file to which ETI•EXTRACT writes run-time error information.
File	The name of the file that a GET instruction copies to when it copies information from a remote system to your local system, or the name of the file that a PUT instruction copies when it copies from your local system to a remote system.
Input(n)	The data source used by a RUN instruction. Depending on the type of RUN instruction, the Input(n) parameter can be a flat file or a database table. In some cases, a RUN instruction has more than one input.
Instruction	The specific type of RUN instruction. See Table 9 on page 44 for more information.
LogFile	The name and location of the file to which ETI•EXTRACT writes log information.
Output(n)	The target to which the RUN instruction writes. In some cases, a RUN instruction has more than one output.
PasswordType	Password information for a remote host. When an instruction type accesses a remote host, it runs one the following password types: **GetPassword** This password type uses the Remote Password Command program to obtain the remote host password. **EnterPassword** This password type directly supplies a password to the remote host. **PasswordNotRequired** This password type is sent when the remote host does not require a password.
PrgExt(n)	A program used by an instruction type.

Table 8. Parameter descriptions (continued)

Parameter	Defines
Program	The name of the program that ETI•EXTRACT generates. This program is either JCL or a shell script.
RecordLength	The record length of file that a PUT or GET instruction uses, as necessary. This parameter is optional.
RemoteAccount	The user ID for the remote host.
RemoteFile	The name of the file that a GET instruction copies from a remote system to a file on your local system, or the name of the file that a PUT instruction copies to when it copies a file from your local system to a remote system.
RemoteHost	The host name of the remote system.
RemoteHostOS	The operating system of the remote system.
RemotePasswordCommand	The required password when the PasswordType is EnterPassword. You must supply a password when you schedule this instruction in the Data Warehouse Center. Otherwise, this parameter will not be passed.
RemotePasswordCommandArgs	The arguments that the RemotePasswordCommand passes. This parameter is used only with the RemotePasswordCommand.
SummaryFile	The name and location of the file to which ETI•EXTRACT writes information about warnings and status.
TransferMode	The type of file transfer (bin, char, or default to FTP). This parameter is used only with the RecordLength parameter.

The parameters for instruction types map to the parameters for the Data Warehouse Center programs that are supplied for ETI•EXTRACT support.

Instruction parameters

Instruction is a general name for a subset of parameters that define a database action to a RUN instruction type. The term *Instruction* is not listed in the execution plan. Instead, the subset parameter that defines the database action is listed. Table 9 on page 44 lists the subset of parameters that the *Instruction*

parameter passes, describes their functions, and enumerates the sources and targets that they use.

Table 9. Data instruction types

Parameter instruction types	Description	Number of sources and targets
query	Reads data to an output file.	*n* sources, *n* targets
sort	Orders data.	1 source, 1 target
split	Writes information from one source to two targets. The source is the first target. The second target is a normal target.	1 source, 1 target
merge	Writes information from two or three different sources to one file.	2 sources, 1 target
populate	Populates a database table.	1 source, 1 target
query_populate	Performs a single-step conversion.	*n* sources, *n* targets

These parameters map to the parameters for the Data Warehouse Center programs that are supplied for ETI•EXTRACT support.

Sample Data Warehouse Center execution plan

An execution plan file is an exact mapping of the execution plan that is created when you register a conversion specification. When you open an execution plan file, a set of instruction types and parameter definitions is displayed. This section provides a sample Data Warehouse Center execution plan file and an explanation of the information in the file.

An execution plan file will resemble the following sample:

```
LOGIN,minerva,funafuti,unix,extract,EnterPassword,,,

RUN,query,funafuti,/tmp/CBL_SIMP_splitquery0e.sh,SRC-EMP,/tmp/CBL_SIMP_
splitquery0.int,/tmp/CBL_SIMP_splitquery0.msg,/tmp/CBL_SIMP_splitquery0.err,
/tmp/CBL_SIMP_splitquery0.wrn,jcl=/tmp/CBL_SIMP_splitquery0.jcl,
shell-compile=/tmp/CBL_SIMP_splitquery0c.sh,shell-execute=/tmp/CBL_SIMP_
splitquery0e.sh,cobol74=/tmp/CBL_SMq0.cbl,prog_ext=last,PasswordNotRequired,,,
RUN,populate,funafuti,/tmp/CBL_SIMP_splitpopulate1e.sh,/tmp/CBL_SIMP_
splitquery0.int,TGT-EMP,/tmp/CBL_SIMP_splitpopulate1.msg,/tmp/CBL_SIMP_
splitpopulate1.err,/tmp/CBL_SIMP_splitpopulate1.wrn,jcl=/tmp
/CBL_SIMP_splitpopulate1.jcl,shell-compile=/tmp/CBL_SIMP_
splitpopulate1c.sh,shell-execute=/tmp/CBL_SIMP_splitpopulate1e.sh,
cobol74-prepop=/tmp/CBL_SMp1z.cbl,cobol74=/tmp/CBL_SMp1.cbl,prog_ext=last,
PasswordNotRequired,,,
DELETE,minerva,/tmp/CBL_SIMP_splitquery0.int
LOGOUT,funafuti,minerva
```

There are five separate instructions in this file:

- `LOGIN,minerva,funafuti,unix,extract,EnterPassword,,,`

  where:
  - `minerva` is the CurrentHost
  - `funafuti` is the RemoteHost
  - `unix` is the RemoteHostOS
  - `extract` is the RemoteAccount
  - `EnterPassword` supplies the password
- `RUN,query,funafuti,/tmp/CBL_SIMP_splitquery0e.sh,SRC-EMP,/tmp/CBL_SIMP_splitquery0.int,/tmp/CBL_SIMP_splitquery0.msg,/tmp/CBL_SIMP_splitquery0.err,/tmp/CBL_SIMP_splitquery0.wrn,jcl=/tmp/CBL_SIMP_splitquery0.jcl,shell-compile=/tmp/CBL_SIMP_splitquery0c.sh,shell-execute=/tmp/CBL_SIMP_splitquery0e.sh,cobol74=/tmp/CBL_SMq0.cbl,prog_ext=last,PasswordNotRequired,`

  where:
  - `query` is the *Instruction*
  - `funafuti` is the CurrentHost
  - `/tmp/CBL_SIMP_splitquery0e.sh` is the program
  - `SRC-EMP` is the Input(n)
  - `/tmp/CBL_SIMP_splitquery0.int` is the Output(n)
  - `/tmp/CBL_SIMP_splitquery0.msg` is the LogFile
  - `/tmp/CBL_SIMP_splitquery0.err` is the ErrorFile
  - `/tmp/CBL_SIMP_splitquery0.wrn` is the SummaryFile

- jcl=/tmp/CBL_SIMP_splitquery0.jcl is a ProgExt(n)
- shell-compile=/tmp/CBL_SIMP_splitquery0c.sh is a ProgExt(n)
- shell-execute=/tmp/CBL_SIMP_splitquery0e.sh is a ProgExt(n)
- cobol74=/tmp/CBL_SMq0.cbl is a ProgExt(n)
- prog_ext=last is a ProgExt(n); last indicates that this is the last ProgExt(n) in the instruction.
- PasswordNotRequired is passed because the password is pulled from the previous LOGIN instruction.

- RUN,populate,funafuti,/tmp/CBL_SIMP_splitpopulate1e.sh,/tmp/CBL_SIMP_splitquery0.int,TGT-EMP,/tmp/CBL_SIMP_splitpopulate1.msg,/tmp/CBL_SIMP_splitpopulate1.err,/tmp/CBL_SIMP_splitpopulate1.wrn,jcl=/tmp/CBL_SIMP_splitpopulate1.jcl,shell-compile=/tmp/CBL_SIMP_splitpopulate1c.sh,shell-execute=/tmp/CBL_SIMP_splitpopulate1e.sh,cobol74-prepop=/tmp/CBL_SMp1z.cbl,cobol74=/tmp/CBL_SMp1.cbl,prog_ext=last,PasswordNotRequired,,,

  You can run an instruction type more than once in an execution plan. While this RUN instruction runs a program that is different than the one called in the previous RUN instruction, the parameter breakdown follows the same format.

- DELETE,minerva,/tmp/CBL_SIMP_splitquery0.int where:
  - minerva is the CurrentHost
  - /tmp/CBL_SIMP_splitquery0.int is the file that is to be deleted.

- LOGOUT,funafuti,minerva where:
  - funafuti is the CurrentHost
  - minerva is the RemoteHost

Appendix B. Return codes for Data Warehouse Center programs

This appendix describes the return codes for the Data Warehouse Center programs that manage conversion programs. Use the descriptions of the return codes along with the log files for the Data Warehouse Center programs to debug problems.

- On Windows NT, the file is in the directory set by the *VWS_LOGGING* environment variable, which has a default value of Program Files\SQLLIB\logging.
- On AIX, use the *VWS_LOGGING* variable with the default to the /var/IWH directory.

OS/390 programs

Table 10 lists the possible values of the **RC2** field in the Show Log window when the value of the **RC1** field is 8410. The programs, ″Delete a File on MVS″ (ETIDLMVS), ″ETI -RUN for MVS″ (ETIEXMVS), and ″Run FTP on an MVS host″ (ETIRCMVS) are used to invoke ETI transformations on the 390 by warehouse agents running on remote Windows NT, OS/390, or AIX.

Table 10. Return codes for OS/390 Data Warehouse Center programs

Return code	Description
0	The program ran successfully.
4	The program ran but might have encountered a problem.
8	Parameter error. The program detected a parameter error, such as the following: • Too few parameters were supplied to the program • The password type is incorrect • The File Record Length is not a number
12	FTP error. The program detected an FTP error, such as the following: • The system can't execute an FTP command. • The host name, user ID, or password for OS/390 is invalid. • A file for which the program issued an FTP GET command is empty on the target machine, but not on the source machine.

Table 10. Return codes for OS/390 Data Warehouse Center programs (continued)

Return code	Description
16	Internal error.
	The program detected an internal error, such as the inability to open, create, or delete a file.
20	OS/390 error.
	The program detected an OS/390 error, such as the following:
	• The JCL file does not exist on the OS/390 system.
	• The JCL file is empty.
	• The first 7 characters of the job name are different from the OS/390 user ID.
	• JES cannot execute the JCL for some reason, such as a syntax error or an invalid data set.
24	ETI•EXTRACT error.
	The program detected an ETI•EXTRACT error and transferred an error file generated by ETI•EXTRACT.
36	FTP PUT error.
	The source file to be transferred with the FTP PUT command does not exist.
44	File empty error.
	The source file is empty on the OS/390 system.
48	Environment variable error.
	The *VWS_LOGGING* or *VWS_TEMPLATES* environment variable has not been set.
52	Get password program error.
	The program detected an error in executing the password program.
60	JCL template error.
	The program could not find a customized Data Warehouse Center template.
	For more information about copying and customizing Data Warehouse Center templates, see "Modifying the Data Warehouse Center template for FTP support" on page 13.

AIX programs

Table 11 lists the possible values of the **RC2** field in the Show Log window when the value of the **RC1** field is 8410. The programs, ″Delete a File using REXEC″ (ETIDLUNX), ″ETI - RUN using REXEC″ (ETIEXUNX), and ″Remote FTP using REXEC″ (ETIRCUNX) are used to invoke ETI transformations on AIX by warehouse agents running on remote Windows NT, OS/390 or AIX.

Table 11. Return codes for AIX Data Warehouse Center programs

Return code	Description
0	The program ran successfully.
4	The program ran but might have encountered a problem.
8	Parameter error.
	Too few or too many parameters were supplied to the program, or an invalid value was supplied for a parameter.
16	File error.
	The program was unable to open, create, or write to a temporary file.
	Modify the environment to fix the problem, such as changing file permissions or changing the directory set by the *VWS_LOGGING* environment variable. See the trace file (if one exists) for more information about the type of file error.
24	ETI•EXTRACT error.
	The program detected an ETI•EXTRACT error.
48	Environment variable error.
	The *VWS_LOGGING* environment variable has not been set.
52	Get password program error.
	The program detected a password program error, such as a missing program, an invalid name, or the wrong number of parameters.
56	Remote execution error.
	The program detected a remote execution error, such as the following : • An incorrect user ID or password was supplied. • A remote file was not found. • A remote host is not responding. • The supplied user ID is not authorized to create or read the remote file.

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