

# Installing the Natural Com-plete Interface

This document describes step by step how to install the Natural Complete Interface. The following topics are covered:

- Structure and Functionality of the Natural Com-plete Interface
- Prerequisites
- Installation Tape for the Natural Complete Interface
- Installation Procedure for the Natural Complete Interface
- Using a Natural Local Buffer Pool under Com-plete
- Using the Com-plete \*ULIB Function
- Installation Verification
- Customizing the Natural Com-plete Environment

For information on how to operate Natural in a Com-plete environment, refer to:

- Natural under Com-plete (in the Natural TP Monitor Interfaces documentation).
- 

## Structure and Functionality of the Natural Com-plete Interface

The Natural Com-plete Interface is made up by linking the following modules:

NCFNUC	TP driver interface module.
NCFPARM	Natural Com-plete parameter module.
NCFAM	Natural Com-plete print/work file access method.
TLOPUSER	Interface module for Com-plete functions. This module resides in the Com-plete delivery load library.
NATPARM	Natural parameter module.

The resulting module has to be cataloged as RESIDENT PAGE (see Com-plete System Programmer's Manual and/or Com-plete Utility Manual).

In addition, it is often quite useful to have small startup programs which pass specific dynamic parameters to Natural. An example of such a startup program is created during installation.

## Prerequisites

- Base Natural must be installed under OS/390 or VSE/ESA.  
Version as specified under Operating/Teleprocessing Systems Required in the current Natural Release Notes.
- Com-plete must be installed.  
Version as specified under Natural and Other Software AG Products in the current Natural Release Notes.

## Installation Tape for the Natural Complete Interface

Platform:	Requirement:
OS/390 Systems	The modules required to install Natural under Com-plete are part of the standard Natural libraries NATnnn.LOAD and NATnnn.SRCE, which are delivered on the Natural installation tape (see Installation Tape for Natural under OS/390). No additional datasets are required.
VSE/ESA Systems	The modules required to install Natural under Com-plete are part of the standard Natural library NATnnn.LIBR, which is delivered on the Natural installation tape (see Installation Tape for Natural under VSE/ESA). No additional datasets are required.

# Installation Procedure for the Natural Complete Interface

Example jobs for installing Natural under Com-plete are contained in the job library with prefix NCO (for example, NCOI070).

## Step 1: Create, Assemble and Link NCFPARM - Job I070, Steps 2311, 2312

### Customization:

Macro NCMCFPRM contains several parameters, which you can modify if their default values do not suit your requirements; these variables are described in the section Customizing a Natural Com-plete Environment.

## Step 2: Create, Assemble and Link Startup Program - Job I070, Steps 2320, 2321

This is an optional step; it should be performed based on site requirements only.

1. Create the source Natural under Com-plete startup program in the source library. Adapt this source to your requirements.
2. Assemble and link the startup program into your Com-plete user program library.

## Step 3: Create Parameter Module - Job I080, Steps 2300, 2310

Create the Natural parameter module for Com-plete.

The following parameters in the parameter module must be modified for the installation:

```
FNAT=(dbid,fnat)
FUSER=(dbid,fuser)
```

For *dbid*, *fnat* and *fuser* use the values you specified when loading the system files; see Installing Natural under OS/390 or Installing Natural under VSE/ESA.

### Local Buffer Pool:

If you wish to use a Natural *local* buffer pool under Com-plete, review the TXTSIZE parameter, which determines the text segment size of the buffer pool; if necessary, change the TXTSIZE value in macro NTBPI.

### Global Buffer Pool (OS/390 only):

If you wish to use a Natural *global* buffer pool under Com-plete, specify the same values for the NTPRM parameter SUBSID and the NTBPI parameter NAME as in the Natural installation procedure.

For all other parameters, you can generally use the default values. Modify only the values of those parameters whose default values do not suit your requirements.

For a description of the individual parameters contained in the parameter module, see also the Parameter Reference overview (in the Natural Reference documentation).

Assemble and link the parameter module.

## Step 4: Link Com-plete/Natural Nucleus - Job I080, Step 2320

With the INCLUDE instruction for the parameter module, specify the name of the Natural Com-plete parameter module created in Step 3.

1. Include the following modules:

NCFNUC

NCFPARM

NCFAM (previous name: NATCMPL)

TLOPUSER

PRM020CO

2. Link the Com-plete/Natural nucleus to your Com-plete user program library.

3. Add the Natural Com-plete nucleus to the list of RESIDENTPAGE programs in your Com-plete SYSPARMS.

4. Adapt the INCLUDE statements for the interface module and the parameter module created in Job I070, Step 2312 and Job I080, Step 2310.

**Non-shared nucleus:**

If you do not wish to use a shared Natural nucleus under Com-plete, merge all INCLUDE statements and corresponding DD cards from Job I060, Step 0105 (shared nucleus) into Job I080, Step 2320 (front-end).

## Step 5: Adapt Com-plete

This step refers to the use of:

- a Natural *local* buffer pool under Com-plete,
- the Com-plete \*ULIB function.

These topics are described below under separate headings.

## Using a Natural Local Buffer Pool under Com-plete

If you wish to run a Natural *local* buffer pool under Com-plete, link module NCFBPS31 with module TLINNSRV from the Com-plete load library, using the following linkage editor commands (see Job I070, Step 2330):

<b>Platform:</b>	<b>Requirement:</b>
OS/390	<pre>MODE RMODE(ANY) INCLUDE natlib(NCFBPS31) INCLUDE comlib(TLINNSRV) ENTRY NCFBPS31 NAME NCFBPS31(R)</pre> <p>where <i>natlib</i> is the Natural load library and <i>comlib</i> is the Com-plete load library.</p>
VSE/ESA	<pre>MODE RMODE(ANY) PHASE NCFBPS31,* INCLUDE NCFBPS31 INCLUDE TLINNSRV ENTRY NCFBPS31</pre>

Define the Natural buffer pool server(s) for Natural Version 3.1 in the Com-plete startup:

```
SERVER=(NATBPS31,NCFBPS31,bpdef[,sortdef] [,edtdef])

bpdef : 1, size Natural buffer pool
sortdef : 2, size Sort buffer pool
edtdef : 4, size EDITOR buffer pool

size : size is specified in KB; the default value is 100.
```

Buffers will by default be allocated above 16 MB wherever possible.

### Example:

```
SERVER=(NATBPS31,NCFBPS31,1,400,2)
```

This example allocates and initializes a Natural buffer pool of 400 KB above 16 MB and a sort buffer pool of 100 KB below 16 MB.

The Natural buffer pool initialization module is loaded dynamically during Com-plete initialization. The linked module must therefore be placed in a load library contained in the COMPINIT concatenation (see also the Com-plete installation documentation).

## Using the Com-plete \*ULIB Function

If you are running Natural under Com-plete in threads "below" (NCFPARM THABOVE=NO), you must catalog the Natural Com-plete Interface using \*ULIB.

The Natural Complete Interface must also be cataloged if Natural work pools below the 16 MB line are desired. The ULIB region size will then depend on the value that was chosen for WPSIZE (section Profile Parameters in the Parameter Reference documentation).

See also Storage Usage (section Natural under Com-plete in the Natural TP Monitor Interfaces documentation).

The region size actually required depends on the buffer sizes specified in the Natural parameter module. To determine the region size actually used, you can use the Natural utility SYSTP as described in the section Debugging and Monitoring.

## Installation Verification

Perform the following steps to verify the successful installation of the Natural/ Com-plete interface:

1. Stop and restart Com-plete.
2. Enter the Com-plete user menu, type in the name of the Natural Complete driver. The Natural initial screen should appear.
3. Proceed with the steps described in the section Installation Verification for the TP Monitor Interface.

# Customizing the Natural Complete Environment

To customize your Natural Complete environment, you can modify the following parameters in the macro NCMCFPRM.

## Parameters in Macro NCMCFPRM

ADDBUF | CRELO | EDITWRK | EXIT | HCDTID | INITID | LC | MSGHDR | NTHSIZE | NUCRELC | SPIEA | THABOVE | TTYxx | U2PRINT |

### ADDBUF

<b>Possible values:</b>	any numeric value up to 32767
<b>Default value:</b>	0

ADDBUF specifies the size of the additional I/O buffer, which is calculated by the following algorithm:

```
I/O buffer size = min (8192 + ADDBUF, 32767)
```

### CRELO

<b>Possible values:</b>	a list of program names
<b>Default value:</b>	none

CRELO defines the table of resident page programs which are relocatable. If one of the programs specified with this parameter is invoked with a CALL statement, the relocation is *not* disabled.

**Example:** CRELO=( PROGA , PROGB )

### EDITWRK

<b>Possible values:</b>	(( <i>sdname</i> , <i>reclength</i> , <i>numrec</i> ),...)
Default values:	<i>sdname</i> : CMEDIT31 <i>reclength</i> : 4048 <i>numrec</i> : 1000

EDITWRK specifies parameters for editor work files to be able to use the Software AG Editor, where *sdname* is the name of the SD file, *recl* is the record length, *numrec* is the number of records.

The combination *sdname,recl,numrec* may be repeated up to 19 times, which allows you to use up to 20 different editor buffer pools.

**Example:** EDITWRK=((WF1,4048,1000),(WF2,4048,2000))

### EXIT

<b>Possible values:</b>	Name of user exit.
<b>Default value:</b>	None

EXIT defines a user exit module name which can be called during a session initialization before Natural is initialized.

## HCDTID

<b>Possible values:</b>	YES/NO
<b>Default value:</b>	NO (the hardcopy destination corresponds to the logical terminal name).

HCDTID controls the initialization of the hardcopy destination.

HCDTID=YES	The hardcopy destination is initialized with the terminal ID.
HCDTID=NO	The hardcopy destination corresponds to the logical terminal name.

## INITID

<b>Possible values:</b>	CPATCH, TIBNAM, TID
<b>Default value:</b>	TID (Natural terminal ID)

This parameter controls the content of the system variable \*INIT-ID.

INITID=TIBNAM	*INIT-ID contains the logical unit name of the user's terminal.
INITID=TID	*INIT-ID contains the string <i>lbnnnnnn</i> , where <i>l</i> is the stack level on which the session is running, <i>b</i> is blank and <i>nnnnnn</i> is the TID number, right justified without leading zeroes.
INITID=CPATCH	*INIT-ID contains the same string as with INITID=TID, except that <i>b</i> is the Com-plete patch character instead of a blank.

## LC

<b>Possible values:</b>	YES/NO
<b>Default value:</b>	YES

This parameter sets the terminal to lower-case mode.

## MSGHDR

<b>Possible values:</b>	YES/NO
<b>Default value:</b>	YES

This parameter activates or deactivates a message header for Natural error and termination messages using Com-plete's message switching facility for asynchronous Natural transactions.

## NTHSIZE

<b>Possible values:</b>	<i>nnnn</i>
<b>Default value:</b>	600

Specifies the size in KB of the storage area used for Natural's buffers, data areas and thread.

This storage area is allocated within the physical Com-plete thread. The remaining area (Com-plete region size RG for the Natural transaction minus NTHSIZE) is available for dynamically loading non-Natural subroutines, or for Natural work pools, for example.

## NUCRELC

<b>Possible values:</b>	YES/NO
<b>Default value:</b>	NO

This parameter specifies whether a nucleus relocation check takes place or not.

NUCRELC=YES	<p>When set to YES, this parameter does two things:</p> <p>It checks whether the shared nucleus has been relocated between terminal output and terminal input after the user has pressed ENTER or a PF key. This may happen if the RESIDENTPAGE nucleus is refreshed with the PGM REFRESH or PGM DELETE and PGM LOAD commands.</p> <p>It relocates Natural's internal pointers to the shared nucleus and avoids that a relocated shared nucleus leads to program abends or data corruption. The session can thus continue without interruption.</p>
NUCRELC=NO	No nucleus relocation check.

## SPIEA

<b>Possible values:</b>	YES/NO
<b>Default value:</b>	YES (SPIE/ABEXIT exits are activated)

This parameter activates or deactivates the SPIE/ABEXIT exits.

SPIEA=YES	Activates the SPIE/ABEXIT exits.
SPIEA=NO	Deactivates the SPIE/ABEXIT exits. Should be used for test purposes only.

## THABOVE

<b>Possible values:</b>	YES/NO
<b>Default value:</b>	YES (use Com-plete thread extension)

This parameter determines the location of the Natural thread (see NTHSIZE parameter).

THABOVE=YES	The Natural thread is allocated in the Com-plete thread extension above the 16-MB line.
THABOVE=NO	The Natural thread is allocated in the physical Com-plete thread below the 16-MB line

## TTYxx

This parameter sets teletypewriter (TTY) device control characters. The following hexadecimal values can be set:

<b>Value</b>	<b>Meaning</b>
TTYCR=0D	TTY carriage return
TTYLF=15	TTY line feed
TTYIC=00	TTY idle character
TTYNIC=00	TTY number of idle characters
TTYBS=16	TTY backspace
TTYAL=07	TTY alarm

## U2PRINT

<b>Possible values:</b>	YES/NO
<b>Default value:</b>	NO (disable the dynamic hardcopy printer allocation)

This parameter controls Com-plete's dynamic printer allocation feature for hardcopy requests.

U2PRINT=YES	Natural calls for hardcopy requests Com-plete's U2PRINT routine to specify a printer destination.
U2PRINT=NO	Natural use the default value from the HCDEST parameter.