

# Natural

## Installation on UNIX

Version 6.3.13 for UNIX

October 2012

This document applies to Natural Version 6.3.13 for UNIX.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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**Document ID: NATUX-NNATUXINSTALL-6313-20121005**

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# Installation

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- Conventions ..... vi

This documentation describes the installation of Natural on a UNIX platform. The following topics are covered:

- Installing and Setting Up Software AG Products on UNIX** Gives information about the installation package and the Software AG environment and describes the pre-installation steps which are common to *all* installations of Software AG products on a UNIX platform. It is relevant if you are installing a Software AG product for the first time.
- Installing and Setting Up Natural on UNIX** Describes how to start the installation of Natural and guides you through the step-by-step instructions for the Natural installation.
- Activating the Natural Buffer Pool on UNIX** Describes the procedure which is used to activate the buffer pool during system startup.
- Activating the Natural Development Server on UNIX** Describes the procedure which is used to activate the Natural Development Server during system startup.
- Activating the Natural Web I/O Interface Daemon on UNIX** Describes the procedure which is used to activate the Natural Web I/O Interface during system startup.
- Installing Natural Security on UNIX** Describes how to start the installation of Natural Security and guides you through the step-by-step instructions for the Natural Security installation.
- After the Installation** Describes the actions necessary after the installation of Natural and/or Natural Security has been successfully completed.
- Uninstalling Natural on UNIX** Describes how to uninstall Natural and other Natural components.

 **Note:** Before installing Natural, please refer to the files *install.txt* and *readme.txt* in the directory *unix/<platform>/nat/<version>* of the installation medium. The file *install.txt* contains information that you should be aware of before you start the installation. The file *readme.txt* contains information that you should be aware of after the installation has completed and before you start to use Natural.

## Conventions

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The following terms are used throughout this documentation.

<i>version</i>	Refers to a specific major or minor version, service pack or fix of Natural.
<i>platform</i>	This is a text string representing the name of the UNIX platform, for example "sun" or "hpux".

# 1 Installing and Setting Up Software AG Products on UNIX

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- General Information ..... 2
- Before Installing Your Software AG Product ..... 3
- Installing the Contents of the Installation Medium to Disk ..... 5

This document contains general information which applies when installing and setting up any Software AG product on a UNIX platform.

## General Information

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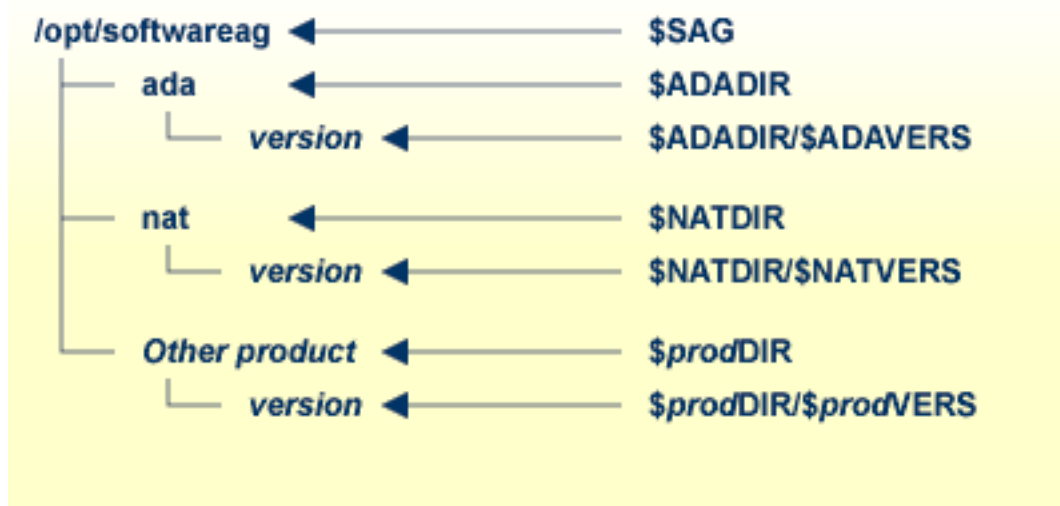
### Installation Package

The installation package containing Software AG products is provided on an installation medium conforming to the ISO 9660 standard.

The installation medium contains a complete directory structure which clearly specifies product and platform.

### Software AG Environment

The following figure shows the general directory structure generated during installation and the environment variables which reference the specified directories:



The environment variable `$$SAG` defines the root directory for all Software AG products. It is recommended to define `SAG=/opt/softwareag`.

For each product, the variable `$prodDIR` is set to the path of the main directory of the product specified, where `prod` is a three-letter product code in upper-case letters. For example, all files for Natural, whose product code is "NAT", are contained in the directory `$NATDIR`.

However, there are exceptions to this convention. For example, the product code for Predict is "PRD" but the environment variables use the prefix "DIC" instead.



The name of the main directory is usually the same as the product code in lower-case letters. For example, the main directory for Natural is named "nat".

Version-independent parts of the product, such as examples or data, are stored in a subdirectory of the product main directory. For example, all Adabas demonstration data is contained in the directory `$ADADIR/adademo`.

Version-dependent components of the product are kept in the version directory `$<prod>DIR/$<prod>VERS`. For example, the current version of Natural is stored in the directory `$NATDIR/$NATVERS`.

The environment variables `prodDIR` and `prodVERS` for all products specified during installation are defined via the file `sagenv.new`. The same applies for any other environment variables needed for the various products.

## Before Installing Your Software AG Product

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It is recommended that you use `/opt/softwareag` as one common root directory for all of your Software AG products. For Linux systems, this location is the registered name with LANANA.

The default search path for dependent libraries of some Software AG products is `/opt/softwareag`. They are loaded from this location or using the environment variable `$LD_LIBRARY_PATH` (`$SHLIB_PATH` on HP-UX systems). If you install the product to a different location (for example, `/usr/SAG` instead of `/opt/softwareag`), you may create a symbolic link to your `$SAG` directory to get a valid default search path:

```
su
cd /opt
ln -s $SAG softwareag
```

The following activities must be performed if you are installing a Software AG product for the first time, or if your environment is not yet set correctly due to any other causes.

This section covers the following topics:

- [Creating the Administrator's Account and Group](#)
- [Backing Up Your Current Product Version](#)
- [Logging in as User "sag"](#)

- [Installation Using sudo Authentication](#)

## Creating the Administrator's Account and Group

You must create one administrator account and one group for all Software AG products when you install your first Software AG product.

1. Define an administrator account to which all of the Software AG products installed at your site belong. Since all environment definition files for the products are written in Bourne shell syntax, the Bourne (or Korn) shell is recommended as the login shell for the administrator account. This section assumes that the administrator account is called "sag".
2. Define a group to which the administrator belongs. This section assumes that this group is also called "sag".
3. Create a login directory for the user "sag" (for example, */opt/softwareag*).



**Note:** To perform these steps, use an appropriate system administration tool.

## Backing Up Your Current Product Version

When upgrading a product, it is strongly recommended that you back up your current product version.

## Logging in as User "sag"

This description assumes that the user "sag" is the administrator for Software AG products. It is recommended to log in as the user "sag".

## Installation Using sudo Authentication

During the installation, you will be asked whether you want to install using sudo authentication or whether you want to run a script after the installation. If you want to install using sudo, check whether your sudo version is newer than 1.6.4 (`sudo -V`). If it is newer, you have to add or edit a configuration entry `Defaults !env_reset` in the sudo configuration file (*/etc/sudoers*). Otherwise, the installation may fail.

If you use the option `Defaults env_reset` instead of proceeding as described above, you have to choose su authentication during the installation.

## Installing the Contents of the Installation Medium to Disk

Before performing the following steps, make sure that the administrator user and group have been created and defined.

► **To install the contents of the installation medium to disk**

- 1 Load the installation medium and mount it if this is not done automatically.

Command	Description
<code>su - root</code>	To mount an installation medium you may need to be root.
<code>mkdir /mount-dir</code>	You may need to create a mount directory for the installation medium.
<code>mount platform-specific_mount_options device-name /mount-dir</code>	Execute the mount command (see the table below for operating system-specific mount commands).
<code>exit</code>	Return to "sag" user.

Platform-specific mount command and options to mount the installation medium as ISO9660 or High-Sierra file system:

Platform	Mount Command
AIX	<code>/etc/mount -v-cdrfs -o ro device-name /mount-dir</code>
HP-UX	<code>/usr/sbin/mount -F cdfs -o cdcase device-name /mount-dir</code>
Solaris	<code>/usr/sbin/mount -F hsfs -o ro device-name /mount-dir</code>
Linux	<code>/bin/mount -t iso9660 -o ro device-name /mount-dir</code>

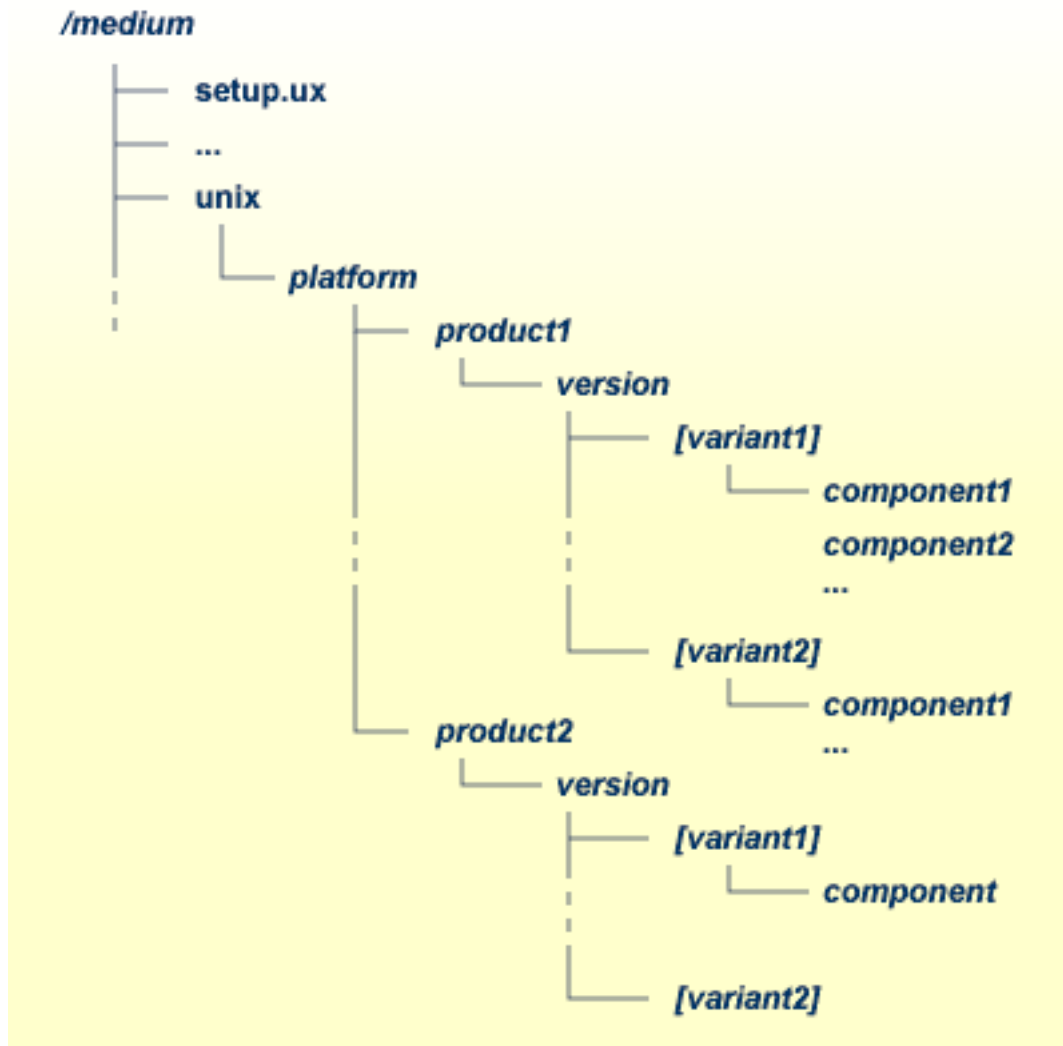


**Note:** On Solaris, the volume management daemon *vold* might be active. This daemon mounts the installation medium automatically.

Example for Linux:

```
/bin/mount -t iso9660 -o ro /dev/cdrom /mnt
```

- 2 Check the directory structure of the UNIX part of the installation medium. When you run an `ls(1)` command on the installation medium, you will see a structure like the following:



**Note:** Depending on the mount options used, the files will be all upper case or all lower case. If you mount the installation medium as a pure ISO 9660 Interchange Level I CD, you will also see a version number ";1" appended to all files. Please note this for the following steps and use the correct name format.

- 3 For Linux S/390, a single archive is provided for your convenience (for example, for Natural this is the file `NATv<version>n.tgz`). The following steps can be performed after you have loaded the installation medium on a Windows or UNIX machine that has a network connection to the Linux S/390 system:

1. Copy the archive file (*<file-name>.tgz*) that is located in the root directory of the installation medium to a temporary area such as */tmp/cdrom* in your Linux S/390 environment, using for example ftp in binary mode.
2. Unpack the archive using the command `tar -xzvf file-name.tgz`.
3. Read the installation instructions for details on how to start the installation from this media in the file *setup.txt* in this directory. Instructions of how to proceed after installing the software will be displayed at the end of the installation and also copied onto your hard disk.
- 4 Please continue reading the step-by-step installation instructions for the Software AG product being installed.



## 2 Installing and Setting Up Natural on UNIX

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This document describes how to set up and install Natural 6.3 on a UNIX platform.

## Product Requirements

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The following topics are covered below:

- [Required Memory Space](#)
- [Disk Space](#)
- [Compilers Used to Build Natural](#)
- [Related Products](#)

See also *Supported Operating Systems* and *License Key File Handling* in the *Release Notes*.

### Required Memory Space

The memory space required by Natural largely depends on the number of users.

The memory space per user is determined by the settings in the parameter file `NATPARM`, especially by the values of profile parameters such as `USIZE` and `SSIZE`.

In addition to the user-specific memory, memory is required for the buffer pool, which is shared among all users.

### Disk Space

Approximately 600 MB of hard-disk space is required for Natural (including all packages), and another 200 MB for Natural Security.

### Compilers Used to Build Natural

The delivered Natural for UNIX was built and tested with the compilers listed below. When re-linking Natural during the installation or using the `make` command, we strongly recommend that you use the same compiler version.

In case a compiler version is used which is compatible according to the declaration of the compiler vendor, Software AG does not ensure that Natural works properly.



Release Platform	Build Platform and Compiler
Sun Solaris 10 64 bit	Sun Studio 11 C++ 5.8 Compiler
HP-UX 11.i v2 64 bit (PA-RISC)	HP-UX 11.23 PA-RISC: aCC: HP ANSI C++ B3910B A.03.85
HP-UX 11.i v2 64 bit (Itanium)	HP-UX 11.23 Itanium: aCC: HP C/aC++ B3910B A.06.25
HP-UX 11.i v3 64 bit (PA-RISC)	HP-UX 11.23 PA-RISC: aCC: HP ANSI C++ B3910B A.03.85
HP-UX 11.i v3 64 bit (Itanium)	HP-UX 11.23 Itanium: aCC: HP C/aC++ B3910B A.06.25
AIX 5.3 64 bit	AIX 5.2: IBM XL C/C++ Compiler Version 8  <b>Note:</b> On AIX 5.3, you can start the linker separate from the compiler using the <code>ld</code> command; this means you do not necessarily need a compiler on AIX 5.3. If you do not want to compile C programs in your Natural environment, you do not have to install a compiler. In this case, it is sufficient to install the IBM XL C/C++ Runtime Version 8 for AIX.
AIX 6.1 64 bit	AIX 6.1: IBM XL C/C++ Compiler Version 10
AIX 7.1 64 bit	<b>Note:</b> As of AIX 6.1, it is no longer possible to use the linker ( <code>ld</code> ) to relink Natural. In order to relink Natural, it is mandatory to use the above compiler, or a higher version.
SUSE Linux Enterprise Server 10 (x86-64)	SUSE Linux Enterprise Server 9: gcc 3.3.3
SUSE Linux Enterprise Server 10 (IA32)	SUSE Linux Enterprise Server 9: gcc 3.3.3
SUSE Linux Enterprise Server 10 (z/Linux)	SUSE Linux Enterprise Server 9: gcc 3.3.3
SUSE Linux Enterprise Server 11 (x86-64)	SUSE Linux Enterprise Server 10: gcc 4.1.2
SUSE Linux Enterprise Server 11 (IA32)	SUSE Linux Enterprise Server 10: gcc 4.1.2
SUSE Linux Enterprise Server 11 (z/Linux)	Red Hat Enterprise Linux 5.0: gcc 4.1.2
Red Hat Enterprise Linux 4.0 (x86-64)	SUSE Linux Enterprise Server 9: gcc 3.3.3
Red Hat Enterprise Linux 4.0 (IA32)	SUSE Linux Enterprise Server 9: gcc 3.3.3
Red Hat Enterprise Linux 4.0 (z/Linux)	SUSE Linux Enterprise Server 9: gcc 3.3.3
Red Hat Enterprise Linux 5.0 (x86-64)	SUSE Linux Enterprise Server 9: gcc 3.3.3
Red Hat Enterprise Linux 5.0 (IA32)	SUSE Linux Enterprise Server 9: gcc 3.3.3
Red Hat Enterprise Linux 5.0 (z/Linux)	SUSE Linux Enterprise Server 9: gcc 3.3.3

Additional tests were done without problems with Natural for UNIX relinked with the compilers listed below.

Build Platform and Compiler	Compiler
HP-UX 11.23 PA-RISC: aCC: HP ANSI C++ B3910B A.03.85	HP-UX 11.23 PA-RISC: aCC: HP ANSI C++ B3910B A.03.73 HP-UX 11.31 PA-RISC: aCC: HP ANSI C++ B3910B A.03.85
HP-UX 11.23 Itanium: aCC: HP C/aC++ B3910B A.06.25	HP-UX 11.23 Itanium: aCC: HP aC++/ANSI C B3910B A.06.05 HP-UX 11.31 Itanium: aCC: HP C/aC++ B3910B A.06.20
AIX 5.2: IBM XL C/C++ Compiler Version 8 AIX 6.1: IBM XL C/C++ Compiler Version 10	AIX 5.3: IBM XL C/C++ Compiler Version 8 AIX 6: IBM XL C/C++ Compiler Version 9 AIX 7: IBM XL C/C++ Compiler Version 11
SUSE Linux Enterprise Server 9: gcc 3.3.3	SUSE Linux Enterprise Server 10: gcc 4.1.2 Red Hat Enterprise Linux 4.0: gcc 3.4.6 Red Hat Enterprise Linux 5.0: gcc 4.1.2
SUSE Linux Enterprise Server 10: gcc 4.1.2	SUSE Linux Enterprise Server 11: gcc 4.3.2
Red Hat Enterprise Linux 5.0: gcc 4.1.2	SUSE Linux Enterprise Server 11: gcc 4.3.2

### Important Information for Solaris

If link problems occur on a machine with multiple compilers, make sure to use the required compiler by setting the environment variable `CC` to the correct path for the installation process.

### Related Products

Natural 6.3 requires:

- Entire Access 5.3 or 6.1 to access SQL databases. For scrollable cursors and Unicode support, Entire Access 6.1 is required.
- EntireX 8.0 or 8.1 when using Natural RPC.
- Entire Net-Work 2.1 UNIX to access remote Adabas database systems.

For remote access to Adabas 6 (Open Systems) or 8 (mainframe), Entire Net-Work 7.3.2 is required.

- Tamino 4.4 when using Natural for Tamino.
- HTTP server, like Apache or IIS when using the Natural Web Interface.

Natural 6.3 includes interfaces to:

- Adabas 3.3.
- Adabas 5.1.
- Adabas 6.1.
- Entire Screen Builder 5.3.
- ApplinX 5.1.
- ApplinX 5.2.

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## The Natural Distribution Kit

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The Natural distribution kit on the installation medium contains the installation files for various UNIX platforms as well as for Windows and other platforms. For UNIX, an example of the directory hierarchy on the installation medium is shown in the section [Installing the Contents of the Installation Medium to Disk](#).

Please note that the license key file is not contained on this installation medium. It is delivered by e-mail.

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## Before You Start

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This section contains important information on the necessary activities before installing Natural on a UNIX platform.

Please note the following before you start the Natural installation:

- Read the *install.txt* file delivered in the directory *unix/<platform>/nat/<version>* of the installation medium. It contains important pre-installation information which may not be contained in this documentation. If you have not already done so, please perform the steps described there before continuing.



### Notes:

1. It is also a good idea to have a look at the *readme.txt* file. This file contains important post-installation information and is located in the same directory as the *install.txt* file.
  2. The *readme.fix* file in the same directory lists all corrections for the current version of Natural.
- Software AG recommends some common steps for the installation of Software AG products on UNIX. See [Installing and Setting Up Software AG Products on UNIX](#) for a detailed description.
  - Some installation steps require super-user (root) permissions. The installation offers a choice between the `su` and `sudo` commands and asks for the corresponding password required to become super-user.
  - Before you start the installation, back up your current product version.
  - The directory on the disk into which the Natural distribution files are installed is identified by the environment variable `SAG` (which can be set to an appropriate value in advance). We recommend to use the `/opt/softwareag/` directory as location for Natural. If you have set up a symbolic link `/opt/softwareag` already, you cannot install into the `/opt/softwareag/` directory unless you remove the link. Alternatively, you may install into the location to which `/opt/softwareag` points. If the directory `/opt/softwareag/` does not yet exist, you need to create it manually. The installation does not do this because root privileges are required for this step.

- Extended Natural functionality needs a shared library for operation, which contains dynamically linked executables. The executables are copied from the installation medium to the `$SAG/nat/vXXXX/lib/` directory. They are configured with the runpath `/opt/software-ag/nat/vXXXX/lib/` during link time. The Natural installation and the `natenv` environment script add the directory `$SAG/nat/vXXXX/lib/` to the environment variable `LD_LIBRARY_PATH` to point to the location of the executables. When you install into the `/opt/softwareag/` directory or into the location to which a symbolic link `/opt/softwareag` points, the `LD_LIBRARY_PATH` setting is not needed any more. The same applies when you set a symbolic link `/opt/softwareag` to your `$SAG` directory after the installation.
- As of Natural Version 6.2, the runpath `/opt/softwareag/common/lib/` is supported for the shared library load of the `adalnk` shared library in Adabas Version 5 or above environments.
- If a previous version of Natural is already installed, the configuration settings are evaluated and may be used in the update installation. Migration of subproducts such as Predict is possible within one version, but not from one version to another one.

The files `$SAG\nat\vXXXX\NATCONV.INI` and `$SAG\nat\vXXXX\SAGtermcap` will not be copied from one version (6.3) to another version (6.4).

- During the installation you need a valid license key file.
- As of Natural Version 6.2, the Software AG common component `BTY` is no longer used by Natural. Instead, the `saglic` module for checking the license key file is delivered with Natural.
- Ensure that prerequisite software is installed.
- As of Natural Version 6.2, the structure of the Natural library directory file `FILEDIR.SAG` has changed. For detailed information, see *Portable Natural System Files* in the *Operations* documentation.

When you install Natural Version 6.2 or above and Natural Version 6.1 is already installed, version 6.2 or above uses the same `FUSER` as in version 6.1 by default. In this case, existing objects which are modified with version 6.2 or above can no longer be read by older versions of Natural. If you want to prevent this problem, you have to define a new `FUSER` during the installation. A new `FUSER` can be defined in the **System File Assignments** installation screen.

- "NSWUCIET" is a reserved name. You should not have another object with this name in a `steplib`.

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## Upgrading from a 32-bit Environment to a 64-bit Environment

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When you upgrade from a 32-bit environment to a 64-bit environment, you need to perform a new installation of Natural. An update installation is not possible in this case. This also means, that you have to reinstall the subproducts you are using.

The `FNAT` system file will be initialized during an installation automatically. For the `FUSER`, consider that the Natural GP is compatible for 32-bit and 64-bit platforms if the object is cataloged with Natural Version 5.1.1 or above. The file `FILEDIR.SAG`, which contains the library list information,

is not compatible for Natural Version 6.1.1 or below. It is compatible with Natural Version 6.2 or above. If you want to use a 32-bit `FUSER` from Natural Version 6.1.1 or below in a 64-bit environment, we recommend using one of the following methods. Either

- transfer the modules using the Object Handler, that is unload and load them, or
- copy the modules using `SPoD`, or
- use the import function of the `SYSMAIN` utility.

## Installing Natural More Than Once in Parallel in the Same `$SAG` Directory

You have the possibility of parallel installations of different Natural update packages or fixes on a machine, because every new Natural update package or fix is installed in a new, separate directory. Two Natural update packages or fixes are treated in the same way as two different Natural versions. If you use the `LD_LIBRARY_PATH` for locating shared library executables, be aware that the system's dynamic loader loads the executables from the first directory specified by `LD_LIBRARY_PATH` which contains the executables. When you switch your Natural version using the `natenv` environment script, the library for this version will be the first in the list.



**Note:** A product version is identified by the first two digits of the version number. An update package is identified by the third digit of the version number. A fix is identified by the fourth and fifth digit of the version number.

Some Natural components will be shared by default. The shared components in this case are the files and directories located above the `$NATDIR/$NATVERS` directory:

- the `/etc` directory (`NATCONF.CFG`),
- the `/extlib` directory, and
- the file `FUSER`.

If required, these components can also be separated. This means, the directories containing the components must have different names. The directories are defined in the `NATURAL.INI` file and can be specified during the installation.

Also, the buffer pool and Natural Development Server start/stop scripts, if installed, will by default be generated only once per Natural or Natural Development Server version. You may set up different start/stop scripts for different update packages or fixes manually.

Besides this, Natural copies the license key file to the `$SAG/common` directory. The `$SAG/common` directory is also used by other Software AG products.

## Installing Natural More Than Once in Parallel in Different \$SAG Directories

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You may install Natural more than once in different \$SAG directories. Although it is rather uncommon, it is possible to have one Natural update package or fix on a machine more than once. This is not possible in one \$SAG directory.

However, if you want to use both \$SAG environments simultaneously, you need to access the executables in the shared library by using the `LD_LIBRARY_PATH` environment variable. If the executables in the shared library are located using the runpath via `/opt/softwareag`, the executables for all \$SAG environments will be loaded from the same shared library.

For Naturals in two different \$SAG directories, the common files above the `$NATDIR/$NATVERS` directory will be different. Buffer pool and Natural Development Server start/stop scripts will be generated with a different name, depending on the \$SAG directory.

A Natural buffer pool may be shared. You must not define different `FUSER` or `FNAT` files with the same `DBID` and `FNR` on one machine. `FUSER` and `FNAT` will be locked for a whole machine, while accessed. The lock file name is composed from the `DBID` and `FNR`. This means a lock on one `FNAT/FUSER` can unintentionally lock another `FNAT/FUSER`.



**Note:** Installing a 32-bit Natural and a 64-bit Natural on the same machine is not supported and not recommended by Software AG.

## Installation Steps

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This section describes step-by-step how to install Natural on the UNIX operating system. The installation steps to be taken depend on whether you are installing Natural for the first time, or upgrading an existing Natural version. You will be guided accordingly during the installation process.

The installation can be performed in two installation modes, either in graphical mode or in character mode.

If you cancel the installation before it has finished and if you want to remove already installed files, you have to do this manually. Or, you also may leave the files installed and replace them with the next installation of the same update package or fix. Depending on the steps you have already performed, you may stop the buffer pool and/or Natural Development Server, remove start/stop scripts for the buffer pool and/or Natural Development Server or remove all files by removing the `$NATDIR` directory. In addition, remove the shared library path from `LD_LIBRARY_PATH` and/or the link `/opt/softwareag` which points to your \$SAG environment (if created manually).

If you cancel the installation during an update installation and/or you want to keep other Natural update packages or fixes, you may remove all files by removing the `$NATDIR/$NATVERS` directory.

In addition, depending on the steps you have already performed, you may move the file `$NATDIR/etc/NATCONF.CFG.BAK` to `$NATDIR/etc/NATCONF.CFG`. You cannot use `SAGRM` to remove Natural files, because the required file `SAGInst.xml` will not be written until the installation has finished.

For further information, see [Uninstalling Natural on UNIX](#).

See the following list for an overview of the necessary steps:

- Step 1: Mount Your Drive for the Installation Medium
- Step 2: Choose Character or Graphical Mode
- Step 3: Start the Installation Process
- Step 4: Welcome
- Step 5: SAG User
- Step 6: Destination Location
- Step 7: SAG Environment Shell
- Step 8: Choose Programs
- Step 9: Software License Agreement
- Step 10: Installation Instructions
- Step 11: License File
- Step 12: Installation Type
- Step 13: Existing Natural
- Step 14: Choose Packages
- Step 15: License File Natural Development Server
- Step 16: License File Natural for Tamino
- Step 17: Installation Information
- Step 18: Installation Status
- Step 19: `NATURAL.INI` Settings
- Step 20: Buffer Pool Settings
- Step 21: Install Buffer Pool Start/Stop Service
- Step 22: Natural Parameter File Template
- Step 23: System File Assignments
- Step 24: UDB Selection
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- Step 26: Natural Development Server DBID/FNR Selection
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- Step 28: NDV Server Configuration and Installation
- Step 29: Natural Command Processor DBID/FNR Selection
- Step 30: Natural for Tamino Configuration
- Step 31: Web I/O Interface Daemon Installation
- Step 32: Web I/O Interface Daemon Configuration and Installation
- Step 33: `INPL` Process
- Step 34: Relinking Natural or Shared Library Nucleus
- Step 35: Parameters for Relinking the Natural Nucleus
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- [Step 38: Relinking Process \(for the Shared Library Nucleus\)](#)
- [Step 39: Root Authentication](#)
- [Step 40: Post Installation Steps](#)
- [Step 41: Installation Complete](#)
- [Step 42: Activate Installed Products](#)
- [Step 43: Installation Finished](#)
- [Step 44: Execute the SAG Environment File](#)

▶ **Step 1: Mount Your Drive for the Installation Medium**

- If your drive for the installation medium has not yet been mounted, mount it now as described in the section *Installing the Contents of the Installation Medium to Disk* of the steps common to all Software AG products.

When the installation is started, the setup procedure will check the hardware platform and operating system version and then start the appropriate installation program.

▶ **Step 2: Choose Character or Graphical Mode**

The installation procedure examines the environment variable `DISPLAY` to determine whether to run in graphical or character mode.

- To use graphical mode, the environment variable `DISPLAY` must be set. If it is not yet set in your environment and you want to use graphical mode, set it using the following commands:

```
DISPLAY="machine_name:0"  
export DISPLAY
```

Character mode will be used automatically if the environment variable `DISPLAY` is not set. If `DISPLAY` has been set in your environment but you want to use character mode, you can use the `-nw` option when you start the installation.

At the end of an installation process, in either mode, a batch script is generated and written to the end of the installation log. It lists the parameters specified for that particular installation. Adapt the script to your needs.

You can use the `-help` option to display a list of all supported parameters.

To display the Natural-specific batch mode parameters, enter the following command:

```
setup.ux nat version -help
```

where *version* represents the version of the current Natural installation medium; for example, "v6320".

To display the Natural Security parameters which are supported in batch mode, enter the following command:



```
setup.ux nsc version -help
```

where *version* represents the version of the current Natural installation medium; for example, "v6320".

### ▶ Step 3: Start the Installation Process

To perform this step, you should be either the user "sag" or a member of the group "sag" to which the administrator and all users of Software AG products are assigned. We do not recommend to perform this step as the user "root".

- Start the installation procedure from a writable working directory. We recommend `$SAG/INSTALL`. Enter the command:

```
sh /mount_dir/setup.ux [-nw]
```

where *mount\_dir* is the starting directory on your product installation medium. Upper/lower case usage is possible depending on your local settings.



**Note:** The following descriptions of installation steps assume that the graphical installation mode is used. The step sequence is the same in character mode.

The setup program is started and guides you through the installation. During installation you have to provide the license key.

### ▶ Step 4: Welcome

In this screen, the variant of Natural that is to be installed is displayed.

- Choose **Next** to proceed.

### ▶ Step 5: SAG User

This screen appears only when you are logged in as the user "root".

We do not recommend that you perform the installation as "root". It is recommended to use the Software AG user "sag" instead.

- a If you still need to perform the installation as "root", enter the user ID of the Software AG user to be able to continue.
- b Choose **Next** to proceed.

### ▶ Step 6: Destination Location

In this screen, you can change the value of the `SAG` environment variable, which is the path of the directory tree where all Software AG products are installed.

By default, the content of the current `$SAG` variable is displayed.

- a If required, enter a different path.

Or:

Choose the **Browse** button to select a different path.

- b Choose **Next** to proceed.

### ▶ **Step 7: SAG Environment Shell**

In this screen, you can change the path and name of the environment file.

The default name is `sagenv.new`. This documentation assumes that the environment file is called `sagenv.new`.

- a If required, enter another environment file.

Or:

Choose the **Browse** button to select a different environment file.



**Note:** You can use any name for your environment file.

- b Choose **Next** to proceed.

### ▶ **Step 8: Choose Programs**

In this screen, you decide whether to install both Natural and Natural Security, or only one of them alone.

- a Activate the required check box(es).

If you choose to install both products at a time, the installation process leads you first through the installation of Natural and, after Natural has been installed successfully, through the installation of Natural Security. The installation of Natural Security is described separately; see [Installing Natural Security on UNIX](#) for further information.



**Notes:**

1. To install Natural Security, Natural must be installed. You can install Natural Security at any later occasion.
2. It is recommended that you install Natural Security *after* having installed all other subproducts of Natural, as this makes defining the subproducts' system libraries to Natural Security easier.

- b Choose **Next** to proceed.

### ▶ **Step 9: Software License Agreement**

In this screen, the license agreement is displayed.

- Choose the **I Accept** button to proceed.



**Note:** If you run the installation procedure in character mode, at each command prompt, you must type in the exact wording (for example: "accept", not just "y" or the ENTER key).

### ▶ **Step 10: Installation Instructions**

In this screen, installation instructions are displayed. This text may contain important information not included in this *Installation* documentation.

- a Read the installation instructions before proceeding with the installation.
- b Choose **Next** to proceed.

### ▶ **Step 11: License File**

In this screen, you specify the path to the Natural license key file.



**Note:** If no common Software AG environment exists yet, `<your-current-directory>/<product-code>.xml` is displayed.

- a If you do not want to use the displayed license key file, specify the path to your license key file.

Or:

Choose the **Browse** button to select the license key file.

- b If you choose the **View** button, the content of your license key file is displayed in a separate screen. Choose **OK** or **Quit** to go back to the **License File** screen.
- c Choose **Next** to proceed.

### ▶ **Step 12: Installation Type**

In this screen, you specify whether you are installing Natural for the first time, or updating an older Natural version already installed on your machine.

- Select the command button for the required option to proceed.

▶ **Step 13: Existing Natural**

This screen appears only when you are updating an existing Natural version. You have to specify the location of your previous Natural installation (*\$NATDIR/\$NATVERS*).

- a If required, enter a different directory.

Or:

Choose the **Browse** button to select a different directory.

- b Choose **Next** to proceed.

▶ **Step 14: Choose Packages**

In this screen, you can choose additional packages to be installed. Adabas must be started to successfully install the package Natural Development Server or Natural Command Processor.

For each package you select, a description is displayed in the **Description** field on the right.

If you perform an update installation, all packages from the previous Natural will be pre-selected. If pre-selected, Natural Development Server, Entire Screen Builder and ApplinX cannot be deselected.

- a When you expand the Natural node, you can decide whether to install the Natural example files in addition to the Natural program files.

- b Choose **Next** to proceed.

▶ **Step 15: License File Natural Development Server**

This screen appears only when you have selected the package Natural Development Server.

- a Specify the path to the Natural Development Server license key file in the same way as described above for the Natural license key file.

- b Choose **Next** to proceed.

▶ **Step 16: License File Natural for Tamino**

This screen appears only when you have selected the package Natural for Tamino.

- a Specify the path to the Natural for Tamino license key file in the same way as described above for the Natural license key file.

- b Choose **Next** to proceed.

▶ **Step 17: Installation Information**

In this screen, the selected features are displayed.

- a To review or change your settings, choose the **Back** button.
- b Choose **Next** to begin extracting files.

If the common Software AG components are not installed in your environment, they are automatically installed now.

▶ **Step 18: Installation Status**

This screen, which contains a progress indicator, informs you about the installation status. Please wait until the selected components have been installed.

- When all files have been extracted, choose **Next** to proceed.

▶ **Step 19: NATURAL.INI Settings**

The installation assignments which will be stored in your local configuration file are shown on two screens. You have to review these settings.

- a If required, change the installation assignments on the first screen.

Or:

Choose the browse buttons to select the required directories or files.

- b Choose **Next** to proceed to the second screen.
- c If required, change the installation assignments as described above.
- d Choose **Next** to proceed.

▶ **Step 20: Buffer Pool Settings**

In this screen, you can specify the settings for the Natural buffer pool. The name of the default buffer pool is "NATBP".

- a Optional. Change the values offered for the buffer pool.

For a list of these parameters, see *Buffer Pool Assignments* in the *Configuration Utility* documentation.

- b Choose **Next** to proceed.

Natural is now initialized.

▶ **Step 21: Install Buffer Pool Start/Stop Service**

In this screen, you can decide whether you want to install a buffer pool start/stop service. This service starts the buffer pool automatically when the system will be started.

- a Mark **Install Service**, if you want to install a buffer pool start/stop service. A script will be copied to the directory defined with the **Initscript Directory** option. Links will be created for all runlevels which are selected by the **Activate in Runlevel** flags, so that the buffer pool will be started for these runlevels.

The installation of the buffer pool start/stop service requires root privileges.



**Note:** **Service Name**, **Path to Daemon**, **Startlink Name** and **Stoplink Name** are generated automatically by the installation. The **Service Name** can be changed. It will be automatically prefixed by a name for your *\$SAG* environment, usually "sag1". **Startlink Name** and **Stoplink Name** will be generated from the **Service Name**.

- b Choose **Next** to proceed.

### ▶ **Step 22: Natural Parameter File Template**

This screen appears only when you are updating an existing Natural version.

- a Select the Natural parameter file that you want to use as a template.

The *FNAT* and *FUSER* values will be read from this template and the parameter file *NATPARAM* will be generated. The parameter file you selected will not be modified, unless it is *NATPARAM*.



**Note:** You can choose the command button displaying a magnifying glass to display the contents of the currently selected parameter file.

- b Select for all other parameter files, if you want the *FUSER* settings to be adapted to the new Natural version. The *FNAT* settings and, if unambiguous, *DBID* and *FNR* of *steplib*s will be adapted without prior selection.
- c Choose **Next** to proceed.



**Note:** At this stage of the installation, all parameter files from the old Natural environment have already been copied to the new environment.

### ▶ **Step 23: System File Assignments**

In this screen, the environment settings (*DBID*, *FNR* and directory) for *FNAT* and *FUSER* are shown.

- a Adapt the displayed values to your Natural environment. Enter an *FNAT* system file of your Natural Version 6.

You can use the browse buttons to select to the required directories.

- b If you perform an update installation, select if you want to migrate subproducts such as Predict or Construct to the new FNAT (this is the default).
- c Choose **Next** to proceed.

**Notes:**

1. All Natural modules from the old FNAT, delivered with Natural in Natural source code (for example, user exits), will not be available on the new FNAT. They will be replaced by the new sources. If required, you have to copy the old sources after the update installation. This does not apply to sources delivered with subproducts.
2. The migration of the FNAT and subproducts is supported for update packages and fixes. It is not supported between two versions, between two \$SAG directories or if no subproducts are installed. When you migrate an FNAT with Natural Security, you need to install Natural Security again, to be able to use the FNAT.

▶ **Step 24: UDB Selection**

In this screen, you specify the user database (UDB parameter) for your current Natural environment.

If you are updating an existing Natural version, the ID of the current user database is shown.

- a Specify the ID of the required user database.
- b Choose **Next** to proceed.



**Important:** The screens which are displayed next depend on the packages you selected in the **Choose Packages** screen. If you have not selected Natural Development Server, Natural for Tamino or Natural Command Processor, the following steps are not relevant and you can continue reading with the step *INPL Process*.

▶ **Step 25: Adabas Environment Selection**

This screen appears only when you have selected the package Natural Development Server or Natural Command Processor. Adabas must be started to successfully install these packages.



**Note:** Using the *adaenv* environment script ensures that your Adabas environment is set correctly for your current Adabas version.

- a Specify the path to the directory in which Adabas has been installed.

You can also use the browse button to select to the required directory.

Or:

Activate the **Use remote database** check box.

If you want to use a remote database, you need to make sure that the database you want to use has been configured correctly and the FDIC file already exists.

Adabas databases outside of the current \$SAG directory (that is: in another \$SAG directory) must be defined as remote.

- b Choose **Next** to proceed.

▶ **Step 26: Natural Development Server DBID/FNR Selection**

This screen appears only when you have selected the package Natural Development Server.

You have to specify a database ID and file number for the Natural Development Server system file (FDIC).

- a Select an existing DBID and FNR.

Or:


To create a new Natural Development Server system file, select an existing DBID and enter an unused number for FNR. In this case, you will be asked whether you want the new system file FDIC to be created.

The following table shows the possible combinations of Predict FDIC files and Natural:

	PRDv44, FDICv44	PRDv45, FDICv45
NAT63 <sub>n</sub>	X	X
NDV22 <sub>n</sub>	X	X

If you are using an FDIC file of a Predict version 4.3 and when you want to convert to FDIC 4.4, further activities are to be performed during the INPL process. See [Converting to FDIC 4.4 Format](#) for detailed information.

To create a new FDIC file for your Natural Development Server environment, check if the Adabas nucleus parameters listed in the following table are set for the database you want to use for your Natural Development Server system file (FDIC).

 **Note:** The nucleus parameters LP, LS, NC and NH do not longer exist with Adabas version 5.1 and therefore need not be set as indicated below.



LAB	Must be at least 200,000.
LP	Must be at least 200.
LS	Must be at least 200,000.
LBP	Must be at least 4,000,000.
LWP	Must be at least 1,000,000.
MGC	Must be at least 50.
NC	Must be at least 200.
NH	Must be at least 10,000.
NISNHQ	Must be at least 1,000.
NT	Must be at least 2.
OPTIONS	The option TRUNCATION must be set in the OPTIONS parameter.

If Adabas is running, use the Adabas utility ADAOPR. Additionally, declare these parameters as start parameters for the Adabas utility ADANUC to ensure that these parameters are set after the next reboot of the specified database.

- b Choose **Next** to proceed.

### ▶ Step 27: NDV Parameter File Template

This screen appears only when you are updating an existing Natural version.

- a Select the Natural parameter file that you want to use as a template.

The FNAT and FUSER values will be read from this template and the parameter file NATPARM will be generated. The parameter file you selected will not be modified, unless it is NATPARM.



**Note:** You can choose the command button displaying a magnifying glass to display the contents of the currently selected parameter file.

- b Choose **Next** to proceed.



**Note:** At this stage of the installation, all parameter files from the old Natural environment have already been set up for the new environment.

### ▶ Step 28: NDV Server Configuration and Installation

This screen appears only when you have selected the package Natural Development Server.

- a Optional. Change the default port number.
- b Mark **Update /etc/services File**, if you want to write an entry for the specified port to the */etc/services* file. You need root privileges for this option.

- c Mark **Install Service**, if you want to install a Natural Development Server start/stop service. This service starts a Natural Development Server automatically when the system is started. A script will be copied to the directory defined with the **Initscript Directory** option. Links will be created for all runlevels which are selected by the **Activate in Runlevel** flags, so that the Natural Development Server will be started for these runlevels.

The installation of the Natural Development Server start/stop service requires root privileges.

If you do not want to copy the Natural Development Server procedure to your system directory during the installation, you will find the template for the Natural Development Server startup under `$NATDIR/$NATVERS/INSTALL`.



**Note:** **Service Name** and **Path to Daemon** are generated automatically by the installation. The **Service Name** can be changed. It will be automatically prefixed by a name for your `$SAG` environment, usually "sag1".

- d Mark **Activate Service after Installation**, if you want the Natural Development Server to be started automatically at the end of the installation.
- e Choose **Next** to proceed.

#### ▶ **Step 29: Natural Command Processor DBID/FNR Selection**

This screen appears only when you have selected the package Natural Command Processor.

- a Select an existing DBID and FNR.

Or:

To create a new system file, select an existing DBID and enter an unused number for FNR. In this case, you will be asked whether you want the new system file to be created.

- b Choose **Next** to proceed.

#### ▶ **Step 30: Natural for Tamino Configuration**

This screen appears only when you have selected the package Natural for Tamino.

- a Specify the DBID and URL for the configuration of Natural for Tamino.
- b Choose **Next** to proceed.

#### ▶ **Step 31: Web I/O Interface Daemon Installation**

This screen appears only when you have selected the package Web I/O Interface and the installation finds a previously installed Natural Web I/O Interface.

- a Decide whether you want to keep the previous environment of the Natural Web I/O Interface daemon, that is the directory `$NATDIR/$NATVERS/nwo/$NWONODE`.
- b Choose **Next** to proceed.

### ▶ **Step 32: Web I/O Interface Daemon Configuration and Installation**

This screen appears only when you have selected the package Web I/O Interface.

- a Optional. Change the default port number.
- b Mark **Update /etc/services File**, if you want to write an entry for the specified port to the `/etc/services` file. You need root privileges for this option.
- c Mark **Install Service**, if you want to install a Natural Web I/O Interface daemon start/stop service. This service starts a Natural Web I/O Interface daemon automatically when the system is started. A script will be copied to the directory defined with the **Initscript Directory** option. Links will be created for all runlevels which are selected by the **Activate in Runlevel** flags, so that the Natural Web I/O Interface daemon will be started for these runlevels.

The installation of the Natural Web I/O Interface daemon start/stop service requires root privileges.

If you do not want to copy the Natural Web I/O Interface daemon procedure to your system directory during the installation, you will find the template for the Natural Web I/O Interface daemon startup under `$NATDIR/$NATVERS/INSTALL`.



**Note: Service Name and Path to Daemon** are generated automatically by the installation. The **Service Name** can be changed. It will be automatically prefixed by a name for your `$SAG` environment, usually "sag1".

- d Mark **Activate Service after Installation**, if you want the Natural Web I/O Interface daemon to be started automatically at the end of the installation.
- e Choose **Next** to proceed.

### ▶ **Step 33: INPL Process**

This screen, which contains a progress indicator, appears after the configuration steps for the selected packages (including Natural) have been completed. The installation now loads all Natural libraries belonging to the selected packages. Please wait until all libraries have been loaded.

If you have selected to install the Natural Development Server, the selected `FDIC` will be initialized automatically during the `INPL` of the Natural modules for the Natural Development Server. For a migration of the `FDIC`, see [Converting to FDIC 4.4 Format](#).

- When the loading of the libraries is complete, choose **Next** to proceed.

▶ **Step 34: Relinking Natural or Shared Library Nucleus**

In this screen, you can decide whether you want to link a new Natural nucleus and/or a new shared library nucleus.

If you have selected Entire Screen Builder, ApplinX and/or Natural for Tamino or if Entire Access is installed, the option **Relink Natural nucleus** is preselected.

See [Compilers Used to Build Natural](#) for the compiler you must use.

- a Select the option **Relink Natural nucleus** and/or **Relink shared library nucleus**
- b Choose **Next** to proceed.

▶ **Step 35: Parameters for Relinking the Natural Nucleus**

This screen appears only when you have selected the option **Relink Natural nucleus**.

The relinking process creates a new Natural nucleus.

- a Select the required options.

The **XML SAX parser** option is required for the `PARSE XML` statement, for Tamino access, and for the application programming interface `USR6001N` (call external XSLT processor) in the library `SYSEXT`.

The **XSLT processor** option is required for `USR6001N`.

In order to activate the external sort program `SyncSort UNIX` to process the sort operations, **SyncSort** must be selected.

- b Choose **Next** to proceed.

▶ **Step 36: Relinking Process (for Natural Nucleus)**

This screen appears only when you have selected the option **Relink Natural nucleus**. It displays the output of this relinking process.

When you have not selected to relink Entire Screen Builder or ApplinX, you are first asked whether the new nucleus shall be the default nucleus and replace the current Natural nucleus which is called "natural".

If you have selected to relink Entire Screen Builder or ApplinX, a nucleus called "natnsw" (for Entire Screen Builder) or "natapx" (for ApplinX) is created. The Natural nucleus called "natural" is not replaced in this case. Therefore, you are not asked whether you want to replace the current nucleus.

- a When you are asked whether to use the new nucleus, choose **Yes** to use the new nucleus.

When you confirm this action, a backup copy of the original prelinked Natural nucleus, which is called "natural", is created in the *NATBIN* directory. This backup is called "natural.*version*" (for example, "natural.6320").

- b Review the results of the relinking process.
- c Choose **Next** to proceed.

#### ▶ **Step 37: Parameters for Relinking the Shared Library Nucleus**

This screen appears only when you have selected the option **Relink shared library nucleus**.

The relinking process creates a new shared library nucleus.

- a Select the required options.
- b Choose **Next** to proceed.

#### ▶ **Step 38: Relinking Process (for the Shared Library Nucleus)**

This screen appears only when you have selected the option **Relink shared library nucleus**. It displays the output of this relinking process.

However, you are first asked whether the new nucleus shall be the default nucleus and replace the current shared library nucleus.

- a Choose **Yes** to use the new nucleus.
- b Review the results of the relinking process.
- c Choose **Next** to proceed.

#### ▶ **Step 39: Root Authentication**

This screen appears only when you have selected options which require root privileges.

- a Enter a user ID with root privileges (for example, "root", "su", "sudo" or another user ID).
- b Enter the corresponding password.
- c Choose **Next** to proceed.

#### ▶ **Step 40: Post Installation Steps**

This screen appears only when you have selected options which are performed in this post installation step.

The steps are performed and listed. Most of them require super user privileges.

- Choose **Next** to proceed.

▶ **Step 41: Installation Complete**

This screen informs you that the installation has finished successfully. You are asked whether you want to read the Readme file.

It is recommended that you read the Readme file.

- a If you do not want to display the Readme file, remove the corresponding selection.
- b Choose **Finish**.

If you have chosen to install both Natural and Natural Security, the installation program will now continue to guide you through the installation of Natural Security. Please continue reading *Software License Agreement* in the section *Installing Natural Security on UNIX*. After a successful installation of Natural Security, the **Activate Installed Products** screen (see below) will then be displayed.

▶ **Step 42: Activate Installed Products**

If you are not installing Natural Security, this screen appears now.

- a Select the product(s) you want to activate in the Software AG environment file.
- b Choose **Next** to proceed.

▶ **Step 43: Installation Finished**

This screen appears when the installation has finished.

- Choose **Finish** to exit the installation program.

▶ **Step 44: Execute the SAG Environment File**

It is necessary to execute the *sagenv.new* file after finishing this installation program to set the environment variables `NATDIR`, `NATVERS` and `PATH`. You can do this now, if you want to work with Natural immediately, or later, if you want to perform other tasks first. But the environment file must have been executed before using Natural.



**Note:** When you install both Natural and Natural Security at the same time, this step is required only once. When you install Natural and Natural Security separately and do not use Natural in the meantime, you can perform this step directly after the installation of Natural Security. Otherwise, you have to perform this step twice (after the installation of Natural and after the installation of Natural Security).

- Check these settings and insert them into your profile (for example, *.profile*).

Once the installation has been successfully completed, you can remove the working directory (which you specified in step *Start the Installation Process*) and all of its contents.

## Converting to FDIC 4.4 Format

1. Start Natural with `PARM=NDVPARM`, or with a parameter file in which the relevant `FNAT` and `FDIC` file are defined.

This step converts Predict Version 4.3 data to Version 4.4 format. If the data on your Predict system file already is in Version 4.4 format, a corresponding message is returned.

2. Log on to the library `SYSNDVCO`.
3. Invoke the **Main Menu** by entering `MENU` in the **Direct Command** window.
4. Enter the function code "C".

The conversion to Version 4.4 is now performed.



**Important:** You can no longer use this `FDIC` file together with Predict Version 4.3.

You can also convert in batch mode. In this case, the file defined by the parameter `CMSYNIN` should contain the following:

```
LOGON SYSNDVCO
MENU
CONVERT VERSION44
FIN
```

## Displaying the Startup Parameters for the Natural Development Server

After the installation has finished, you may want to get information about the startup parameters for the Natural Development Server.

Enter the following command in the binary directory of Natural:

```
natdvsrv -help
```

The possible startup parameters are shown with explanations.

## Setting Up Access to the EntireX Broker

---

Access to EntireX Broker is required when you are using the Natural RPC (either as client or as server) or when you are using native ACI programming, that is when you are using the `CALL 'BROKER'` statement.

If you want to access EntireX Broker, you must copy the Natural-specific broker stub `natetb.so/nat-etb.sl` from the directory `$EXXDIR/$EXX/VERS/lib` to the directory which is specified as the binary load path (`NATEXTLIB`) in the installation assignments of the local configuration file.

## Further Information on the Additional Packages

---

For further information on the packages you may have selected, see the following documentation:

- SYNCP Utility (for the Natural Command Processor)
- Natural Web Interface
- Debugger
- Natural Web I/O Interface

For Entire Screen Builder, see your Entire Screen Builder documentation.

For ApplinX, see your ApplinX documentation.

For Natural Development Server, see your Natural Development Server documentation.



# 3 Activating the Natural Buffer Pool on UNIX

---

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Since the Natural buffer pool requires resources that should be created every time your system is booted, a procedure to activate the buffer pool should be called during system startup.

The Natural installation process provides a buffer pool start/stop service procedure. The name of the procedure will be generated depending on the \$SAG environment and the Natural version.

Furthermore, the Natural installation process determines the platform automatically and prepares the system (V style or AIX) to execute the start/stop service procedure during start/stop of the system. Depending on the platform, the system directory for initialization and, if needed, the runlevel startup directories will be selected. The start/stop service procedure will be copied to the system directory for initialization and links will be created in the runlevel startup directories.

The Natural installation process installs the buffer pool start/stop service as an optional feature. You can also set up this service manually as described below.

The Natural buffer pool needs some operating system resources for its operation. Therefore, kernel parameters need to be checked and, if necessary, increased as described below.

To verify the operation of the buffer pool, invoke the NATBPMON utility which is used to monitor the buffer pool's activity.

## Preparing the System V Style Startup Procedure

---

The procedure template *rc\_srv.tpl* in the \$NATDIR/\$NATVERS/INSTALL directory may be used to create a script, which is used to invoke the Natural buffer pool during system startup.

The following table shows where the *init.d* and *rc3.d* directories are located on the various platforms. In the following description, *init.d* or *rc3.d* stand for the relevant path indicated below for the platform you are using.

Platform	System Directory for Initialization	Runlevel Startup Directory
Solaris	<i>/etc/init.d</i>	<i>/etc/rc3.d</i>
HP-UX	<i>/sbin/init.d</i>	<i>/sbin/rc3.d</i>
Linux	<i>/etc/init.d</i>	<i>/etc/init.d/rc3.d</i> or <i>/etc/init.d/rc5.d</i>

A sample copy of the buffer pool procedure is shown below. It can be edited with a text editor.

To set up the system, proceed as described below:

1. Log in as user "root".
2. Copy the template *rc\_srv.tpl* to the *init.d* system directory and rename it, for example to *sag1nat63bp*.

3. If already available, create a backup copy of your current *sag1nat63bp* file contained in the *init.d* directory (see the above table).
4. Set the following environment variables in the *sag1nat63bp* procedure:

NATDIR	Location where Natural was installed.
NATVERS	Natural version number.
NATADM	The login name of the Natural system administrator responsible for this buffer pool. It is assumed that this administrator account is called "sag", and that the user ID is already known to the system. It does not have to be a user with root privileges.



**Note:** The Bourne shell does not allow blanks before and after the equals sign in the lines to be customized.

5. Create a link "S99sag1nat63bp" to the *sag1nat63bp* procedure in the *rc3.d* directory.

You may create a link to the buffer pool procedure in the runlevel 3 startup directory of your UNIX machine. The *rc3.d* directory contains several Bourne shell scripts or links to Bourne shell scripts that start with "S" followed by a number, for example "99". A lower number will be executed first. If you add a file or a link to this directory, the respective code is executed when the system changes to "multi-user mode".

When you are using a Natural Development Server, make sure that the Natural Development Server is started after the buffer pool and is stopped before the buffer pool.


## Preparing the AIX Startup Procedure

The procedure template *rc\_srv.tpl* in the *\$NATDIR/\$NATVERS/INSTALL* directory may be used to create a script which is used to invoke the Natural buffer pool during system startup.

To set up the system, proceed as described below:

1. Log in as user root.
2. Copy the template *rc\_srv.tpl* to the *etc* system directory and rename it, for example to *sag1nat63bp*.
3. Set the following environment variables in the *sag1nat63bp* procedure:

NATDIR	Location where Natural was installed.
NATVERS	Natural version number.
NATADM	The login name of the Natural system administrator responsible for this buffer pool. It is assumed that this administrator account is called "sag", and that the user ID is already known to the system. It does not have to be a user with root privileges.

 **Note:** The Bourne shell does not allow blanks before and after the equals sign in the lines to be customized.

4. The */etc/inittab* file supplies the script to the *init* command's role as a general process dispatcher. Therefore, enter a record with the *sag1nat63bp* script in the */etc/inittab* file using the *mkinitab* command. For example:

```
mkinitab "sag1nat63bp:3:wait:/etc/sag1nat63bp > dev/console"
```

5. Verify your changes to make sure that the changes made consist only of those changes desired.

## Sample of a Buffer Pool Start/Stop Procedure

```
#!/bin/sh
#
# Copyright (c) 2010 Software AG, Germany.
# All rights reserved.
#
# Start/stop script for Natural Buffer Pool
#
#
#=====
NATDIR= <the name of Natural's installation directory, for example, ↵
'/opt/softwareag/nat'>
NATVERS= <Natural version, for example, '63100'>
NATADM=sag
export NATDIR NATVERS
#
#-----
#
natstart=$NATDIR/$NATVERS/bin/natstart.bsh
natbpmon=$NATDIR/$NATVERS/bin/natbpmon

if [ "${LOGNAME}" = "" ]; then
    LOGNAME=root
    HOME=/
    export LOGNAME HOME
fi
```

```

case "$1" in
  start)
    echo "Starting Natural Bufferpool ..."
    if [ -x "${natstart}" ]; then
      su $NATADM -c "${natstart}" > /dev/console 2> /dev/console
    else
      exit 1
    fi
    echo "done..."
    ;;
  stop)
    echo "Stopping Natural Bufferpool ..."
    if [ -x "${natbpmon}" ]; then
      su $NATADM -c "${natbpmon} shutdown" > /dev/console 2> /dev/console
    else
      exit 1
    fi
    echo "done..."
    ;;
  *)
    echo "Usage: $0 {start|stop}"
    exit 1
    ;;
esac

#
#=====

```

The procedure *natstart.bsh* is called automatically by the system startup procedure and is used to initialize the Natural environment. It needs no customization and is stored under *\$NAT-  
DIR/\$NATVERS/bin/natstart.bsh*.

## Changing the Kernel Parameters

The information below applies to Solaris, HP-UX and Linux.




**Note:** Since AIX dynamically adjusts the IPC configuration, kernel parameter changes are not required.

The Natural buffer pool needs the following operating system resources for its operation:

- A set of semaphores to enable synchronization between the users.
- Shared memory to store the buffer pools objects.

The amount of available shared memory and the semaphores are configured in the kernel. For information on how to change your current kernel, contact your system administrator or consult your respective operating system documentation.

 **Note:** Since semaphores are also needed to synchronize the access to Natural system files, additional operating system resources should also be considered here.


The following abbreviations are used:

<b>NBP</b>	Number of buffer pools running on one computer.
<b>SMU</b>	Sum of all “maximum users” assignments for all buffer pools.
<b>MAXMEM</b>	Largest buffer pool size value for all buffer pools.
<b>NSF</b>	Number of system files used.

If you have only one buffer pool on your computer, the following values are used:

<b>NBP</b>	1
<b>SMU</b>	“Maximum users” assignment from the buffer pool assignments in the local configuration file.
<b>MAXMEM</b>	Buffer pool size from the buffer pool assignments in the local configuration file.

As not all resources defined by the default parameter settings are used during normal system operation, the default values are sufficient to operate one buffer pool supporting up to 20 users using about 1 MB of memory.

 **Note:** You can find the default values specific to your environment in your kernel configuration file. Do not decrement any kernel parameters that are above their default values, as other software may need the larger value.

Change the following kernel parameters to the required values as follows:

Name	Required Value
SEMAEM *	Must be at least SMU.
SEMMNI	Increment by (NBP + NSF).
SEMMNS	Increment by (SMU + 5 * NBP) + NSF.
SEMMNU *	Increment by SMU.
SEMMSL	Must be at least SMU + 4.
SEMUME *	Must be at least 5.
SEMVMX *	Must be at least SMU.
SHMMAX	Must be at least MAXMEM.
SHMMNI	Increment by NBP.
SHMSEG	Must be at least 4.

\* Cannot be modified on Linux.

Review the changes made to the file *sag1nat63bp* in your *init.d* directory in case the startup message is not displayed during rebooting.



**Note:** If the system should fail to boot after modification (that is, the new kernel cannot be booted), check if there is an error in the startup procedure. Detailed information about trouble-shooting the operating system can be found in your respective operating system manuals. If you cannot solve the problem, contact Software AG support.





# 4      **Activating the Natural Development Server on UNIX**

---

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- Preparing the AIX Startup Procedure ..... 45
- Sample of a Natural Development Server Start/Stop Procedure ..... 46

When a Natural Development Server is used, a procedure to activate the server may be called during system startup.

The Natural installation process provides a Natural Development Server start/stop service procedure. The name of the procedure will be generated depending on the *\$SAG* directory and the Natural Development Server version.

Furthermore, the Natural installation process determines the platform automatically and prepares the system (V style or AIX) to execute the start/stop service procedure during start/stop of the system. Depending on the platform, the system directory for initialization and, if needed, the runlevel startup directories will be selected. The start/stop service procedure will be copied to the system directory for initialization and links will be created in the runlevel startup directories.

The Natural installation process installs the Natural Development Server start/stop service as an optional feature. You can also set up this service manually as described below.

To verify the operation of the Natural Development Server, invoke a Natural for Windows and connect to the system on which the servers runs. Use the port specified at start of the Natural Development Server.

## Preparing the System V Style Startup Procedure

---

The procedure template *natdvsrv.tpl* in the *\$NATDIR/\$NATVERS/INSTALL* directory may be used to create a script which is used to invoke the Natural Development Server during system startup.

The following table shows where the *init.d* and *rc3.d* directories are located on the various platforms. In the following description, *init.d* or *rc3.d* stand for the relevant path indicated below for the platform you are using.

Platform	System Directory for Initialization	Runlevel Startup Directory
Solaris	<i>/etc/init.d</i>	<i>/etc/rc3.d</i>
HP-UX	<i>/sbin/init.d</i>	<i>/sbin/rc3.d</i>
Linux	<i>/etc/init.d</i>	<i>/etc/init.d/rc3.d</i> or <i>/etc/init.d/rc5.d</i>

A sample copy of the Natural Development Server start/stop procedure is shown below. It can be edited with a text editor.

To set up the system, proceed as described below:

1. Log in as user "root".
2. Copy the template *natdvsrv.tpl* to the *init.d* system directory and rename it, for example to *sag1ndv22srv*.

3. If already available, create a backup copy of your current *sag1ndv22srv* file contained in the *init.d* directory (see the above table).
4. Set the following environment variables in the *sag1ndv22srv* procedure:

NATDIR	Location where Natural was installed.
NATVERS	Natural version number.
NATADM	The login name of the Natural system administrator responsible for this Natural Development Server. It is assumed that this administrator account is called "sag", and that the user ID is already known to the system. It does not have to be a user with root privileges.



**Note:** The Bourne shell does not allow blanks before and after the equals sign in the lines to be customized.

5. Create a link "S99sag1ndv22srv" to the *sag1ndv22srv* procedure in the *rc3.d* directory.

You may create a link to the Natural Development Server start/stop procedure in the runlevel 3 startup directory of your UNIX machine. The *rc3.d* directory contains several Bourne shell scripts or links to Bourne shell scripts that start with "S" followed by a number, for example "99". A lower number will be executed first. If you add a file or a link to this directory, the respective code is executed when the system changes to "multi-user mode".

Make sure that the Natural Development Server is started after the buffer pool and is stopped before the buffer pool.

## Preparing the AIX Startup Procedure

The procedure template *natdvsrv.tpl* in the *\$NATDIR/\$NATVERS/INSTALL* directory may be used to create a script which is used to invoke the Natural Development Server during system startup.

To set up the system, proceed as described below:

1. Log in as user "root".
2. Copy the template *natdvsrv.tpl* to the *etc* system directory and rename it, for example to *sag1ndv22srv*.
3. Set the following environment variables in the *sag1ndv22srv* procedure:

NATDIR	Location where Natural was installed.
NATVERS	Natural version number.
NATADM	The login name of the Natural system administrator responsible for this Natural Development Server. It is assumed that this administrator account is called "sag", and that the user ID is already known to the system. It does not have to be a user with root privileges.

 **Note:** The Bourne shell does not allow blanks before and after the equals sign in the lines to be customized.

4. The */etc/inittab* file supplies the script to the *init* command's role as a general process dispatcher. Therefore, enter a record with the *sag1ndv22srv* script in the */etc/inittab* file using the *mkinitab* command. For example:

```
mkinitab "sag1ndv22srv:3:wait:/etc/sag1ndv22srv > dev/console"
```

5. Verify your changes to make sure that the changes made consist only of those changes desired.

## Sample of a Natural Development Server Start/Stop Procedure

---

```
#!/bin/sh
#
# Copyright (c) 2007 Software AG, Germany. All rights reserved.
#
# Start/stop script for Natural Development Server
#
#=====
if [ ! -r "/SAG/ada/v51103/INSTALL/adaenv" ] ; then
    echo "$0: Adaenv not found!"
    exit 1
else
    adaenv="/SAG/ada/v51103/INSTALL/adaenv > /dev/null"
fi

if [ ! -r /SAG/nat/v6320/INSTALL/natenv ] ; then
    echo "$0: Natenv not found!"
    exit 1
else
    natenv="/SAG/nat/v6320/INSTALL/natenv > /dev/null"
fi

NATDIR=/usr/SAG/nat      # customize
NATVERS=v6320           # customize
NATADM=sag              # customize
```

```

PORT=pnum                # customize
PARM=NDVPPARM            # customize

export NATDIR NATVERS PORT PARM
#
#-----
#
natdvsrv=${NATDIR}/${NATVERS}/bin/natdvsrv

if [ "${LOGNAME}" = "" ]; then
    LOGNAME=root
    HOME=/
    export LOGNAME HOME
    UNDO=1
else
    UNDO=0
fi

case "$1" in
    start)
        echo "Starting Natural Development Server ..."
        if [ -x "${natdvsrv}" ]; then
            su ${NATADM} -c ". ${adaenv} \
                && . ${natenv} \
                && ${natdvsrv} -port=${PORT} parm=${PARM}"
        else
            exit 1
        fi
        echo "done..."
        ;;
    stop)
        echo "Stopping Natural Development Server ..."
        if [ -x "${natdvsrv}" ]; then
            su ${NATADM} -c ". ${adaenv} \
                && . ${natenv} \
                && ${natdvsrv} -terminate=${PORT}"
        else
            exit 1
        fi
        echo "done..."
        ;;
    *)
        echo "Usage: $0 {start|stop}"
        exit 1
        ;;
esac

if [ ${UNDO} ]; then
    unset LOGNAME HOME
fi
unset UNDO

```

```
#  
#-----  
#
```

# 5 Activating the Natural Web I/O Interface Daemon on UNIX

---

- Preparing the System V Style Startup Procedure ..... 50
- Preparing the AIX Startup Procedure ..... 51
- Sample of a Natural Web I/O Interface Daemon Start/Stop Procedure ..... 52

When a Natural Web I/O Interface daemon is used, a procedure to activate the daemon may be called during system startup.

The Natural installation process provides a Natural Web I/O Interface daemon start/stop service procedure. The name of the procedure will be generated depending on the \$SAG directory and the Natural version.

Furthermore, the Natural installation process determines the platform automatically and prepares the system (V style or AIX) to execute the start/stop service procedure during start/stop of the system. Depending on the platform, the system directory for initialization and, if needed, the runlevel startup directories will be selected. The start/stop service procedure will be copied to the system directory for initialization and links will be created in the runlevel startup directories.

The Natural installation process installs the Natural Web I/O Interface daemon start/stop service as an optional feature. You can also set up this service manually as described below.

To verify the operation of the Natural Web I/O Interface daemon, invoke a Natural Web I/O Interface client on Windows and connect to the system on which the server runs. Use the port that was specified when starting the Natural Web I/O Interface daemon.

## Preparing the System V Style Startup Procedure

---

The procedure template *nwosrvd.tpl* in the *\$NATDIR/\$NATVERS/INSTALL* directory may be used to create a script which is used to invoke the Natural Web I/O Interface daemon during system startup.

The following table shows where the *init.d* and *rc3.d* directories are located on the various platforms. In the following description, *init.d* or *rc3.d* stand for the relevant path indicated below for the platform you are using.

Platform	System Directory for Initialization	Runlevel Startup Directory
Solaris	<i>/etc/init.d</i>	<i>/etc/rc3.d</i>
HP-UX	<i>/sbin/init.d</i>	<i>/sbin/rc3.d</i>
Linux	<i>/etc/init.d</i>	<i>/etc/init.d/rc3.d</i> or <i>/etc/init.d/rc5.d</i>

A sample copy of the Natural Web I/O Interface daemon start/stop procedure is shown below. It can be edited with a text editor.

To set up the system, proceed as described below:

1. Log in as user "root".
2. Copy the template *nwosrvd.tpl* to the *init.d* system directory and rename it, for example to *sag1nw063srv*.



3. If already available, create a backup copy of your current *sag1nwo63srv* file contained in the *init.d* directory (see the above table).
4. Set the following environment variables in the *sag1nwo63srv* procedure:

NATDIR	Location where Natural was installed.
NATVERS	Natural version number.
NATADM	The login name of the Natural system administrator responsible for this Natural Web I/O Interface daemon. It is assumed that this administrator account is called "sag", and that the user ID is already known to the system. It does not have to be a user with root privileges.
NWODIR	Home directory of the product located at $\$NATDIR/\$NATVERS/nwo$ .
NWONODE	Name of the node on which the Natural Web I/O Interface daemon is installed.
NWO_SRVDCONF	$\$NATDIR/nwo/\$NWONODE/nwosrvd.conf$



**Note:** The Bourne shell does not allow blanks before and after the equals sign in the lines to be customized.

5. Create a link "S99sag1nwo63srv" to the *sag1nwo63srv* procedure in the *rc3.d* directory.

You may create a link to the Natural Web I/O Interface daemon start/stop procedure in the runlevel 3 startup directory of your UNIX machine. The *rc3.d* directory contains several Bourne shell scripts or links to Bourne shell scripts that start with "S" followed by a number, for example "99". A lower number will be executed first. If you add a file or a link to this directory, the respective code is executed when the system changes to "multi-user mode".

## Preparing the AIX Startup Procedure

The procedure template *nwosrvd.tpl* in the  $\$NATDIR/\$NATVERS/INSTALL$  directory may be used to create a script which is used to invoke the Natural Web I/O Interface daemon during system startup.

To set up the system, proceed as described below:

1. Log in as user "root".
2. Copy the template *nwosrvd.tpl* to the *etc* system directory and rename it, for example to *sag1nwo63srv*.
3. Set the following environment variables in the *sag1nwo63srv* procedure:

NATDIR	Location where Natural was installed.
NATVERS	Natural version number.
NATADM	The login name of the Natural system administrator responsible for this Natural Web I/O Interface daemon. It is assumed that this administrator account is called "sag", and that the user ID is already known to the system. It does not have to be a user with root privileges.
NWODIR	Home directory of the product located at $\$NATDIR/\$NATVERS/nwo$ .
NWONODE	Name of the node on which Natural Web I/O Interface daemon is installed.
NWO_SRVDCONF	$\$NATDIR/nwo/\$NWONODE/nwosrvd.conf$



**Note:** The Bourne shell does not allow blanks before and after the equals sign in the lines to be customized.

- The `/etc/inittab` file supplies the script to the `init` command's role as a general process dispatcher. Therefore, enter a record with the `sag1nwo63srv` script in the `/etc/inittab` file using the `mkitab` command. For example:

```
mkitab "sag1nwo63srv:3:wait:/etc/sag1nwo63srv > dev/console"
```

- Verify your changes to make sure that the changes made consist only of those changes desired.

## Sample of a Natural Web I/O Interface Daemon Start/Stop Procedure

```
#!/bin/sh
#
# Copyright (c) 2007 Software AG, Germany. All rights reserved.
#
# Start/stop script for Web I/O Interface Daemon
#
#=====
#
# For a logfile see variable "logfile" below!!!
#
start_daemon ()
{
  echo "Starting Web I/O Interface Daemon ..."
  if [ "x$pid" = 'x' ]; then
    if [ -x "${nwosrvd}" ]; then
      . ${natenv} > /dev/null && ${nwosrvd} ${PORT} > $logfile 2>&1 &
    fi
  fi
}
```

```

else
    exit 1
fi
sleep 2
chmod 775 $logfile
chown ${NATADM}: $logfile
pid='ps -A -o pid= -o args= | grep $PORT | grep nwsrvd | grep -v grep | awk ←
'${print $1}''
if [ "x$pid" = 'x' ]; then
    echo "failed"
else
    echo "done"
fi
else
    echo "skipped"
fi
}

stop_daemon ()
{
    echo "Stopping Web I/O Interface Daemon ..."
    if [ "x$pid" != 'x' ]; then
        kill -TERM $pid
        sleep 2
        ps -p $pid > /dev/null 2>&1
        pidstat="echo $?"
        if [ "$pidstat" != 0 ]; then
            echo "done"
        else
            echo "failed"
        fi
    else
        echo "skipped"
    fi
}

if [ ! -r /opt/softwareag/nat/v6320/INSTALL/natenv ] ; then
    echo "$0: Natenv not found!"
    exit 6
else
    natenv="/opt/softwareag/nat/v6320/INSTALL/natenv "
fi

SAG=/opt/softwareag                # customize
export SAG                          # customize

NATDIR=/opt/softwareag/nat         # customize
NATVERS=v6320                      # customize
NATADM=sag                         # customize
NWODIR=/opt/softwareag/nat/v6320/nwo # customize
NWNODE=computerName               # customize

```

```
NWO_SRVDCONF=/opt/softwareag/nat/v6320/nwo/computerName/nwosrvd.conf # customize
NWOTIMEOUT=0 # customize

PORT=pnum # customize

export NATDIR NATVERS NWODIR NWONODE NWO_SRVDCONF NWOTIMEOUT PORT

# needed for longer output of the ps command on Linux
COLUMNS=500
# needed for the options -o or -f of the ps command on hp-ux
UNIX95=

nwosrvd=$NATDIR/$NATVERS/nwo/bin/nwosrvd
logfile=$NATDIR/nwo/$NWONODE/nwosrv_${PORT}.log
rfile=$NATDIR/nwo/$NWONODE/nwosrvd.conf

#look pid of the server running on port $PORT
pid=''
pid='ps -A -o pid= -o args= | grep $PORT | grep nwosrvd | grep -v grep | awk '{print $1}'
# Startup the daemon
case "$1" in
  start)
    start_daemon
    ;;
  stop)
    stop_daemon
    ;;
  *)
    echo "Usage: $0 {start|stop}"
    exit 1
    ;;
esac
#
#=====
#
```

# 6 Installing Natural Security on UNIX

---

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- Installation Steps ..... 57
- After the Natural Security Installation ..... 66

This document describes how to install Natural Security on a UNIX platform.

It is recommended that you install Natural Security *after* having installed all other subproducts of Natural, as this makes defining the subproducts' system libraries to Natural Security easier.



**Important:** Once Natural Security is installed, Natural on the assigned system file (FNAT) can only be accessed under the control of Natural Security. Natural Security cannot be removed once it has been installed. It is therefore recommended that you make a backup copy of your FNAT system file before you install Natural Security.

See also *Natural Security On Different Platforms* in the *Natural Security* documentation.

## Product Requirements

---

The following topics are covered below:

- [Prerequisites](#)
- [License Key File Issues](#)
- [Shared Natural Security System File FSEC](#)

### Prerequisites

Make sure that the following software has been installed on your computer:

- Natural (same version and update package or fix as that of Natural Security).
- Adabas.
- Entire Net-Work (only required if the FSEC system file is located in a remote database).

Natural Security uses the same versions of Adabas and Entire Net-Work as Natural. For the supported versions, see [Related Software AG Products](#).

Also, make sure that the environment variables for the above products have been set correctly.

### License Key File Issues

You need a license key file to install and activate Natural Security.

During the Natural Security installation, you will be required to specify the location of the license key file provided by Software AG.

Before you start the installation, ensure that the license key file is available locally on the machine where you intend to install Natural Security.

In general, Software AG recommends you to place the license key file on the file system before starting the installation.

## Shared Natural Security System File FSEC

With this version, you can continue to use your existing FSEC system file. No migration of Natural Security data from the previous version to the current version is necessary.

## Installation Steps

---

The first steps of the installation are the same as during the installation of Natural. If you are installing Natural and Natural Security together, they need not be performed again. You can then continue the installation with the step *SAG Environment Shell*.

The installation can be performed in two installation modes, either in graphical mode or in character mode.

See the following list for an overview of the necessary steps:

- Step 1: Mount the Drive for Your Installation Medium
- Step 2: Choose Character or Graphical Mode
- Step 3: Start the Installation Process
- Step 4: Welcome
- Step 5: SAG User
- Step 6: Destination Location
- Step 7: SAG Environment Shell
- Step 8: Choose Programs
- Step 9: Software License Agreement
- Step 10: License File
- Step 11: Installation Information
- Step 12: Installation Status
- Step 13: Environment Check
- Step 14: Parameter File Template
- Step 15: FNAT System File Settings
- Step 16: FSEC File Selection
- Step 17: Log File Selection
- Step 18: Relinking Natural or Shared Library Nucleus
- Step 19: Parameters for Relinking Natural Nucleus
- Step 20: Relinking Process (for Natural Nucleus)
- Step 21: Parameters for Relinking Shared Library Nucleus
- Step 22: Relinking Process (for Shared Library Nucleus)
- Step 23: INPL Process
- Step 24: Installation Complete
- Step 25: Activate Installed Products

- [Step 26: Installation Finished](#)
- [Step 27: Execute the SAG Environment File](#)

▶ **Step 1: Mount the Drive for Your Installation Medium**

- If your drive for the installation medium has not yet been mounted, mount it now as described in the section *Installing the Contents of the Installation Medium to Disk* of the steps common to all Software AG products.

When the installation is started, the setup procedure will check the hardware platform and operating system version and then start the appropriate installation program.

▶ **Step 2: Choose Character or Graphical Mode**

The installation procedure examines the environment variable `DISPLAY` to determine whether to run in graphical or character mode.

- To use graphical mode, the environment variable `DISPLAY` must be set. If it is not yet set in your environment and you want to use graphical mode, set it using the following commands:

```
DISPLAY="machine_name:0"  
export DISPLAY
```

Character mode will be used automatically if the environment variable `DISPLAY` is not set. If `DISPLAY` has been set in your environment but you want to use character mode, you can use the `-nw` option when you start the installation.

At the end of an installation process, in either mode, a batch script is generated and written to the end of the installation log. It lists the parameters specified for that particular installation.

You can use the `-help` option to display a list of all supported parameters.

To display the Natural-specific batch mode parameters, enter the following command:

```
setup.ux nat version -help
```

where *version* represents the version of the current Natural installation medium; for example, "v6320".

To display the Natural Security parameters which are supported in batch mode, enter the following command:

```
setup.ux nsc version -help
```

where *version* represents the version of the current Natural installation medium; for example, "v6320".



### ▶ Step 3: Start the Installation Process

To perform this step, you must be either the user "sag" or a member of the group "sag" to which the administrator and all users of Software AG products are assigned. Do not perform this step as the user "root".

- Start the installation procedure from a writable working directory. We recommend `$SAG/INSTALL`. Enter the command:

```
sh /mount_dir/setup.ux [-nw]
```

where `mount_dir` is the starting directory on your product installation medium. Upper/lower case usage is possible depending on your local settings.



**Note:** The following descriptions of installation steps assume that the graphical installation mode is used. The step sequence is the same in character mode.

The setup program is started and guides you through the installation. During installation you have to provide the license key.

### ▶ Step 4: Welcome

In this screen, the variant of Natural that is to be installed is displayed.

- Choose **Next** to proceed.

### ▶ Step 5: SAG User

This screen appears only when you are logged in as the user "root".

It is not intended that you perform the installation as "root". It is recommended to use the Software AG user "sag" instead.

- a If you still need to perform the installation as "root", enter the user ID of the Software AG user to be able to continue.
- b Choose **Next** to proceed.

### ▶ Step 6: Destination Location


In this screen, you can change the value of the `SAG` environment variable, which is the path name of the directory tree where all Software AG products are installed.

By default, the content of the current `$SAG` variable is displayed.

- a Optional. Enter a different path or use the **Browse** button to change the path.
- b Choose **Next** to proceed.

▶ **Step 7: SAG Environment Shell**

This screen appears only if you are installing Natural Security separately. In this case, you have to select the path to the environment file.

 **Note:** This screen does not appear if you have selected to install both Natural and Natural Security at the same time. In this case, the environment settings were selected during the Natural installation.

The default name is *sagenv.new*. This documentation assumes that the environment file is called *sagenv.new*.

- a Optional. Select another environment file.  
You can use any name for your environment file.
- b Choose **Next** to proceed.

▶ **Step 8: Choose Programs**

This screen appears only if you are installing Natural Security separately.

 **Note:** Natural must have been installed before you can install Natural Security.


- a Activate the check box for Natural Security.
- b Choose **Next** to proceed.

▶ **Step 9: Software License Agreement**

When you have selected to install both Natural and Natural Security at the same time, this is the first Natural Security installation screen to appear after you have chosen **Finish** in the **Installation Complete** screen.

In this screen, the license agreement is displayed.

- Choose the **I Accept** button to proceed.

 **Note:** If you run the installation procedure in character mode, at each command prompt, you must type in the exact wording (for example: "accept", not just "y" or the ENTER key).

▶ **Step 10: License File**

In this screen, you specify the path to the Natural Security license key file.



**Note:** If no common Software AG environment exists yet, `<your-current-directory>/<product-code>.xml` is displayed.

- a If you do not want to use the displayed license key file, specify the path to your license key file.

Or:

Choose the **Browse** button to select the license key file from a dialog.

- b If you choose the **View** button, the content of your license key file is displayed in a separate screen. Choose **OK** or **Quit** to go back to the **License File** screen.
- c Choose **Next** to proceed.

### ▶ **Step 11: Installation Information**

In this screen, the name of the source directory and `$SAG` directory are shown.

- a To review or change your settings, choose the **Back** button.
- b Choose **Next** to begin extracting files.

### ▶ **Step 12: Installation Status**

This screen, which contains a progress indicator, informs you about the installation status.

- When all files have been extracted, choose **Next** to proceed.

### ▶ **Step 13: Environment Check**

In this screen, you have to specify where Adabas is installed (`$ADADIR/$ADAVERS`).

If you use Natural Security on multiple platforms, see also the section *Central FSEC System File* in the Natural Security documentation.

- a Specify the path to the directory in which Adabas has been installed.

You can also use the browse button to select to the required directory.

Or:

To use a remote FSEC, select **Use remote database**.

Adabas databases outside of the current `$SAG` directory (that is: in another `$SAG` directory) must be defined as remote.

- b Choose **Next** to proceed.

▶ **Step 14: Parameter File Template**

In this screen, you specify the Natural parameter file you want to use as a template.

- a Select the Natural parameter file.

The settings in this Natural parameter file will be used to create a new parameter file for Natural Security called `NSCPARM`. If `NSCPARM` already exists, a copy of it will be saved.

If you want to create a Natural Development Server environment with Natural Security, use the parameter file named `NDV Parm` as a template.



**Note:** You can choose the command button displaying a magnifying glass to display the contents of the currently selected parameter file.

- b Choose **Next** to proceed.

▶ **Step 15: FNAT System File Settings**

In this screen, the environment settings for `FNAT` are shown.

- a If required, select a different system file.
- b Choose **Next** to proceed.

▶ **Step 16: FSEC File Selection**

In this screen, you have to enter a database ID and file number for the `FSEC` system file.

- a Select an existing DBID and FNR.

If you are using a local `FSEC` system file, all available databases are available for selection.

If you specified **Use remote database** in the step *Environment Check*, enter the DBID and FNR of an existing `FSEC` on your remote database you want to use.

Or:

To create a new system file, select an existing DBID and enter an unused number for FNR. In this case, you will be asked whether you want the new system file to be created.

If no local `FSEC` exists yet, the system file will be created and initialized. If you choose an existing `FSEC`, its contents will not be modified.

`FNAT/FUSER` reside on the file system and the `FSEC` in Adabas. It is therefore not possible to use the same DBID for `FNAT/FUSER` and `FSEC`.

- b Choose **Next** to proceed.

### ▶ Step 17: Log File Selection

Before this screen appears, you are asked whether you want to use a log file with your Natural Security installation.

- a Choose **Yes**, if you want to use the Natural Security feature **Logging of Maintenance Functions** (see *Maintenance Log Records* in the *Natural Security* documentation).



**Note:** The option **Logging of Maintenance Functions** must additionally be enabled in Natural Security after the installation.

- b Enter or select the database ID and file number for the Natural Security log file. If you do not want to use this feature, enter "0" as DBID.

If you are using a local database, all available database IDs and file numbers are available for selection.

If you want to use an existing log file, select the DBID and FNR. If no log file exists yet, the Natural Security installation creates a new log file. Enter a DBID and FNR.

If you specified **Use remote database** in the step *Environment Check*, enter the DBID and FNR of an existing log file on the remote database you want to use.

- c Choose **Next** to proceed.

You are asked whether you want to create a log system file with the specified numbers.

- d Choose **Yes** to create the log system file.

### ▶ Step 18: Relinking Natural or Shared Library Nucleus

In this screen, you can decide whether you want to link a new Natural nucleus and/or a new shared library nucleus.

If you have selected Entire Screen Builder, ApplinX and/or Natural for Tamino or if Entire Access is installed, the option **Relink Natural nucleus** is preselected.

Natural Security is delivered with a prelinked Natural Security nucleus called "natsec" and a Natural Security shared library nucleus. However, if you want to use additional packages such as Entire Screen Builder, ApplinX, Natural for Tamino or Entire Access, you need to relink the Natural Security nucleus. See *Compilers Used to Build Natural* for the compiler you must use.

- a Select the option **Relink Natural nucleus** and/or **Relink shared library nucleus**
- b Choose **Next** to proceed.

▶ **Step 19: Parameters for Relinking Natural Nucleus**

This screen appears only when you have selected the option **Relink Natural nucleus**.

- a Select the required options.
- b Choose **Next** to proceed.

▶ **Step 20: Relinking Process (for Natural Nucleus)**

This screen appears only when you have selected the option **Relink Natural nucleus**. It displays the output of this relinking process.

The relinking process creates a new Natural Security nucleus called "natnsc".

When you have not selected to relink Entire Screen Builder or ApplinX, you are first asked whether the new nucleus shall be the default nucleus and replace the current Natural nucleus which is called "natural".

If you have selected to relink Entire Screen Builder or ApplinX, a nucleus called "natnsw" (for Entire Screen Builder) or "natapx" (for ApplinX) is created. The Natural nucleus called "natural" is not replaced in this case. Therefore, you are not asked whether you want to replace the current nucleus.

- a Review the results of the relinking process.
- b Choose **Next** to proceed.

▶ **Step 21: Parameters for Relinking Shared Library Nucleus**

This screen appears only when you have selected the option **Relink shared library nucleus**.

The relinking process creates a new shared library nucleus.

- a Select the required options.
- b Choose **Next** to proceed.

▶ **Step 22: Relinking Process (for Shared Library Nucleus)**

This screen appears only when you have selected the option **Relink shared library nucleus**. It displays the output of this relinking process.

However, you are first asked whether the new nucleus shall be the default nucleus and replace the current shared library nucleus.

- a Choose **Yes** to use the new nucleus.
- b Review the results of the relinking process.

- c Choose **Next** to proceed.

▶ **Step 23: INPL Process**

This screen, which contains a progress indicator, appears after the above configuration steps have been completed. The installation now loads the libraries.

- When the loading of the libraries is complete, choose **Next** to proceed.

▶ **Step 24: Installation Complete**

This screen informs you that the installation of Natural Security has finished successfully. You are asked whether you want to read the Readme file for Natural Security.

It is recommended that you read the Readme file.

- a If you do not want to display the Readme file, remove the corresponding selection.
- b Choose **Finish**.

▶ **Step 25: Activate Installed Products**

You have to activate Natural Security in this screen.



**Note:** This screen is also shown when you install both Natural and Natural Security at the same time.

- a Select the product(s) you want to activate in the Software AG environment file.
- b Choose **Next** to proceed.

▶ **Step 26: Installation Finished**

This screen appears when the installation has finished.

- Choose **Finish** to exit the installation program.

▶ **Step 27: Execute the SAG Environment File**

It is necessary to execute the *sagenv.new* file after finishing this installation program to set the environment variables `NATDIR`, `NATVERS` and `PATH`. You can do this now, if you want to work with Natural immediately, or later, if you want to perform other tasks first. But the environment file must have been executed before using Natural.



**Note:** When you install both Natural and Natural Security at the same time, this step is required only once. When you install Natural and Natural Security separately and do not use Natural in the meantime, you can perform this step directly after the install-

ation of Natural Security. Otherwise, you have to perform this step twice (after the installation of Natural and after the installation of Natural Security).

- Check these settings and insert them into your profile (for example, *.profile*).

Once the installation has been successfully completed, you can remove the working directory (which you specified in step [Start the Installation Process](#)) and all of its contents.

## After the Natural Security Installation

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If you have installed Natural Security for the very first time (that is, if the version you have installed is your first version of Natural Security on this FSEC system file), proceed as described in the *Natural Security* documentation under the heading *First Steps After the Installation*. Do this immediately after a successful installation of Natural Security.



# 7 After the Installation

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After the installation has been performed successfully, a variety of post-installation activities are necessary.

## Post-Installation Steps Common to All Software AG Products

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This section describes the activities which need to be performed for all Software AG products after the installation procedure for your Software AG product has been successfully completed.

### Dismounting and Unloading Installation Medium

Dismount the installation medium and unload it using the following commands:

Command	Description
<code>su - root</code>	To dismount an installation medium you must be root.
<code>umount mount-dir</code>	Execute the <code>umount</code> command.
<code>rmdir mount-dir</code>	Remove the mount directory (optional).
<code>exit</code>	Return to "sag" user.



**Note:** On Solaris machines on which the volume management daemon *vold* is active, use the `eject(1)` command to dismount and to unload your installation medium.

### Checking Correctness of User and Group Information

Ensure that all installed files are owned by the user "sag" and have the group ID "sag".

### Creating the Environment File `sagenv.new`

The product installation generates an environment settings file `sagenv.new`.

1. Review the contents of `sagenv.new` and customize it as necessary.
2. Rename `sagenv.new` to another file name (for example, to `sagenv`).



**Note:** If you are performing an update installation and changes were made to your environment, replace only the modified product-specific part in your existing `sagenv` file.

## Modifying User Profiles

Enter the following command line in the *.profile* file of each user who will use this environment permanently:

```
. $SAG/sagenv
```



# 8 Uninstalling Natural on UNIX

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To uninstall Natural on UNIX platforms, you are recommended to perform several steps in the sequence given below. These steps are described in detail in the section [Guidelines for Uninstalling](#) below.

1. Terminate the Natural Development Servers, if there are active ones.
2. Shut down the Natural buffer pools, if there are active ones.
3. Use the `SAGRM` utility to remove the Natural files (which have been extracted from the installation medium to your machine) and the Natural product entry in the `SAGInst.xml` installation catalog.
4. Delete the directory `$NATDIR` to remove the remaining Natural files which have been created by Natural during the installation, or delete the directory `$NATDIR/$NATVERS` to remove only one Natural update package or fix and keep another update package or fix.
5. Remove other Natural components:
  - if installed, runlevel scripts for starting/stopping the buffer pool and NDV server,
  - obsolete system file definitions from `NATCONF.CFG`,
  - obsolete environment settings in remaining scripts like `sagenv`.
  - if set, the link from `/opt/softwareag` to your `$SAG` directory.

## Guidelines for Uninstalling

---

### ▶ To terminate the Natural Development Servers

- 1 Check if there are active Natural Development Servers. To do so, you can use the following command (as "sag" user):

```
ps -ef | grep natdvsrv
```

- 2 Terminate a NDV server with `natdvsrv` by specifying the port:

```
natdvsrv -t=port
```

### ▶ To shut down Natural buffer pools

- 1 Stop the Natural buffer pool "NATBP" with the `NATBPMON` utility:

```
natbpmon shutdown
```

or any other buffer pool with:

```
natbpmon bp=buffer-pool-name shutdown
```

No new users are allowed to use the buffer pool after the `shutdown` command. The buffer pool will be shut down, when the last user stopped using it.

- 2 Clear the ipc resources used by the buffer pool "NATBP" with the NATBPMON utility:

```
natbpmon ipcrm
```

or any other buffer pool with:

```
natbpmon bp=buffer-pool-name ipcrm
```

▶ **To remove the Natural files (which have been extracted from the installation medium to your machine) and the Natural product entry in the *SAGInst.xml* installation catalog**

- 1 Start the SAGRM utility from the `$SAG` directory or a directory above it by issuing the following command:

```
SAGRM
```

- 2 Select the Natural version you want to deinstall and proceed with the deinstallation.

All files which have been extracted from the installation medium are now removed and the selected product is removed from the *SAGInst.xml* installation catalog.

All files which have been created by Natural in batch during the installation (for example, the FNAT system file) are still there.

▶ **To remove the remaining Natural files (which have been created by Natural during the installation)**

- Remove all Natural versions by removing the `$NATDIR` directory. Go to the `$SAG` directory and issue the following command:

```
rm -rf nat/
```

or remove one of several Natural versions by removing the corresponding `$NATVERS` directory located in the `$NATDIR` directory. Go to the `$SAG` directory and issue the following command:

```
rm -rf nat/vversion
```

▶ **To remove other Natural components**

- 1 To remove start/stop procedures, go to the platform-specific directory and delete the scripts for starting/stopping the buffer pool and the Natural Development Server. For further details on the procedures and directories, refer to [Activating the Natural Buffer Pool on UNIX](#) and [Activating the Natural Development Server on UNIX](#).

Examples for Solaris:

Go to the following directory:	<code>cd /etc/init.d</code>
Remove script for buffer pool:	<code>rm sag1nat63bp</code>
Remove script for Natural Development Server:	<code>rm sag1ndv22srv</code>

- To remove the links to the start/stop scripts for the runlevels, go to the relevant directories and delete the links for starting/stopping the buffer pool and the Natural Development Server. For further details on the procedures and directories, refer to [Activating the Natural Buffer Pool on UNIX](#) and [Activating the Natural Development Server on UNIX](#).

Examples for Solaris:

Go to the following directory:	<code>cd /etc/rc3.d</code>
Remove link for buffer pool:	<code>rm K36sag1nat63bp@ S64sag1nat63bp@</code>
Remove link for Natural Development Server:	<code>rm K35sag1ndv22srv@ S65sag1ndv22srv@</code>

- If you removed one Natural version only and you have one or more other Natural versions left, you may have system files defined in your global configuration file which do no longer exist (for example, the FNAT of the just removed Natural version). You may delete the relevant entries using the Configuration Utility.

Enter the following command to invoke the Configuration Utility:

```
natparm
```

From the **Configuration** menu of the Configuration Utility, choose **Global Configuration File** and then choose the category **System Files**. You can now delete the relevant entries.

- By default, the script `sagenv.new` will be generated to set up the environments for all Software AG products. If you use this script, any copy of this script or any other script to set up your Natural environment, remove the instructions which set up the Natural environment.

Example - remove an instruction such as the following:



```
# Natural
if [ -f "$SAG"/nat/v6320/INSTALL/natenv ]; then
. "$SAG"/nat/v6320/INSTALL/natenv
fi
```

- 5 If you use a symbolic link from the */opt/softwareag* directory to your *\$SAG* directory to find dynamically linked executables in a shared library and if you do not need this link for other purposes, you may remove it with the following command:

```
rm softwareag
```

