

Natural under IMS TM - Components

This chapter of the Natural IMS Interface documentation discusses the components of the Natural IMS interface.

The following topics are covered:

- Front-End Module
 - Natural IMS Interface Module NIIINTFM
 - Physical Input Edit Routine
 - User Message Table DFSCMTU0
 - Roll File and Roll Server
 - Authorized Services Manager
 - Shared Natural Nucleus
 - Natural Buffer Pool
 - Adabas Interface
 - Preload List
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Front-End Module

The front-end module receives control from the IMS TM program controller DFSPPC20, except in the server environment where it is called by the call interface NIIBOOTS.

The front-end module must be created during the installation process and consists of the following:

- Environment-Dependent Interfaces (Drivers)
- Natural Parameter Module NATPARM
- Natural Work and Print File Access Method Module NATWKFO (AM=STD)

Environment-Dependent Interfaces (Drivers)

You must generate an environment-dependent interface for each IMS environment supported by the Natural IMS Interface using the macro NIMDRIV.

For a detailed description of the macro NIMDRIV, see *NIMDRIV Macro Parameters*.

Natural Parameter Module NATPARM

For information on the Natural parameter module, see *Assembling a Natural Parameter Module* in the *Natural Operations* documentation.

Natural Work and Print File Access Method Module NATWKFO (AM=STD)

The NATWKFO module is delivered as part of the base Natural. It is used for work file and print file handling for work files and print files defines with AM=STD. It is applicable to the BMP environment, including off-line DL/I batch regions, the message-oriented environment and the server environment. It is not applicable to the dialog-oriented environments.

Some Natural products, such as Natural for DB2 and Natural for DL/I, require that their modules be linked to the Natural IMS front-end module. For further information, see the appropriate product documentation.

Natural IMS Interface Module NIIINTFM

The Natural IMS Interface module has to be created during the installation process and is common to all environments.

The interface module consists of the following components:

- Natural IMS Nucleus
- Natural IMS Parameter Module NIIPARM
- Transaction Code Table NIITRTAB
- Message Text Module NIIMSGT
- DL/I Language Interface ASMTDLI

The interface module is fully reentrant and can run above the 16 MB line. It is therefore eligible for the ECSA in order to have only one copy of the interface module for all IMS environments.

Natural IMS Nucleus

The Natural IMS nucleus is delivered as a load module and contains all the runtime routines required by the Natural IMS Interface.

Natural IMS Parameter Module NIIPARM

The Natural IMS parameter module NIIPARM contains a number (1 - *n*) of parameter tables (also called "environment tables") each defined by the macro NIMPARM and identified by the parameter ENTRYNM. Each parameter table within NIIPARM defines the Natural IMS-specific parameters for a particular environment. Thus it is possible to set the parameters for all Natural IMS environments in one parameter module. The environment which is currently used is set in the transaction code table NIITRTAB.

For a detailed description of the macro NIMPARM, see *NIMPARM Macro Parameters*.

Transaction Code Table NIITRTAB

The transaction code table NIITRTAB table is of variable length and each entry is generated by the macro NIMTRNTG.

Each entry in the transaction code table refers to an entry in the Natural IMS parameter module and can be followed by one or more occurrences of the macro NIMLPCB.

For a detailed description of the macro NIMLPCB, see *NIMLPCB Macro Parameters*.

The appropriate entry within this table is detected by the current transaction code. If, in a non-message-driven BMP, no transaction code is defined, the current PSB name is taken instead.

For a detailed description of the macro NIMTRNTG, see *NIMTRNTG Macro Parameters*.

Message Text Module NIIMSGT

The message text module NIIMSGT is part of the Natural IMS Interface module and is supplied both as a load and a source module. For each possible Natural IMS runtime error, it contains the corresponding message text. Each entry is generated by the macro NIMMSGT.

For a detailed description of the macro NIMMSGT, see *NIMMSGT Macro Parameters*.

DL/I Language Interface ASMTDLI

The DL/I language interface ASMTDLI is part of IMS TM.

Physical Input Edit Routine

The physical input edit routine is required only in a dialog-oriented, non-conversational environment. It is used to insert the transaction code preceding the message sent to the terminal. This is required as Natural runs in MFS bypass mode and the message sent to the terminal does not contain a transaction code.

The physical input edit routine is generated by using the NIMPIXT macro. For further information on the NIMPIXT macro, see *NIMPIXT Macro Parameters*.

Once the physical input edit routine is generated, its name must be specified in the TYPE or LINEGRP macros of your IMS TM system definition. For all terminals on which the non-conversational environment is supposed to run, you must enable physical editing by using the EDIT parameter in the TERMINAL macro.

User Message Table DFSCMTU0

The delivered user message table DFSCMTU0 is required only in a dialog-oriented, non-conversational environment. It contains the error messages for errors detected by the physical input edit routine.

The user message table DFSCMTU0 must be integrated into the existing user message table of your IMS TM installation. In case of conflicts with already existing user message numbers of your IMS TM installation you may change the message numbers of the delivered DFSCMTU0 by modifying the EQUATES PIXTE and SIPSE to create new message number ranges. The new start value of the message number range must be specified in the NIMPIXT macro.

Roll File and Roll Server

These components are used in dialog-oriented environments only.

Natural session-related information is held in the Natural thread. With each terminal output, the content of the Natural thread is saved either in a roll file or by using the roll server. The medium is defined by the NIMPARM parameter `ROLLSRV`.

Using Roll Files

To use roll files, the parameter `ROLLSRV` is set to `NO`.

A roll slot in the roll file is reserved for each Natural user at Natural session initialization time. The identifier of the slot is the IMS TM `LTERM` at which the Natural session is started. You must therefore ensure that all terminals that use the same set of roll files have different `LTERM` names. This is always the case if the roll files are used by a single IMS TM. The slot is freed when the Natural session terminates normally. In case of an abnormal termination, the roll slot remains allocated, but will be reused when the same user (identified by his `LTERM`) starts a new Natural session.

Roll files are accessed under the DD statements `ROLLF1` - `ROLLF5`. The number of roll files used is defined by the NIMPARM parameter `ROLLFN`.

If your Natural transaction code is scheduled in more than one MPP region or if you switch between transaction codes running in different MPP regions, you have to use the same roll files in all MPP regions.

If you reformat the roll file(s), make sure that no Natural transactions are active. If a transaction is scheduled after the roll file has been reinitialized, it cannot locate its roll slot on the roll file and abnormally terminates. To avoid this problem, it is recommended that you cold-start IMS TM after the roll file has been reformatted.

The roll files used by Natural under IMS have the same layout as the roll files used by the Roll Server and are formatted by the same utility program.

Note:

The roll files used by Natural under IMS must not be shared with the Roll Server. If you use roll files for Natural under IMS and the Roll Server at the same time, you must assign an own set of roll files to the Roll Server.

Using the Roll Server

To use the roll server, the parameter `ROLLSRV` is set to `YES`.

Instead of using roll files which have to be allocated to each MPP region, you can use the Natural roll server. The roll server offers the following advantages:

- No DD statements in each MPP region.
- One central address space is responsible for access to the roll files.
- Support of main storage buffers to reduce disk I/Os to the roll files.

A slot in the roll server is reserved for each Natural user at Natural session initialization time. The identifier of the slot (roll server user ID) is the IMS TM LTERM at which the session is started, concatenated with the z/OS host ID and the IMS TM subsystem ID of the IMS TM dependent region in which the corresponding Natural transaction is scheduled. The slot is freed when the Natural session terminates normally. In case of an abnormal termination, the slot remains allocated, but will be reused when the same user (identified by his LTERM) starts a new Natural session.

In a z/OS Parallel Sysplex environment you must use the roll server.

For further information on roll files and the roll server, see *Roll Server* in the *Natural Operations* documentation.

Authorized Services Manager

The *Natural Authorized Services Manager* is required in the following cases:

- In a dialog-oriented, non-conversational environment; see *Special Considerations for a Non-Conversational Environment*).
- If Monitoring or Broadcasting is used; see *Monitoring* or *Broadcasting*.
- If Accounting is used and the accounting information is written to SMF; see *Accounting*.
- If buffer pool propagation is used; see profile parameter BPPROP.

In the first two cases, the optional SIP function must be made available during startup of the Authorized Services Manager.

In a z/OS Parallel Sysplex environment, the SIP must be located in a Coupling Facility.

Shared Natural Nucleus

In an IMS TM environment, the Natural nucleus is always separated from the environment-dependent interface (driver). This means that you have to install the shared Natural nucleus. The same Natural nucleus can be shared by all Natural IMS environments.

For further information, see *Natural Shared Nucleus* in the *Natural Operations* documentation.

Natural Buffer Pool

Since Natural under IMS is executable in more than one MPP region, it is recommended that the Natural buffer pool be a global buffer pool.

Although you can use a local buffer pool, this is not recommended in terminal-driven environments for performance reasons.

For further information, see *Natural Global Buffer Pool* in the *Natural Operations* documentation.

Adabas Interface

In order to access the Natural system file and Adabas user files, the Adabas interface is required.

By default, the appropriate Adabas interface is dynamically loaded at runtime.

- In terminal-driven dialog-oriented environments, the Adabas/IMS interface module ADALNI is used.
- In all other environments, the Adabas batch interface module ADALNK is used.

You can overwrite the name of the Adabas interface to be used by specifying the Natural profile parameter ADANAME.



Warning:

You must not use the reentrant version of either of these interface modules.

Preload List

It is no longer required to use a preload list with the Natural IMS Interface, but for performance reasons it is recommended that you add the names of the following modules to the preload list for the Natural regions:

- the Natural IMS front-ends,
- the Natural IMS Interface module,
- the Natural shared nucleus,
- the Adabas interface.