MICRO FOCUS

Administrator's Guide

Databridge FileXtract

Version 6.6 Service Pack 1

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Contents

About This Guide

This guide contains instructions for installing, configuring, and using Attachmate Databridge FileXtract (hereafter referred to as FileXtract). This preface includes information to help you use this guide.

To install, configure, and run Databridge, you should be a system administrator familiar with the following:

- Standard Unisys® operations for MCP-hosted mainframes such as the CS7xxx series, Libra series, ClearPath® NX/LX or A Series
- DMSII databases and Data And Structure Definition Language (DASDL)
- File layouts and the description of those layouts for the files you will be replicating

Abbreviations

The following abbreviations are used throughout this guide and are provided here for quick reference.

Abbreviation	Name
AA	Absolute Address
ABSN	Audit Block Serial Number
AFN	Audit File Number
API	Application Programming Interface
DASDL	Data and Structure Definition Language
DMSII	Data Management System II
IDX	Index
IPC	Inter-Process Communications
MCP	Master Control Program
RPC	Remote Procedure Call
SEG	Segment
WFL	Work Flow Language

Conventions

The following conventions and terms may be used in this guide.

This convention or term	Is used to indicate this
`this type style`	text that you type filenames and directory names onscreen messages
italic	variables emphasis document titles
square brackets ([ ])	optional items in a command For example, [true | false]. (Do not type the brackets.)
pipe (|)	a choice between items in a command or parameter. When enclosed in braces ({ }), the choice is mandatory.
UPPERCASE	DMSII data set and data item names
MCP server host mainframe (terms)	Unisys ClearPath NX, LX or A Series mainframe
DBEngine (term)	Databridge Engine
DBEnterprise (term)	Databridge Enterprise Server
DBServer (term)	Databridge Server

Related Documentation

When using Databridge, you may need to consult the following resources.

Databridge product documentation	On the Databridge installation image, the DOCS folder contains guides for installation, error codes, and administrator's guides for each Databridge product. These documents require Adobe Reader for viewing, which you can download from the Adobe website (http://get.adobe.com/reader/). This documentation, and current technical notes, is also available on the Attachmate support site (http://support.attachmate.com/manuals/databridge.html). Documentation for Databridge Enterprise Server and the Databridge Client Console is also available from the **Help** menu. A modern browser is required for viewing this documentation.
Unisys MCP server documentation	If you are not completely familiar with DMSII configuration, refer to your Unisys documentation.

1 Introducing FileXtract

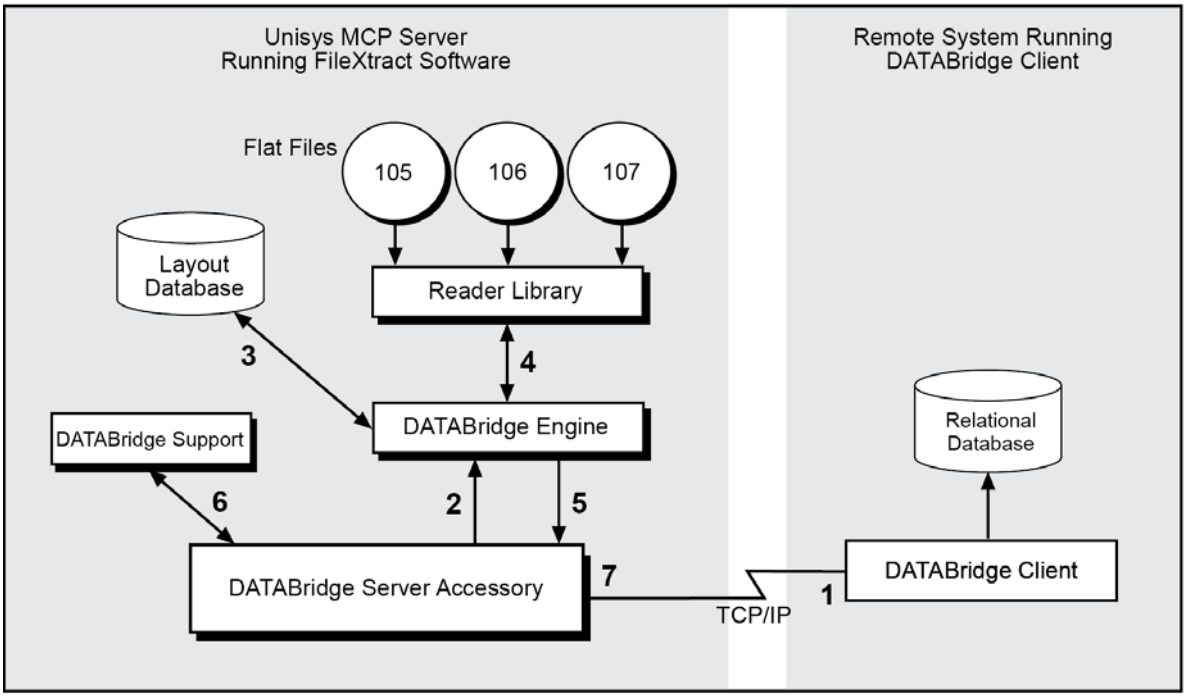
In this Chapter

Introducing FileXtract

Databridge FileXtract is a product which allows you to clone and update non-DMSII data (that is, flat files) residing on Unisys ClearPath NX, LX, or A Series mainframes. FileXtract is bundled with the Databridge Host software and includes several Reader libraries and other associated files.

FileXtract software is automatically installed as part of the Databridge host software, and has no additional system requirements.

You can use FileXtract in conjunction with the Databridge Client, DBSpan, or DBSnapshot. When using FileXtract with the Databridge Client, FileXtract data sources resemble any other DMSII data source. The following diagram shows how the Databridge Client uses FileXtract to replicate flat files.



1. The Databridge Client calls the Databridge Server (DBServer) to replicate the specified flat files.
2. DBServer calls the Databridge Engine (DBEngine) to extract the data for the selected flat files.
3. The DBEngine accesses the specified FileXtract layout database to determine the layout of the flat files.

No updates are actually done to this database. The Engine gets all of the layout information it needs from the DESCRIPTION file. The DMSII CONTROL file and the DMSUPPORT library will exist, but the data sets and audit files will not.

4. DBEngine calls the appropriate Reader library, as specified in the layout database, to extract the data from the flat files.
5. DBEngine sends the data to DBServer.
6. DBServer calls Databridge Support to filter, alter, or transform the data, if needed.
7. DBServer sends the data to the Databridge Client.
8. The Databridge Client populates the relational database and then either waits for additional flat file information or terminates.

Advantages of FileXtract

FileXtract provides the following advantages:

- Any type of flat file (non-DMSII data) can be replicated to a Client database.
  - Sample Reader libraries are provided for system summary log files (SUMLOG), COMS Transaction Trail files (TTRAIL), printer backup files (PRINTFILES), BICSS log files (BICSS), LINC Activity logs (LINCLOG), and the USERDATA system file. You can use these sample Reader libraries without any modifications to the Reader libraries. DASDL files are provided to generate the corresponding layout database. For more information, see Chapter 3, “Using Reader Libraries."
  - The DISKFILE Reader library is provided to replicate COBOL created flat files. If you have COBOL 01-level file record descriptions for your flat files, you can use the COBOL-to-DASDL utility to generate the layout database. For more information, see Chapter 4, “Using the COBOL-to-DASDL Utility.”
  - Sample Reader libraries are also provided to allow you to customize replication of any other type of flat file. For more information, see Chapter 3, “Using Reader Libraries."
- Cloning is required only one time. After the flat files are cloned, FileXtract updates the Client database as new records and flat files become available.
- Replicate only the parts you want from flat files. You don't have to replicate the entire flat file.
- By copying flat files to a secondary database, you offload decision support, queries, and reporting from the primary database. The secondary database provides a secure way to make data available to selected individuals, departments, or sites while protecting the flat files on the host.
- The data is available on the Client system even if the host is down or the data communication connection is broken. This eliminates long wait times for data availability. Users can use any database tool available on the Client system to access the data in the secondary database.

NOTE: FileXtract cannot track updates to flat file records. If record modifies or deletes occur, you must reclone.

Getting Started with FileXtract

The following is a description of how to use FileXtract to replicate flat files.

1. The FileXtract software is automatically installed with the rest of the host software. See Chapter 2 of the Databridge Installation Guide for more information.
2. Decide which flat files you want to replicate.
3. Select a Reader library to use from the following table, and then select or generate a layout database for the flat files you want to replicate.

For these types of files	Use this Reader library
System summary log files	SUMLOG
COMS Transaction Trail files	TTRAIL
Printer backup files	PRINTFILE
BICSS log files	BICSS
Flat file using a COBOL FD	DISKFILE
LINC Activity logs created by LINC systems	LINCLOG
System USERDATA file	USERDATA
Flat files that contain information in a “proprietary” format (for example, a flat file that requires reading the nth word to find the address of the next record)	A custom, user-written Reader library
The BANKFILE sample flat file supplied with FileXtract	BANKFILE

4. Start the replication process.
5. If you will be using DBServer, define the SOURCE and READER options in the DBServer parameter file. If you will be using Databridge Span or Snapshot, define the READER option in the appropriate parameter file.

   Refer to the *Databridge Host Administrator’s Guide* for instructions.
6. Run the accessory (DBServer, DBSpan, or DBSnapshot). Refer to the *Databridge Host Administrator’s Guide* for instructions on configuring and running Databridge accessories.
7. If you are replicating to the Databridge Client, run the Databridge Client DEFINE command against the SOURCE option in Databridge Server.

   Refer to the *Databridge Client Administrator’s Guide* for instructions on running the Databridge Client.

2 Using the Sample Reader Libraries

FileXtract includes several sample Reader libraries, which are configured to replicate flat files as standard data sets for the given file type. You can typically use the sample Reader libraries without modifications, except in the following circumstances:

- Your flat files contain data in a proprietary format
- New fields have been added to a standard layout
- You want to replicate additional types of records that the Reader library does not support (for example, a new SUMLOG record type)

The Reader libraries work in conjunction with a physical database that DBEngine uses to determine the layout of the flat files. DBEngine gets the information it needs from the DESCRIPTION file for the layout database. The DMSII CONTROL file and the DMSUPPORT library will exist, but the data sets and audit files will not.

A DASDL file is provided for each sample Reader library so that you can create the corresponding layout database. For example, if you want to replicate SUMLOGs, you would use the SYSFILESDB DASDL to create a physical database called SYSFILESDB. Within this database is a logical database called SUMLOG that contains typical layout information for SUMLOG files. If needed, you can modify this information. If you customize the layout information in the logical database, you must make the corresponding changes in the Reader library.

In this Chapter

Creating a Custom Reader Library

You must create a custom Reader library in either of the following situations:

- The flat files that you want to replicate contain information in a "proprietary" format (for example, a flat file that requires reading the *n*th word to find the address of the next record).
- The sample Reader library does not meet your needs. For example, you want to replicate additional types of SUMLOG records.

The easiest way to create a custom Reader library is simply to customize one of the sample Reader libraries to meet your needs. If this is not possible, complete the following steps to create a custom Reader library.

To create a custom library

1. Describe the file layouts in either DASDL or COBOL FD format.

NOTE: If you use COBOL FD format, use the COBOL-to-DASDL utility to generate the DASDL. For instructions, see Generating Database Layout from COBOL 01-Level File Record Descriptions (page 21).

Append a VERIFY clause to each data set that indicates when a flat file record is considered part of that data set. The DASDL must group the data sets into a logical database, as follows:

Logical_dbname ["*reader* [; *file_spec]*"] DATABASE (*dataset_list*)

where *reader* is the title of the Reader library object code and *file_spec* is a file or directory containing the flat files. Note that the semicolon is required before the *file_spec*, if present.

2. Write the Reader library source code in ALGOL or COBOL. If you are writing the Reader library in ALGOL, use the TEXT, SUMLOG, or TTRAIL Reader library as an example. If you are writing the Reader library in COBOL, use the BANKFILE Reader library as an example.

   The procedure called in the Reader library must be named FileRead. Use DBFileReaderHead to define the procedure in ALGOL. Use $FEDLEVEL =5, $ SET LIBRARYPROG, and set PROGRAM-ID to FILEREAD for COBOL. FileRead is passed two arrays—the FileInfo structure and FileRecord for the resulting record image.

3. Perform required initialization the first time FileRead is called. This might include linking to DBEngine, getting the structure index for the data sets, identifying the location of the flat files, etc.

   NOTE: Linking to DBEngine, whether explicit or implicit, must not occur before the first call of FileRead.

4. Configure the Reader library to read the file, filter records, copy the data to the FileRecord array, and set items in FileInfo such as the structure index, file record location, timestamp, etc.

   Set the appropriate structure index, as defined in the *Databridge Programmer's Reference*, in the FileInfo array to determine the data set to which a record belongs. Note that by setting the structure index to 0 in the FileInfo array, you can rely on the DASDL VERIFY clauses to determine the data set to which a record belongs; however, this is not the preferred method because it is slower.

   NOTE: In addition to filtering and formatting done by the Reader library, DBSupport can also provide filtering and formatting. See the *Databridge Host Administrator's Guide* for more information about DBSupport.

Sample Reader Libraries

SUMLOG Reader Library

This Reader library reads system summary log files and returns the data records to DBEngine. This Reader library uses the SUMLOG logical database of the SYSFILESDB layout database.

Closed SUMLOG files are typically titled:

*SUMLOG/*ssss/mmddyy/nnnnnn* ON *familyname*

where *ssss* is the system serial number, *mmddyy* is the date in month-day-year format, and *nnnnnn* is a sequential number.

The Reader option in the Accessory's parameter file should specify the directory and family name where the closed log files are located. The following is an example of the DBServer SOURCE declaration for this Reader library:

```
Source SUMLOG:
% ------
Database = SUMLOG of DESCRIPTION/SYSFILESDB ON DISK,
Support = OBJECT/DATABRIDGE/SUPPORT/SYSFILESDB ON DISK,
Filter = SUMLOGFILTER,
Reader using "SUMLOG/= ON DISK"
```

If the Reader option is missing or empty, the SUMLOG Reader library will use the following:

"*SUMLOG/*ssss*/= ON *sumlogpack*"

where *ssss* is the serial number of the system it is running on and *sumlogpack* is the pack containing *SYSTEM/SUMLOG. When all of the closed SUMLOGs have been processed, the Reader library will automatically switch to reading the active SUMLOG.

TTRAIL Reader Library

This Reader library reads COMS Transaction Trail files and returns the data records to DBEngine. This Reader library uses the TTRAIL logical database of the SYSFILESDB layout database.

TTRAIL files are typically titled:

*COMS/TTRAIL/*dbname/nnnn* ON *familyname*

where *dbname* is the database that participates in synchronized recovery and *nnnn* is a sequential number. The TTRAIL for all non-synchronized recovery programs has a database name of TPLIBRARY.

The Reader option in the accessory parameter file must specify the directory and family name where the TTRAIL files for a particular database are located. The following is an example of the DBServer SOURCE declaration for this Reader library:

```
Source TTRAIL:
% ------
Database = TTRAIL of DESCRIPTION/SYSFILESDB ON
DISK,
Support = OBJECT/DATABRIDGE/SUPPORT/SYSFILESDB
ON DISK,
Filter = TTRAILFILTER,
Reader using "COMS/TTRAIL/= ON DISK";
```

PRINTFILE Reader Library

This Reader library reads printer backup files and returns the printer file attributes and print lines to DBEngine. This Reader library uses the PRINTFILE logical database of the SYSFILESDB layout database.

The Reader option in the Accessory's parameter file should specify the directory and family name where the print files are located. The following is an example of the DBServer SOURCE declaration for this Reader library:

```
Source LISTER:
% ------
Database = REPORTS of DESCRIPTION/PRINTFILESDB ON
DISK,
Reader using "DBBD/RUN/LISTER/= ON DISK";
```

If the Reader option is missing or empty, the PRINTFILE Reader library will use:

"*BD ON *printerbackuppack*"

where *printerbackuppack* is the value identified by issuing a DL BACKUP command.

BICSS Reader Library

This Reader library reads BICSS log files and returns the data records to DBEngine. This Reader library uses the UVMSBICSS or IVRBICSS logical database of the NAPFILESDB layout database.

BICSS log files are typically titled:

(usercode)BICSSLOG/ACTIVITY/*yymmdd*/*hhmnss* ON *familyname*

where *yymmdd* is the date in year-month-day format and *hhmnss* is the time in hours-minutes-seconds format.

The Reader option in the accessory parameter file must specify the directory and family name where the log files are located. Optionally, it can also specify the particular application system name that must appear in all records by appending a colon and the LINC application name, such as IVRSYS (see the example below) or UVMS. If you want records from only one application and the log contains records from more than one application, specifying the application name after the colon speeds up the processing.

The following is an example of the DBServer SOURCE declaration for this Reader library:

```
Source IVRBICSS:
% --------
Database = IVRBICSS of DESCRIPTION/NAPFILESDB ON
DISK,
Support = OBJECT/DATABRIDGE/SUPPORT/NAPFILESDB ON
DISK,
Filter = BICSSFILTER,
Reader using "(BICSS)BICSSLOG/ACTIVITY/= ON DISK:
IVRSYS";
```

DISKFILE Reader Library

This Reader library reads flat files and returns the data records to DBEngine. When you use the COBOL-to-DASDL utility to create the various structures needed to replicate flat files that use COBOL 01-level file record descriptions, as explained in Generating Database Layout from COBOL 01-Level File Record Descriptions (page 21), the DISKFILE Reader library is the default Reader library.

The DISKFILE Reader library processes disk files in creation timestamp order. It assumes that the file it is reading can be extended as long as there is no file with a later creation timestamp. During processing, the creation timestamp of the disk file is used as the timestamp associated with each record. If you need to process a flat file having a creation timestamp prior to what FileXtract has already processed, see “Out-of-Order Processing” on page 27.

The Reader option in the accessory parameter file must specify the directory and family name where the disk files are located. The following is an example of the DBServer SOURCE declaration for this Reader library:

```
Reader using "(PROD)DATA/TRANLOG/= ON USERPACK"
```

If you want to change this behavior, you may modify the DISKFILE Reader library or substitute your own Reader library. If you use a name other than BJECT/FILEBRIDGE/READER/DISKFILE, make sure to specify the title of the Reader library code file in the READER "*codefiletitle*" `USING "..."` option of the accessory parameter file.

Some programs, such as CANDE and FileXpress®-XST, rewrite the entire file when records are added, deleted, or modified. The (modified) file will have a new creation timestamp. When the DISKFILE Reader searches the disk directory for files to process, it will find the file with a new creation timestamp and will attempt to process it from the beginning. This is likely to cause many "duplicates" errors because it will send each record as an "add" and all of the records from the old file are already present in the client database. To avoid these errors, you must configure the client to reclone every time it is run.

Similarly, if the mainframe application updates records in place, the DISKFILE Reader will not detect the update if it has already processed that file. In this situation, you must also configure the client to reclone every time it is run.

LINCLOG Reader Library

This Reader library reads LINC Activity logs and returns the data records to DBEngine.

LINC log files are typically titled:

`(usercode)lincsystem/``LINCLOG/`*`nnn`* `ON` *`familyname`*

where *nnn* is the Activity log number.

The Reader option in the accessory parameter file should specify the directory and family name where the closed log files are located.

To generate the LINCLog database so that Databridge can replicate the log records to the client database, perform the following steps.

1. Edit the DATA/COBOLTODASDL/SAMPLE/LINCLOGDB/FD file, which describes the layout of the LINC Activity Log records, to reflect your particular LINC system. (Different LINC implementations sometimes have new fields added to the log record layout.)
2. Save the file as DATA/COBOLTODASDL/LINCLOGDB/FD, i.e., without the SAMPLE node.
3. Edit the DATA/COBOLTODASDL/SAMPLE/LINCLOGDB/CONTROL file with the proper location for the LINC log files.
4. Save the file as DATA/COBOLTODASDL/LINCLOGDB/CONTROL, again without the SAMPLE node.
5. Use the COBOL-to-DASDL utility to generate the database:

   ```
   START WFL/FILEBRIDGE/COBOLTODASDL ("LINCLOGDB")
   ```

   This also generates a file called DATA/SERVER/LINCLOGDB/CONTROL that you can insert into DATA/SERVER/CONTROL to define the LINCLog SOURCE.

6 If you want to filter the log records, declare a filter and generate a tailored DBSupport library using DBGenFormat. For more information see the Databridge Client Administrator's Guide for instructions. A sample file is provided - DATA/GENFORMAT/SAMPLE/LINCLOGDB/CONTROL.

7 Use the Databridge Client or an accessory such as DBSpan to replicate the LINC Log data just like any other database.

The following is an example of the DBServer SOURCE declaration for this Reader library:

```
Source "LINCLOGFILES":
% ------------
Database = "LINCLOGFILES" OF
"DESCRIPTION/LINCLOGDB",
Reader using "(PROD)G2/LINCLOG/= ON AUDIT";
Reader processes the disk files in the LINC log file number order (with
wraparound from 999 to 1).
```

BANKFILE Reader Library

This Reader library is a sample flat file Reader library that demonstrates how to write a FileXtract Reader in COBOL. For an example of how to use this Reader library to replicate a sample flat file called DATA/LOAD/SAMPLE/DATABASE, see "BANKFILE COBOL-to-DASDL Example" on page 19.

USERDATA Reader Library

This Reader library reads the system USERDATA file layout and returns the usercode attributes to DBEngine. It interprets the structure of the system USERDATA file, which contains attributes associated with usercodes. Because the layout of the USERDATA file can vary from site to site, this Reader library generates a DMSII database layout corresponding to your site-specific USERDATA file.

The USERDATA Reader library generates the following:

- The corresponding DASDL layout for a DMSII database for FileXtract
- The corresponding source code for the USERDATA Reader library

To generate and compile the DASDL layout and the USERDATA Reader library, do the following:

```
START WFL/FILEBRIDGE/COMP ("USERDATA")
```

The Reader option in the accessory parameter file should specify the directory and family name where the USERDATA file is located. The following is an example of the DBServer SOURCE declaration for this Reader library:

```
Source USERDATA:
% --------
Database = USERFILE of DESCRIPTION/USERDATADB
Support = OBJECT/DATABRIDGE/SUPPORT/USERDATADB
Filter = USERDATAFILTER
%- Reader using "SYSTEM/USERDATAFILE/othersystem ON
DISK";
```

If the Reader option is missing or empty, the USERDATA Reader library will use:

```
*SYSTEM/USERDATAFILE ON userdatapack
```

where *userdatapack* is disk location specified by the DL USERDATA command.

TEXT Reader Library

This is a skeleton of a Reader library written in ALGOL. It is intended to be used when writing a custom ALGOL Reader library. See Chapter 5, “Creating a Custom Reader Library,” for information about writing a custom Reader library.

3 Using the COBOL-to-DASDL Utility

This chapter explains how to use the COBOL-to-DASDL utility to replicate flat files that use COBOL 01-level file record descriptions.

In this Chapter

Understanding the COBOL-to-DASDL Utility

The COBOL-to-DASDL utility allows you to generate a FileXtract layout database from COBOL 01-level file record descriptions. It also generates the appropriate DBServer SOURCE declaration that you insert into the DBServer parameter file so that Databridge Clients can access the replicated flat files.

- For normal disk files, the DISKFILE Reader library is used to read the flat files that are being replicated. For a description of the DISKFILE Reader library, see "DISKFILE Reader Library" on page 14. Otherwise, see Generating Database Layout from COBOL 01-Level File Record Descriptions.

  NOTE: You must have or create a COBOL file containing the 01-level file record descriptions for the flat files you want to replicate. A sample COBOL file (DATA/COBOLTODASDL/SAMPLE/LINCLOG/FD) containing a layout of the LINC log is installed with the FileXtract software.

- For LINC log activity files, the LINCLOG Reader library is used to read the flat files that are being replicated. For a description of the LINCLOG Reader library, see "LINCLOG Reader Library" on page 15. Otherwise, see Generating Database Layout from LINC Activity Log Files.

For an example of how to use the COBOL-to-DASDL utility to replicate a sample flat file called DATA/LOAD/SAMPLE/DATABASE, see the BANKFILE COBOL-to-DASDL Example that follows. We recommend that you complete this example before using the COBOL-to-DASDL utility for your own disk files.

BANKFILE COBOL-to-DASDL Example

This example illustrates how to use the COBOL-to-DASDL utility to replicate a sample flat file called DATA/LOAD/SAMPLE/DATABASE. Everything you need to run this example is installed with FileXtract.

1. View DATA/LOAD/SAMPLE/DATABASE and familiarize yourself with the records in this flat file.
2. View and familiarize yourself with DATA/COBOLTODASDL/SAMPLE/BANKFILE/FD, which is the COBOL FD for DATA/LOAD/SAMPLE/DATABASE.
3. Copy the BANKFILE parameter file as follows:

```
GET DATA/COBOLTODASDL/SAMPLE/BANKFILE/CONTROL AS DATA/COBOLTODASDL/
BANKFILE/CONTROL
```

4 Define the SOURCE.

The SOURCE name will be used as the DBServer SOURCE name as well as the name of logical database that the COBOL-to-DASDL utility creates. Note that this step has already been completed for you in this sample control file, as follows:

```
DEFINE Source COBOLBankFile USING "DATA/LOAD/SAMPLE/DATABASE" FROM FD
IN "DATA/COBOLTODASDL/SAMPLE/BANKFILE/FD";
```

5 Declare the data sets to be generated from the various flat files. Note that this step has already been completed for you in this sample control file. The following are the data sets that have been defined:

```
Dataset Comments
   uses INPUT-DATA-REC
   where COMMENT-REC; % 88-level item

Dataset BANK
   uses INPUT-BANK % => use the INPUT-BANK REDEFINE
   where BANK-TYPE and (BANK-ID not greater than 5000
   or BANK-NAME ^= SPACES); % a more complex expression

Dataset BRANCH
   uses INPUT-BRANCH, DATA-TYPE
   where BRANCH-TYPE;  % need to be listed because it is not REDEFINEd.

Dataset CUSTOMER
   uses INPUT-CUSTOMER
   where CUSTOMER-TYPE;

Dataset TELLER
   uses INPUT-TELLER
   where TELLER-TYPE;

Dataset ACCOUNT
   uses INPUT-ACCOUNT
   where ACCOUNT-TYPE;

Dataset HISTORY
   uses INPUT-HISTORY
   where HISTORY-TYPE;
```

6 Save the parameter file.

7 Run the COBOL-to-DASDL utility using the following command:

```
START WFL/FILEBRIDGE/COBOLTODASDL ("BANKFILE")
```

The COBOL-to-DASDL utility processes the COBOL file description, generates a DASDL called SOURCE/FILEBRIDGE/COBOLTODASDL/BANKFILE, and generates a DBServer parameter file fragment called DATA/SERVER/BANKFILE/CONTROL. Then, the WFL compiles the resulting database and runs the FileXtract Initialize utility to prepare it for Databridge.

8 Update the DBServer parameter file with the generated DBServer parameter file fragment, as follows:

a. Transmit the following command:

```
GET DATA/SERVER/CONTROL
```

b. Transmit the following command:

```
INSERT DATA/SERVER/BANKFILE/CONTROL AT END
```

The DBServer parameter file is appended with the BANKFILE DBServer parameter file fragment, which defines the SOURCE, database, and data file title to use to replicate the BANKFILE flat file.

9 Run the Databridge Client with the DEFINE command to define the COBOLBankFile source. Then run it with the GENERATE command and finally with the PROCESS command. The Databridge Client contacts DBServer to replicate the BANKFILE flat file. Refer to the *Databridge Clients Administrator's Guide* for instructions on running the Databridge Client.

Generating Database Layout from COBOL 01-Level FileRecord Descriptions

COBOLTODASDL/SAMPLE/BANKFILE/CONTROL) contains sample entries based on a flat file called DATA/LOAD/SAMPLE/DATABASE. This file illustrates how to declare a DBServer SOURCE and generate the associated layout database from COBOL 01-level file record descriptions. As you complete the following steps, remove, modify, or comment out the sample entries.

To replicate flat files that use COBOL 01-level file record descriptions.

1 Copy the COBOL-to-DASDL parameter file as follows:

```
Get DATA/COBOLTODASDL/SAMPLE/BANKFILE/CONTROL AS DATA/
COBOLTODASDL/dbname/CONTROL
```

where *dbname* is the name you want to use for the layout database that will be generated. (See the table below.)

2 Define the DBServer SOURCE declaration as follows:

```
DEFINE SOURCE sourcename USING "filename"
FROM FD IN "COBOLsourcefile";
```

Where	Is
sourcename	the name of the logical database that the COBOL-to-DASDL utility creates. DBSpan and DBSnapshot access flat file data using the logical database will be used .
dbname	different than *sourcename* and *flatfiledirectory*. If you enter the same name for SOURCE and database, an error message appears.
filename	a file or a directory. Note that the DISKFILE Reader library treats a file as both a file and a directory. Therefore, that file and all files under that file node will be replicated.

Where	Is
COBOLsourcefile	the file that contains the 01-level file record layout(s). It cannot contain declarations other than the FD and the 01-level file record layouts (and it does not have to contain the actual FD). If the FD is in the main COBOL program source file, you must create a new COBOL file containing just the disk file layout and use that file's title for COBOLsourcefile.

In addition to using this information to create the DASDL, the COBOL-to-DASDL utility uses the SOURCE declaration to create a DBServer parameter file fragment (DATA/SERVER/dbname/CONTROL) which you insert into the DBServer control file.

3 Declare the data sets to be generated from the various flat files using the following syntax.

NOTE: When you run the COBOL-to-DASDL utility, it automatically encloses the SOURCE and logical database names in "quotation marks" in the generated parameter file fragment for DBServer. This feature allows you to use hyphens (-) in SOURCE names, and the SOURCE names can be the same as a parameter file keyword.

DATASET *datasetname* USES *identifier_list* [WHERE *boolean_expression]*

For example:

```
DATASET BANK USES INPUT-BANK WHERE BANK-TYPE and (BANK-ID not greater
than 5000 or BANK-NAME ^= SPACES);
```

The USES clause tells the Reader library what data items to use when there are REDEFINES. Note that successive 01s under an FD are implicit REDEFINES.

The WHERE clause indicates the condition that must be true of all records that belong in that data set. The WHERE clause can be omitted if all records belong in a single data set. The WHERE clause must evaluate to a Boolean expression (true or false).

The Boolean expression can consist of relational expressions, connected by AND or OR, using the normal COBOL relational operators: GREATER THAN, >, GTR, LESS THAN, <, LSS, EQUAL TO, =, EQL, GREATER THAN OR EQUAL TO, >=, GEQ, LESS THAN OR EQUAL TO, <=, LEQ, ^=, !=, <>, NEQ. The left side of a relational expression must be a data item name and the right side must be either an integer, a double-quoted string, a hex string, SPACE, or SPACES. An 88-level condition name can also be used as a relational expression.

4 Save the COBOL-to-DASDL parameter file.

5 Run the COBOL-to-DASDL utility using the following command:

START WFL/FILEBRIDGE/COBOLTODASDL ("*dbname*")

where *dbname* is the name of the layout database you assigned in step 1.

The COBOL-to-DASDL utility processes the COBOL file description, generates the DASDL called SOURCE/FILEBRIDGE/COBOLTODASDL/*dbname*, and generates a DBServer parameter file fragment called DATA/SERVER/*dbname*/CONTROL. Then, the WFL compiles the resulting database and prepares it for use with FileXtract.

6 Do one of the following based on which Databridge accessory you are going to use:

For	Do this
DBServer	Insert the DBServer parameter file fragment (DATA/SERVER/dbname/CONTROL) into the DATA/SERVER/CONTROL file using the following steps: 1. Get DATA/SERVER/CONTROL. 2. Transmit the following command: `INSERT DATA/SERVER/`*`dbname`*`/CONTROL AT END` 3. Save the file. The DBServer parameter file is appended with the DBServer parameter file fragment, which defines the SOURCE, database, and Reader library to use to replicate the flat files. After you have updated the DBServer parameter file, run the Client with the DEFINE, GENERATE, and PROCESS commands. Refer to the *Databridge Clients Administrator's Guide* for instructions.
Other accessories	The flat file is ready to be cloned. For DBSpan and DBSnapshot, start the associated WFL with the layout database and logical database (SOURCE) names to create the accessory parameter file. For example: `START WFL/DATABRIDGE/SPAN ("BANKFILE", "COBOLBANKFILE")` Define the READER options in the accessory parameter file and then run the Accessory. Refer to the *Databridge Host Administrator's Guide* for instructions.

4 Troubleshooting

If you have problems using FileXtract, complete the following steps.

To troubleshoot FileXtract

1. Make sure that your system meets the requirements necessary to use the product. See "System Requirements" in the *Databridge Installation Guide*.
2. Make sure that the READER option in the parameter file has the correct Reader library and flat file location. If you are using DBServer, verify that the SOURCE declaration is pointing to the correct logical database. If you are using DBSpan or DBSnapshot, make sure that you start the WFL with the correct logical database name as the second parameter. For example, START WFL/DATABRIDGE/SPAN ("SYSFILESDB", "SUMLOG"). For information about the Reader libraries, see one of the following:
   - Sample Reader Libraries (page 11)
   - Generating Database Layout from COBOL 01-Level File Record Descriptions (page 21)
   - Using the COBOL-to-DASDL Utility (page 19)
   - Creating a Custom Reader Library (page 11)
3. Check your setup:
   - Check the mix to make sure that the Databridge accessory is running. For instructions, see the *Databridge Host Administrator's Guide*.
   - Make sure that the READER declaration for the Databridge accessory is correct. Refer to the *Databridge Host Administrator's Guide* for instructions.
   - Make sure that the source name for the DEFINE command for the Databridge Client matches the SOURCE name for DBServer.
4. Resolve any errors you receive.

   If you are receiving error messages you don't understand, see the *Databridge Error Guide* for help resolving error these messages.
5. If you cannot identify and solve the problem without assistance, contact your product distributor. Call from a location where you have access to the problem mainframe.
6. Contact Attachmate Technical Support or troubleshoot the problem using information available from the Support site (http://support.attachmate.com/techdocs).

5 Out-of-Order Processing

Occasionally you need to load a large amount of flat file data that has been archived, and the archived data is not available in the proper sequence. For example, you might have a set of backup tapes with SUMLOGs for several days and one set of tapes in the middle of the sequence is currently "on loan."

The SUMLOG Reader library (and other Reader libraries) rely on the timestamp from StateInfo to locate the current file and the ABSN concatenated with INX to determine the record number.

In general you want to keep two audit locations—one for the "real" (relatively current) location, and another for the archive-catch-up location. The following is one approach to handling out-of-order processing. This procedure is for processing archived log files sequentially. Processing archived log files discontinuously requires additional techniques, which are not explained in this guide.

In this Chapter

Before You Process

On the host, define a duplicate SOURCE in DBServer (call it SUMLOGARCHIVE) and add a STOP BEFORE *timestamp* condition to it, where *timestamp* is the timestamp of the oldest record that has already been loaded using the regular SUMLOG source. (This will prevent picking up the same files twice, including the active SUMLOG.) The SUMLOGs for this SOURCE could be in a different directory to avoid confusion.

On the client, you need the two audit locations and a way to switch them back and forth. Create a new table (AudLocSwitch) to hold the variable parts of the audit location. The variable parts are: AFN, ABSN, INX, and timestamp. Also define a text column in AudLocSwitch called "*source_name*."

Create a row for each data set in AudLocSwitch with all zeros for the audit location and *source_name* = "SUMLOG". Create a similar row for each data set having *source_name* = "SUMLOGARCHIVE".

Process Archived SUMLOGs

To process archived SUMLOGs

1. Copy the audit locations from the DATASETS table into the AudLocSwitch rows for*source_name* = "SUMLOG".
2. Copy the AudLocSwitch rows for *source_name* = "SUMLOGARCHIVE" into the data sets table.
3. Change `data_source` in the DATASOURCES table and the DATATABLES table to "SUMLOGARCHIVE".

4 Run the following command:

```
dbutility process SUMLOGARCHIVE
```

Process Current SUMLOGs

To process current SUMLOGs

1 Copy the audit locations from the DATASETS table into the AudLocSwitch rows for *source_name* = "SUMLOGARCHIVE".

2 Copy the AudLocSwitch rows for *source_name* = "SUMLOG" into the DATASETS table.

3 Change data_sourcein the DATASOURCES table and the DATATABLES table to "SUMLOG".

4 Run the following command:

```
dbutility process SUMLOG
```

By maintaining separate audit locations and using the STOP BEFORE condition, you can continue to copy in old SUMLOGs, process them, and alternately switch back to processing the current SUMLOGs using the other SOURCE. If the old files are loaded out of order, before you can do the process command, you must manually remove the processed files and reset the audit location in the AudLocSwitch rows for "SUMLOGARCHIVE" to 0.

Glossary of Terms

accessories. Databridge accessories access the services in DBEngine and DBSupport. Some of the accessories provided with Databridge are as follows:

- DBServer, which provides communication and DMSII database replication services to Databridge Clients.
- DBSpan, which produces a replication of one or more data sets into flat sequential disk files. DBSpan updates the cloned flat files by appending the changes to the end of the flat files (unlike DBSnapshot, which replaces the changed records).
- DBSnapshot, which produces a one-time replication of one or more data sets into flat sequential disk files or tape.
- DBInfo, which produces a report of your DMSII database timestamps, update levels, DMSII release levels, etc.
- DBLister, which produces a report of the layout of the structures in your DMSII database, including structure numbers and key sets.
- DBAuditTimer, which closes the current audit file when it is older than a specified length of time.

cloning. Cloning is the one-time process of generating a complete snapshot of a data set to another file. Cloning creates a static picture of a dynamic database. Databridge uses the DMSII data sets and the audit trail to ensure that the cloned data represents a synchronized snapshot of the data sets at a quiet point, even though other programs may be updating the database concurrently. Databridge clones only those data sets you specify.

Cloning is one phase of the database replication process. The other phase is tracking (or updating), which is the integration of database changes since the cloning.

CONTROL file. The DMSII CONTROL file is the runtime analog of the DESCRIPTION file. The DESCRIPTION file is updated only when you compile a modified DASDL. The CONTROL file controls database interlock. It stores audit control information and verifies that all database data files are compatible by checking the database timestamp, version timestamp, and update level. The CONTROL file is updated each time anyone opens the database for updates. The CONTROL file contains timestamps for each data set (when the data set was defined, when the data set was updated). It contains parameters such as how much memory the Accessroutines can use and titles of software such as the DMSUPPORT library (DMSUPPORT/databasename).

Databridge uses the CONTROL file for the following information:

- Timestamps
- INDEPENDENTRANS option
- AFN for the current audit file and ABSN for the current audit block
- Data set pack names
- Audit file pack name
- Database user code

DASDL. Data and Structure Definition Language (DASDL) is the language that defines DMSII databases. The DASDL must be compiled to create a DESCRIPTION file.

data set. A data set is a file structure in DMSII in which records are stored. It is similar to a table in a relational database. You can select the data sets you want to store in your replicated database.

Databridge Engine. The Databridge Engine (also referred to as DBEngine) is a host library program that uses the DMSII Support Library to retrieve data records from the DMSII database for cloning.

extraction. Extraction is the process of reading through a data set sequentially and writing those records to a file (either a secondary database or flat file).

replication. Replication is the ongoing process of cloning and tracking changes to a DMSII database.

set. An index into a data set. A set has an entry (key + pointer) for every record in the data set.

structure. A data set, set, subset, access, or remap. Each structure has a unique number called the structure number.

Support Library. A library that provides translation, formatting, and filtering to the DBServer and other accessories. After DBServer receives data from the Databridge Engine, it calls the Support Library to determine if the data should be replicated, and if so, passes the data to the Support Library for formatting.

tracking. Tracking is an ongoing process for propagating changes made to records in the DMSII primary database to the replicated database after the initial clone. The Databridge Engine performs extraction as well as tracking.