

# Installing the Natural Com-plete/SMARTS Interface

This document describes how to install the Natural Com-plete/SMARTS Interface, which corresponds to the Natural Com-plete Interface (product code NCF).

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 for Recoverable Sessions in Com-plete
- Installation of the Natural Server under Com-plete
- Using the Com-plete \*ULIB Function
- Installation Verification
- Customizing the Natural Com-plete Environment

**Note:**

SMARTS is an acronym for "Software AG Multi-Architecture Runtime System". It constitutes a runtime layer that allows POSIX-like applications to run on mainframe operating systems. Software AG products communicate with the operating system through the SMARTS layer.

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 Messages and Codes* documentation.

**Notation vrs or vr:** If used in the following document, the notation *vrs* or *vr* stands for the relevant version, release, system maintenance level numbers. For further information on product versions, see Version in the *Glossary*.

---

## 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.
NCFPARAM	Natural Com-plete parameter module.
NCFAM	Natural Com-plete print/work file access method.
NCFROLLS	Natural Com-plete interface module for Natural Roll Server.
NATPARAM	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.
ATTRCSS	Interface module for Resource Recovery Services (RRS). This module resides in the SYS1 .CSSLIB library.

The resulting module has to be cataloged as `RESIDENT PAGE`. For further information, 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 z/OS or z/VSE.  
Version as specified under *Operating/Teleprocessing Systems Required* in the current Natural *Release Notes* for Mainframes.

- 

Com-plete must be installed.  
Version as specified under *Natural and Other Software AG Products* in the current Natural *Release Notes* for Mainframes.

## Installation Tape for the Natural Com-plete/SMARTS Interface

The following topics are covered below:

- Installation Tape - z/OS Systems
- Installation Tape - z/VSE Systems

### Installation Tape - z/OS 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:
NCFvrs.LOAD	Com-plete-dependent load modules.
NCFvrs.SRCE	Com-plete-dependent source programs and macros.

## Copying the Tape Contents to a z/OS Disk

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

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

This section explains how to:

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

The JCL in this dataset is then used to copy all datasets 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 Dataset COPY.JOB from Tape to Disk
- Step 2 - Modify COPY.JOB on Your Disk
- Step 3 - Submit COPY.JOB

### Step 1 - Copy Dataset COPY.JOB from Tape to Disk

The dataset COPY.JOB (Label 2) contains the JCL to unload all other existing datasets 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=tape-volume),
// LABEL=(2,SL)
//SYSUT2 DD DSN=hilev.COPY.JOB,
// DISP=(NEW,CATLG,DELETE),
// UNIT=3390,VOL=SER=volume,
// SPACE=(TRK,(1,1),RLSE),
// DCB=*.SYSUT1
//SYSPRINT DD SYSOUT=*
//SYSIN DD DUMMY
//
```

where:

*hilev* is a valid high level qualifier

*tape-volume* is the tape volume name, for example: T12345

*volume* is the disk volume name

## Step 2 - Modify COPY.JOB on Your Disk

Modify the COPY .JOB on your disk to conform to 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 datasets from the tape to your disk.

## Installation Tape - z/VSE 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:
NCFvrs.LIBR	Com-plete installation libraries.

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

## Copying the Tape Contents to a z/VSE Disk

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

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

This section explains how to:

- Copy dataset COPYTAPE .JOB from tape to disk.
- Modify this dataset to conform with your local naming conventions.

The JCL in this member is then used to copy all datasets 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 Dataset COPYTAPE.JOB from Tape to Disk
- Step 2 - Modify COPYTAPE.JOB
- Step 3 - Submit COPYTAPE.JOB

### Step 1 - Copy Dataset COPYTAPE.JOB from Tape to Disk

The dataset COPYTAPE . JOB contains the JCL to unload all other existing datasets 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 to 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 datasets 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 NCFPARAM

(Job I070, Steps 2311, 2312)

- **Customization:** The 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 *Parameters in Macro NFMPRM* in the *Natural TP Monitors* documentation.

## 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 z/OS* or *Installing Natural under z/VSE*.

### 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 the macro *NTBPI*.

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

```
K SERV,NCFNAT42,BPSTAT
```

### Global Buffer Pool (z/OS 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.

### Note:

For a description of the individual parameters contained in the parameter module, see 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 the corresponding step.
  1. Include the following modules:
    - NCFNUC
    - NCFROLLS
    - NCFPARM
    - NCFAM
    - TLOPUSER
    - PAEAINT
    - PRM020CO
    - ATRRCSS
  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 for Recoverable Sessions in Com-plete

To benefit from Com-plete's recoverable session handling available under z/OS, you have to link the module NCFROLLS to the Com-plete/Natural nucleus. NCFROLLS serves as an interface to the Natural Roll Server, which has to be started to support recoverable sessions. Furthermore, the module ATRRCSS needs not to be linked to the Com-plete/Natural nucleus, because the RRS interface module is part of the Com-plete routine TLOPUSER.

For further information on the Natural Roll Server, refer to *Natural Roll Server Functionality* and *Natural Roll Server Operation* in the *Natural Operations* documentation.

## 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 NCFNAT42 with module TLOPUSER from the APS load library, using the following linkage editor commands (see Job I080, Step 2350):

Platform:	Requirement:
z/OS	<pre>MODE RMODE(ANY) INCLUDE natlib(NCFNAT42) INCLUDE comlib(TLOPUSER) ENTRY NCFNAT42 NAME NCFNAT42(R)</pre> <p>where <i>natlib</i> is the Natural load library and <i>comlib</i> is the Com-plete load library.</p>
z/VSE	<pre>MODE RMODE(ANY) PHASE NCFNAT42,* INCLUDE NCFNAT42 INCLUDE TLOPUSER ENTRY NCFNAT42</pre>

Define the Natural server for Natural Version 4.2 in the Com-plete startup:

```
SERVER=(NCFNAT42,NCFNAT42)
```

The first parameter defines the name of the server as defined by the parameter SERVER of macro NFMPRM. 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 parameters in the macro NFMPRM.

Refer to *Parameters in Macro NFMPRM* in the Natural *TP Monitor Interface* documentation.