

# **Natural Engineer**

## **Installation Guide for Windows**

Version 8.3

April 2017

**Manual Order Number: NEE83-010WIN**

Copyright © 1997-2016, Generation Systems Ltd., East Grinstead, UK.

This document applies to Natural Engineer version 8.3 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:

document@gensystems.com

## **Acknowledgements**

The name Software AG and all Software AG product names are either trademarks or registered trademarks of Software AG and/or Software AG USA Inc. and/or its subsidiaries and/or its affiliates and/or their licensors. Other company and product names mentioned herein may be trademarks of their respective owners.

Detailed information on trademarks and patents owned by Software AG and/or its subsidiaries is located at <http://softwareag.com/licenses>.

This software may include portions of third-party products. For third-party copyright notices, license terms, additional rights or restrictions, please refer to "License Texts, Copyright Notices and Disclaimers of Third Party Products". For certain specific third-party license restrictions, please refer to section E of the Legal Notices available under "License Terms and Conditions for Use of Software AG Products / Copyright and Trademark Notices of Software AG Products". These documents are part of the product documentation, located at <http://softwareag.com/licenses> and/or in the root installation directory of the licensed product(s).

Use of this software is subject to adherence to Software AG's licensing conditions and terms. These terms are part of the product documentation, located at <http://softwareag.com/licenses> and/or in the root installation directory of the licensed product(s).

## Table of Contents

1 What Can Be Installed with Natural Engineer? .....	1
Natural Engineer .....	2
Natural Engineer Web Interface .....	2
License Files .....	2
2 System Requirements .....	3
Supported Operating System Platforms .....	4
Installation Prerequisites .....	4
Natural Security .....	5
Microsoft Excel .....	6
Screen Resolution .....	6
3 Important Information .....	7
Administrator Status .....	8
Installation Directory .....	8
Side-by-Side Installations .....	8
Upgrading Your Natural Engineer Environment .....	9
Updating Your Natural Engineer Environment .....	9
4 Installing Natural Engineer .....	11
Using the GUI to Install Natural Engineer .....	12
Using Software Distribution Tools to Install Natural Engineer .....	14
5 Completing the Installation .....	17
Windows User Group .....	18
Entries in the Start Menu .....	18
Setting Up Your Products Using the SYSPCI Utility .....	19
Invoking the SYSPCI Utility .....	20
Apply Changes to Repository FDT .....	21
6 Operational Considerations .....	24
Remote Development Environments .....	25
Remote Desktop Services .....	27
Windows Server Installation .....	29
Natural Parameter Settings .....	30
Environment Sizing .....	31
Alternative Natural Keywords .....	32
Natural Engineer User Exits .....	34
Natural User Exits .....	35
Generation of Reports to PDF .....	35
Users of East Asian Languages (Double Byte Character Sets) .....	36
7 Uninstalling Natural Engineer .....	37
Index .....	39

# Preface

---

This documentation describes the installation of Natural Engineer on Windows. This also includes the installation of related products such as Natural Engineer Web Interface.

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:

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

---

▪ Natural Engineer .....	2
▪ Natural Engineer Web Interface.....	2
▪ License Files.....	2

## Natural Engineer

---

This is the full development version of Natural Engineer.

## Natural Engineer Web Interface

---

The Natural Engineer Web Interface is a web based application that accesses the Natural Engineer repository. Two configuration options are available; a multi user install where clients access a common Natural Engineer repository or a single user install where the Natural Engineer repository is on the client machine. A multi user environment uses a web server (IIS or Apache) and can use either EntireX or NAS to execute the Natural Engineer Natural objects.



### Notes:

For further details on installing and configuring the Natural Engineer Web Interface please see the Natural Engineer Web Interface Installation and Configuration Guide.

## 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
- Natural Engineer Advanced Services
- Natural Engineer Aris Interface



### 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

---

▪ Supported Operating System Platforms.....	4
▪ Installation Prerequisites .....	4
▪ Natural Security.....	5
▪ Microsoft Excel.....	6
▪ Screen Resolution .....	6

## Supported Operating System Platforms

---

Natural Engineer supports the following 64-bit operating system platforms, both for the Natural Engineer environment and the Natural Engineer Web Interface.

- Microsoft Windows 7
- Microsoft Windows 8
- Microsoft Windows 10
- Microsoft Windows Server 2008
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2012

Home Editions of Microsoft Windows are not supported.

## Installation Prerequisites

---

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

- Windows 7, Windows 8, Windows 10, Windows 2008 Server or Windows 2012 Server.
- 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 6.3 or above.
- A Web Browser e.g., Microsoft Internet Explorer or Google Chrome
- Microsoft Visio 2010 or above (optional).  
If Microsoft Visio 2010 is to be used, it is essential that the VBA (Visual Basic for Applications) option is included during the install. This option is part of the installation options on the Microsoft Visio 2010 CD.
- Microsoft Office Professional Edition 2010 or above (optional).  
Microsoft Office Word 2010 or above (optional).  
If you wish to make use of the report display option 'Word', you will need to have either Microsoft Office Professional Edition 2010 or stand-alone Microsoft Office Word 2010 installed. These provide the necessary support for XML documents required for this option.
- PDF Generation (optional).  
If you wish to generate reports to PDF then a Formatting Objects Processor e.g., Apache FOP 1.1 and the Microsoft Command Line Transformation Utility (MSXSL.EXE) will need to be installed. Configuration details can be found in the Natural Engineer Administration Guide for Windows.

In addition please ensure that the latest Java runtime (version 1.7 or above) is installed.



## 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. The same principles can be applied to Natural 8.3 for Mainframes when using remote development environment.

### 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
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

## **Microsoft Excel**

---

If you intend to use Microsoft Excel to display the reports generated by Natural Engineer then please ensure that macros are enabled within Microsoft Excel.

## **Screen Resolution**

---

It is recommended that Natural Engineer is run with a minimum screen resolution of 1280x1024 with small fonts.

# 3

## Important Information

---

■ Administrator Status .....	8
■ Installation Directory.....	8
■ Side-by-Side Installations.....	8
■ Upgrading Your Natural Engineer Environment .....	9
■ Updating Your Natural Engineer Environment.....	9

## Administrator Status

---

The person performing the installation must have administrator rights.


## 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.

We recommend that you use the *SoftwareAG* directory as the location for Natural Engineer. But any other directory is also possible.

You can only install Natural Engineer on a local hard drive on a Windows system. You cannot install Natural Engineer on a network-mounted drive or a SUBST drive.

 **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.

## 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 *SoftwareAG*, you can install a second instance of Natural Engineer, for example, in a directory named *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*.

While Natural Engineer is being installed, it is not possible for another user to install Natural Engineer on the same machine. A message with the following information will then be shown: the name of the user who is currently installing Natural Engineer, when this installation has been started, and into which directory Natural Engineer is currently being installed.

## 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

---

- Using the GUI to Install Natural Engineer ..... 12
- Using Software Distribution Tools to Install Natural ..... 14

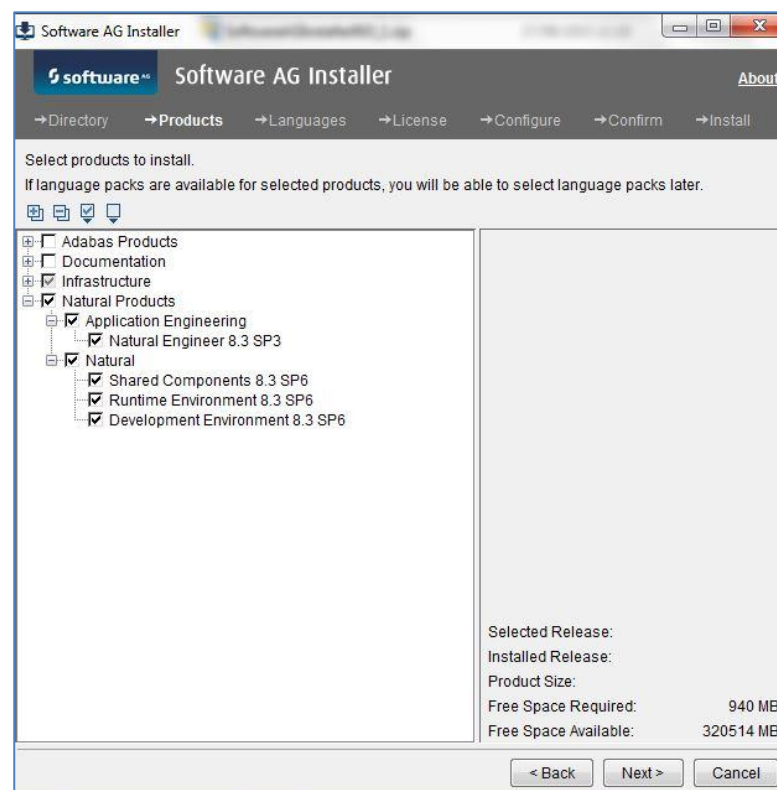
## Using the GUI to Install Natural Engineer

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**.



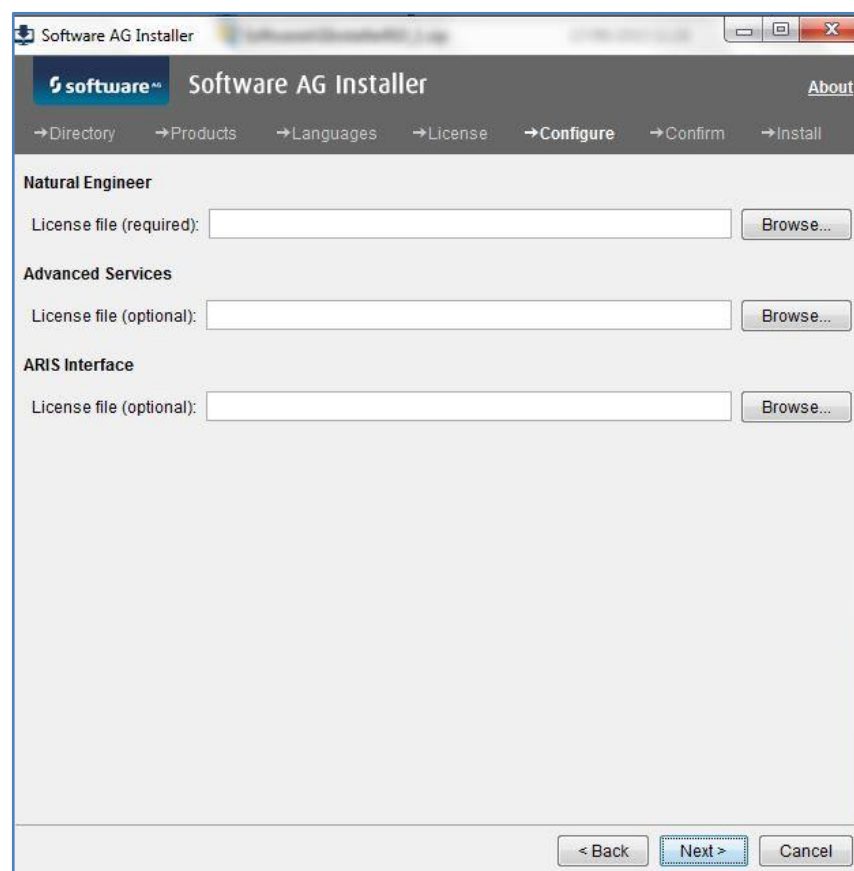
**Note:** Products or product versions which are already installed in the selected installation directory are shown as disabled.



- 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 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).

Optionally enter the full path to the Natural Engineer Advanced Services license file and/or the Natural Engineer Aris Interface license file (or use the **Browse** button to select it from a dialog box).



- 7 Choose the **Next** button.
- 8 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.

-  **Note:** If you wish to use the Aris Interface, and have done an update installation from NEE832 to NEE833, your Aris Interface license file needs to be renamed to NAI83.xml, and manually copied to <InstallDir>/common/conf.

## 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%5Cnsc83.WinDesk.2013.xml
guiNatLicense= VERSION1 ,C%3A%5CUsers%5Cxyt%5CDocuments%5CLics%5Crun83WinDesk.2013.xml
imageFile=C:\\Users\\xyz\\Documents\\NaturalSec83.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 ,nsc83.WinDesk.2013.xml
guiNscLicense= VERSION1
,\\.\\Lics\\nsc83.WinDesk.2013.xml
```

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

```
imageFile=$IMAGEDIR$\\NaturalSec83.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.

# 5

## Completing the Installation

---

■ Windows User Group.....	18
■ Entries in the Start Menu .....	18
■ Setting Up Your Products Using the SYSPCI Utility .....	19
■ Invoking the SYSPCI Utility .....	20
■ Applying changes to the Repository FDT .....	21

## Windows User Group

---

The Natural installation creates a local Windows user group with the name "SAG Natural Users". The user "EVERYONE" is assigned to this user group by default.

When the Windows user group "SAG Natural Users" is created, you have to reboot your machine when the installation finishes. When this user group has already been created (due to a previous installation), this reboot is not required.

The user group "SAG Natural Users" receives full write permissions for all installed objects. Due to the user "EVERYONE", all users have write permissions for all installed objects. You can limit these permissions by removing the user "EVERYONE" from the user group "SAG Natural Users", and then manually adding all required users to this group. To do so, go to **Control Panel > System and Security > Administrative Tools > Computer Management**; in the resulting window, select **Local Users and Groups**.

## Entries in the Start Menu

---

Depending on your selection in the product selection tree, some or all of the following entries have been created in the Windows **Start** menu:

- Under All Programs > Software AG > Tools:  
Natural Engineer *n.n*
- All Programs > Software AG > Documentation

where *n.n* stands for the current version number. The **Start** menu group name (by default, this is "Software AG") can be changed during the installation.

## 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 requires an Adabas Repository and Component system file. These may be local or remotely accessed via a SPoD environment.

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 <code>TRUNCATION</code> must be set in the <code>OPTIONS</code> parameter.

## Invoking the SYSPCI Utility

---

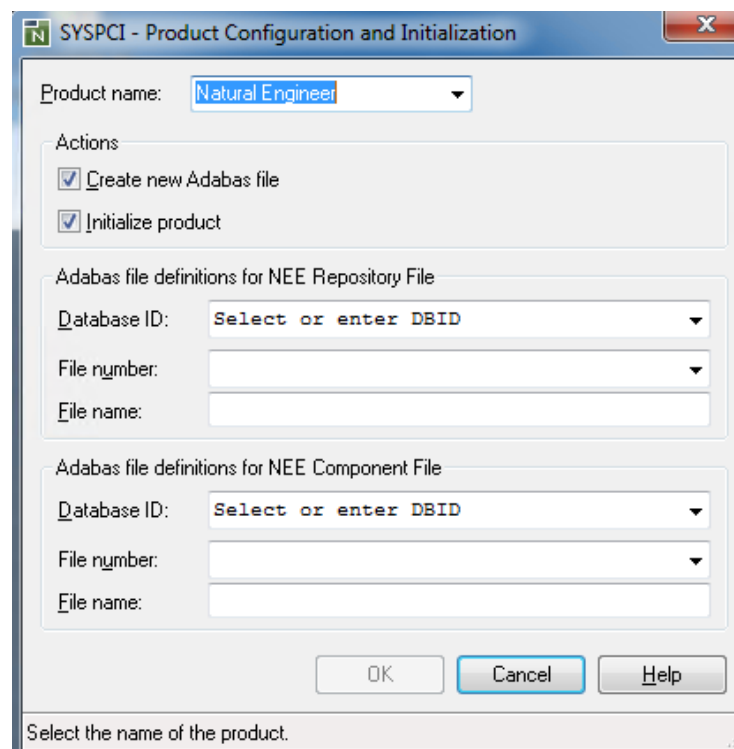
In order to invoke the SYSPCI utility, you must first invoke Natural. You can then invoke the SYSPCI utility using the command line.

► **To invoke the SYSPCI utility**

- 1 From the Windows **Start** menu, choose **All Programs > Software AG > Tools > Natural *n.n*** to invoke Natural.
- 2 From the **View** menu, choose **Command Line** to switch on the display of the command line.
- 3 Enter the following command in the command line:

```
SYSPCI
```

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





## Apply Changes to Repository FDT

---

If you are upgrading from a previous Natural Engineer version and want to re-use your existing data then the following tasks should be performed where applicable.



### 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:

SQL= 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.

## 6 Operational Considerations

---

▪ Remote Development Environments .....	25
▪ Remote Desktop Services .....	27
▪ Windows Server Installation .....	29
▪ Natural Parameter Settings .....	30
▪ Environment Sizing.....	31
▪ Alternative Natural Keywords.....	32
▪ Natural Engineer User Exits .....	34
▪ Natural User Exits .....	35
▪ Generation of Reports to PDF.....	35
▪ Users of East Asian Languages (Double Byte Character Sets) .....	36

## Remote Development Environments

---

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

When using Natural Engineer in a SPoD environment the same version of Natural Engineer must also be installed in both client and server environments.

### Location of the Repository File

It is recommended that the location of the Repository file when utilizing the SPoD environment for Natural Engineer is in the same location as the NDV server and the Natural Source Code.

- The Natural Parameter file used to map the remote environment needs to have the correct settings for LFILE 96 (Repository file).

### Mapping the Remote Mainframe Environment

To successfully utilize the SPoD environment for Natural Engineer, Natural parameter settings need to be made which will be invoked when using the Map Environment function in Natural version 8.3.

The key parameter settings for Natural Engineer are:

- **LFILE 95**  
To access the mainframe Natural Engineer Refactoring database file, LFILE 95 needs to be defined with the required database id and file number.
- **LFILE 96**  
To access the mainframe Natural Engineer Repository, LFILE 96 needs to be defined with the required database id and file number.
- **OVSIZ**  
If you are using an NDV Server that uses CICS Sub-tasks then the OVSIZ parameter should be set to at least 10000.
- **CFICU=ON,CP=AUTO**  
To ensure correct display of Natural Source Code when running Natural Engineer in a SPoD environment to a mainframe server these need to be set.
- **TABA1 (EBCDIC to ASCII Translation Table)**  
Used to translate any special characters between the mainframe and the PC. For example:  
  
`TABA1=(7C,40)`  
  
This represents the '@' sign. The EBCDIC value is 7C and the ASCII value is 40.
- **TABA2 (ASCII to EBCDIC Translation Table)**  
Used to translate any special characters between the PC and the mainframe.  
  
`TABA2=(40,7C)`

This represents the '@' sign. The ASCII value is 40 and the EBCDIC value is 7C.

*Note: The TABA1 and TABA2 parameters only need to be specified if the standard SPoD translation tables do not handle all special characters, for example umlauts, tilda sign exclamation mark etc. Any translation problems that may occur are related to the SPoD environment rather than Natural Engineer.*

The parameter settings are applied using the 'Startup Session Parameters' specified in the Map Environment function within Natural version 6.3.

The session parameters can be defined in one of three ways:

- As a dynamic individual parameter. For example

```
LFILE=(00096,11177,01052)
```

- As a defined profile using SYSPARM. This would then be referenced using the 'PROFILE=' parameter. For example:

```
PROFILE=NEESPOD
```

- Use the NTSYS macro within NATPARM. This is compiled into the Natural environment itself and will automatically invoke the correct settings. This would then be referenced using the 'SYS=' parameter. For example:

```
SYS=NEESPOD
```

## Remote Desktop Services

Natural Engineer offers compatible support for environments that make use of Windows Remote Desktop Services.

Use of Remote Desktop Services provides an easily maintained run time environment with centrally deployed copies of Adabas, Natural and Natural Engineer residing on a server machine. Users can log on to this environment and execute Natural Engineer tasks as if they were running on their own separate machine.

*Note: The use of Remote Desktop Services is available to both the Windows and Natural's Single Point of Development (SPoD) environments.*

### Configuration

In order to execute Natural Engineer successfully in a Remote Desktop Services environment the following configuration tasks are required.

#### Natural Parameter File for Natural Engineer

The Natural Parameter file NEEPARM, used to execute Natural Engineer under Windows, needs to be modified to include a new environment variable USERNAME in the path names for each work file referencing the Natural Engineer DATA folder.

The environment variable must have the delimiter character '%' at the start and end of the variable name, i.e. %USERNAME%.

This will provide each logged on User with their own DATA folder containing the Natural Engineer files they are working with. This provides User integrity in the shared server environment.

Example using work file 3 which is used to hold the extracted application data to be loaded into the Repository:

```
<install-dir>\NaturalEngineer\data\%USERNAME%\#####.OUT
```

*Note: This change is only required on the server machine hosting Natural Engineer. If the default Natural Parameter file NEEPARM has been renamed or copied, then these modifications need to be applied to the renamed or copied version.*

#### Natural Engineer INI File

The Natural Engineer initialization file NATENG.INI, used by Natural Engineer, needs to be modified to include a new environment variable USERNAME in the path names for each path referencing the Natural Engineer DATA folder.

The environment variable must have the delimiter character '%' at the start and end of the variable name, i.e. %USERNAME%.

This will provide each logged on User with their own DATA folder containing the Natural Engineer files they are working with. This provides User integrity in the shared server

environment.

Example using the INI parameter “XLS=” which locates the Natural Engineer Excel macro:

```
XLS=<install-dir>\NaturalEngineer\data\%USERNAME%\XLS\NATENG.XLS
```

*Note: This change is only required on the server machine hosting Natural Engineer.*

### **User DATA Folders**

To accommodate the new Natural Engineer User DATA folders, the User folders must first be created in the Natural Engineer DATA folder.

Example for User = XGSLXX

```
<install-dir>\NaturalEngineer\data\XGSLXX
```

*Note: This change is only required on the server machine hosting Natural Engineer*

The contents of the DATA directory including sub-directories should be copied from

```
<install-dir>\NaturalEngineer\data
```

to each individual User folder e.g.,

```
<install-dir>\NaturalEngineer\data\XGSLXX
```



## Windows Server Installation

---

If you wish to run Natural Engineer with Windows clients communicating to a Windows Server using SPod, then the same release/patch level of Natural Engineer needs to be installed on all platforms. In addition the BAT files need to be renamed (by removing the suffix .tpl) and configured on the server to enable Natural Engineer to run certain batch functions e.g., extract.bat.tpl should be renamed to extract.bat.

For installations under Natural 8.3 the BAT files reside in

<install-dir>\NaturalEngineer\Bat\

*Note: First time installations of Natural Engineer may have the BAT files renamed automatically during the install. Subsequent update installations may supply the BAT files with the .tpl suffix in order to not override any potential customer modifications that have been made. If you have an existing installation then the supplied BAT files templates should be checked and any changes applied to your existing BAT files.*

The BAT files are also utilised by the Bulk Extract & Load function. If wish to run the Bulk Extract & Load functionality and are running purely on the PC or in a Windows Server environment then the relevant BAT files need to be configured.

## Natural Parameter Settings

---

The Natural parameter settings are independent of the number of lines of code being processed. In fact, Natural Engineer does not require the settings listed below. However, for optimum performance they are the recommended minimum set for any Natural Engineer session. The following parameters are relevant for Natural on the PC platforms.

Parameter	Setting	Comment
BPSIZE	2000K	Set at least a 2MB Bufferpool.
BPSFI	ON	Set BPSFI on.
ZD	OFF	Set as ZD=off. <i>Note: Prevents NAT1302 error during the Load process.</i>
EDTBPSIZE	600K	If you have a installation of Predict 8.2.2 (or above) under Windows please set the EDTBPSIZE parameter to at least 600K. This is to ensure that COBOL programs accessing Predict User Views are handled by the Predict User Exits correctly.

Other Natural Parameter settings have to be set for Natural Engineer such as LFILE 96. This depends on what Repository (DBID, FNR) has been created.

## Environment Sizing

This section describes the environment sizing considerations based on one million lines of source code.

### Hard Disk Space

Natural Engineer writes an Extract file ("application name".OUT) which contains the neutral records for loading into the Natural Engineer Repository.

- For the PC platforms, 1 million lines of code require 300 Meg of hard disk space.
- For the MVS platform, 1 million lines of code require 300 cylinders of disk space. This file can also be written to tape.

### Adabas Database

#### Space Requirements

The main consideration when estimating space requirements for Natural Engineer depends upon the complexity of the code, for example how many include routines are present (LDAs, GDAs, PDAs, COPYCODEs etc). The more include routines, the larger the Repository size.

An average record size is 200 bytes.

For 1 million lines of code and more, this would equate to the following:

	Natural Studio	Mainframe	
	Adabas on Windows	3390	3380
<b>ASSO</b>	220 MB	200 cyls	300 cyls
<b>DATA</b>	250 MB	600 cyls	900 cyls
<b>WORK</b>	50 MB	100 cyls	100 cyls

## 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> <b>X</b> - Not a keyword in its own right. <b>Y</b> - Is a keyword in its own right.
35	Indicates whether the alternative keyword has a further qualifier. <u>Valid values are:</u> <b>'</b> - No further qualifier. <b>Y</b> - 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> <b>A</b> - 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 exits also needs to be made available.

USR1005N  
USR1007N  
USR1019N  
USR1054N  
USR2018N  
USR2026N  
USR3013N

*Note: The supplied Natural Engineer NATPARM module specifies SYSEXT as a steplib so they should be picked up automatically.*

## Generation of Reports to PDF

---

Natural Engineer outputs reports into various formats e.g., Word, a spreadsheet e.g., Excel and HTML. If you wish to generate reports into PDF then a third-party Formatting Objects Processor e.g., Apache FOP and the Microsoft Command Line Transformation Utility (MSXSL.EXE) will need to be installed. Install both into the same directory.

Following the installation of the FOP utility and MSXSL.EXE the transformfo.bat and fopexe.bat BAT files need to be renamed (by removing the word SAMPLE) and configured to point to the directory where the objects have been installed.

In addition the PDF= parameter in the [REPORTER] section of the NATENG.INI file needs to be set to Y.

The latest version of Apache FOP may be downloaded from <http://xmlgraphics.apache.org/fop/>

Microsoft Command Line Transformation Utility (MSXSL.EXE) may be downloaded from <http://www.microsoft.com/en-gb/download/details.aspx?id=21714>.

## Users of East Asian Languages (Double Byte Character Sets)

---

If a user is having difficulties displaying details on the nodes within Natural Engineer, it may be related to character differences between windows locale. To resolve the NEETV\_RECORD\_DELIM setting in the [ENVIRONMENT] section of the Initialization file should be changed from the default ¬ (Logical not).

Possible values cannot be a valid character that may be used in a Natural application name or field name, vertical bar or a tilde. For Chinese(Hong Kong) or Japanese, for example, this should be set to a semi-colon e.g.,

```
[ENVIRONMENT]
NEETV_RECORD_DELIM=;
```

In addition, to display characters correctly in reports that go to WORD the user must set the correct ISO setting for their environment in the NATENG.INI file in the [ENVIRONMENT] section e.g., for Japanese

```
[ENVIRONMENT]
ISO-WORD=ISO-2022-JP
```

To display characters correctly in PDF output a different encoding may be required as the MSXML processing that underpins the PDF generation utilizes different character encoding. Therefore a separate NATENG.INI setting is required for this e.g., for Japanese

```
[ENVIRONMENT]
ISO-PDF=SHIFT-JIS
```

More information may be found at the following link.

<http://msdn.microsoft.com/en-us/library/windows/desktop/ms757065%28v=vs.85%29.aspx>

If you wish to export comma delimited files to Microsoft Excel e.g., from Literal & Constant Search Export functionality then the Editing Language in Microsoft Excel must be set to a language that supports DBCS e.g., Japanese. In Microsoft Excel 2010 this may be achieved by choosing "Options" from the "File" menu and then "Language", "Choose Editing Languages" and selecting "Japanese" as the default Editing Language.



# 7

## Uninstalling Natural Engineer

---

You uninstall Natural Engineer Version 8.3.4 using the Software AG Uninstaller. For detailed information on how to use the uninstaller, see the Using the Software AG Installer guide.

In short, you uninstall Natural Engineer using the standard uninstall functionality of the Windows. The Control Panel offers the following entry: Software AG Products: <installation-directory>.

When you choose to uninstall this entry, the Software AG Uninstaller is invoked.

If you uninstall Natural Engineer please re-boot your system before using Natural.



# Index

- Administrator Status, 8
- Alternative Natural Keywords, 32
- Apply Changes to Repository FDT, 21
- Completing the Installation
  - Apply Changes to Repository FDT, 21
- Environment Sizing, 31
- Generation of Reports to PDF, 35
- Important Information, 7
  - Administrator Status, 8
  - Installation Directory, 8
  - Side by Side Installations, 8
  - Updating Your Natural Engineer Environment, 9
  - Upgrading Your Natural Engineer Environment, 9
- Installation Directory, 8
- Installation Prerequisites, 4
- Installing Natural Engineer, 11
  - Using Software Distribution Tools to Install Natural Engineer, 14
  - Using the GUI to Install Natural Engineer, 12
- Microsoft Excel, 6
- Natural Engineer User Exits, 34
- Natural Parameter Settings, 30
- Natural Security, 5
- Natural User Exits, 35
- Operational Considerations, 24
- Alternative Natural Keywords, 32
  - NATSTT-T, 32
- Environment Sizing, 31
- Generation of Reports to PDF, 35
- Natural Engineer User Exits, 34
- Natural Parameter Settings, 30
- Natural User Exits, 35
- Remote Desktop Services, 27
  - Configuration, 27
  - Natural Engineer INI File, 27
  - Natural Parameter File, 27
  - User Data Folders, 28
- Remote Development Environments, 25
  - Mapping, 25
  - Repository File, 25
- Users of East Asian Languages (DBCS), 36
- Windows Server Installation, 29
- Remote Desktop Services, 27
- Remote Development Environments, 25
- Screen Resolution, 6
- Side by Side Installations, 8
- Supported Operating System Platforms, 4
- System Requirements, 3
  - Installation Prerequisites, 4
  - Microsoft Excel, 6
  - Natural Security, 5

Screen Resolution, 6	Users of East Asian Languages (DBCS), 36
Supported Operating System Platforms, 4	Using Software Distribution Tools to Install Natural Engineer, 14
Uninstalling Natural Engineer, 37	Using the GUI to Install Natural Engineer, 12
Updating Your Natural Engineer Environment, 9	What Can Be Installed with Natural Engineer, 1
Upgrading Your Natural Engineer Environment, 9	Windows Server Installation, 29

