

Installing the Natural Optimizer Compiler

This section describes how to install the Natural Optimizer Compiler (also referred to as NOC) in the various environments supported.

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General Information

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Installation Jobs

The installation of Software AG products is performed by installation jobs. These jobs are either created manually or generated by Software AG's System Maintenance Aid (SMA).

For each step of the installation procedure described below, the job number of a job performing the corresponding task is indicated. This job number refers to an installation job generated by SMA.

Using System Maintenance Aid

For information on using SMA for the installation process, refer to the System Maintenance Aid documentation.

Prerequisites

Products and versions are specified in the sections Natural and Other Software AG Products and Operating/Teleprocessing Systems Required in the current Natural Release Notes for Mainframes.

Installation Tape - OS/390

The installation tape contains the dataset listed in the table below.

Dataset Name	Contents
NOC nnn .LOAD	This dataset contains the Natural Optimizer Compiler load modules.

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

For a detailed description of the installation tape refer to the Report of Tape Creation which accompanies the tape.

Space Requirements

The space the dataset requires on disk is shown in the Report of Tape Creation.

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=<hi lev>.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 COPY.JOB to conform with your local naming conventions

There are three parameters you have to set before you can submit 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

The installation tape contains the following dataset:

Dataset Name	Contents
NOC nnn .LIBR	LIBR backup file.

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

For a detailed description of the installation tape refer to the Report of Tape Creation which accompanies the tape.

Copying the Tape Contents to Disk

If you are not using System Maintenance Aid, adapt and run job NOCTAPE contained in sublibrary NAT nnn J to restore the product sublibrary from tape and make it known to MSHP.

Installation Tape - BS2000/OSD

The installation tape contains the following dataset:

Dataset Name	Contents
NOC nnn .PAMS	Optimizer Compiler module library.

The notation nnn in dataset names represents the version number of the product. For a detailed description of the installation tape refer to the Report of Tape Creation which accompanies the tape.

Space Requirements

The space the dataset requires on disk is shown in the Report of Tape Creation.

Copying the Tape Contents to Disk

If you are not using SMA, use the procedure described below. In this procedure, the following values must be supplied:

- In the dataset names, replace nnn with the current version number of the datasets.
- Replace all $xxxxxx$ with the volume serial number of the tape.

To copy the datasets from tape to disk

1. Copy the job dataset NOC nnn .JOBS from tape to disk using the BS2000/OSD utility PERCON or EDT.
 - If you use PERCON, issue the following commands:

```
/FILE NOC $nnn$ .JOBS ,VOL= $xxxxxxx$  ,DEV=T9G -
/      ,FCBTYPE= ,RECSIZE= ,BLKSIZE= ,RECFORM= -
/      ,STATE=FOREIGN ,FSEQ=UNK ,LINK=PCIN
/FILE P.NOC $nnn$  ,LINK=PCOUT
/EXEC PERCON
END
```

- If you use EDT, issue the following commands:

```
/FILE NOC $nnn$ .JOBS ,VOL= $xxxxxxx$  ,DEV=T9G -
/      ,RECSIZE= ,BLKSIZE= ,RECFORM= -
/      ,STATE=FOREIGN ,FSEQ=UNK ,LINK=EDTSAM
/EXEC EDT
@ READ ' / '
@ SY ' /REL EDTSAM '
@ WRITE ' P.NOC $nnn$  '
@ HALT
```

2. Issue the following command:

```
/CALL P.NOCnnn, PRODUCT=NOCnnn
```

An example job library LIB.NOCnnn is created from the procedure dataset.

3. Adapt job E.TAPE from the example job library.

Then issue the following command to run the job which copies all datasets from tape to disk:

```
/E LIB.NOCnnn ( E . TAPE )
```

Installation Tape - VM/CMS

The installation tape contains the dataset listed in the table below.

Dataset Name	Contents
NOC nnn .TAPE	This dataset contains the Natural Optimizer Compiler load module.

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

For a detailed description of the installation tape refer to the Report of Tape Creation which accompanies the tape.

Space Requirements

The space the dataset requires on disk is shown in the Report of Tape Creation.

Copying the Tape Contents to Disk

To copy the tape contents to disk

1. Position the tape for the TAPE LOAD command by calculating the number of tape marks as follows:
If the sequence number of NOC nnn .TAPE, as shown by the Report of Tape Creation, is n , you must position over $3n - 2$ tape marks (that is, FSF 1 for the first dataset, FSF 4 for the second, etc.)
2. Access the disk that is to contain the Natural installation files as disk **A**.
3. Ask the system operator to attach a tape drive to your virtual machine at the address X'181' and mount the Natural Optimizer Compiler installation tape.
4. When the tape has been attached, enter the following CMS command:
TAPE REW
Position the tape by entering the CMS command:
TAPE FSF n
where n is the number of tape marks and is calculated as described above ($3n - 2$).
5. Load the Natural Optimizer Compiler/CMS installation material by entering the CMS command:
TAPE LOAD * * A
Keep the tape drive attached to your virtual machine, because the tape is needed later in the installation procedure.

Installation Procedure

Step 1 - Modify the Natural Parameter Module - Jobs I060, I080

Activate the Natural Optimizer Compiler by adding the following macro to your Natural parameter module (NATPARM):

```
NTOPT ON
```

Assemble and link the parameter module.

Step 2 - Relink all Natural Nuclei - Jobs I060, I080

Adapt the link steps for Natural.

- **OS/390**

Add the following INCLUDE instruction to all links of the Natural nuclei (if you are using a shared nucleus, then include this statement in the link of the shared part):

```
INCLUDE NOCLIB(NOCNUC)
```

Add the corresponding DD statement:

```
//NOCLIB DD DSN=NOCnnn.LOAD,DISP=SHR
```

- **VSE/ESA**

Add the following INCLUDE instruction and the corresponding sublibrary for the Natural Optimizer Compiler in the search chain for the linkage editor:

```
INCLUDE NOCNUC
```

- **BS2000/OSD**

Add the following INCLUDE instruction to the element LNATSHAR in LIB.NATnnn:

```
INCLUDE NOCNUC,NOCnnn.MOD
```

Relink your Natural nucleus with the procedure P.LINKMOD in LIB.NATnnn.

- **VM/CMS**

The list of text files to be included in the Natural module or DCSS is contained in REXX program NAT\$LOAD EXEC (variable LOADLIST). To customize your Natural system, modify this EXEC with XEDIT by changing the LOADLIST as required.

Add the following INCLUDE instruction to the program NAT\$LOAD EXEC

```
LOADLIST = LOADLIST 'NOCNUC'
```

Relink your Natural nucleus with the procedure NATBLDM.

Installation Verification

1. Recatalog an existing program or write a new program and then catalog it.
2. Check the directory information for the program you have just cataloged, by using the LIST system command:
`LIST DIR object-name`

The directory information for the specified object will be displayed, showing the size of the machine code at the bottom of the screen.