Installing Natural under z/VSE

This document describes step by step how to install Natural under the operating system z/VSE using Adabas system files.

The following topics are covered:

- Prerequisites

- Installation Tape for Natural under z/VSE

- Transferring a License Key File from PC to Host with FTP

- Installation Procedure for Natural under z/VSE

- Installation Verification for Natural under z/VSE

See also *z/VSE Environment* in the Natural *Operations* documentation.

For installation-related information on Unicode and code page support, refer to *Configuration and Administration of the Unicode/Code Page Environment* in the *Unicode and Code Page Support* documentation.

Notation vrs or vr: If used in the following document, the notation *vrs* or *vr* stands for the relevant **v**ersion, **r**elease, **s**ystem maintenance level numbers. For further information on product versions, see Version in the *Glossary*.

Prerequisites

- A supported version of the z/VSE operating system must be installed. For the supported versions of the operating systems, refer to *Operating/Teleprocessing Systems Required* in the current Natural *Release Notes* for Mainframes.

- A supported version of Adabas must be installed. For the supported versions, refer to *Natural and Other Software AG Products* in the current Natural *Release Notes* for Mainframes.

- As a rule of thumb, each major Software AG product requires approximately 20 MB space in the Adabas database to store the Natural objects supplied by Software AG.

Installation Tape for Natural under z/VSE

The installation tape contains the datasets listed in the table below. The sequence of the datasets and the number of library blocks needed are shown in the *Report of Tape Creation* which accompanies the installation tape.

Dataset Name	Contents
NAT*vrs*.LICS	Natural Licence Key File. For further information on license key file, license key file installation, product license check and product license check FAQs, see *Licensing Natural*. If a license key file is supplied as an e-mail attachment, see *Transferring the License Key File from PC to Host with FTP*
NAT*vrs*.SYSF	Example Natural system file
NAT*vrs*.LIBR	LIBR backup file
NAT*vrs*.LIBJ	Installation jobs
NAT*vrs*.LDEL	Instructions to delete Natural system objects of Version 4.1
NAT*vrs*.INPL	Natural system objects
NAT*vrs*.EXPL	Natural example objects
NAT*vrs*.ERRN	Natural error messages

The dataset type and the space each dataset requires on disk is shown in the *Report of Tape Creation*.

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 confom 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.

Transferring a License Key File from PC to Host with FTP

If a license key file is supplied as an e-mail attachment, you must transfer the attached license key file natvr.xml from the PC to the mainframe, using native FTP commands.

⚠️   **Warning:**
Using utilities instead of native FTP commands for the license key file transfer may corrupt the license key and thus prevent Natural from execution later on. This applies for example to file transfer based on 3270 terminal emulations that do not provide a true binary file transfer, but convert specific characters.

To transfer a license key file from the PC to the mainframe, perform the following steps:

1. Save the product license key file e-mail attachment on your PC hard disk.

2. Open a command prompt window. In the command prompt window, change to the directory where you saved the product license key file.

3. Start an FTP session for communication with the z/VSE host:

   ```
   ftp host-name
   ```

   Where `host-name` is the name of the z/VSE host.

4. Enter your z/VSE host login `user` and `password`.

5. Once the FTP session has been established, specify the z/VSE sublibrary for the license key file:

   ```
   ftp>cd lib.sublib
   ```

6. Switch to binary data mode (the license key file must retain its ASCII format during the transfer):

   ```
   ftp>bin
   ```

7. Copy the license key file as a member into the specified sublibrary.

   ```
   ftp>put natvr.xml NATvrs.LICS
   ```

   This command will create a member `NATvrs.LICS` in the specified sublibrary.

8. Stop your FTP session by entering:

   ```
   ftp>quit
   ```

Installation Procedure for Natural under z/VSE

Step 1: Convert and Assemble the License Key File

Convert member `NATvrs.LICS` in sublibrary `lib.sublib` with `PROGRAM NATLICAV` in an Assembler input file.

Assemble/link into a linkable module. This module is linked (Job I060) to the Natural nucleus.

- (Job I006, Step 0104, and Job I007, Step 0104)

Job I006, Step 0104	Copy Natural license key into sublibrary.
Job I007, Step 0104	Convert and generate license key module (`NATLIC`).

Step 2: Load the FNAT System File

- (Job I050, Step 0100)

  If you are installing into an existing Natural 4.1 FNAT file, skip this step.

Load the empty Natural system file (dataset NAT*vrs*.SYSF) using the ADALOD utility.

This file will contain all Natural objects supplied by Software AG. Its size depends on the number of products to be installed later. As a rule of thumb, 20 MB can be assumed for each major Software AG product.

The following ADALOD parameters must not be altered:

```
ISNREUSE=YES
```

To avoid Natural errors NAT9988 and NAT7397 after reorganization of the FNAT system file using ADAULD/ADALOD, the parameter USERISN should be set to YES.

The file number *fnat* of the FNAT system file can be chosen as described under Natural profile parameter FNAT in the Natural *Parameter Reference* documentation.

Step 3: Load the FUSER System File

- (Job I050, Step 0101)

  You have the following options:

  1. You can use an existing Version 4.1 FUSER file, then you can skip this step.

  2. You can use a new FUSER file for Version 4.2.

  3. You can use an existing Version 4.1 FUSER file to be shared by Versions 4.1 and 4.2.

  4. You can use an existing Version 4.1 FUSER file to be used by Version 4.2 only.

Use a New Version 4.2 FUSER System File - First-Time Installation

For the use of a new and empty FUSER system file for Natural Version 4.2, no additional system-file-related actions are necessary.

If you do *not* want to share the FUSER system file, proceed as follows:

Load the empty Natural user file contained in dataset NAT*vrs*.SYSF using the ADALOD utility.

In this file, all user-written Natural programs are stored.

The following ADALOD parameters *must not* be altered:

```
ISNREUSE=YES
```

The file number *fuser* of the FUSER system file can be chosen as described under Natural profile parameter FUSER in the Natural *Parameter Reference* documentation.

Reuse an Existing Version 4.1 FUSER System File - Migration from Natural Version 4.1

If you want to use the existing Natural Version 4.1 FUSER system file and you do not want to share the FUSER system file, skip this step.

Using a Version 4.1 FUSER File to be Shared by Natural Versions 4.1 and 4.2

If you use an existing Natural Version 4.1 FUSER system file to be shared by Natural Versions 4.1 and 4.2, you must upgrade your Natural Version 4.1 installation to Version 4.1.4.

Natural Version 4.1.4 Service Pack I003 or a subsequent Service Pack is required. Service Pack I003 and all subsequent Service Packs contain all the necessary Version 4.1 based solutions for Natural Version 4.2.

User Application Programming Interfaces USR* in Library SYSEXT

The USR* programs from the delivered library SYSEXT run in a special mode. As a result, the USR* programs do not need to set further steplibs to execute related objects for processing. This reduces the impact on the Natural buffer pool search logic and improves the performance significantly if user exits are used extensively within user written applications.

It is necessary that the user exits are cataloged with Natural Version 4.2. This implies that the user exits cannot be executed with Natural Version 4.1.

Use of USR* Programs

Usually, the access of USR* programs by an application requires that the user application programming interfaces be copied from library SYSEXT to either the application libraries on the FUSER system file or to library SYSTEM on the FUSER system file or to library SYSTEM on the FNAT system file, respectively, or any other library which is defined as steplib for the application. Library SYSEXT can also be used as steplib. Due to the fact that the delivered user application programming interfaces will always be cataloged with the latest Natural version, we recommend that the user application programming interfaces should reside on the FNAT system file. This will ensure that the right version is executed and will separate user written applications from Software AG modules.

If applications which call user application programming interfaces should run with both Natural Version 4.1 and Natural Version 4.2, it must be made sure that the user application programming interfaces delivered with the corresponding Natural version are used.

The following scenarios may be considered:

Using a Version 4.1 FUSER File for Natural Version 4.1 and 4.2

If the same FUSER system file shall be used in a Natural Version 4.1 and Version 4.2 environment in parallel the following steps are recommended:

○ Remove all USR* modules you have copied from library SYSEXT into application libraries on your FUSER system file.

○ In both environments, copy the used USR* modules from library SYSEXT to library SYSTEM on the corresponding FNAT system file.

○ Alternatively, the USR* modules can be moved to another system library on FNAT which then must be defined as steplib, or library SYSEXT can be used as steplib for the applications. Then automatically in both environments the right versions of the user application programming interfaces are executed.

Using a Version 4.1 FUSER File for Natural Version 4.2 only

If you want to use the existing Natural Version 4.1 `FUSER` system file and you do not want to share the `FUSER` system file, then it is still possible to replace all `USR*` modules you have copied from library `SYSEXT` into application libraries with the new `USR*` objects from the Version 4.2 library `SYSEXT`.

But the preferred way is to remove all user application programming interfaces on the `FUSER` system file and copy the used user application programming interfaces from library `SYSEXT` to library system of the FNAT system file or use a `SYS` library on `FNAT` as steplib.

Using a New FUSER File for Natural Version 4.2

If you want to port existing applications to a new `FUSER` system file, copy all application objects but no Software AG `USR*` objects to the new `FUSER` system file. Then proceed as described in the scenario above.

Migration

The `FIND` function of the Natural utility `SYSMAIN` can be used to search for all `USR*` modules stored in a specific library on the `FUSER` system file or across the whole system file. In addition, Predict cross reference data can be used to determine all referenced user application programming interfaces.

The file number *fuser* of the `FUSER` system file can be chosen as described under Natural profile parameter `FUSER` in the Natural *Parameter Reference* documentation.

Step 4: Load the Scratch-Pad File

- (Job I050, Step 0102)

  The scratch-pad file (which is a Natural-internal system file) can be used exclusively by the new Natural version or it can be shared by different versions of Natural.

  If you do *not* want to use a scratch-pad file, skip this step.

  If you do want to use a scratch-pad file; that is, if you want to use read-only system files (profile parameter `ROSY=ON`), see also *Natural Scratch-Pad File* in the Natural *Operations* documentation, proceed as follows:

  Load the empty scratch-pad file contained in dataset `NATvrs.SYSF`, using the `ADALOD` utility as described below.

  The following `ADALOD` parameter *must not* be altered:

  ```
  ISNREUSE=YES
  ```

  For the optional scratch-pad file inclusion, the following NATPARM parameters must be added or, if already present, updated with:

  ```
  LFILE=(212,dbid,fnr)
  ROSY=ON
  ```

If you use SMA: To be able to use read-only system files, set the SMA parameter `NAT-SCRF=Y` and the Natural profile parameter `ROSY=ON`.

Step 5: Load the FDIC System File

● (Job I050, Step 0103)

Skip this step:

○ if you want to install Predict (in this case, use the corresponding installation step in the Predict *Installation* documentation), or

○ if you want to use an existing `FDIC` system file (an existing `FDIC` system file can be shared by Natural Versions 4.1 and 4.2), or

○ if you do not use your own `FDIC` system file.

Load the empty `FDIC` system file contained in dataset `NATvrs.SYSF` using the `ADALOD` utility, as described below.

The following `ADALOD` parameters *must not* be altered:

`ISNREUSE=YES`

The file number `fdic` of the `FDIC` system file can be chosen as described under Natural profile parameter `FDIC` in the Natural *Parameter Reference* documentation.

Step 6: Load the FSEC System File

● Skip this step,

○ if you do not use Natural Security, or

○ if you want to use an existing `FSEC` system file, or

○ if you do not want to use an own `FSEC` system file.

If you use Natural Security, refer to *Installing Natural Security* in the Natural *Installation* documentation.

Step 7: Assemble the Natural z/VSE Interface Module

● (Job I055, Step 0100)

Set the parameters in the source code of the module `NATVSE` contained in the sublibrary `lib.sublib` to fit your site requirements.

For a description of the `NTVSE` generation parameters, refer to *NTVSE Macro - Generation Parameters for Natural under z/VSE* in the Natural *Operations* documentation.

Assemble and link the Natural z/VSE interface module `NATVSE` contained in the sublibrary `lib.sublib`.

Step 8: Create the Natural Configuration Module

- (Job I055, Step 0110)

  This step is only required if you need to change the delivered `NATCONFG` module, for example, to adapt the `NTDVCE` macro definition to your requirements.

  Change and assemble the source contained in the sublibrary *lib.sublib*.

  Link the resulting Natural configuration module (`NATCONFG`) to the Natural nucleus when you link the Natural nucleus (see below).

  For more information on the configuration tables in `NATCONFG`, refer to *Natural Configuration Tables* in the Natural *Operations* documentation.

Step 9: Create the Parameter Module

- (Job I060, Step 0010)

  Create the Natural batch parameter module (Job I060, Step 0010).

  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 in the previous steps when you loaded the system files (see above).

  Global Natural Buffer Pool: If you wish to use a *global* Natural buffer pool, specify the parameter macro `NTBPI` with the name of the global Natural buffer pool and set the profile parameter `SUBSID` in all your Natural parameter modules.

  If you use SMA: Define the name of the global Natural buffer pool in SMA parameter `NAT-GLOBAL-BP`.

  For all other parameters, you can generally use the default values.

  Modify only the values of those parameters whose default values do not meet your requirements.

  For a detailed description of the individual parameters contained in the parameter module, refer to the Natural *Parameter Reference* documentation.

  Assemble the parameter module.

Step 10: Link the Natural Nucleus

(Job I060, Step 0020)

The following alternatives exist:

Link a batch front-end (Job I060, Step 0020) and link a shared nucleus (Job I060, Step 0105), or link a non-shared nucleus (Job I060, Step 0020).

The Natural z/VSE batch front-end requires RMODE(24) due to the use of z/VSE macros which have this restriction. Therefore the use of a shared nucleus is highly recommended, as a non-shared nucleus would also require RMODE(24).

-

Using Alternative 1

If you use SMA: Ensure that the SMA parameter SHARED-NUC is set to Y (yes).

1. Link a batch front-end (Job I060, Step 0020).

The following modules must be included (include module NATVSE first):

Module	Function
NATVSE	Batch Natural driver
NATVSERV	Natural z/VSE services
PRM020BA	Generated parameter module created above
ADAUSER	Adabas link module; optionally you can use ADANAME instead.

To access the shared nucleus, ensure that the parameter NUCNAME in the module NATPARM contains the name of the shared module linked in Job I060, Step 0105.

2. Link a shared nucleus (Job I060, Step 0105).

For a list of the modules included, see *Natural Shared Nucleus under z/OS and z/VSE* in the Natural *Operations* documentation.

Or:

Using Alternative 2

Link a non-shared nucleus (Job I060, Step 0020).

If you use SMA: Ensure that parameter SHARED-NUC is set to N (no).

If you do not use SMA: Merge all INCLUDE statements and corresponding DD cards from Job I060, Step 0105 (shared nucleus) into Job I060, Step 0020 (front-end).

Step 11: Link the Global Buffer Pool Modules

- (Job I060, Steps 0120, 0126, 0127, 0128, 0129)

```
Step 0120 LINK GLOBAL BUFFER POOL MANAGER NATGBP
     0126 EXAMPLE JOB TO START NATURAL GLOBAL BUFFER POOL
     0127 EXAMPLE JOB TO STOP NATURAL GLOBAL BUFFER POOL
     0128 EXAMPLE JOB TO START EDITOR GLOBAL BUFFER POOL
     0129 EXAMPLE JOB TO STOP EDITOR GLOBAL BUFFER POOL
```

This step is required if you want to use global buffer pools in z/VSE. See *Global Buffer Pool under z/VSE* in the Natural *Operations* documentation.

Step 12: Delete Natural System Objects

- This step is optional but recommended to avoid data inconsistencies.

  If you are using a Version 4.1 Natural `FNAT` system file, you can delete obsolete Version 4.1 Natural objects.

  If you are using SMA: Set the SMA parameter `NAT-FNAT41` to `Y` (yes).

  If only base Natural Version 4.1 is installed

  Delete the Version 4.1 Natural objects by loading the `NATvrs.LDEL` data set with the Natural `INPL` utility.

  (Job I061, Step 0010)

  If Natural Review Version 4.1 is installed

  Delete the Version 4.1 Natural Review objects by loading the `RNMvrs.LDEL` data set with the Natural `INPL` utility.

  (Job I061, Step 0026)

  See also *Delete Natural Review Objects* in the *Natural Review* documentation.

  If Natural Security Version 4.1 is installed

  Delete the Version 4.1 Natural Security objects by loading the `NSCvrs.LDEL` data set with the Natural `INPL` utility.

  (Job I061, Step 0099)

  See also *Delete Natural Security Objects* in *Installing Natural Security*.

Step 13: Load the System Programs

- (Job I061, Step 0100)

  Use the Natural `INPL` utility to load the Natural system objects (dataset `NATvrs.INPL`) into the Natural system files.

Step 14: Load the Error Messages

- (Job I061, Step 0102)

  Load the English Natural error messages file (dataset `NATvrs.ERRN`) using the program `ERRLODUS`. In addition to the English error message short and long texts, error message short texts in German language (`ULANG=2`) are loaded. Use the program `ERRUPPER` to convert the error message texts to upper case. Both programs are described in the Natural *SYSERR Utility* documentation.

Load the Japanese Error Message Long Texts (dataset `NCJvrs.INPL`)

(Job I061, Step 8300)

This step is only required if you wish to replace the English error message long texts with their Japanese equivalents.

The Natural error message long texts in Japanese language are contained in the Natural Japanese Language Pack. This is a separate product (product code NCJ) that can be loaded optionally. If you do not load the Natural error message long texts in Japanese language, English error message long texts will appear.

Use the Natural utility `INPL` to load the Japanese error message long texts (dataset `NCJvrs.INPL`) into the Natural system files.

Load the Japanese Error Message Short Texts (dataset `NCJvrs.ERRN`)

(Job I061, Step 8302)

This step is only required if you wish to load the error message short texts in Japanese language (`ULANG=59`).

The Natural error message short texts in Japanese language are contained in the Natural Japanese Language Pack. This is a separate product (product code NCJ) that can be loaded optionally. If you do not load the Natural error message short texts in Japanese language, English error message short texts will appear.

Use the program `ERRLODUS` described in the Natural *SYSERR Utility* documentation to load the error message short texts (dataset `NCJvrs.ERRN`) into the Natural system file.

Step 15: Load the Examples

- (Job I061, Step 0103)

  Use the `INPL` utility to load the Natural example objects (dataset `NATvrs.EXPL`) into the Natural system file.

Installation Verification for Natural under z/VSE

For base Natural, there are no specific installation verification procedures.

After the last step of the installation procedure has been successfully performed, check that the following results are available:

- Communication between Adabas and Natural is working.

- The Natural system files have been loaded.

- Batch Natural is operational.