

Add-On Products

This section contains an overview of all Natural add-on products or subcomponents for which new versions are available, and, where applicable, provides detailed information on product-specific changes and enhancements.

The following topics are covered:

- Overview of New Natural Add-On Product Versions
- Natural Advanced Facilities
- Natural for Ajax
- Natural for DB2 Version 4.3.1
- Natural Development Server
- Natural for MBCS
- Natural Remote Procedure Call
- Natural SAF Security
- Natural Security
- Natural SQL Gateway
- Natural Web I/O Interface
- Super Natural

Overview of New Natural Add-On Product Versions

With Natural Version 4.2.6, new versions of the following Natural add-on products or subcomponents are provided:

Product	Prod. Code	Version	General Changes and Enhancements
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Natural Advanced Facilities *	NAF	4.2.6	<p>These versions contain</p> <ul style="list-style-type: none"> ● all Zaps, ● INPL updates, ● early warnings and ● source changes <p>applied to their respective predecessor versions as error corrections.</p>
Natural for Ajax *	NJX	1.2.4	
Natural CICS Interface	NCI	4.2.6	
Natural Com-plete/SMARTS Interface	NCF	4.2.6	
Natural Connection	NTC	4.2.6	
Natural for DB2	NDB	4.2.6	
Natural for DB2 *	NDB	4.3.1	
Natural Development Server *	NDV	2.2.6	
Natural for DL/I	NDL	4.2.6	
Natural IMS TM Interface	NII	4.2.6	
Natural ISPF	ISP	2.6.6	
Natural Japanese Language Pack	NCJ	4.2.6	
Natural for MBCS *	NKA	4.2.6	
Natural Optimizer Compiler	NOC	4.2.6	
Natural Remote Procedure Call *	RPC	6.3.3 (RPC is a separate subcomponent of Natural)	
Natural Review	RNM	4.2.6	
Natural SAF Security *	NSF	4.2.6	
Natural Security *	NSC	4.2.6	
Natural for SQL/DS	NSQ	4.2.6	
Natural SQL Gateway *	NSB	1.2.2	
Natural TIAM Interface	NRT	4.2.6	
Natural TSO Interface	NTI	4.2.6	
Natural UTM Interface	NUT	4.2.6	
Natural VM/CMS Interface	NCM	4.2.6	
Natural for VSAM	NVS	4.2.6	
Natural Web I/O Interface *	NWO	1.3.5 (client) 1.1.5 (server)	
Super Natural	NSN	3.5.6	

* Further product-specific changes and/or enhancements are described below.

Natural Advanced Facilities

The following documentation enhancement is provided with Natural Advanced Facilities Version 4.2.6:

Natural Advanced Facilities BS2000/OSD Error Messages

The messages that may be issued by the front end, monitor, printer task (print server) or the `SERVEND` program under the operating system BS2000/OSD have been included in the *Messages and Codes* documentation; see the section *Natural Advanced Facilities BS2000/OSD Error Messages*.

Natural for Ajax

Natural for Ajax is now delivered in the Version 1.2.4. It is based on Application Designer Version 8.0.

Support is provided for the following:

- Certain controls can be bound to Natural control variables so that the modification status of a Natural operand that represents the value of the control can be checked with IF control-variable `MODIFIED`. See *XCIDATADEF - Data Definition* in the *Natural for Ajax* documentation.
- The Natural system variable `*CURS-FIELD` can be used in Natural for Ajax applications to identify the operand that represents the value of the control that has the input focus. When the Natural system function `POS` is applied to a Natural operand that represents the value of a control, it yields the identifier of that operand. See also *Natural Parameters and System Variables* in the *Natural for Ajax* documentation.
- The `statusprop` property for input controls such as `FIELD` has been split into two separate properties: `statusprop` and `displayprop`. See *Dynamically Controlling the Visibility and the Display Status of Controls* in the *Natural for Ajax* documentation.
- It is now possible to define a Natural for Ajax application as a servlet in the file `web.xml`. This makes the definition of security constraints for individual applications easier. See *Wrapping a Natural for Ajax Application as a Servlet* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.

The following new features apply only to Natural maps, not to rich GUI pages:

- With the configuration tool, it is now possible to configure the behavior of a double-click. The double-click can be assigned to a function key or can be disabled. See *Overview of Session Options* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.
- With the configuration tool, it is now possible to define that all function keys are to be shown, including those which do not have names. This makes sure that the function keys are always displayed at the same position. See *Overview of Session Options* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.

The following are features which have already been introduced with Natural for Ajax Version 1.2.3:

- Applications that organize multiple pages in so-called workplaces. See *Working with Workplaces* in the *Natural for Ajax* documentation.
- Numeric edit mask concept of Natural. See *Usage of Edit Masks* in the *Natural for Ajax* documentation.
- Project-specific online help popups. See *Online Help Management* in the Application Designer documentation (this is not part of the Natural documentation).
- Application-controlled sorting of multiple columns in TEXTGRIDSSS2 and ROWTABLEAREA2. See *Data Structures for Server-Side Scrolling and Sorting* in the *Natural for Ajax* documentation.
- Automatic style sheet selection for different screen models. See *Modifying the Font Size* in the *Natural Web I/O Interface* documentation.

Natural for DB2 Version 4.3.1

This section describes the enhancements implemented in Natural for DB2 Version 4.3.1.

Note:

Information on Natural for DB2 Version 4.2.6 can be found in the earlier edition of the Natural Version 4.2.6 documentation on Software AG's Empower web site at <https://empower.softwareag.com/>.

For compatibility information, see the subsection *Component Compatibility of Natural for DB2 Versions 4.2.6 and 4.3.1* in the section *General Information* of these release notes.

With Version 4.3.1, the following new features, new statements and syntax enhancements have been implemented for the support of DB2 Version 9:

- SQL MERGE Statement
- SELECT Statement
- EXCEPT and INTERSECTION Set Operations
- OLAP Specification
- ROW CHANGE Expression
- SKIP LOCKED DATA
- Support of BIGINT, BINARY, DECFLOAT, XML Data Types
- Enhanced XML Functionality
- Natural Array Decomposition in SQL IN Predicate
- File Server Statistics Enhancements

SQL MERGE Statement

Natural for DB2 supports the SQL MERGE statement as introduced by DB2 for z/OS Version 9.

The SQL MERGE statement is a hybrid statement, which allows the programmer to update rows of a SQL table or to insert rows into a SQL table from data arrays within one statement. The update or insert operation is performed depending on whether or not the row already exists in the target table.

For further information, see *MERGE - SQL* in the *Natural Statements* documentation.

SELECT Statement

The *table-reference* clause of the SELECT statement has been enhanced by DELETE, MERGE, and UPDATE statements as so called *data-change-table-reference*, which allow to directly select rows which are subject to a DELETE, INSERT, MERGE, or UPDATE statement.

For further information, see *SELECT - SQL* in the *Natural Statements* documentation.

EXCEPT and INTERSECTION Set Operations

Natural for DB2 allows the specification of EXCEPT and INTERSECTION set operations in addition to the already supported UNION operation in fullselects.

OLAP Specification

Online analytical processing (OLAP) specification provide ranking and row numbering information as a scalar value in the result of a query. Natural for DB2 now supports this syntax in the SELECT statement.

For further information, see *OLAP Specification* in the *Natural Statements* documentation.

ROW CHANGE Expression

A ROW CHANGE expression returns a token or a timestamp representing the last change to a row.

For further information, see *ROW CHANGE Expression* in the *Natural Statements* documentation.

SKIP LOCKED DATA

Natural for DB2 supports the SKIP LOCKED DATA clause in the SELECT statement. This clause avoids the wait on locked data rows.

For further information, see the *SKIP LOCKED DATA Clause* of the *DELETE - SQL* and *SELECT - SQL* statements in the *Natural Statements* documentation.

Support of BIGINT, BINARY, DECFLOAT, XML Data Types

The Natural utility SYSDDM is able to recognize these data types and maps these types to Natural field formats.

For further information, see *Natural Formats and SQL Data Types* in the *Natural Statements* documentation.

Enhanced XML Functionality

DB2 for z/OS Version 9 provides a set of XML enhancements, which can also be used by Natural for DB2.

For further information, see *SQL Statements* in the *Natural Statements* documentation.

Natural Array Decomposition in SQL IN Predicate

Natural for DB2 now allows the specification of Natural arrays or array ranges in the SQL IN clause and decomposes the array into its single occurrences.

For further information, see *IN Predicate* in the *Natural Statements* documentation.

File Server Statistics Enhancements

The File Server Statistics have been enhanced by a screen displaying the allocated directory entries of the file server, which allows you to display the file server blocks associated with the directory and to delete a file server directory entry whose associated Natural session has already ended.

For further information, see *File Server Statistics* in the *Natural for DB2* documentation.

Natural Development Server

With Natural Version 4.2.6 for Mainframes, Version 2.2.6 of Natural Development Server is available.

For information on changes, enhancements and new features available with Version 2.2.6, see the corresponding sections *What's New* in the platform-specific *Natural Development Server* documentation.

Natural for MBCS

The following enhancement is provided with Natural for MBCS Version 4.2.6:

Optional Uppercase Standard Natural Output Texts

An alternate NATTXT2 module named NATTXT2J is provided that contains English (ULANG=1) Standard Natural Output Texts in upper case. The alternate module must be linked to Natural instead of the default NATTXT2 module.

Natural Remote Procedure Call

Natural Remote Procedure Call (RPC) 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 4.2.6, an enhanced Natural Remote Procedure Call Version 6.3.3 is delivered that replaces the existing Natural RPC Version 6.3.2.

As of Version 6.3 of Natural Remote Procedure Call (RPC), the following changes, enhancements and new features are provided:

- Migration
- System Command RPCERR Enhanced
- RPCINFO/RPCINFOL Enhanced
- Impersonation without Password Check
- New RPC-Specific Application Programming Interface
- SYSRPC Stub Generation
- Stub Subprograms from IDL File
- Documentation

Migration

The following information is only for non-SMA users who are migrating from Natural Version 4.2.3 or a lower version:

In the link JCL of your Natural, you must replace NATRPC62 by NATRPC63.

System Command RPCERR Enhanced

The system command RPCERR has been enhanced to show the full error message text returned by an EntireX RPC server.

RPCINFO/RPCINFOL Enhanced

The following enhancements have been applied to the user application programming interface RPCINFO and the parameter data area RPCINFOL:

- RPCINFO has been enhanced to retrieve the error message text returned by an EntireX RPC server.
- The fields S-NODE, S-NAME, C-NODE, C-NAME have been enlarged from A8 to A32 to be more compliant with EntireX.
- RPCINFO is loaded to the library SYSTEM on system file FNAT and is immediately available to all user applications.

All enhancements are compatible with existing applications.

Notes:

1. If you recatalog an existing application that references RPCINFOL you may be concerned if the enlarged fields are displayed. Either adapt your output layout accordingly or add the session parameter AL=8 where appropriate.
2. You are strongly recommended to remove any copies of RPCINFO from the FUSER system file.

Impersonation without Password Check

The user authentication on the Natural RPC server side against the external security system can optionally be performed without password check. See also *Impersonation without Password Check*.

New RPC-Specific Application Programming Interface

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

API	Purpose
USR4371N	<p>Set User ID and ETID for RPC</p> <p>Used 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).</p>

SYSRPC Stub Generation

The **Stub Generation** function of the SYSRPC utility has been enhanced by the direct command `COMPAT IDL` in order to optionally generate stub subprograms that are more compliant with EntireX RPC servers and the reliable RPC. If `COMPAT IDL` is specified and an EntireX RPC server is called by a Natural client, the parameter definitions on the **Stub Generation** screen must correspond to the IDL definition for the EntireX RPC server.

With the next version of Natural, `COMPAT IDL` will be the default. For compatibility reasons, an option will be provided to generate stub subprograms as in previous Natural versions.

Stub Subprograms from IDL File

If you have generated a stub subprogram from an IDL file using the Generate Natural from Software AG IDL command of NaturalONE or EntireX Workbench, the program and library name of the IDL file are incorporated into the generated stub subprogram and passed to the RPC server. This means especially that the name of the program that is executed on the RPC server may be different from the name of the stub subprogram.

Note for Natural RPC Servers:

If the Natural client calls a Natural RPC server, the library name of the IDL file is only evaluated by the Natural RPC server if the Natural client has set the Logon option.

Documentation

Please note that the term *stub subprogram*, which in earlier versions of EntireX was also used to refer to application-dependent, Workbench-generated pieces of code for issuing and receiving remote procedure calls, will no longer be used. In the EntireX documentation, these objects are now referred to as *interface objects*. In the Natural Remote Procedure Call documentation, however, the term *stub subprogram* is still prevailing. It will be replaced in one of the next versions of Natural RPC.

Natural SAF Security

The following enhancement is provided with Natural SAF Security Version 4.2.6:

- Replacement of EntireX APIs

Replacement of EntireX APIs

Until EntireX Version 7.2.1, the following Natural SAF Security application programming interfaces (APIs) were delivered with EntireX: NA2NPAX, NA2NRES, NA2NREX and NA2NLOGZ. As their replacements, the following APIs are delivered with Natural SAF Security:

EntireX API	Replacement API
NA2NPAX	NSFNPAX in library SYSSEC.
NA2NRES	NSFNRES in library SYSSEC.
NA2NREX	NSFNREX in library SYSSEC.
NA2NLOGZ	NSFNLOGZ in library SYSSAFOS.

The EntireX APIs can still be used, and internally each of them invokes the corresponding replacement API. However, it is recommended that the replacements be used instead.

NSFNPAX, NSFNRES and NSFNREX are described in the section *Application Programming Interfaces* of the *Natural SAF Security* documentation. NSFNLOGZ provides encryption of 8-character password based values of password and user ID with EntireX's broker encryption performed in Adabas before exits.

Natural Security

The following enhancements are provided with Natural Security Version 4.2.6:

- Administrator Services
- Users
- Libraries
- Utilities
- RPC Servers
- Application Programming Interfaces
- Other Enhancements

Administrator Services

The following enhancements are provided in Administrator Services:

- Suppress Startup Transaction in NDV Mapped Environment
- Logon Records

Suppress Startup Transaction in NDV Mapped Environment

If a startup transaction is specified in a Natural Security library profile, it will be executed after a successful logon to the library. In a Natural Development Server environment, however, when a library is selected from the tree view in the mapped environment, the execution of a startup transaction may not be desired. A new Administrator Services option NDV Startup Inactive, which can be set in the *Library and User Preset Values*, allows you to suppress the execution of startup transactions in a mapped environment.

Logon Records

A new logon-records maintenance function allows you to list logon records in the chronological order of time-stamps, that is, the date/time when the logons occurred.

The information stored in the logon records has been expanded to include user type and system-file information (FUSER, FNAT, FDIC). With this Natural Security version, this information can only be retrieved via the application programming interface NSCXR; see the example program PGMXR006 in the library SYSSEC.

Users

The following enhancements are provided for users:

- Copying a User
- New User Exit NSCUSEX2

Copying a User

The function Copy User has been enhanced: You can enter the name of the new user not only in the new profile but already in the window which is displayed when you invoke the Copy function. This name is then written into the new profile (where you can still change it, of course).

New User Exit NSCUSEX2

A new user exit, NSCUSEX2, is provided in the library SYSSEC. It allows you to review the changes you have made to a list of group members. It is invoked when you use the user-maintenance function Edit Group Members and CATALOG the changes to the group. It displays a list of the group's members, indicating which members have been added to the group and which have been removed from it.

Libraries

The following enhancements are provided for libraries:

- Copying a Library
- Use of UNIX Shell Commands

Copying a Library

The function Copy Library has been enhanced: You can enter the name of the new library not only in the new profile but already in the window which is displayed when you invoke the Copy function. This name is then written into the new profile (where you can still change it, of course).

Use of UNIX Shell Commands

UNIX shell commands can be executed from within a Natural program by invoking the Natural user exit SHCMD via the statement `CALL SHCMD`. With Natural Security you can now control for each library the execution of UNIX shell commands from within Natural programs by allowing/disallowing the execution of the `CALL SHCMD` statement in the Command Restrictions section of library profiles.

Utilities

The following enhancements are provided for utilities:

- `SYSERR` - Direct Commands
- `SYSMAIN` and `SYSOBJH` - Exclude Library Profiles with Co-Owners
- `NATLOAD`, `NATUNLD` and `SYSTRANS` - Conversion of Utility Profiles

SYSERR - Direct Commands

In the security profiles for the `SYSERR` utility, you can now control the use of `SYSERR` direct commands. You can allow or disallow each command for all users, or allow it for Natural Security administrators only.

SYSMAIN and SYSOBJH - Exclude Library Profiles with Co-Owners

The session option Utilities option in the default profiles of utilities `SYSMAIN` and `SYSOBJH` has been enhanced: In addition to the existing values `Y` and `N`, you can specify the new value `O`: This is identical to `Y`, but has the following additional effect:

If you use `SYSMAIN` or `SYSOBJH` to process the contents of a library in whose library profile the general option **Utilities** is set to `O` (= processing permitted for owners), and you as an owner require a countersignature, the countersignature prompt will be suppressed; instead, the library will be excluded from `SYSMAIN/SYSOBJH` processing.

This enhancement is only relevant online, because in batch mode countersignatures cannot be processed anyhow.

NATLOAD, NATUNLD and SYSTRANS - Conversion of Utility Profiles

A new function allows you to convert your old `NATLOAD`, `NATUNLD` and `SYSTRANS` utility profiles into corresponding `SYSOBJH` utility profiles. It is described under *Conversion of Utility Profiles* in the *Natural Security* documentation.

RPC Servers

The following enhancement is provided for RPC servers:

- Impersonation without Password Check

Impersonation without Password Check

The Impersonation option in the security profiles of RPC servers has been enhanced: In addition to activating impersonation with password check, you can now activate impersonation without password check. See the section *Protecting Natural RPC Servers and Services* in the *Natural Security* documentation for details.

Application Programming Interfaces

The following application programming interfaces (APIs) have been enhanced:

- NSCADM
- NSCXR

NSCADM

The API NSCADM has been enhanced. It allows you to compare a preset value (as set in the Library and User Preset Values) with the corresponding actual value in user profiles, and provides a list of all user profiles in which the value differs from the preset value. For details, see example program PGMADM04 and text member TXTADM04 in the library SYSSEC.

NSCXR

The API NSCXR has been enhanced. It allows you to retrieve information about the access rights to an individual module in a library, for all users who have access to the library. For details, see example program PGMXR018 and text member TXTXR018 in the library SYSSEC.

Other Enhancements

The following other enhancements are provided:

- Deferred Countersigning
- Copying a Mailbox
- System Variable *ETID

Deferred Countersigning

Deferred countersigning allows you to perform a maintenance function, and obtain the required countersignature later.

This is possible for the functions **Add**, **Modify**, **Rename** and **Delete** of user profiles and library profiles, and if only *one* countersignature is required.

When you attempt to maintain a security profile and the Countersignatures screen is invoked, but none of the other owners of the security profile is available to supply his/her password, you may defer the countersigning. This means that you can proceed with your intended maintenance function and obtain the other owner's countersignature afterwards. For details on how this works, see the section *Deferred Countersigning* in the *Natural Security* documentation.

With the current version of Natural Security, deferred countersigning is available for the functions mentioned above. With subsequent versions, it is planned to make it available for further functions.

Copying a Mailbox

The function **Copy Mailbox** has been enhanced: You can enter the name of the new mailbox not only in the new profile but already in the window which is displayed when you invoke the Copy function. This name is then written into the new profile (where you can still change it, of course).

System Variable *ETID

The value contained in the Natural system variable *ETID (End-of-Transaction ID) within a Natural session under Natural Security has changed:

- With previous versions, *ETID contained the ETID set at the Natural Security logon.
- As of Version 4.2.6, *ETID contains the ETID used for the most recent database OPEN.

Natural SQL Gateway

The following restriction applies to the use of the Natural utility SYSDDM:

SYSDDM and ConnecX SQL Engine 11.0 and above

Once you have accessed a certain ConnecX Data Dictionary (CDD) using the ConnecX SQL Engine (CXX) 11.0, you will no longer be able to use the same ConnecX Data Dictionary with the ConnecX SQL Engine 1.1.3.

Natural Web I/O Interface

The following changes/enhancements are provided:

- Natural Web I/O Interface Client
- Natural Web I/O Interface Server

Natural Web I/O Interface Client

Support is provided for the following:

- Automatic Style Sheet Selection for Different Screen Models
- Show PF Keys with Numbers
- Variable Terminal Screen Sizes
- Different Styles for Output Fields
- Configurable Behavior of Double-Click
- Discontinued Support of Natural Web I/O Interface Client on IIS
- Enhanced Web I/O Interface Screen Rendering

Automatic Style Sheet Selection for Different Screen Models

Support is now provided for automatic style sheet selection for different screen models. See *Modifying the Font Size* in the *Natural Web I/O Interface* documentation.

Show PF Keys with Numbers

On IIS, you can now determine whether the PF key numbers are shown next to the PF keys. This is done with the `showfkeynumbers` attribute of the `screen` element in `sessions.xml`. See *Overview of Configuration File Elements* in the *Natural Web I/O Interface* documentation. (This feature is already available for J2EE.)

Variable Terminal Screen Sizes

The screen size definition from the client style sheet on the application server is passed to Natural and used as the default terminal screen size. The Natural profile parameter `TMODEL` has been enhanced to support variable screen sizes.

Different Styles for Output Fields

It is now possible to define different styles for output fields which are based on variables and output fields which are based on literals (J2EE only). See *Defining Different Styles for Output Fields* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.

Configurable Behavior of Double-Click

It is now possible to define the key that is to be simulated when double-clicking an output field. See *Overview of Session Options* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.

Discontinued Support of Natural Web I/O Interface Client on IIS

With the next version of Natural, it will no longer be possible to use the Natural Web I/O Interface client with Microsoft Internet Information Services (IIS). IIS will no longer be supported.

Enhanced Web I/O Interface Screen Rendering

The new Natural profile parameter `WEBIO` allows you to individually enable or disable the rendering of certain features of the Natural Web I/O Interface display. For further information, see *New Parameters* in the section *Changes, Enhancements, New Features*.

Natural Web I/O Interface Server

The following enhancement is provided for the Natural Web I/O Interface server:

Support of Very Large Amounts of Rich GUI Terminal I/O Data

In previous versions, the amount of data that could be processed by a `PROCESS PAGE` statement in an NWO server environment was limited to 64 K. This limitation has been removed now.

Super Natural

With Super Natural Version 3.5.6, the following limitation applies and the following language-specific changes should be taken into account:

- No Support of Source Object Locking
- Language-Dependent Modules

No Support of Source Object Locking

Super Natural Version 3.5.6 does not support the locking mechanism of Natural source objects which is activated with the Natural profile parameter `SLOCK`. We strongly recommend that you set `SLOCK` to `OFF` when working in a Super Natural environment to guarantee that `SLOCK` is deactivated and that no unpredictable errors occur.

Language-Dependent Modules

If you use or supply Super Natural Version 3.5.6 in a language other than English or German, you must make source changes in certain language-dependent modules. Language-dependent modules can be, for example, maps, subprograms or command processors.