

Natural Engineer

Installation Guide for Unix

Version 9.1

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Manual Order Number: NEE91-010UNIX

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This document applies to Natural Engineer version 9.1 and to all subsequent releases.

Specifications contained herein are subject to change, and these changes will be reported in subsequent revisions or editions.

Readers' comments are welcomed. Comments may be addressed to the Documentation Department at the address on the back cover. Internet users may send comments to the following e-mail address:

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Preface

This documentation describes the installation of Natural Engineer on a Unix platform.

Natural Engineer is installed using the Software AG Installer, which you download from the Software AG Empower website at <https://empower.softwareag.com/>.

This documentation provides product-specific instructions for installing Natural Engineer. It is intended for use with *Using the Software AG Installer*. That guide explains how to prepare your machine to use the Software AG Installer, and how to use the Software AG Installer and Software AG Uninstaller to install and uninstall your products. The most up-to-date version of *Using the Software AG Installer* is always available at <http://documentation.softwareag.com/> (Empower login required).

This documentation is organized under the following headings:

What Can be Installed With Natural Engineer?	General information on Natural Engineer and the components that can be installed with Natural Engineer and on the required license files.
System Requirements	Supported operating system platforms and prerequisites.
Important Information	Important information that you should be aware of before you start the installation.
Installing Natural Engineer	How to install Natural Engineer with the Software AG Installer.
Completing the Installation	How to proceed after the installation.
Post Installation Configuration	Information on configuring Natural Engineer.
Uninstalling Natural Engineer	How to uninstall Natural Engineer.

For important last-minute information, see the readme file that is provided with Natural Engineer. You can find it in the Natural Engineer product documentation at <http://documentation.softwareag.com/> (Empower login required), or when you have chosen to download the documentation during the installation of Natural Engineer - in a central directory named `_documentation` in your main installation directory.

1 What Can Be Installed with Natural Engineer?

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Natural Engineer

This is the full development version of Natural Engineer.

License Files

During the installation of Natural Engineer, the Software AG Installer prompts you to enter the path to one or more valid license files. The license file is an XML file which is delivered by e-mail.

Separate license files are required for the following products and components:

- Natural Engineer

 **Notes:**

1. The Software AG Installer does not check all information in the license file. All license checks are done, however, when the product itself is started.

2 System Requirements

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Supported Operating System Platforms

Natural Engineer supports the following 64-bit operating system platforms.

- AIX 6.1
- AIX 7.1
- Red Hat Enterprise Linux 6 (x86-64)
- Red Hat Enterprise Linux 7 (x86-64)
- Oracle Solaris 10 (Sun and FSC)
- Oracle Solaris 11 (Sun and FSC)
- SUSE Linux Enterprise Server 11 (x86-64)
- SUSE Linux Enterprise Server 12 (x86-64)

Natural Engineer is available on the following platforms by request.

- HP-UX 11.i v3 (Itanium)

Installation Prerequisites

Before installing Natural Engineer, the following must already be installed on your machine:

- Natural version 8.3.7 or above.
Any Natural Source should be saved with Line Numbers so that Natural Engineer can tie up any potential modification with the Natural Source.
- Adabas version 6.4 or above.

Natural Security

If you are using Natural Security, then the following steps need to be applied to ensure successful installation and subsequent execution of Natural Engineer.



Note: The Natural Security settings described here are applicable to Natural 8.3 for Open Systems.

Natural Parameter file: NATPARM

This is the default Natural Parameter file used by Natural.
Set the following parameters:

- USER - applicable User-id (For example DBA)
- AUTO - set on

Natural Security: Library Maintenance

Pre-define the following libraries prior to installation:

Library Id	Library Name
HOSPITAL	Natural Engineer Sample Library
NEEEXPG	Natural Engineer Ex. Library
SYSNEE	Natural Engineer
SYSNEEI	Natural Engineer Web Interface



Notes:

- 1: When adding each of these libraries, set the General Options parameter:
People-protected = N
- 2: For the SYSNEE library, additionally set the Transactions parameters:
Startup = NATENG
Batch execution = N

Natural Security: Utility Maintenance

For the utility SYSOBJH, set the following profile settings:

- All functions for Unload, Load and Delete should be set to 'A' (Allowed).
- General option parameter:
Transfer only = N

Natural Security: User Maintenance

For the User- id set up in the NATPARM above, set the Libraries parameter:
Default = SYSTEM

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Administrator Status

During the installation, the **Sudo** panel may appear. When you enter the sudo password in this panel, the installer will execute the scripts which require sudoers privileges. If sudoers privileges are not available you may run the script manually after installation as explained later in this documentation.

For you to use sudo in the installer, the user that you are using to install must be in the sudoers configuration. If you are creating or installing from an installation script, the installer cannot execute the script because it does not store the sudo password for security reasons. You must therefore execute the script manually after the installation.

User ID for Installation

When installing Natural Engineer, the user ID under which you run the Software AG Installer must not be longer than eight characters. If you use a longer user ID, an error message is shown. You can then exit the installer and use a different user ID or - in case you also want to install other products - return to the product selection tree and deselect Natural Engineer.

Installation Directory

During the installation, you are asked to specify an installation directory. Specify the installation directory in which to install your Software AG products. The user that you are using to install must have full read and write permissions to this directory.

We recommend that you use the `/opt/softwareag` directory as the location for Natural Engineer. But any other directory is also possible.

 **Important:** It is recommended that you do not install into a directory which is a subdirectory of a previous installation. Such a previous installation may have been created either with the Software AG Installer or by an installation tool that was used in the past.

File Permissions

The user who starts the installation owns all files that are installed.

The user file-creation mode mask (`umask` command) determines the file permissions for newly created files. Make sure that the `umask` command you are using for the installation will not prevent users from accessing and executing the installed file. On UNIX systems, for example, the command `umask 022` allows full access rights for the fiowner and read-only access rights for group members and others.

Side-by-Side Installations

You can install the same Natural Engineer version more than once on the same machine. And you can also install several different versions of Natural Engineer on the same machine. This may be necessary to test a new Natural Engineer version before it is taken over into a production environment. Each version, however, must be installed in a separate directory. That is, when Natural Engineer is already installed, for example, in the directory `/opt/softwareag`, you can install a second instance of Natural Engineer, for example, in a directory named `/opt/softwareag2`.

Since Empower only offers the latest version of Natural and other products, it is recommended that you create and keep an image of installed Natural versions for possible later use. Installing from an image rather than downloading it from Empower will usually be faster, too. For further information, see *Using the Software AG Installer*.

Upgrading Your Natural Engineer Environment

When one of the first two digits of the version number changes, we consider an installation as an upgrade installation.

It is not possible to upgrade an existing Natural Engineer Version 8.2 or Natural Engineer Version 8.3.1 with a Natural Version 8.3.2 or 8.3.3 installation. Any version of Natural Engineer prior to version 8.3.2 should be uninstalled before installing Natural Engineer version 8.3.2 or 8.3.3.

Updating Your Natural Engineer Environment

When the first two digits of the version number remain the same and the third or fourth digit changes, we consider an installation as an update installation.

To update Natural Engineer, specify the same directory and select the same items to install.

4 Installing Natural Engineer

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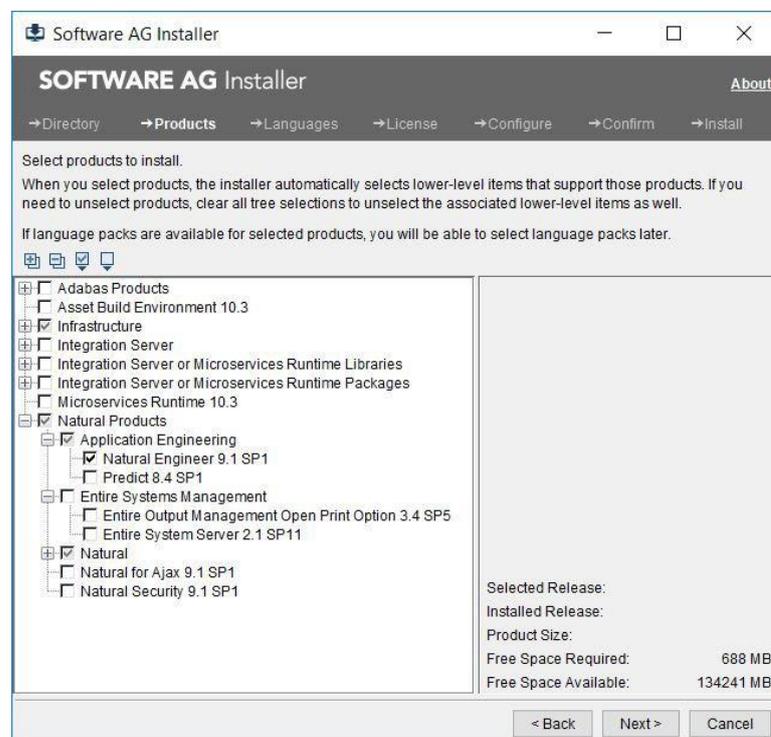
Using the GUI to Install Natural Engineer

This installation documentation provides just a brief description on how to install Natural Engineer directly on the target machine using the Software AG Installer GUI. For detailed information on the Software AG Installer, see *Using the Software AG Installer*.

► To install Natural Engineer

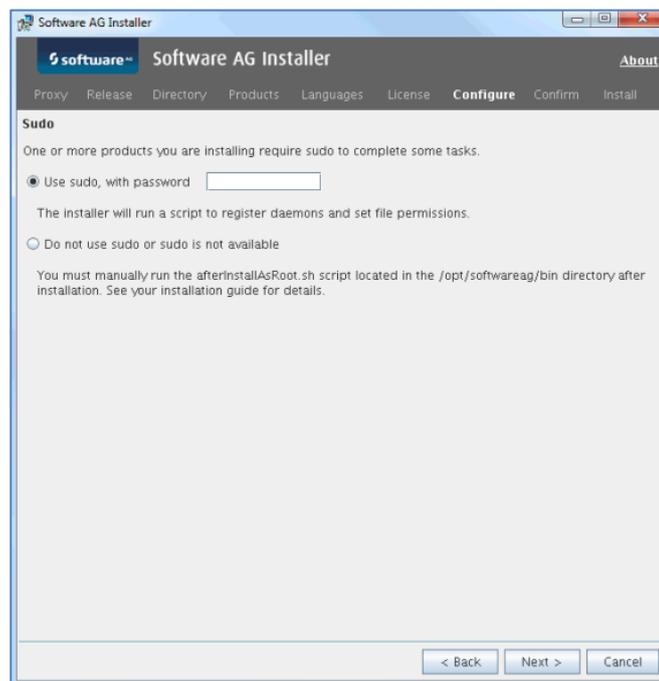
Software AG provides one or more license files for Natural Engineer; the installer requires them during a first-time installation. Copy the license files to the machine on which you want to install Natural Engineer. You can copy the license files to any temporary location. The installer will ask for the location of your license file and will then copy them to the *common/conf* directory of your installation directory.

- 1 Start the Software AG Installer GUI as described in *Using the Software AG Installer*.
- 2 When the first page of the Software AG Installer GUI (the so-called Welcome panel) is shown, choose the **Next** button repeatedly (and specify all required information on the shown panels as described in *Using the Software AG Installer*) until the panel containing the product selection tree appears. This tree lists the products you have licensed and which can be installed on the operating system of the machine on which you are installing.
- 3 To install Natural Engineer with all of its product components, expand the **Natural Products** node followed by the **Application Engineering** node and select **Natural Engineer**.



Note: Products or product versions which are already installed in the selected installation directory are shown as disabled.

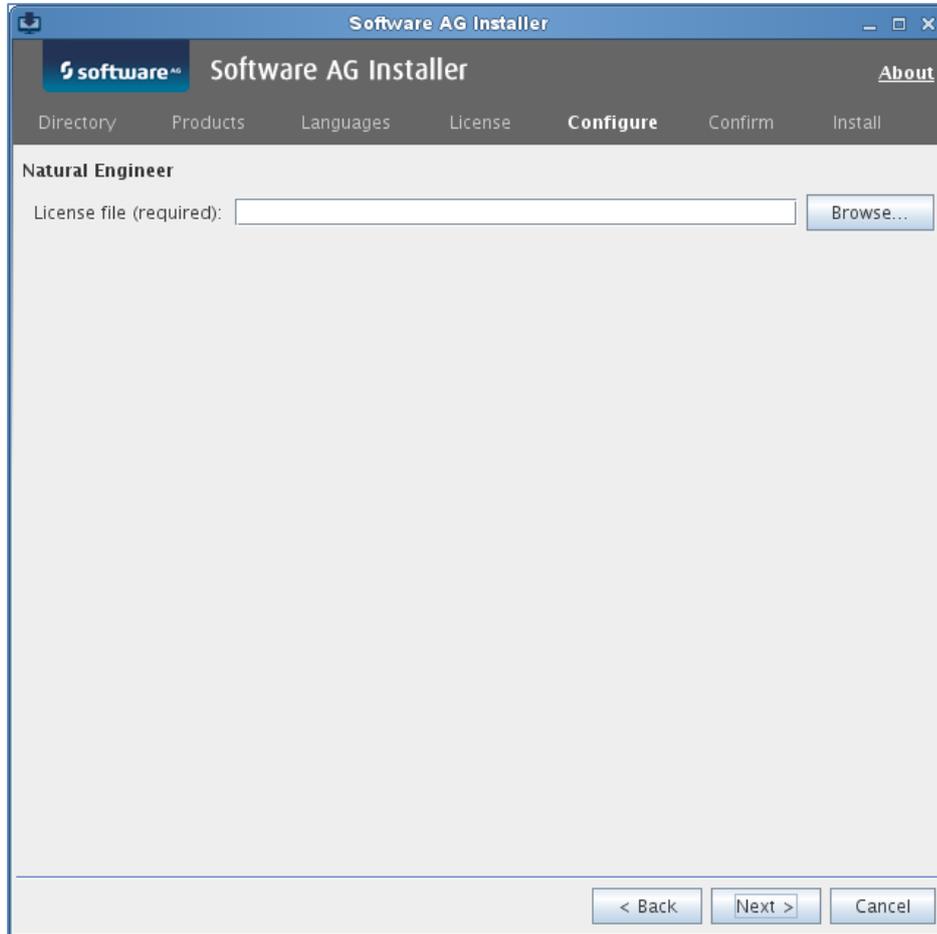
- 4 Choose the **Next** button.
- 5 Read the license agreement, select the check box to agree to the terms of the license agreement, and choose the **Next** button.
- 6 Specify whether to use sudo or not.
You must either have the installer execute the <install-dir>/bin/afterInstallAsRoot.sh script, or you must run the script manually after installation as explained later in Registering Daemons and Setting File Permissions. If you want to have the installer to execute the script, the user under which you are running the installer must be in the sudoers configuration. For security reasons, the installer does not store the sudo password in installation scripts. If you are creating or installing from an installation script, therefore, the option to use sudo is not available. You must execute the afterInstallAsRoot.sh script manually after the installation.



- 7 Choose the **Next** button.

- 8 First-time installation only.

Enter the full path to the Natural Engineer license file (or use the **Browse** button to select it from a dialog box).



- 9 Choose the **Next** button.
- 10 On the last panel, review the list of products and items you have selected for installation. If the list is correct, choose the **Next** button to start the installation process.

When the Software AG Installer has completed the first-time installation, additional configuration steps are required. See [Completing the Installation](#) for further details.

Using Software Distribution Tools to Install Natural Engineer

You can use the Software AG Installer to create an installation package which can then be distributed automatically to any number of computers in your environment. You can use any third-party distribution tool for this purpose.

To distribute Natural Engineer, the following items are required:

- Software AG Installer.
- Installer image containing the products to be installed.
- Script file which defines the location of the image file, the products to be installed, and the locations of all required license files.
- License files for the products to be installed.

The description below just provides a brief overview on how to create the required files. For more detailed information, see *Using the Software AG Installer*.

▶ To create the image and script

- 1 Start the Software AG Installer GUI as described in *Using the Software AG Installer*.
- 2 On the Welcome panel, choose the **Advanced Options** button.
- 3 Go to the **Images** tab and proceed as follows:
 1. Select the **Use installation image** check box.
 2. Select the **Create image** option button.
 3. Specify a location and name for the image. The installer will automatically add the extension *.zip*.
 4. Specify the platform for which you want to create the image. You can create an image for any platform from any platform.
 5. Choose the **OK** button to return to the Welcome panel.
- 4 Choose the **Next** button repeatedly in order to:
 1. Select the products to be installed.
 2. Agree to the terms of the license agreement.
 3. Start the installation to create the image.

 **Note:** When creating an image, the panels on which you usually specify the license files and ports do not appear.
- 5 Start the Software AG Installer GUI once more, and choose the **Advanced Options** button again.

- 6 Go to the **Images** tab again and proceed as follows:
 1. Select the **Use installation image** check box.
 2. Select the **Install from image** option button.
 3. Specify the name of the image that you have previously created.

- 7 Go to the **Scripts** tab and proceed as follows:
 1. Select the **Use installation script** check box.
 2. Select the **Create script** option button.
 3. Select the **Do not install products on local machine** option button, unless you also want to install on the local machine in the same step.
 4. Specify a location and name for the script.
 5. Choose the **OK** button to return to the Welcome panel.

- 8 Choose the **Next** button repeatedly in order to:
 1. Specify the installation directory.
 2. Select the products to be installed.
 3. Agree to the terms of the license agreement.
 4. First-time installation only: Specify the paths to all required license files and, if required, specify the ports for the selected products.
 5. Start the installation to create the script.



Note: It is recommended that you create separate scripts for first-time installations and update installations.

► To adapt the script

- 1 Edit the script that you have previously created and adjust the references to the image and license files. For example:

```
guiNscLicense= VERSION1 ,C%3A%5CUsers%5Cxyz%5CDocuments%5CLics%5Cnsc84.WinDesk.2013.xml
guiNatLicense= VERSION1 ,C%3A%5CUsers%5Cxyt%5CDocuments%5CLics%5Crun84WinDesk.2013.xml
imageFile=C:\\Users\\xyz\\Documents\\NaturalSec84.zip
```

For an automated installation, the references to the image and license files need to be adjusted to the actual installation location. You can specify either the full path or a relative path such as *file-name*, *.\file-name* or *.\folder-name\file-name*. You can also specify the full path to a file server such as *\\\\file-server\folder-name\file-name*. The following examples show the different ways in which a path can be specified:

```
guiNscLicense= VERSION1 ,nsc84.WinDesk.2013.xml
guiNscLicense= VERSION1
,.\Lics\nsc84.WinDesk.2013.xml
```

You also can use environment variables as part of the path specification. For example:

```
imageFile=$IMAGEDIR$\\NaturalSec84.zip
```

- 2 If necessary, adjust the parameter values in the script (for example, port numbers).



Note: You can delete the port specification lines for Natural Development Server (`guiNdvPort=.`) and the Natural Web I/O Interface (`guiWebioPort=.`) from the script if you want to make sure that the installation does not stop if the specified port number is in use. In this case, the next free port number will be used.

► To start the installation

- Start the installation from the command line. Start the installer jar file as follows:

```
java -jar SoftwareAGInstaller.jar -readScript script-file-name ↵
-scriptErrorInteract no
```

Alternatively, you can use the installer exe file. In this case, you have to set the environment variable `ZFUSION_INSTALL_ARGS` to the required installer options:

```
set ZFUSION_INSTALL_ARGS=-readScript fullpath\script-file-name ↵
-scriptErrorInteract no
SoftwareAGInstaller.exe
```



Note: An appropriate Java version must be installed on the machine when using the jar file. A Java installation is not required when using the exe file.

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Completing the Installation

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Registering Daemons and Setting File Permissions

If you installed Natural and Natural Engineer on a UNIX system and did not use `sudo`, the installer was not able to register daemons and set file permissions for the affected products. Also the runpath directory `/opt/softwareag/Natural/v<version>/lib` may not have been created if the user that you are using to install does not have full read and write permissions to the runpath directory. Note that the runpath directory may have been created by a previous Natural installation. Perform these tasks now by executing the script `afterInstallAsRoot.sh` as the root user. You can find this script in the `bin` directory of your main installation directory. It contains actions for all installed Software AG products.

 **Important:** If you did not use `sudo` during the installation, you must run the script `afterInstallAsRoot.sh` or some products might not work correctly.

If you do not want to register daemons for Natural, set file permissions or create the runpath directory, proceed as follows:

- Remove the commands to start the setup scripts in the `afterInstallAsRoot.sh` script before you execute it. The scripts to register daemons are called `install_daemon_natbpsrv`, `install_daemon_natdvsrv` and `install_daemon_nwosrvd`. The scripts to set file permissions are called `install_bin_apx` and `install_bin_nwo`. The script to set up the run path library is called `install_lib_to_runpath`. All these scripts are located in the `<install-dir>/Natural/INSTALL` directory.

For the daemons, uninstall scripts are available. Therefore, if you do not want to register the daemons, you can also proceed as follows:

- Install all daemons (either automatically with the installation when `sudo` is used, or manually by executing the `afterInstallAsRoot.sh` script when `sudo` is not used) and then uninstall the Natural daemons using the `uninstall_daemon_natbpsrv`, `uninstall_daemon_natdvsrv` and `uninstall_daemon_nwosrvd` scripts in the `<install-dir>/Natural/INSTALL` directory.

Setting the Environment Variables with `sagenv.new`

Before you start your product, it is recommended that you run (source) the `sagenv.new` script in the `<install-dir>/bin` directory. This sets the environment variables needed to run your product and other Software AG products.



Important: The `sagenv.new` file is replaced with every new installation. If you have set up your own environment settings file (for example, with the name `sagenv`), replace only the modified product-specific part in your existing `sagenv` file.

Running the `sagenv.new` script is also recommended before configuring the installed products with the SYSPCI utility.



Important: It is recommended that you start a new shell before switching to a different installation directory and running the `sagenv.new` script (for example, when switching from the directory for a test environment to the directory for a production environment).

Setting Up Your Products Using the SYSPCI Utility

After you have installed your product, you need to set up a number of files, parameters and individual settings depending on your environment. These are described below. To set them up, you use the SYSPCI utility. For detailed information on this utility, see *SYSPCI Utility - Product Configuration and Initialization* in Natural's *Tools and Utilities* documentation.

Natural Engineer on Unix requires a local Adabas Repository and Component system file.

When you initialize (activate) Natural Engineer using the SYSPCI utility, the default `FNAT` system file from the installation must be used (that is, `<install-dir>/Natural/fnat`). Otherwise, a subsequent update installation will not be possible.

For a local Adabas installation:

The database IDs and file numbers of the new or existing files that you specify using the SYSPCI utility are entered into the default parameter files for Natural Engineer (`NEEPARM`).

It is recommended for an Adabas database containing Natural Engineer repository or component files to have a Work Block Size of 16KB.

Existing Local File

Before you start the SYSPCI utility, make sure that the Adabas database containing the required files is active. With this version, you can continue to use your existing files. No migration of data from the previous version to the current version is necessary.

New File

Before you start the SYSPCI utility, make sure that the Adabas database which will contain the required files is active. The SYSPCI utility will load and initialize these files. This should be also done if another file is required for your product.

Before you create new files with the SYSPCI utility, make sure that the ASSO and DATA sizes of your Adabas database are appropriate for these files. It is therefore recommended that you check the Adabas `.fdu` files in the `<install-dir>/<product>/INSTALL/<product-code>` directory for the used sizes. If required, change your database setup so that the files can be created.

In addition, make sure that the Adabas nucleus parameters listed in the following table are set for the database you want to use at database startup. They are not appropriate if you are using the default nucleus parameters.

LWP	Must be at least 1,000,000.
OPTIONS	The option TRUNCATION must be set in the OPTIONS parameter.

Invoking the SYSPCI Utility

In order to invoke the SYSPCI utility, you must first invoke Natural. You can then invoke the SYSPCI utility using the **Direct Command** window.

▶ To invoke the SYSPCI utility

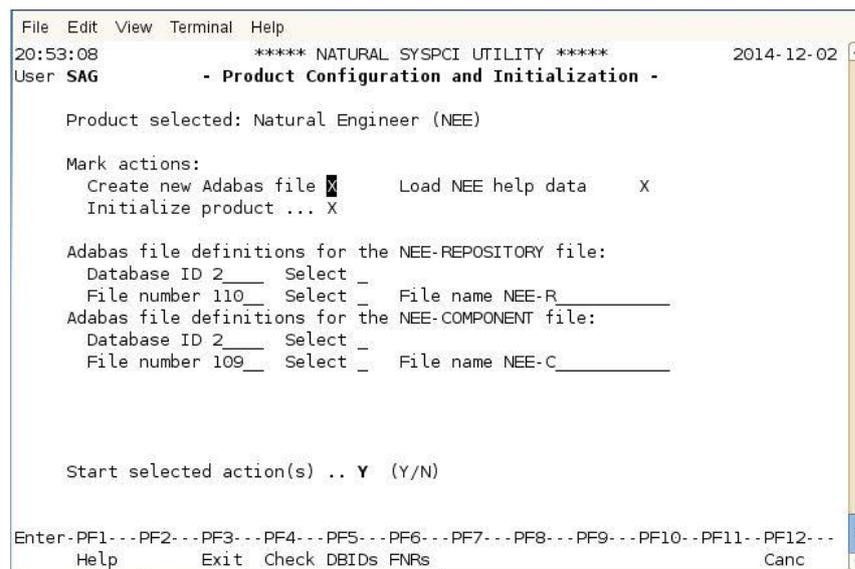
- 1 Enter the following command at the UNIX system prompt to invoke Natural:

```
natural
```

- 2 Select the **Direct** menu and press ENTER to invoke the **Direct Command** window.
- 3 Enter the following command in the **Direct Command** window:

```
SYSPCI
```

For more information, see *SYSPCI Utility - Product Configuration and Initialization* in Natural's *Tools and Utilities* documentation.



```
File Edit View Terminal Help
20:53:08          ***** NATURAL SYSPCI UTILITY *****          2014-12-02
User SAG          - Product Configuration and Initialization -

Product selected: Natural Engineer (NEE)

Mark actions:
Create new Adabas file       Load NEE help data      X
Initialize product ... X

Adabas file definitions for the NEE-REPOSITORY file:
Database ID 2__ Select _
File number 110__ Select _ File name NEE-R_____
Adabas file definitions for the NEE-COMPONENT file:
Database ID 2__ Select _
File number 109__ Select _ File name NEE-C_____

Start selected action(s) .. Y (Y/N)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help      Exit  Check DBIDs FNRs                          Canc
```

Apply Changes to Repository FDT



Notes:

1. Depending on the version of Natural Engineer used as a starting point, all subsequent migration steps must be followed. For example: If the starting point is Version 8.2.1 then migration steps Version 8.2.2, Version 8.2.2.1, Version 8.2.2.2, Version 8.2.3, Version 8.2.3.1, Version 8.2.3.2, Version 8.3.1, Version 8.3.2, Version 8.3.3 and Version 8.3.3.1 must be addressed.
If you are upgrading from a version earlier than version 8.2.1 then please refer to the relevant NEExxx Release Notes documentation.
2. As of Natural Engineer version 8.2.2 the Refactoring Option of Natural Engineer has been replaced by Advanced Services

From Natural Engineer Version 8.2.1

If you are upgrading from Natural Engineer version 8.2.1 to Natural Engineer version 8.2.2 then there are no conversion tasks to be performed.

From Natural Engineer Version 8.2.2 Base Release

If you are upgrading from Natural Engineer version 8.2.2 to Natural Engineer version 8.2.2.1 you will need to perform the following task:

[i] Release the following Superdescriptor:

SQ= AA(1,8), AZ(1,1), AK(1,32), RC(1,1), AB(1,8)

[ii] Conversion is Complete

From Natural Engineer Version 8.2.2.1

If you are upgrading from Natural Engineer version 8.2.2.1 to Natural Engineer version 8.2.2.2 you will need to perform the following task:

[i] Add the following fields to the end of the REPOSITORY file:

01,NQ,65,A,NU

[ii] Invert the following Superdescriptor:

ST= AA(1,8), AB(1,8), NQ(1,65)

[iii] Decompress the Repository file.

[iv] Backup and then delete the existing Repository file.

[v] Compress and Load using the inline definitions in the Job.

[vi] Conversion is Complete

From Natural Engineer Version 8.2.2.2

[i] If you are upgrading from Natural Engineer version 8.2.2.2 to Natural Engineer version 8.2.3 and have JCL loaded into your repository you will need to run the following object in the SYSNEE library:

NEEJXCNV



Note:

This program is completely re-executable and should be executed in a Natural session invoked using the Natural Parameter file: NEEPARM.

[ii] Conversion is Complete

From Natural Engineer Version 8.2.3 Base Release

[i] If you are upgrading from Natural Engineer version 8.2.3 to Natural Engineer version 8.2.3.1 you will need to run the following object in the SYSNEE library:

NEEEXCNV



Note: This program is completely re-executable and should be executed in a Natural session invoked using the Natural Parameter file: NEEPARM.

[ii] Conversion is Complete

From Natural Engineer Version 8.2.3.1

[i] If you are upgrading from Natural Engineer version 8.2.3.1 to Natural Engineer version 8.2.3.2 and have COBOL Links defined then you will need to run the following object in the SYSNEE library:

NEECLCNV



Note: This program is completely re-executable and should be executed in a Natural session invoked using the Natural Parameter file: NEEPARM.

[ii] Conversion is Complete

From Natural Engineer Version 8.2.3.2

If you are upgrading from Natural Engineer version 8.2.3.2 to Natural Engineer version 8.3.1 you will need to perform the following tasks:

[i] Invert the following Superdescriptors:

SU= AA(1,8), NL(1,1), AN(1,32)

SV= AA(1,8), NL(1,1), OL(1,1), AS(1,1), AN(1,32)

SW= AA(1,8), NL(1,1), OL(1,1), AN(1,32)

If you have soft links within your applications then the following object needs to be run to ensure that the soft link records are converted to the new format.

[i] To apply the necessary conversions run the following object in the SYSNEE library

NEESLCNV

 **Note:** This program is completely re-executable and should be executed in a Natural session invoked using the Natural Parameter file: NEEPARM

[ii] Conversion is Complete

From Natural Engineer Version 8.3.1

If you are upgrading from Natural Engineer version 8.3.1 to Natural Engineer version 8.3.2 then there are no conversion tasks to be performed.

From Natural Engineer Version 8.3.2

If you are upgrading from Natural Engineer version 8.3.2 to Natural Engineer version 8.3.3 then there are no conversion tasks to be performed.

From Natural Engineer Version 8.3.3

If you are upgrading from Natural Engineer version 8.3.3 to Natural Engineer version 8.3.3.1 then there are no conversion tasks to be performed.

From Natural Engineer Version 8.3.3.1

If you are upgrading from Natural Engineer version 8.3.3.1 to Natural Engineer version 8.3.4 then there are no conversion tasks to be performed.

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Setting Initialization Parameters

The various configuration options for Natural Engineer are held as initialization parameters and are used to control the processes within Natural Engineer.

The initialization parameters are located:

1. Text member ###CINI located in the Natural Engineer library SYSNEE. This is used by the Natural Engineer job submission processes.

The following parameters should be checked.

Group Header / Parameter	Description
(EXTRACT)	
CEE=	Default=Y If set to Y, will use the new Extract engine. If set to N, will use the old Extract engine. Possible values Y,N
NO-SECS=	Default=N If set to Y, when comparing timestamps, will include seconds, i.e. will use HH:MM:SS. If set to N, when comparing timestamps, will not include seconds, i.e. will use HH:MM. Possible values Y,N
MSG=	Default=/opt/softwareag/nee/v911/data/extract.msg Message file used with the new extract engine under Unix.
(NATURAL)	
STT=	Default=%RES%/nat.stt Location of the NATSTT source file.
(JCL-UNIX)	
LOGON=	Default=LOGON SYSNEE The name of the Natural Engineer logon library. <i>Note: If Natural Security is being utilized then the USER and PASSWORD information can be also be specified here. For example:</i> <i>LOGON=SYSNEE,USER,PASSWORD.</i>
DATAPATH=	Default=<install-dir>/NaturalEngineer/data/ Set to the location of the data directory specified during the installation.

Modifying Natural Engineer Jobs

The Natural Engineer jobs need to be reviewed and administered to ensure that they comply with your site standards before any job is submitted.

The Natural Engineer jobs are supplied as:

1. Natural Engineer Script text members

The Natural Engineer Script text members are automatically submitted when a function is selected online and the Natural Engineer Job submission screen is presented.

For Unix, the scripts are supplied within library SYSNEEU. These should be copied to the SYSNEE library.

Note: Do not change the following settings as these are dynamically replaced by the Natural Engineer Job submission screen.

Parameter	Description
NNNNNNNN	Job Name
AAAAA	Application Name
QQQQQQQ	
BBBBBBB	
LLLLLLL	Library Name
XXXXXXXX	User Id
VV	Impact Version Number
IIIIIIII	Initialization File Name
MMMMMMMMMMMMMMMMMMMM MMMMMMMMMMMMMMMMMMMM	Data Masking File Name
<LOGON>	Natural Engineer logon library from (jcl-unix) section of Initialization file.

The text member JCLSTART must be checked to ensure it complies with your site standards. The following statement must be checked

```
. <install-dir>/bin/sagenv.new
```

The path name must be absolute i.e., contain no environment variables to ensure that any jobs submitted via SPod get their environment variables set up correctly.

Task Scheduler Configuration

In order to utilize the Task Scheduler functionality, some basic configuration tasks are required. These should be completed before attempting to use the Task Scheduler.

Crontab File

A crontab file contains the schedule of cron entries to be run at specified times.

For the Task Scheduler function, a crontab entry needs to be added to the crontab file.

A crontab entry has five fields for specifying day, date and time followed by the command to be run at that interval.

```

*      *      *      *      *  "command to be executed"
|      |      |      |      |
|      |      |      |      |
|      |      |      |      +-----day of the week (0-6) (Sunday = 0)
|      |      |      +-----month (1-12)
|      |      +-----day of month (1-31)
|      +-----hour (0-23)
+-----minutes (0-59)
    
```

The '*' (asterisk) value field means all legal values as in braces for that column.

The value column can have a * or a list of elements separated by commas. An element is either a number in the ranges shown above or two numbers in the range separated by a hyphen (meaning an inclusive range).

Note: The specification of days can be made in two fields: month day and weekday. If both are specified in an entry, they are cumulative meaning both of the entries will get executed.

Sample crontab file entry for Natural Engineer

```

30 * * * * <install-dir>/NaturalEngineer/tasksh.sh
    
```

This would run tasksh.sh every day at 30 minute intervals.

The tasksh.sh script will just invoke whatever task the user has specified and Natural Engineer will submit the relevant job (script).

Natural Engineer Processes and Related Jobs

This section illustrates the relationships between the Natural Engineer processes and the Natural Engineer Script text members.

Processes	Natural Engineer Script text members
Extract Missing Objects	JCLSTART JCLEXTMS JCLLAST
Extract Application	JCLSTART JCLEXTRT
Load Repository	JCLSTART JCLLOAD JCLLAST
Extract and Load	JCLSTART JCLEXTLD JCLLAST
Impact Execution	JCLSTART JCLIMPX1 JCLIMPX2 JCLLAST
Impact Execution – Field Analysis	JCLSTART JCLIMPWZ JCLLAST
Execute Modification for All Objects	JCLSTART JCLREMDY JCLLAST
Global Reports	JCLSTART JCLREPG1 JCLREPG2 JCLREPCT JCLLAST
Application Reports	JCLSTART JCLREPA1 JCLREPA2 JCLREPCT JCLLAST
Impact Reports	JCLSTART JCLREPI1 JCLREPI2 JCLREPCT JCLLAST
Modification Reports	JCLSTART JCLREPR1 JCLREPR2 JCLREPCT JCLLAST
Application Delete	JCLSTART JCLDELET
JCL Analysis	JCLSTART JCLEXEC JCLLAST
Service Analysis	JCLSTART JCLEXEC JCLLAST

Processes	Natural Engineer Script text members
Data Masking Extract Model	JCLSTART JCLDMODL
Data Masking Load	JCLSTART JCLDMLOD
Data Masking Execution	JCLSTART JCLDMASK

Natural & Adabas Parameter Settings

Natural Parameter Settings

Natural parameters can be changed with the Natural for UNIX utility NATPARM. See the *Natural Operations for UNIX documentation* for more information.

Parameter	Description
MADIO	Must be set to 0.
MAXCL	Must be set to 0.
FNAT, FUSER	Enter the numbers of the current Natural system files.
LFILE 96	Set to the number of the Natural Engineer Repository File created during the installation
LFILE 95	Set to the number of the Natural Engineer Component File created during the installation (only required if Natural Refactoring is installed)
OPRB	OFF.
WORK	Workfiles 1, 2, 3, 4 and 5 must be specified in ASCII format for every Natural Engineer user. This can be done by using UNIX environment variables as workfile names e.g., \$WRKF1. Set different values for the environment variables for different users.

Adabas Parameter Settings

There are two methods of setting these Adabas parameters:

- If Adabas is running, use the Adabas utility ADAOPR.
- If Adabas is not running, declare these parameters as start parameters for the Adabas utility ADANUC.

The nucleus/ADARUN parameter settings listed below do not depend on the number of lines of code being processed. However, they reflect the recommended minimum set for any Natural Engineer Repository.

Parameter	Setting	Comment
LWP	Must be at least 1,000,000.	
LBP	20M	
LOGGING		Set to blank
LP	1,600	
LS	20,000	
PLOG	No	Set to NOPLOG
TNAE	7200	
TNAX	7200	
TNAA	7200	

Alternative Natural Keywords

This section describes the ability to add alternative Natural keywords to Natural Engineer.

Overview

If your site makes use of any alternative Natural keywords that you have modified to the Natural NATTEXT module, then Natural Engineer will not recognize these as valid Natural keywords during the Extract process. This could result in Natural Engineer having an incomplete representation of your applications.

As with Natural, it is possible to add any alternative Natural keywords to Natural Engineer to resolve this issue.

The NATSTT-T Text Member

The alternative Natural keywords can be added to the text member NATSTT-T, which can be found on the FNAT library SYSNEE.

The new keywords should be added to the end of the text member NATSTT-T. Each keyword needs to be added as a new row within the text member NATSTT-T.

The following table illustrates the format and positioning of the NATSTT-T entries:

Column Positions	Description
01-32	The name of the alternative keyword.
33	Not required. Should be blank.
34	Indicates whether the alternative keyword is a keyword or not. <u>Valid values are:</u> X - Not a keyword in its own right. Y - Is a keyword in its own right.
35	Indicates whether the alternative keyword has a further qualifier. <u>Valid values are:</u> ' - No further qualifier. Y - A further qualifier is available and needs to be checked for.
36-38	Not required. Should be blank.
39	Indicates that the keyword is an alias of another keyword. <u>Valid values are:</u> A - Alias.
40-71	The name of the Natural keyword that is being aliased.

Example

This example illustrates how the text member NATSTT-T is modified for the following criteria:

- ADDNEW is a new keyword that is an alias for the Natural keyword STORE but is not a keyword in its own right. It uses a further qualifier of ADDNEW X. This means that for STORE statements the alternative keyword ADDNEW X is used.
- CHANGE is a new keyword that is an alias for the Natural keyword UPDATE and is a keyword in its own right. It has no further qualifier. This means that for UPDATE statements the alternative keyword CHANGE is used.
- PURGE is a new keyword that is an alias for the Natural keyword DELETE and is a keyword in its own right. It also uses a further qualifier of PURGE X. This means that for DELETE statements the alternative keyword PURGE or PURGE X is used.

ADDNEW	XY	ASTORE
ADDNEW X	Y	ASTORE
CHANGE	Y	AUPDATE
PURGE	YY	ADELETE
PURGE X	Y	ADELETE

Note: If you have added any alternative keywords, it is recommended that you review the contents of the text member NATSTT-T after any new installation of Natural Engineer. If necessary you may have to re-apply your changes.

Natural Engineer User Exits

Natural Engineer offers compatible support for remote development environments using Natural's Single Point of Development (SPoD) available with Natural version 6.3.
Natural Engineer User Exits

Natural Engineer provides various user exits. They are:

NEEUEX1 - Application Lock Password Setting (Mainframe and Unix Only)

NEEUEX1 is used if you wish to change the Application Lock Release Password from the default value. The new value must be uppercase and contain no special characters.

NEEUEX2 - Mainframe Job Submission (Mainframe Only)

This is used to customize RJE online job submission.

NEEUEX3 - User Customizable Modification

NEEUEX3 is used in modification. Each source line to be modified will be passed to this exit. The user may then perform any customizations on the source prior to the modification being actually applied.

NEEUEX4 - Natural for Ajax Adapter Name Generation

NEEUEX4 allows the dynamic generation of adapter and variable names in the Natural for Ajax processing.

NEEUEX5 - Generate Application Names (PC Only)

NEEUEX5 allows for the dynamic generation of application names within Natural Engineer.

NEEUEX6 - Bespoke Security Interface

NEEUEX6 controls access to applications when Natural Security does not exist.

Further information on the usage of these user exits are contained within the source of the user exits themselves on the SYSNEE FNAT library.

Notes:

1: The user exit modules are supplied named 'NEEUEXnX' where 'n' is the number of the User Exit, on the Natural Engineer SYSNEE library. This is to avoid overwriting any existing (modified) versions on the production SYSNEE library during Natural Engineer installation. If this user exit has not been loaded before, then it will need to be renamed to 'NEEUEXn' i.e., NEEUEX2 before making use of the User Exit functionality.

2: NEEUEX5 and NEEUEX6 are required on the PC. If they don't exist the NEEUEX5X object will need to be renamed to NEEUEX5 and the NEEUEX6X to NEEUEX6 before any Natural Engineer Applications can be created.

Natural User Exits

Natural Engineer utilizes various Natural user exits. These need to be made available to the Natural session where you are running Natural Engineer.

USR4206N
USR4209N
USR6006N
USR6203N

If you are using the Natural Engineer Web Interface then the following Natural user exit also needs to be made available.

USR1005N

7 Uninstalling Natural Engineer

You uninstall Natural Engineer using the Software AG Uninstaller. For detailed information on how to use the uninstaller, see the Using the Software AG Installer guide.

In short: to uninstall Natural Engineer, proceed as follows:

1. Open a command window and go to the bin directory of your main installation directory.
2. Execute the script `beforeUninstallAsRoot.sh` as the root user.
3. Run the command `uninstall`. This starts the Software AG Uninstaller

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