Installing the Natural Com-plete/SMARTS Interface

This document describes step by step how to install the Natural Com-plete/SMARTS Interface. The following topics are covered:

- Structure and Functionality of the Natural Com-plete/SMARTS Interface
- Prerequisites
- Installation Tape for the Natural Com-plete/SMARTS Interface
- Installation Procedure for the Natural Com-plete/SMARTS Interface
- Installation of the Natural Server 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/SMARTS (in the Natural TP Monitor Interfaces documentation).
- Natural under Com-plete/SMARTS Abend Codes (in the Natural Codes and Messages documentation)

Structure and Functionality of the Natural Com-plete/SMARTS Interface

The Natural Com-plete/SMARTS 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.
NATPARM	Natural parameter module.
PAEAINT	Interface module for SMARTS APS C/ASM-functions. This module resides in the SMARTS APS delivery load library.
TLOPUSER	Interface module for Com-plete functions. This module resides in the Com-plete delivery load library.

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 Com-plete/SMARTS Interface

- Installation Tape - OS/390 Systems
- Installation Tape - VSE/ESA Systems

Installation Tape - OS/390 Systems

The installation tape contains the datasets listed in the table below. The sequence of the datasets is shown in the **Report of Tape Creation** which accompanies the installation tape.

Dataset Name:	**Contents:**
NCF*nnn*.LOAD	Com-plete-dependent load modules.
NCF*nnn*.SRCE	Com-plete-dependent source programs and macros.

The notation *nnn* in dataset names represents the version number of the product.

Copying the Tape Contents to Disk

If you are using System Maintenance Aid (SMA), refer to the SMA documentation (included on the current edition of the Natural documentation CD).

If you are **not** using SMA, follow the instructions below.

This section explains how to:

- Copy data set COPY.JOB from tape to disk.
- Modify this data set to conform with your local naming conventions.

The JCL in this data set is then used to copy all data sets from tape to disk.

If the datasets for more than one product are delivered on the tape, the dataset COPY.JOB contains the JCL to unload the datasets for all delivered products from the tape to your disk.

After that, you will have to perform the individual install procedure for each component.

Step 1 - Copy data set COPY.JOB from tape to disk

The data set COPY.JOB (label 2) contains the JCL to unload all other existing data sets from tape to disk. To unload COPY.JOB, use the following sample JCL:


```
//SAGTAPE JOB SAG,CLASS=1,MSGCLASS=X
//* --------------------------------
//COPY EXEC PGM=IEBGENER
//SYSUT1 DD DSN=COPY.JOB,
// DISP=(OLD,PASS),
// UNIT=(CASS,,DEFER),
// VOL=(,RETAIN,SER=<Tnnnnn>),
// LABEL=(2,SL)
//SYSUT2 DD DSN=<hilev>.COPY.JOB,
// DISP=(NEW,CATLG,DELETE),
// UNIT=3390,VOL=SER=<vvvvvv>,
// SPACE=(TRK,(1,1),RLSE),
// DCB=*.SYSUT1
//SYSPRINT DD SYSOUT=*
//SYSIN DD DUMMY
//
```

Where:

<*hilev*>	is a valid high level qualifier
<*Tnnnnn*>	is the tape number
<*vvvvvv*>	is the desired volser

Step 2 - Modify COPYTAPE.JOB

Modify the COPYTAPE.JOB to conform with your local naming conventions and set the disk space parameters before submitting this job:

- Set HILEV to a valid high level qualifier.
- Set LOCATION to a storage location.
- Set EXPDT to a valid expiration date.

Step 3 - Submit COPY.JOB

Submit COPY.JOB to unload all other data sets from the tape to your disk.

Installation Tape - VSE/ESA Systems

The installation tape contains the dataset listed below. The sequence of the datasets on tape is shown in the **Report of Tape Creation** which accompanies the installation tape.

Dataset Name:	Contents:
NCF*nnn*.LIBR	Com-plete installation libraries.

The notation *nnn* in dataset names represents the version number of the product.

Copying the Tape Contents to Disk

If you are using System Maintenance Aid (SMA), refer to the SMA documentation (included on the current edition of the Natural documentation CD).

If you are **not** using SMA, follow the instructions below.

This section explains how to:

- Copy data set COPYTAPE.JOB from tape to library.
- Modify this member to conform with your local naming conventions.

The JCL in this member is then used to copy all data sets from tape to disk.

If the datasets for more than one product are delivered on the tape, the member COPYTAPE.JOB contains the JCL to unload the datasets for all delivered products from the tape to your disk, except the datasets that you can directly install from tape, for example, Natural INPL objects.

After that, you will have to perform the individual install procedure for each component.

Step 1 - Copy data set COPYTAPE.JOB from tape to disk

The data set COPYTAPE.JOB (file 5) contains the JCL to unload all other existing data sets from tape to disk. To unload COPYTAPE.JOB, use the following sample JCL:

```
* $$ JOB JNM=LIBRCAT,CLASS=0,                                          +
* $$ DISP=D,LDEST=(*,UID),SYSID=1
* $$ LST CLASS=A,DISP=D
// JOB LIBRCAT
* ***************************************
*     CATALOG COPYTAPE.JOB TO LIBRARY
* ***************************************
// ASSGN SYS004,NNN                              <------  tape address
// MTC REW,SYS004
// MTC FSF,SYS004,4
ASSGN SYSIPT,SYS004
// TLBL IJSYSIN,'COPYTAPE.JOB'
// EXEC LIBR,PARM='MSHP; ACC S=lib.sublib'       <------- for catalog
/*
// MTC REW,SYS004
ASSGN SYSIPT,FEC
/*
/&
* $$ EOJ
```


Where:

NNN	is the tape address
lib.sublib	is the library and sublibrary of the catalog

Step 2 - Modify COPYTAPE.JOB

Modify COPYTAPE.JOB to conform with your local naming conventions and set the disk space parameters before submitting this job:

Step 3 - Submit COPYTAPE.JOB

Submit COPYTAPE.JOB to unload all other data sets from the tape to your disk.

Installation Procedure for the Natural Com-plete/SMARTS Interface

Example jobs for installing Natural under Com-plete/SMARTS 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 NFMPRM 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/SMARTS 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 Pools:

In contrast to previous versions, local buffer pools are allocated during the very first Natural session after Com-plete startup. If you wish to use a *local* buffer pool under Com-plete, review the SIZE subparameter of macro NTBPI, which determines the size of the local buffer pool, and for the Natural buffer pool review the TXTSIZE parameter, which determines the text segment size of the buffer pool; if necessary, change these parameters in macro NTBPI.

The status of the local buffer pools can be displayed on the operator console by the following command:

```
K SERV,NCFNAT41,BPSTAT
```

Global Buffer Pool (OS/390 only):

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

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 Parameter 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 Natural 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
   PAEAINT
   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.

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

- Installation of the Natural Server under Com-plete,
- Using the Com-plete *ULIB Function.

These topics are described below under separate headings.

Installation of the Natural Server under Com-plete

The Natural server is used to maintain common storage and tables across Natural sessions, e.g. local buffer pools.

To install the Natural server under Com-plete, link module NCFNAT41 with module TLOPUSER from the APS load library, using the following linkage editor commands (see Job I080, Step 2350):

Platform:	Requirement:
OS/390	MODE RMODE(ANY) INCLUDE *natlib*(NCFNAT41) INCLUDE *comlib*(TLOPUSER) ENTRY NCFNAT41 NAME NCFNAT41(R) where *natlib* is the Natural load library and *comlib* is the Com-plete load library.
VSE/ESA	MODE RMODE(ANY) PHASE NCFNAT41,* INCLUDE NCFNAT41 INCLUDE TLOPUSER ENTRY NCFNAT41

Define the Natural server for Natural Version 4.1 in the Com-plete startup:

```
SERVER=(NCFNAT41,NCFNAT41)
```

The first parameter defines the name of the server as defined by the SERVER parameter of macro NFMPRM (see below). The second parameter defines the module name.

The Natural server 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/SMARTS in threads "below" (NCFPARM THABOVE=NO), you must catalog the Natural Com-plete/SMARTS Interface using *ULIB.

The Natural Com-plete/SMARTS 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 (in the Natural Parameter Reference documentation).

See also Storage Usage (section Natural under Com-plete/SMARTS 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 Natural Utilities documentation.

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 Com-plete 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 Com-plete Environment

To customize your Natural Com-plete environment, you can modify the following parameters in the macro NFMPRM.

Parameters in Macro NFMPRM

EXIT | HCDTID | INITID | LC | MSGHDR | NTHSIZE | SERVER | SPIEA | THABOVE | TTYxx | U2PRINT |

EXIT

Possible values:	Name of user exit.
Default value:	None

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

HCDTID

Possible values:	YES/NO
Default value:	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

Possible values:	CPATCH, TIBNAM, TID
Default value:	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 *lbnnnnnn*, where *l* is the stack level on which the session is running, *b* is blank and *nnnnnn* is the TID number, right justified without leading zeroes.
INITID=CPATCH	*INIT-ID contains the same string as with INITID=TID, except that *b* is the Com-plete patch character instead of a blank.

LC

Possible values:	YES/NO
Default value:	YES

This parameter sets the terminal to lower-case mode.

MSGHDR

Possible values:	YES/NO
Default value:	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

Possible values:	*nnnn*
Default value:	1024

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, increasing of variable Natural thread buffers or for Natural work pools, for example.

SERVER

Possible values:	Name of the Natural Server
Default value:	NCFNAT41

SERVER defines the name of the Natural server which is initialized during Com-plete startup. It is used to maintain common storage and tables across Natural sessions, e.g. local buffer pools. The server must be defined in the Com-plete startup.

It is possible to copy the supplied server module NCFNAT41 under a different name and to link and run different Com-plete interfaces with different servers, i.e. with different sets of local buffer pools in the same Com-plete.

SPIEA

Possible values:	YES/NO
Default value:	YES (ABEXIT exit is activated)

This parameter activates or deactivates the ABEXIT exits.

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

THABOVE

Possible values:	YES/NO
Default value:	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:

Value	Meaning
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

Possible values:	YES/NO
Default value:	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.

