

Natural

Release Notes for Natural Version 8.3 for Windows

Version 8.3.8

January 2017

This document applies to Natural Version 8.3.8.

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

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1 Release Notes for Natural Version 8.3 for Windows

These Release Notes summarize the new features, changes and enhancements that are provided with Natural Version 8.3. The following topics are covered:

[Release Information for Natural Version 8.3.1](#)

[Release Information for Natural Version 8.3.2](#)

[Release Information for Natural Version 8.3.3](#)

[Release Information for Natural Version 8.3.4](#)

[Release Information for Natural Version 8.3.6](#)

[Release Information for Natural Version 8.3.7](#)

[Release Information for Natural Version 8.3.8](#)

 **Note:** With the October 2015 release, Natural for Windows has the same version number as NaturalONE, which is 8.3.6. There is no version 8.3.5 for Natural.

For information on the supported operating system platforms and other requirements for the current version of Natural, see *System Requirements* in the *Installation* documentation.

Due to last-minute documentation updates, it may be possible that the online help that you can invoke directly from the product does not yet contain the latest information. The most up-to-date Natural documentation can always be found on the Software AG documentation website at <http://documentation.softwareag.com/> (Empower login required).

Update Information for Version 8.3.1, January 2014

The *Release Information for Natural Version 8.3.1* erroneously stated that the handling of the `TF` parameter was changed. This information has been removed. Other than previously announced, it is not possible to use the asterisk notation for the database ID and file number of the test database. The `TF` parameter works as documented. As a workaround, you can use the Natural API `USR2005N`: when you specify `-1` for the file numbers, each file in the production database is mapped to the file with the same file number in the test database.

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Installation

System Requirements

The system requirements for the current version of Natural are now listed in the *Installation* documentation.

Software AG Installer

Natural for Windows is now installed using the Software AG Installer. For more information, see the *Installation* documentation.



Note: Natural no longer provides a file server installation. As of this version, you can only install Natural on a local hard drive on a Windows system.

Environment Variables

The environment variables `NATDIR` and `NATVERS` are no longer required for starting Natural.

The Natural utilities which have used these environment variables have been adapted. The Object Handler now provides `NATROOT` as a new valid input value.

Natural now determines from which directory it has been started and automatically uses the appropriate local configuration file (*natural.ini*). By default, *natural.ini* is located in the *Etc* directory which is located within the Natural installation directory. If required, you can still set the environment variables `NATDIR` and `NATVERS`, for example, to simplify the start of Natural in your environment or to ensure compatibility with your existing batch files in the Natural Version 8.3 environment.

Compiler Used to Build Natural

With Natural for Windows Version 8.3.1, a different compiler version was used to build and test Natural: Microsoft Visual Studio 2010. See also *Compiler Used to Build Natural* in the *Installation* documentation.

Migrating Applications to Version 8.3

Applications that were created with Natural for Windows Version 3.1 and above can be executed with Version 8.3.

New Features

Application Programming Interfaces

The utility SYSEXT provides the following new application programming interface (API):

API	Description
USR8208	This API terminates an EntireX Broker of version 5 or above by using the Command and Information Service of EntireX Broker. It also returns version information on the EntireX Broker and the Command and Information Service itself. For older versions, the same method as in USR2075N is used.

Changes and Enhancements

Change in Return Code Handling

The return code handling of batch Natural processing has been changed:

- A `TERMINATE nnn` statement now causes `nnn` to be always set as the return code of a Natural run.
- The return code set by a `TERMINATE` statement now overrides the return code 61 which is set due to a runtime error.
- Error message NAT9987 now appears in the file identified by Natural parameter `CMPRINT` if a Natural run was stopped by a `TERMINATE` statement.

Review your batch procedures and check whether there are dependencies related to the above mentioned changes.

New Exit Code

A new exit code 91 is available. It is issued when a connection to the Natural Web I/O Interface is not available. See also *Natural Exit Codes* in the *Operations* documentation.

CATALL Command

To improve the migration of Natural applications, the sequence in which the system command CATALL catalogs the Natural objects has been changed. The following table compares the new sequence with the old sequence as used in Version 6.3.

	New Sequence as of Version 8.3.1	Old Sequence in Version 6.3
1	DDMs	DDMs
2	Global data areas	Global data areas
3	Local data areas	Local data areas
4	Parameter data areas	Parameter data area
5	Copycodes *	Classes
6	Texts *	Maps
7	Functions	Dialogs
8	Subprograms	Subroutines
9	Subroutines	Subprograms
10	Helproutines	Functions
11	Maps	Adapters
12	Adapters	Helproutines
13	Programs	Programs
14	Classes	
15	Dialogs	

* Copycodes and texts are processed as of Version 8.3.

Natural Development Server

Natural Development Server is now released with the same version number as Natural for Windows.

The following changes and enhancements are provided with Natural Development Server Version 8.3.1.

New Start Option

A new optional start option is available which defines the types of clients which are permitted to connect to the server:

```
-c[lient][=]<type>
```

where *<type>* can be one of the following:

Type	Description
NAT	Only Natural for Windows (Natural Studio) clients are permitted to connect to this server.
ONE	Only NaturalONE clients are permitted to connect to this server.
ANY	Both Natural for Windows (Natural Studio) and NaturalONE clients are permitted to connect to this server.

If this start option is not specified, the server will use ANY as the default. If a client which is not permitted tries to connect to the server, error NAT7742 will be issued, indicating that the current IDE is not permitted.

See also *Starting the Development Server* in the Natural Development Server documentation for Windows, which is available separately.

Renamed File

The file *NDVSERVER.LOG* (located in the subdirectory *Natural\Prof*), which is used to terminate the started Natural development servers, has been renamed to *NDVSERVER.PRU*. Existing entries inside the *NDVSERVER.LOG* file are not migrated to *NDVSERVER.PRU*.

Natural RPC (Remote Procedure Call)

Natural RPC (Remote Procedure Call) is available as a separate subcomponent of Natural. It has its own version number. This measure takes into account that Natural RPC is a cross-platform component and makes it possible to provide new Natural RPC versions independent of new Natural versions for the various platforms supported.

With Natural Version 8.3.1, an enhanced Natural RPC Version 6.3.4.9 is delivered. This version only contains error corrections. New functionality is not provided.

Natural Security

The following enhancements are provided with Natural Security Version 8.3.1.

Administrator Services

Password History

The field **User password history** in **Library and User Preset Values > User Profile Items** can now be set to asterisk (*) to allow the activation of password history for individual users.

User Profiles

Batch ETID

The security profiles for users of types A, P, M and E provide a new **ETID Batch** field. This field is used to specify an ETID for a Natural batch-mode session, if this is to be different from the one used for an online session. See *Components of a User Profile* in the *Natural Security* documentation for more information.

Additional Options - Groups/Members

The **Groups/Members** field is now also available for users other than groups in the user maintenance functions Add User, Copy User and Modify User.

Library Profiles

Copy With Links

The **Copy Library** function, when used with the **With Links** option, now handles DDMs correctly as documented.

DDM Profiles

Copy Function Enhanced

The function **Copy Link to All Special Links** (function code CU) has been enhanced and re-named; in addition to copying a DDM's links, it now also copies a DDM profile to all special links. See **Copy Profile/Link to All Special Links** in the *Natural Security* documentation for details.

Environment Profiles

User ID "DBA"

If environment protection is active, the user ID "DBA" may be used to log on to the library SYSSEC, even if the environment is undefined. This makes it possible to define new environments.

Utility Profiles

SYSOBJH

A new **Xref option** is provided to control how Predict cross-reference data related to objects processed with the SYSOBJH utility are handled. See *Additional Options* under *Protecting Utilities* in the *Natural Security* documentation for more information.

Natural Development Server - Client Access

With Natural Development Server Version 8.3.1, a new start option is provided which defines the types of clients permitted to connect to the server. This option is also supported by Natural Security. The new Natural Security option **Natural client access** can be set in library preset values, user profiles (types Administrator, Person and Group), library profiles and special link profiles. It defines the types of clients permitted to connect to the server.

Possible values are:

Value	Description
N	Only Natural for Windows (Natural Studio) clients are permitted to connect to this server.
O	Only NaturalONE clients are permitted to connect to this server.
A	Default. Both Natural for Windows (Natural Studio) and NaturalONE clients are permitted to connect to this server.
P	Natural for Windows (Natural Studio) and NaturalONE clients are <i>not</i> permitted to connect to this server.

If a client which is not permitted tries to connect to a library, error NAT7742 will be issued, indicating that the current IDE is not permitted.

Application Programming Interfaces

NSCXRTC

The new application programming interface NSCXRTC can be used to obtain a list of all utility functions which are allowed for a user.

Documentation

MOVE ALL Statement

The `MOVE ALL` statement is now documented with the `MOVE` statement: see *Syntax 9 - MOVE ALL*. As a result, you can no longer select `MOVE ALL` from the *Quick Reference* selection box of the *Statements* overview page.

LIST COUNT System Command

The `LIST COUNT` system command is now documented with the `LIST` system command: see *Syntax Overview* and *Displaying Numbers and Sizes of Objects*. As a result, you can no longer select `LIST COUNT` from the *Quick Reference* selection box of the *System Commands* overview page.

Removed Features

The features to be removed which have been announced in the Release Notes for Version 6.3 are no longer available with Version 8.3:

Remote Debugging

Remote debugging is no longer supported. Instead, you will have to use the debugger of NaturalONE. Using the NaturalONE debugger, it is possible, for example, to debug Natural RPC applications or to debug workplace applications which have been created with Natural for Ajax.

Old Debugger

Up to Natural Version 6.2 for Windows, a debugger was delivered which was not integrated in Natural Studio. This debugger was named "old debugger" in the Natural Version 6.3 documentation. This old debugger is no longer supported. The corresponding documentation has been removed.

Instead, you can use the integrated debugger which was introduced with Natural Version 6.2. See the *Debugger* documentation for further information.

Natural Web Interface

SYSWEB is no longer supported. It is no longer delivered on the product CD.

The interface SYSWEB3 is now to be used instead of SYSWEB. If you have not already done so, you have to update your programs written for SYSWEB to run with the SYSWEB3 interface. See *Migrate Natural Web Interface SYSWEB to SYSWEB3* in the *Web Technology* documentation for further information.

External Sort Program

The external sort program SyncSort is no longer supported.

Natural Reporter

The Natural Reporter is no longer part of the Natural installation. For Natural for Windows customers, the Natural Reporter is now only available for download.

NATVERS Parameter

Natural now determines from which directory it has been started. Therefore, the Natural profile parameter NATVERS has been removed.

XADB Parameter

The Natural profile parameter XADB was not used and has therefore been removed.

Utilities SYSPAUL and SYSTRANS

The utilities SYSPAUL and SYSTRANS are no longer delivered with Natural. Thus, it is no longer possible to install these utilities by issuing the corresponding system commands for the first time. Use the Object Handler instead.

Notice of Future Changes

Profile Parameters for Remote Debugging

Remote debugging is no longer supported. Therefore, the profile parameters `RDACTIVE`, `RDNODE` and `RDPORT` are no longer required. They will be removed with a future version of Natural.

Natural Installer

Natural is now installed with the Software AG Installer. Therefore, the Natural Installer utility is no longer required. It will be removed with a future version of Natural.

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Installation of Natural Add-On Products

Many Software AG product installations are currently being changed in order to use the common Software AG Installer. Thus, all major products can be installed with the same look and feel. Natural for Windows and Natural Security already use the Software AG Installer since version 8.3.1.

In the future, the Natural add-on products Predict Version 8.2.3 and Natural Construct Version 8.2.2 will also use the Software AG Installer. These releases are planned for October 2014. If you want to install Predict and/or Construct, it is therefore recommended that you wait for the October release where these products can be installed with the Software AG Installer.

New Features

Parameters

The following new Natural profile parameter is provided in this version:

Profile Parameter	Description
RENCONST	Can be used to renumber the line number references in alphanumeric constants within a Natural source. By default, line number references in alphanumeric constants are not renumbered. Note: For compatibility with the mainframe, this parameter has been renamed to RNCONST in version 8.3.4.

Changes and Enhancements

SYSPCI Utility

The SYSPCI utility, which is used to configure the installed products, can now be called with direct command data (that is, with keywords and their corresponding values), both in batch mode and online. For example:

SYSPCI PRODUCT NDV FUNCTION ALL DBID 177 FNR 501

For more information, see *Calling the SYSPCI Utility with Direct Command Data* in the *Tools and Utilities* documentation.

Configuration Utility

Editor Options

The parameter group **Natural Development Environment** now contains the new category **Editor Options**. The new profile parameter `RENCONST` is available in this category. See *Editor Options* in the *Configuration Utility* documentation.

Read-Only Information in Buffer Pool Monitor

The buffer pool monitor now indicates whether a buffer pool is a special read-only buffer pool or not. This information is shown in both the GUI version and the command line version of the buffer pool monitor. See also the following in the *Operations* documentation: the description of the *Parameters* page in *Using the GUI Version of the Buffer Pool Monitor*, and the description of the `PARAM` command (*Displaying the Buffer Pool Settings*) in *Using the Buffer Pool Monitor (NATBPMON)*.

Statistical Information in Buffer Pool Monitor

The precision of the information shown with the `STATUS` command has been increased. This leads to a different output of the statistics shown in the command line version of the Natural Buffer Pool Monitor (NATBPMON utility). See *Statistical Information About the Buffer Pool* in the *Operations* documentation.

Dynamic Variables with ASCII Work Files

The work file types `ASCII` and `ASCII-COMPRESSED` can now handle dynamic variables with a maximum field/record length of 32766 bytes. Reading a dynamic variable from an `ASCII` or `ASCII-COMPRESSED` work file puts the rest of the work file record into the variable. Thus, for work files with these types, the dynamic variable is resized in each execution of the `READ WORK FILE` statement to match the exact length of the remaining part of the record. See also the sections *Handling of Large and Dynamic Variables* in the descriptions of the `READ WORK FILE` and `WRITE WORK FILE` statements.

Natural Web I/O Interface Client

The Natural Web I/O Interface client is now delivered in the Version 1.3.14.

This is the last version that supports JBoss Application Server 4.2 and Oracle Glassfish 3.1. Support of subsequent versions of JBoss Application Server and Oracle Glassfish is not planned.



Important: Due to changes and corrections in the right-to-left (RTL) handling, the following prerequisites must be met to run RTL applications correctly: The Natural Web I/O Interface client Version 1.3.14 requires Natural Version 8.3.2 or above on Linux, UNIX or Windows, or Natural Version 8.2.4 or above on mainframes, and vice versa.

The Natural Web I/O Interface client now supports Internet Explorer 11. For a list of the currently supported web browsers, see *Browser Prerequisites* in the *Natural Web I/O Interface* documentation.

With the configuration tool, it is now possible to define the filler character that is to be removed from the input fields of an application. Trailing filler characters will be removed from the input fields, and leading filler characters will be replaced with blanks. See *Editing a Session* in the *Natural Web I/O Interface* documentation.

Natural RPC (Remote Procedure Call)

Natural RPC (Remote Procedure Call) is available as a separate subcomponent of Natural. It has its own version number. This measure takes into account that Natural RPC is a cross-platform component and makes it possible to provide new Natural RPC versions independent of new Natural versions for the various platforms supported.

With Natural Version 8.3.2, Natural RPC Version 6.3.4.9 is still delivered. This version only contains error corrections. New functionality is not provided.

Natural Security

The following enhancements are provided with Natural Security Version 8.3.2.

User Profiles

Time Differential

With previous versions, **Time Differential** could only be set in user profiles of types Terminal and Group. As of this version, you can also set it in user profiles of types Administrator, Person and Member.

Utility Profiles

SYSPCI

The use of the Natural product configuration and initialization utility SYSPCI can now be controlled by Natural Security. See *SYSPCI Utility Profiles* under *Protecting Utilities* in the *Natural Security* documentation for more information.

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Installation

Natural Add-On Products

The Natural add-on products now also use the Software AG Installer. These are:

- Predict Version 8.2.3
- Entire System Server Version 2.1.5

For detailed information on how to install the above-mentioned Natural add-on products using the Software AG Installer, see the documentation for these add-on products. This documentation is available separately. It is not part of the Natural documentation.

The Entire Systems Management (ESM) clients that are installed together with Natural need to be initialized before they can be used. See also *Setting Up the Additional Natural Components* in the *Installation* documentation.

New Features

Application Programming Interfaces

The utility SYSEXT provides the following new application programming interface (API):

API	Description
USR8210N	This API enhances profiler monitoring with the Natural profiler that is provided with NaturalONE. You can start or pause profiler monitoring or view the current state of the profiler monitoring process.

Changes and Enhancements

PROCESS PAGE MODAL and ESCAPE Statements

The statements `ESCAPE TOP` and `ESCAPE BOTTOM` are no longer applied to the `PROCESS PAGE MODAL` processing block.

The statements `ESCAPE TOP` and `ESCAPE BOTTOM` are designed to interrupt the flow of a processing loop. Due to the fact that the statements `PROCESS PAGE MODAL` and `END-PROCESS` form a processing block (and not a processing loop), the `ESCAPE` statement is no longer applied to the `PROCESS PAGE MODAL` processing block.

If an `ESCAPE` statement is encountered during processing of a `PROCESS PAGE MODAL` block, the execution of the processing block will be terminated and the `ESCAPE` processing will continue as defined.

Comparison of Binary Operands During Runtime

The comparison of a binary operand with a length of less than or equal to 4 with an operand of format I (integer), P (packed numeric) or N (numeric unpacked) was adapted in order to be compatible with the mainframe.

- For binary operands with a length less than 4, the comparison is now integer4-based.



Note: This handling was already in place for binary operands with a length of 4.

The following example will now result in `WRITE '#B2 GT -999'`:

```
DEFINE DATA LOCAL
  01 #B2 (B3)
END-DEFINE
#B2 := 12
IF #B2 < -999
  WRITE '#B2 LE -999'
ELSE
  WRITE '#B2 GT -999'
END-IF
END
```

The following example will now result in `WRITE 'TRUE....01'`:

```
MOVE -5 TO BIN11(B1)
MOVE -5 TO INT11(I1)
IF BIN11 > INT11 WRITE 'TRUE...01' ELSE WRITE 'FALSE...01'
```

- For binary operands with a length less than or equal to 4 that are compared with packed or numeric operands, the comparison is now based on P (packed) format where the decimal precision is ignored.

In the previous implementation, the comparison was done according to the format of the second operand.

Natural Web I/O Interface Client

The Natural Web I/O Interface client is now delivered in the Version 1.3.15.

This is the last version that supports Internet Explorer 8.

A new option, **Double-click behavior**, is now available in the configuration tool. This option defines the key that is to be simulated when double-clicking an output field in a Natural map. By default, this is the ENTER key. You can also use this option to disable the double-click behavior. See *Overview of Session Options* in the *Natural Web I/O Interface* documentation.

Natural RPC (Remote Procedure Call)

Natural RPC (Remote Procedure Call) is available as a separate subcomponent of Natural. It has its own version number. This measure takes into account that Natural RPC is a cross-platform component and makes it possible to provide new Natural RPC versions independent of new Natural versions for the various platforms supported.

With Natural Version 8.3.3, Natural RPC Version 6.3.4.9 is still delivered. This version only contains error corrections. New functionality is not provided.

Natural Security

The following enhancements are provided with Natural Security Version 8.3.3.

Utility Profiles

PROFILER

The use of the Natural PROFILER utility can now be controlled by Natural Security, as described under *Protecting Utilities* in the *Natural Security* documentation.

Documentation

SYSPCI Utility

The documentation for the SYSPCI utility has been moved from the *Installation* documentation to the *Tools and Utilities* documentation.

Removed Features

Natural Web I/O Interface Client

JBoss Application Server and Oracle Glassfish are no longer supported. As of this version, Apache Tomcat is the only supported application server.

If you are currently using JBoss Application Server or Oracle Glassfish, you have to move to Apache Tomcat. You can reuse your previous settings (that is, the URL for logon page and the configuration file *sessions.xml*).

Natural Installer (SYSINST)

Natural is now installed with the Software AG Installer. Therefore, the Natural Installer utility and the corresponding system command `SYSINST` are no longer required and have been removed.

Notice of Future Changes

Discontinued Support for EntireX Location Transparency

EntireX no longer supports Location Transparency. Effective with the next Natural version, Natural will no longer support Location Transparency as well.

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New Features

Parameters

The following new Natural profile parameter is provided in this version:

Profile Parameter	Description
ETIO	Determines whether or not implicit END TRANSACTION statements are to be issued upon terminal I/Os.

Changes and Enhancements

RNCONST Parameter

For compatibility with the mainframe, the RENCONST parameter has been renamed to RNCONST.

INPUT Statement and IM Parameter

Forms mode as specified by the parameter IM=F is now supported. See *Using the INPUT Statement in Batch Mode* in the *Statements* documentation.

For compatibility with existing applications, the default for the IM (input mode) parameter on Windows has been to be changed to D (delimiter mode). Previously, the default was F (forms mode).

*TIMESTMP System Variable

To ensure that the *TIMESTMP value is unique on multiprocessor machines, the CPU ID is now written to an area of the *TIMESTMP system variable which was previously unused.

Configuration Utility

The new profile parameter ETIO (ET upon Terminal I/O) is now available in the **General Parameters** category of the **Database Management** parameter group. See *General Parameters* in the *Configuration Utility* documentation.

Natural Web I/O Interface Client

The Natural Web I/O Interface client is now delivered in the Version 1.3.16.

Natural RPC (Remote Procedure Call)

Natural RPC (Remote Procedure Call) is available as a separate subcomponent of Natural. It has its own version number. This measure takes into account that Natural RPC is a cross-platform component and makes it possible to provide new Natural RPC versions independent of new Natural versions for the various platforms supported.

With Natural Version 8.3.4, an enhanced Natural RPC Version 8.3.4 is delivered that replaces the existing Natural RPC Version 6.3.4.9.

Highest EntireX API Version Now Used

The highest API version of the EntireX ACI that Natural RPC, the EntireX Broker stub and the EntireX Broker support is now determined automatically. As a result, the `ACIVERS` profile parameter has become obsolete and is ignored. `ACIVERS` is described in the *Parameter Reference*.

Natural RPC-Specific Application Programming Interfaces

New API

The following Natural RPC-specific application programming interface (API) has been added in the `SYSEXT` system library:

API	Task
USR4371N	On the RPC client side, this API sets the user ID and ETID for Natural RPC servers which were configured with <code>Impersonation = A</code> (automatic logon).
USR8213N	Terminate a single Natural RPC server by using the sequence number returned for the required server.

Changed APIs

The following Natural RPC-specific application programming interfaces (APIs) have changed: they do no longer support EntireX Location Transparency.

API	Task
RPC - CNTX	Maintain RPC context for Natural clients.
USR2071N	Support EntireX Security on client side.
USR2073N	Ping or terminate an RPC server.
USR2074N	Set new password for Natural Security user in RPC context.
USR2075N	Terminate EntireX Broker service.

All USR* APIs are contained in the SYSEXT system library, RPC - CNTX is contained in the SYSRPC system library.

SYSRPC Utility

Discontinued Support for Logical Names

The **Service Directory Maintenance** and the **Server Command Execution** functions of the SYSRPC utility no longer support logical node and server names previously supplied by EntireX.

See also [Discontinued Support for EntireX Location Transparency](#).

Natural Security

The following enhancements are provided with Natural Security Version 8.3.4.

- [Utility Profiles -SYSPCI](#)
- [Application Programming Interfaces](#)
- [Read-Only FSEC System File](#)



Note: The sections indicated for more information are contained in the *Natural Security* documentation, unless otherwise noted.

Utility Profiles -SYSPCI

The SYSPCI utility functions related to the products System Automation Tools, Entire Output Management, Entire Operations and Natural Engineer can now also be controlled via SYPCI utility profiles

Application Programming Interfaces

The application programming interfaces NSCADM, example program PGMADM02, and NSCXR, example program PGMXR006, provide a new subcode "D": This can be used for the maintenance/retrieval of logon records sorted by date.

Read-Only FSEC System File

If the FSEC system file is read-only (profile parameter `FSEC=(dbid,fnr,,,R0)` or `ROSY=0N`), any attempt to invoke a Natural Security maintenance function which would cause an update to the system file will be rejected with error NAT1012.

Removed Features

Discontinued Support for EntireX Location Transparency

EntireX no longer supports Location Transparency. Effective with this Natural version, Natural no longer supports Location Transparency as well. For this reason, SYSRPC utility functions and Natural RPC-specific application programming interfaces have changed as described above.

Notice of Future Changes

Version Number

With the upcoming release in October 2015, Natural for Windows will have the same version number as NaturalONE. This means, Natural Version 8.3.5 will be skipped and the next version will be 8.3.6.

6 Release Information for Natural Version 8.3.6

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New Features

Parameters

The following new Natural profile parameter is provided in this version:

Profile Parameter	Description
PROFILER	Can be used to profile a Natural session. The profiling data is written to a resource file you can analyze with the Natural Profiler in NaturalONE.

Application Programming Interfaces

The utility SYSEXT provides the following new application programming interface (API):

API	Description
USR8217	Can be used to search in the Natural search path the execution library for a given object. If the object name is not filled, the name of the calling program is used.

Changes and Enhancements

REQUEST DOCUMENT Statement

The `HEADER/VALUE` option of the `RETURN` clause now also supports arrays in addition to scalar values. Arrays are required if more than one occurrence of the same header is returned by the HTTP server.

For more information, see the *header-value-in* operand of the *return-clause* described in the *Statements* documentation.

Poodle Safe SSL Connections

The SSL connection between the Natural Web I/O server and the Natural Web I/O client(s) or Natural for Ajax is now Poodle-safe. The Poodle ("Padding Oracle On Downgraded Legacy Encryption") vulnerability can be exploited by possible attackers to break the cryptographic security of SSL Version 3.

To counter this, the clients and server no longer allow to be forced back to SSL Version 3. Only TLS Version 1.0 and upwards is possible.

Further information can be found in the [Software AG Security Advisory on Poodle](#) in Empower.

Support of Adabas Short Names

This version of Natural supports lowercase characters in database short names for DDM fields generated from an Adabas file. For detailed information, see *Using the DDM Editor* in the *Editors* documentation and the ADAFDU utility in the *Adabas Utilities* documentation.

Increased Limits for Natural Buffer Pool

The maximum size and the number of directory entries in the Natural buffer pool has been increased. For further details please see *Buffer Pool Assignments* under *Local Configuration File* in the *Configuration Utility* documentation.

Natural Web I/O Interface Client

The Natural Web I/O Interface client is now delivered in the Version 1.3.17.

Natural Security

The following enhancements are provided with Natural Security Version 8.3.6.

- [Administrator Services](#)
- [Application Programming Interfaces](#)



Note: The sections indicated for more information are contained in the *Natural Security* documentation, unless otherwise noted.

Administrator Services

- [Logging of Maintenance Functions](#)
- [Store Logon and Error Data on Separate System Files](#)
- [Definition of System Libraries](#)

Logging of Maintenance Functions

Whenever you modify a security profile, Natural Security automatically adjusts related security profiles to ensure the consistency of all Natural Security definitions. For example, if you modify a group profile to remove a user from the group, Natural Security will automatically modify the user profile to remove that group from the list of the user's Privileged Groups, if necessary.

As of this version, the general option **Logging of Maintenance Functions** will not only log the profile modifications themselves but also the automatic adjustments of related profiles.

Store Logon and Error Data on Separate System Files

With previous versions, all Natural Security data were stored on a single FSEC system file.

As of this version, you can store the following data on separate system files:

- logon records,
- logon/countersign error records,
- maintenance log records.

These system files can be specified with the new general option **Store Logon and Error Data on Separate System Files**.

All other definitions of Natural Security settings, object definitions and object relations will still be stored on the main FSEC system file.

Definition of System Libraries

The function **Definition of System Libraries** now also supports Entire Operations and Entire Output Management; that is, you can use this function to create library security profiles for the system libraries of these products.

Application Programming Interfaces

- NSCADM
- NSCSSX
- NSCXR

NSCADM

The application programming interface NSCADM has been enhanced and now allows you to list unlocked user IDs and unlock individual user IDs.

For details, see the example program PGMADM06 and text member TXTADM06 in the library SYSSEC.

NSCSSX

The new application programming interface NSCSSX is available to check the validity of a password in an LDAP user authentication context.

NSCXR

The application programming interface NSCXR has been enhanced:

- It allows you to obtain a list of all users with all libraries to which they are linked directly.
- It allows you to obtain the **Time Differential** and **Time Zone** values of a specific user security profile.

For details, see the example programs PGMXR019 and PGMXR020 and text members TXTXR019 and TXTXR020 in the library SYSSEC.

Notice of Future Changes

Encryption

EntireX Encryption will be deprecated with the next version of EntireX.

For encrypted transport, Software AG strongly recommends that you use the Secure Sockets Layer/Transport Layer Security protocol. The relevant sections in the Natural RPC documentation have been updated accordingly.

Applications that execute with EntireX Encryption are still supported for compatibility reasons.

For more information, see *SSL/TLS and Certificates with EntireX* in the *EntireX* documentation.

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Release Information for Natural Version 8.3.7

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New Features

Application Programming Interfaces

The utility SYSEXT provides the following new application programming interfaces (APIs):

API	Description
USR8215N	This new API returns the Natural and Natural Security versions installed at your site.
USR8216N	This new API retrieves a Natural RPC service directory and creates, changes and deletes the node and server definitions in the directory.
USR8219N	This new API enables you to issue Adabas direct calls by using the extended Adabas control block (ACBX) interface. All Adabas buffers you can specify with this API are defined as dynamic variables of the format A.
USR8220N	This new API causes an active RPC server to terminate if it is called by a Natural RPC server subprogram. Explicit server termination through this API is useful when severe errors occur.
USR8301N	With this new API, information about installed Natural hot fixes is returned to the calling program. The information is contained in arrays. USR8301N in conjunction with USR2031N returns all information which SYSPROD returns.
USR8302N	This new API enables you to specify a "wait interval" for the session that can be less than one second.

Profiler Utility

The new Profiler utility provides functions to pause and to restart the Profiler data collection and to process the Profiler event data. Additionally, it offers an interface to MashZone (Software AG's tool for creating interactive business dashboards).

The Profiler utility runs in batch mode only.

- [Event Data Processing](#)
- [Presentation of Profiler Data on an Interactive Dashboard](#)

Event Data Processing

When you profile a Natural application with the Natural Profiler for UNIX and Windows, the resulting event data is written to a Natural resource file. The use of the Natural Profiler for UNIX and Windows is described with the PROFILER profile parameter in the *Parameter Reference* documentation.

The new Profiler utility reads and analyzes the event data from the Profiler resource files. It provides functions for data consolidation (aggregation), event tracing and program tracing. It also provides a program summary and displays the Profiler properties and statistics. The resulting

data can be exported in text or CSV (comma-separated values) format, or in the format expected by the Natural Profiler MashApp (see the following section).

For detailed information, see *Using the Profiler Utility* in the section *Natural Profiler* of the *Tools and Utilities* documentation.

Presentation of Profiler Data on an Interactive Dashboard

The new Natural Profiler MashApp is used to evaluate Profiler event data with MashZone.

MashZone is a browser-based application from Software AG which is used to visualize data on a graphical, interactive dashboard.

For detailed information, see *Natural Profiler MashApp* in the section *Natural Profiler* of the *Tools and Utilities* documentation.

Changes and Enhancements

Application Programming Interfaces

The utility SYSEXT provides the following enhanced application programming interfaces (APIs):

API	Description
USR1009N	Convert store clock into microseconds. The performance of the API has been improved. See Improved Time Conversion APIs .
USR1023N	Convert date and time format. The performance of the API has been improved. See Improved Time Conversion APIs .
USR2036N	Convert variable of format (B8) into (P20). Can be used to convert the system variable *TIMESTMP into a numeric variable. The performance of the API has been improved. See Improved Time Conversion APIs .

Improved Time Conversion APIs

The time conversion APIs USR1009N, USR1023N, and USR2036N have been redesigned and now provide a significantly better performance. If your application is using these APIs, replace each copy of the API with the corresponding subprogram delivered in library SYSEXT.

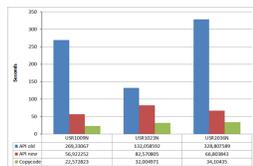
In addition to the subprograms, the utility SYSEXT provides the following new copycodes for the conversion of time related values:

Copycode	Description
USR1023W	Convert microseconds into a store clock value.
USR1023X	Convert microseconds into Natural time.
USR1023Y	Convert a store clock value (such as *TIMESTAMP) into microseconds.
USR1023Z	Convert Natural time into microseconds.
USR2036Z	Convert variable of format (B8) into (P20). Can be used to convert the system variable *TIMESTAMP into a numeric variable.

Performance of the Time Conversion APIs

The following graphic illustrates the result of a performance test of the time conversion APIs. For the test, a Natural program converts the following formats 1 million times:

- Store clock value into microseconds using the subprogram USR1009N (previous version) compared with the new version of the subprogram and with the new copycode USR1023Y.
- Store clock value into microseconds and Natural time using the subprogram USR1023N with function S (previous version) compared with the new version of the subprogram and with the new copycodes USR1023Y (store clock into microseconds) and USR1023X (microseconds into Natural time)
- Store clock value into numeric variable (P20) using the subprogram USR2036N (previous version) compared with the new version of the subprogram and with the new copycode USR2036Z



The new version of the APIs is up to five times faster than the old version; the corresponding copycodes are up to twelve times faster.

Internal Buffer Pool Structures

Because of a required correction in the Natural Buffer Pool, it was necessary to change internal buffer pool structures. This change makes the buffer pool incompatible to previous buffer pool versions. As a consequence the internal buffer pool version was incremented, which identifies this change.

This implies that Natural Version 8.3.7 does not work with a buffer pool started with an older version of Natural. Instead, an error message is displayed.

Support of Apache 2.4

With Natural Version 8.3.7 and SYSWEB3, Apache 2.4 in 64-Bit is supported. The EntireX 64-Bit DLLs are required as well.

The 32-Bit applications on Apache 2.4 are not supported.

Natural RPC (Remote Procedure Call)

With Natural Version 8.3.7, an enhanced Natural RPC Version is delivered which introduces the following changes and enhancements:

- Encryption
- SYSRPC Utility

Encryption

The encryption/decryption mechanism provided by EntireX Security is deprecated.

For encrypted transport, Software AG strongly recommends that you use the Secure Sockets Layer/Transport Layer Security protocol. All references regarding encryption have been removed from the *Natural RPC* documentation accordingly.

Applications that execute with EntireX Encryption are still supported for compatibility reasons.

For more information, see *SSL/TLS and Certificates with EntireX* in the *EntireX* documentation.

SYSRPC Utility

Support for Long Natural RPC Node Names

The Service Directory Maintenance function of the SYSRPC utility now supports node names of up to 192 characters, which is particularly useful when referencing Internet Protocol Version 6 (IPv6) names. If you press PF2 on the Service Directory screen, a window opens where you can enter a long node name. See also Service Directory Maintenance in *SYSRPC Utility* in the *Tools and Utilities* documentation.

API for Natural RPC Service Directory Maintenance

The new API `USR8216N` provides the option to retrieve a Natural RPC service directory and create, change and delete the node and server definitions in the directory.

Natural Security

The following enhancements are provided with Natural Security Version 8.3.7.

- [Administrator Services](#)
- [Library Profiles](#)
- [Utility Profiles](#)
- [Application Programming Interfaces](#)

Administrator Services

Library FDIC Assignment Enabled

A new option **Library FDIC Assignment Enabled** is available under **Library and User Preset Values** to enable the new settings described under *Assigning FDIC and FUSER* below.

Library Profiles

Assigning FDIC and FUSER

With previous versions, the following applied:

- You could not make FDIC specifications in library or special-link profiles. The Natural profile parameter `FDIC` set at the start of the Natural session determined which FDIC system file was used for all libraries.
- You could make FUSER specifications in library profiles, but not in special-link profiles.
- You could set the **Cross-reference** option in library profiles, but not in special-link profiles.

As of this version, the following applies:

- You can make FDIC specifications in both library profiles and special-link profiles.
- You can make FUSER specifications in both library profiles and special-link profiles.
- You can set the **Cross-reference** option in both library profiles and special-link profiles.

This feature is activated by the new Administrator Services option **Library FDIC Assignment Enabled** (see above).

The usual logic applies, that is: The settings at library level take precedence of those which apply at session start; and the settings at special-link level take precedence of those at library level.

Utility Profiles

SYSMAIN

A new option **Enable Unrestricted Use of Libraries** is available in the SYSMAIN default utility profile (under **Additional Options > Session Options**). It can be used to allow users of type Administrator unrestricted use of libraries with SYSMAIN. They may then use SYSMAIN functions to process the contents of *all* libraries defined in Natural Security - *regardless* of any access restrictions that may exist for these libraries. For an Administrator to be able to do so, another new option **Process All Libraries** has to be set in his/her user-specific SYSMAIN utility profile.

Application Programming Interfaces

NSCXR

The application programming interface NSCXR has been enhanced: It allows you to list all library profiles in which an FDIC and/or FUSER specification is made. For details, see the example program PGMXR021 and the text member TXTXR021 in the library SYSSEC.

Documentation

Updated and Enhanced Plug-in Documentation

The documentation *Extending Natural Studio with Plug-ins* has been updated in the section *Quick Start*. The description provided in *Creating a Minimal Plug-in* has been changed to reflect the new plug-in creation behavior introduced with this version of Natural.

In addition, the new sub-section *Transferring a Plug-in From Natural 6 to Natural 8* has been added to provide information on how to transfer plug-ins created with older versions of Natural to the current version.

Notice of Future Changes

Upgrade of Build Compiler

With the upcoming release of Natural Version 8.3.8, the compiler used to build Natural on Windows will be upgraded to Visual Studio 2015. It is potentially necessary to re-build the customer-specific user exits as well.

Natural for Windows 64-bit

It is possible, that an upcoming version of Natural for Windows will be built based on 64-bit technology. This effects for example the Natural GUI programming because of the usage of ActiveX controls.

This topic is under investigation and not yet finally decided.

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Release Information for Natural Version 8.3.8

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Installation

System Requirements

The system requirements for the current version of Natural are now listed in the *Installation* documentation.

Compiler Used to Build Natural

With Natural for Windows Version 8.3.8, a different compiler version was used to build and test Natural: Microsoft Visual Studio 2015. See also *Compiler Used to Build Natural* in the *Installation* documentation.

New Features

Application Programming Interfaces

The utility SYSEXT provides the following new application programming interfaces (APIs):

API	Description
USR8221N	This new API generates a translation table which maps all codepoints of the source codepage to the corresponding value of the target codepage. The delivered sample program USR8221P generates the translation tables used by the API USR0620N for ASCII/EBCDIC translation.

Parameters

The following new Natural profile parameter is provided in this version:

Profile Parameter	Description
ITERM	Specifies whether or not the Natural session is to continue in the case of a session initialization error.

Configuration Utility

Program Loading and Deletion

The category **Program Loading and Deletion** in the parameter group **Natural Execution Configuration** now contains the new profile parameter `ITERM`. See *Program Loading and Deletion* in the *Configuration Utility* documentation.

System Variables

*LINEX

*LINEX is a new system variable which returns the source line number of the statement currently executing plus the line numbers of the copycode references (`INCLUDE` statements) in which the statement is embedded.

The line numbers are presented as a path where a slash (/) separates superior from subordinate statement levels (from left to right), for example: 3210/0200/0050.

*LOAD-LIBRARY-ID

*LOAD-LIBRARY-ID is a new system variable which returns the name of the library from where the current executed object was loaded.

System Commands

PROFILER System Command

The `PROFILER` system command is now also available on UNIX and Windows. This command executes the Profiler utility in batch mode. The `PROFILER` system command is described in the *System Commands* documentation.

Changes and Enhancements

Application Programming Interfaces

The utility `SYSEXT` provides the following new application programming interfaces (APIs):

API	Description
USR0620N	Convert string into ASCII or EBCDIC code. The API offers the new function codes "1" and "2". The functions use ASCII/EBCDIC translation tables from <i>natconv.ini</i> which can be edited by the user.
USR1059N - USR1060N	Natural Reporter interface. The APIs return a code "-99" if an unsupported machine class is encountered. The sample programs USR1059P – USR1060P print a corresponding message in this case.

Profiler Utility

Data Input for Profiler from Natural text objects

The Profiler utility now provides the option to retrieve data from Natural text objects and include them in the input data for the Profiler.

For more information, see *Including Profiler Input from Natural Text Objects* in the section *Using the Profiler Utility in Batch Mode* in the *Tools and Utilities* documentation.

Natural Security

The following enhancements are provided with Natural Security Version 8.3.8.

- [Group Within Group](#)
- [SECULD2 Workplan for Unloading Security Data](#)
- [NaturalONE LSO Container Libraries](#)

Group Within Group

With previous versions, it was not possible for a user of type "Group" to contain another group. As of this version, a group can also contain another group. However, a group within a group within a group is not possible.

SECULD2 Workplan for Unloading Security Data

If you need to perform the same unload operation at regular intervals, you can make the desired SECULD2 specifications in a so-called "workplan". Instead of having to make all the specifications every time on the SECULD2 menu, you make them in the workplan, and then only have specify the ID of the workplan on the SECULD2 menu. See *Using SECULD2* in the *Natural Security* documentation.

NaturalONE LSO Container Libraries

Natural Security supports LSO container libraries (LSO = library search order) generated in NaturalONE and automatically creates security profiles for them. See *LSO Container Libraries* under *Protection With Development Mode Options* in the *Natural Security* documentation.

Notice of Future Changes

Entire Transaction Propagator

Entire Transaction Propagator will no longer be supported with the next version of Natural. As a consequence, the parameters `ETPDB` and `ETPSIZE` will be removed as well.

Additional Parameter for Profiling Natural Applications

It is planned to add a new parameter to further support the profiling of Natural applications. This parameter will be used to generate specific profiling information which is currently only generated if the corresponding Natural object was compiled with `SYMGEN=ON`. With the introduction of the new parameter, it will no longer be required to use the `SYMGEN` profile parameter.

