



Natural/Adabas Code Extraction

Background

NatMiner is a Natural/Adabas application analysis toolset developed by FBD Associates Inc. (FBDA). Common uses of NatMiner are software modification impact analysis or analysis of the scope and complexity of migrating a Natural/Adabas application to the EGL/DB2 environment or Java/RDBMS environment.

Accurate and complete analysis requires an examination of the source code for all of the Natural objects used by the application including:

GDAs, PDAs, LDAs and MAPs;

Programs, Subprograms, Subroutines, Help routines (and Copycode);

including all objects in the main library(s) as well as any objects referenced in STEPLIB libraries.

In addition to the Natural objects an analysis requires examination of:

All DDMs used by any of the Natural objects identified above;

All Adabas FDTs used by any of the Natural DDMs (a DDM contains the database ID and file number identifying the FDT to which it applies; if the database ID is zero, it indicates dynamic database redirection, which requires further investigation to locate all potential FDTs).

And optionally, an ADAULD file.

Process Overview

The most efficient strategy is to extract all potentially relevant libraries and all DDMs in all the relevant Natural system files (any FUSER or FNAT containing relevant libraries, and any FDIC containing relevant DDMs), and all FDTs in all relevant Adabas databases.

While it may be feasible to narrow this range of code significantly, restricting the list of objects within a library is rarely worth the effort. It is strongly recommended that the lists of DDMs and FDTs not be restricted due to the potential negative impact on processing of even a single missing DDM or FDT.

Source modules should be left in the libraries where they reside and extracted from there.

The STEPLIB relationships should be noted and passed along with the extracted code (this information is stored in Natural Security if this product is in use).

It is very important that for each library, the whole STEPLIB chain back to SYSTEM should be provided (e.g. library A

may have library B as a STEPLIB, which in turn has library C, which has SYSTEM, the default; this chain can be of any length).

All of the above extraction can be handled by the Natural SYSTRANS utility. For a number of reasons, FDTs are better handled by the Adabas ADAREP utility, but SYSTRANS should be used for the rest.

If a requirement of the analysis is also to confirm ADABAS to DB2 mappings by migration sample data an ADAULD file for each relevant FDT should also be supplied/

Detailed instructions for SYSTRANS, ADAREP and ADAULD extraction are provided in Attachment A.

File Preparation and Transfer

When code extraction following Attachment A is complete the output file(s) can be prepared for transfer. The following files should be transferred:

SYSTRANS output (text)

SYSTRANS report (text)

ADAREP report (text)

ADAULD output

An accurate transfer (by ftp or otherwise) of text files to an ASCII platform (Windows or Unix) with correct conversion (EBCDIC to ASCII character set conversion, and insertion of a newline or carriage return/newline pair at the end of every record) is possible, then the text files can be transferred as is in ASCII format or as ZIP files in binary format.

When you are ready to ftp contact:

rhysp@fbda.ca

and he will provide detailed instructions for the ftp transfer.

After the ftp is complete, send confirmation emails to:

frankd@fbda.ca

rhysp@fbda.ca

with an inventory of what was extracted and a description of the steps executed to prepare each file for transfer including any transfer mechanism(s) used (e.g. intermediate transfers to PCs).



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Attachment A – Detailed Procedures

1. SYSTRANS Data

SYSTRANS can be executed in a number of different modes. It is most easily executed in batch, but you can also use the menu system.

For more information see the SYSTRANS section of the Natural Utilities Manual for Mainframes.

Pages 387-399 describe the menu system for interactive use, and then show how to invoke it in batch.

The UNLOAD function of the Natural SYSTRANS utility allows you to unload Natural source code, and is the only function required for extraction. It will be used to unload DDMs, MAPs and other objects.

Note that SYSTRANS will only unload from the Natural System Files (FUSER, FNAT and FDIC) at which it is pointed. It is important to ensure that the proper system files are used for the unload (i.e. that production source is unloaded not development).

Also note that at some sites problems may be encountered executing SYSTRANS. This may be due to the use of the PAC or N2O configuration management products, or because SYSTRANS is not installed. If this happens, contact FBDA for alternative instructions.

To start SYSTRANS in batch, execute the command "LOGON SYSTRANS" followed by "MENU"; it is also a good idea to proceed the "MENU" command with "GLOBALS IM=D ID=," to ensure that batch menu input will be correctly accepted.

Then enter "U" for the unload function. After entering "U", the following General Unload Options should be specified:

- EBCDIC to ASCII conversion: "N"
(conversion here can confuse later transfers which expect to see EBCDIC text coming from OS/390)
- User defined conversion table: "N"
- Substitute line references: "N"
- Report: "Y" (see below)
- Include line numbers: "Y"
- Use work file input: "Y"
- If you want to a workfile containing a list of modules to be extracted otherwise use "N";
- Use selection list: "N"

The report requested above should be sent along with the SYSTRANS file to allow for crosschecking.

At this point SYSTRANS presents a number of unload options, three of which are of immediate interest:

- "N": Unload Natural Objects (other than MAPs)
- "M": Unload Natural MAPs
- "D": Unload DDMs

Unload Natural Objects expects the following input values:

- From library:** the library from which code is to be extracted
- Object name:** "*" for all objects, "ABC*" for all objects whose names begin with "ABC", "DEF" for the single object "DEF"
- Object type:** "*" for all object types
- To library:** "", so that the From library value is used

Unload Natural Maps expects the following input values:

- From library:** the library from which code is to be extracted
- MAP name:** "*" for all MAPs, "ABC*" for all MAPs whose names begin with "ABC", "DEF" for the single MAP "DEF"
- Incorporate all Predict Rules: "Y"
- Unload associated Free Rules: "Y"
- To library:** "", so that the value of From library is used

Unload DDMs expects the following input value: DDM name: "*" for all DDMs, "ABC*" for all DDMs whose names begin with "ABC", "DEF" for the single DDM "DEF".

Any of the above unload options can be repeated as necessary to unload multiple libraries; multiple ranges of objects within libraries; or multiple ranges of DDMs. Alternatively, separate SYSTRANS runs can be used, and the output sent in separate files.

As a simple example, to unload all of the code in library LIBX and all available DDMs using Systrans in batch, pass the following input (CMSYNIN) to a batch Natural session:

```

LOGON                                SYSTRANS
GLOBALS                                ID=',
MENU
U
N,N,N,Y,Y,Y,N
N
  
```



Natural/Adabas Code Extraction

```
LIBX,**;  
M  
LIBX*,Y,Y,  
D  
*  
FIN
```

The SYSTRANS output will be written to WORKFILE 1 (CMWKF01), which should have a format of FB, LRECL= 96, BLKSIZE=6240. The report will be written to standard output (CMPRINT). Both of these files should be sent as text files.

The SYSTRANS should be run in accordance with the instructions above for the application to be migrated, and the resulting MVS sequential files be sent as text files.

2. ADAREP Data

The Adabas ADAREP utility produces the database status report, which provides information concerning the physical layout and logical contents of a database, including the FDTs defined within the database (except for certain restricted ones, which are of no interest for migration).

ADAREP is run using the ADARUN program (for more information see the ADAREP section of the ADABAS Utilities Manual, Volume 2. The ADAREP command format, passed as input to ADARUN, is:

```
ADAREP REPORT
```

The ADAREP should be run and the machine-readable printed output sent as a text file.

Note: it is critical not to use the NOFILE option as this produces an ADAREP report but the report does NOT contain the FDT structures.

3. ADAULD Data

The ADAULD files should be extracted using the instructions found at:

<http://documentation.softwareag.com/adabas/ada812mfr/adamf/util/adauld-unload.htm#adauld-unload>

Then the ADAULD should be ftp'd in binary mode to keep the EBCDIC characters.