software AG

Natural for Mainframes

Natural 4.2.6 Release Notes for Mainframes

Version 4.2.6 for Mainframes

October 2009

Natural

This document applies to Natural Version 4.2.6 for Mainframes and to all subsequent releases.

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 Natural 4.2.6 Release Notes for Mainframes

These Release Notes describe the changes, enhancements and new features provided with Version 4.2.6 of Natural. This version contains all Zaps, `INPL` updates, early warnings and source changes applied to Natural Version 4.2.5 as error corrections.

For background information, or if you are upgrading from a Natural version prior to Version 4.2.5, you should also read the Natural Release Notes for Mainframes of all Natural versions that succeeded the version from which you are upgrading. These earlier Release Notes are available in the archive of the current Natural Documentation DVD.

This documentation is organized under the following headings:

	General Information	Information on product prerequisites, compatibility, documentation, migration, discontinued functionality, end of maintenance of base Natural and Natural add-on products, availability of other Software AG product versions in conjunction with Natural 4.2.6, upcoming releases, implemented customer change/enhancement requests.
	Changes, Enhancements, New Features	An overview of the changes, enhancements and new features provided with this Natural version.
	Add-On Products	Information on changes, enhancements to new versions of several add-on products that are available simultaneously with Natural Version 4.2.6.

2 General Information

Introduction

These Release Notes describe the changes and enhancements provided with Natural Version 4.2.6 for Mainframes. Natural Version 4.2.6 contains all Zaps, `INPL` updates, early warnings and source changes applied to Natural Version 4.2.5 as error corrections.

Prerequisites

This section provides an overview of the prerequisites required for Natural Version 4.2.6.

License Key File

A license key file is required. For further information, see *License Concept* in the *Installation* documentation.

Operating/Teleprocessing Systems Required

Natural Version 4.2.6 supports the following versions of the following operating/teleprocessing systems:

Product	Version
BS2000/OSD	5, 6, 7 or 8, Open Net Server 2.0 or above
z/OS	1.10, 1.11
z/VSE	4.2
z/VM	5.4
Com-plete	See ***Natural and Other Software AG Products***.
CICS/TS for z/OS	3.1, 3.2, 4.1
CICS/TS for VSE/ESA	1.1.1
CICS/VSE	2.3
IMS TM	9.1, 10.1
*open*UTM	4, 5
TIAM	All versions available with OSD Version 5, 6, 7 or 8.

Software AG provides Natural support for the operating/teleprocessing system versions supported by their respective manufacturers. Generally, when an operating/teleprocessing system provider stops supporting a version of an operating system, Software AG will stop supporting that operating system version.

See the respective manufacturer's documentation for valid and supported combinations of the above mentioned operating/teleprocessing systems.

Caution: Although it may be technically possible to run a new version of Natural on an old operating/teleprocessing system, Software AG cannot continue to support operating/teleprocessing system versions that are no longer supported by the system's provider. For legal reasons, Software AG does not support Natural Version 4.2.6 for operating/teleprocessing system versions that are not supported by their respective manufacturers for at least one year after the release of Natural Version 4.2.6. This restriction applies in particular to older versions of operating/teleprocessing systems not listed in the table above. Furthermore, Software AG cannot make any statement whether it is technically possible to run Natural Version 4.2.6 on any old operating/teleprocessing system version not listed above.

Database Management System Versions Required

Natural Version 4.2.6 supports the following versions of the following database management systems:

Product	Version
Adabas	See *Natural and Other Software AG Products*.
DB2 for z/OS	8.1, 9.1
DB2 Server for VSE and VM	7.3, 7.4, 7.5
DL/I	As delivered with the teleprocessing system IMS TM.
VSAM	As delivered with the operating system.
DFSMStvs	As delivered for the respective VSAM version, if transactional VSAM is to be used with Natural for VSAM.

Software AG provides Natural support for the database management system versions supported by their respective manufacturers. Generally, when a database management system provider stops supporting a version of a database management system, Software AG will stop supporting that database management system version.

See the respective manufacturer's documentation for valid and supported combinations of the above mentioned database management and operating/teleprocessing systems.

Caution: Although it may be technically possible to run a new version of Natural using an old database management system, Software AG cannot continue to support database management system versions that are no longer supported by the system's provider. For legal reasons, Software AG does not support Natural Version 4.2.6 for database management

system versions that are not supported by their respective manufacturers for at least one year after the release of Natural Version 4.2.6. This restriction applies in particular to older versions of database management systems not listed in the table above. Furthermore, Software AG cannot make any statement whether it is technically possible to run Natural Version 4.2.6 using any old database management system version not listed above.

Assemblers Required

Natural Version 4.2 requires one of the following assemblers for the assembly of its source modules:

- "HL" Assembler Version 1.5 or 1.6 (IBM),
- "Assembh" Assembler (Siemens).

It may be possible to assemble source modules with older assemblers; however, Software AG cannot guarantee this.

Documentation

A revised and updated documentation set is available with this Natural Version.

To review past versions of the documentation, link to the Software AG website: ***http://servline24.softwareag.com/public/***. The documentation at this site will be updated as required.

Migration Hints

The following hints are provided to simplify migration to a new Natural version or system maintenance (SM) level:

- Migrating to Natural Advanced Facilities Version 4.2

Changes to Installation

This information is only for those users who do not use System Maintenance Aid (SMA).

The installation of Natural has changed. Please refer to the sample installation jobs supplied on the delivery tape.

No Re-installation of Natural Subproducts Required when Installing a New Natural Version

With Natural Version 4.1 or below, a new version of Natural had to be installed on an empty `FNAT` system file. As a consequence, all Natural related subproducts also had to be re-installed. With Natural Version 4.2, Natural can be installed on an existing Version 4.1 `FNAT` system file, which eliminates the necessity of having to re-install all Natural related subproducts and significantly reduces the time and effort needed to install a new Natural version. However, only defined product combinations for Natural Version 4.2 are allowed. For example, when upgrading a secured Natural Version 4.1 `FNAT` system file to Version 4.2, Natural Security Version 4.2 must be installed as well.

Using a Version 4.1 (or Older) FSEC File

An existing `FSEC` system file created with Natural Security Version 2.2, 2.3, 3.1 or 4.1 may be used with Natural Security Version 4.2 without migration. However, any changes to the `FSEC` system file should only be performed using Natural Security Version 4.2.

Special Purpose Zaps Replaced by Parameters

As of Version 4.2, special-purpose Zap NA63207 of Version 4.1 (which inhibits the removal of trailing blanks from print file records) is replaced by the keyword subparameter `STRIP` of the profile parameter `PRINT`.

Display List of Applied Special Purpose Zaps

The system command `DUMP` has been enhanced to display a list of all applied special purpose Zaps to ease migration from one system maintenance (SM) level to the next.

Purpose of Profile Parameter CP Changed

When migrating from Natural Version 4.1 to Version 4.2, please note that the purpose of the profile parameter CP has changed and that this parameter must be replaced by the keyword subparameter CPRPC of profile parameter RPC or macro NTRPC if your Natural application is using the Natural Remote Procedure Call (RPC).

In earlier Natural versions, the profile parameter CP was used to specify the name of the code page used by the Entire Conversion Service (ECS) and applied only to the Natural Remote Procedure Call when the transport protocol ACI (that is, EntireX Broker) was used. For this purpose, a new keyword subparameter (CPRPC) has been introduced for the Natural profile parameter RPC.

The profile parameter CP is now used in conjunction with the parameter macro NTCPAGE (in the source module NATCONFG) to specify the name of the default code page for Natural data or to automatically take the code page name from the user terminal.

Storage Requirements

Because the screen attributes had to be enhanced (and therefore their size increased) to support Unicode and the Web I/O Interface, the size of the attribute buffers used for screen I/O may increase depending on the number of fields on the screen.

Storage Requirements for New Features

The use of several new features requires additional working storage. In order to use these features, it may be necessary to increase the size of your threads.

Storage Requirements for New Statements

Approximately 420 KB of storage is required when the ICU Library is used to support Unicode or one of the following statements:

1. REQUEST DOCUMENT
2. PARSE XML
3. MOVE ENCODED

Additional storage may be required, depending on the size of the strings to be converted.

For using the PARSE XML statement, a minimum of 75 KB of storage is required in addition. The total amount of additional storage space needed will depend on the size of the strings to be parsed.

Storage Requirements for New Web I/O Interface

If the Web I/O Interface is used, additional storage requirements will depend on the following:

1. The screen size, which is determined by the Natural profile parameter TMODEL (where TMODEL=0 necessitates the most and TMODEL=2 the least storage space).
2. The size and number of Unicode fields to be displayed.

When you are using the Web I/O Interface with TMODEL=0, the minimum additional storage requirement is 11 KB. With TMODEL=2, the minimum additional storage requirement is 5 KB. These amounts of storage will be sufficient to display a map with approximately 100 fields where each field is of format/length U20.

Storage Requirements in Conjunction with Natural for Ajax

When you are using rich GUI applications involving the use of Natural for Ajax, the ICU library will also be required, and you should consider the storage requirements mentioned above.

Migrating to Natural under IMS TM (NII) Version 4.2

If you do not use SMA, you must add an ENTRY CMSTART statement to the link-edit of all NII front-ends (Job I070, Step 2510, 2530, 2550, Job I080, Step 2570 and 2572).

Support of License Keys

As of Natural Version 4.2.2, Natural supports the use of license keys. The new Natural program NATQVS can be used to display your machine characteristics in order to verify your current license. For further information, see *Licensing Natural* in the *Installation* documentation.

Migrating to Natural Advanced Facilities Version 4.2

Case 1

When upgrading from Natural Advanced Facilities Version 4.1, you need not generate a new spool file because the Adabas FDT used in Version 4.2 is compatible with the one used in Version 4.1.

Case 2

When upgrading from Natural Advanced Facilities versions prior to Version 4.1, you must generate a new spool file because the Adabas FDT used in Version 4.2 is not compatible with the one used in versions prior to Version 4.1. If you want to use the contents of such a spool file, its contents must be converted to the newly generated Version 4.2 spool file layout. This is done by using the CONVERT command in the library SYSPOOL. After conversion is complete, you must specify the general spool file options and the system-specific options for the spool server. See *Function 30.5* in the *Natural Advanced Facilities* documentation.

Compatibility

This section contains information on compatibility with earlier versions of Natural for mainframes as well as with Natural on other platforms.

Applications Created with Previous Natural Versions

Applications that were created with Natural Version 2.3, 3.1 or 4.1 for Mainframes can be executed with Natural Version 4.2 for Mainframes without any adjustments to the programs or any conversion or migration procedure being required. This applies also to programming objects that have been cataloged with the Natural Optimizer Compiler.

Execute Applications Cataloged under Natural Version 4.2 with Natural Version 4.1

If you want to use Natural Version 4.1 to execute applications that were cataloged under Natural Version 4.2, you have to recatalog the application with Natural Version 4.1.

When developing applications with Natural Version 4.2, you may use the `V41COMP` option of system command `COMPOPT`, which has been provided to reject syntax constructs that are supported by Version 4.2, but not by Version 4.1.

Using a Version 4.1 FUSER File to be Shared by Natural Versions 4.1 and 4.2

Note: The maintenance for Natural Version 4.1.4 has ended on November 30, 2007. The following information is supplied for your convenience only, without any guarantee or warranty. Software AG will not be held liable for any damages or losses that might be caused to products, data or computer systems as a result of using this information.

If an existing Natural Version 4.1 `FUSER` system file is to be shared by Natural Version 4.1 and Version 4.2, you must upgrade your Natural Version 4.1 installation to Version 4.1.4.

Natural Version 4.1.4 Service Pack I003 or a subsequent Service Pack is required. Service Pack I003 and all subsequent Service Packs contain all the necessary Version 4.1 based solutions to provide

for sharing an existing Natural Version 4.1 FUSER system file by Natural Version 4.1 and Natural Version 4.2.

A Natural Version 4.1.3 installation must be upgraded to Natural Version 4.1.3 Service Pack I005 (the final Service Pack) before Natural Version 4.1.4 Service Pack I003 or a subsequent Service Pack is applied (for more information, see the notes delivered with Natural Version 4.1.3 Service Pack I005). The Zaps NA64035 and NA64036 must also be applied to a Natural Version 4.1.3 installation.

Certain Natural Version 4.2 features (such as Unicode format and X-arrays) supported by Natural Version 4.2 editors and utilities cannot be processed by the Natural Version 4.1 editors and utilities. To ensure that these features, if they are included in a Natural object that is to be processed by an editor or utility, are properly rejected or ignored by Natural Version 4.1 editors and utilities, Natural Version 4.1.4 Service Pack I003 or a subsequent Service Pack must be installed.

Natural Version 4.1.4 does not provide full support of the new Natural object type Adapter introduced with Natural Version 4.2.3. To provide for a restricted support of this object type in the system command LIST in Natural Version 4.1.4, Natural Version 4.1.4 Service Pack I008 or a subsequent Service Pack must be installed.

Caution: In addition, the increased number of header records for Natural source objects (see below) has required adaptations in Natural Version 4.1 utilities. If Natural Version 4.1.4 Service Pack I003 (or a subsequent Service Pack) is not applied, unpredictable results may occur if source objects saved with Natural Version 4.2 are accessed using Natural Version 4.1 editors or utilities.

Number of Header Records for Natural Source Objects in FUSER/FNAT System File Increased

If a Natural source object is saved with Natural Version 4.2, the number of header records is increased. These records contain information on date and time when the object was saved. If a source object was saved with Natural Version 4.2, it can be accessed with Natural Version 4.1 editors, utilities and user application programming interfaces without requiring any application adjustments. It is strongly recommended that Natural source objects are processed only through the available application programming interfaces and that any direct access to the FUSER system file is avoided. The number of header records for cataloged objects remains unchanged.

Note: The FDTs for the system files FUSER and FNAT remain unchanged.

Roll Server Startup Parameters

With Natural Version 3.1, the Roll Server supported a `FORCE` option as eighth positional start-up parameter. This parameter was dropped with Version 4.1 but tolerated and ignored by Version 4.1 and previous Version 4.2 Roll Servers. Since as of Natural Version 4.2.4 the eighth parameter is used to specify session inactivity time, older JCL that still includes a `FORCE` option will fail with message: `RSM0069 jobname: Invalid non-activity time`. In this case, correct your JCL by eliminating the old `FORCE` option. For information on the start-up parameters, see *Starting the Roll Server* in the *Operations* documentation.

Compatibility with Natural for Windows, UNIX and Linux

Natural Version 4.2 for Mainframes is syntax compatible with Natural for Windows, UNIX and Linux as of Version 5.1.1.

The following features available with Natural Version 6.1 for Windows, UNIX and Linux are available with Natural Version 4.2:

- X-arrays (extensible arrays)
- System variables `*CURRENT-UNIT`, `*LBOUND`, `*TYPE`, `*UBOUND`, `*PARSE-COL`, `*PARSE-LEVEL`, `*PARSE-NAMESPACE-URI`, `*PARSE-ROW`, `*PARSE-TYPE`
- Thousands separator for edit masks (see *Customizing Separator Character Displays*)
- Large constants
- `REQUEST DOCUMENT` statement
- `PARSE XML` statement

The following features are available both with Natural Version 4.2 for Mainframes and Natural Version 6.2 for Windows, UNIX and Linux:

- Unicode and Code Page Support
- System variables `*CODEPAGE` and `*LOCALE`
- Profile parameters `CPCVERR`, `CPOBJIN`, `CPPRINT`, `CPSYNIN`, `SRETAIN`
- New statements `MOVE NORMALIZED` and `MOVE ENCODED`
- `EXAMINE` statement clauses `CHARPOSITION` and `CHARLENGTH`
- New keyword parameter `CPRPC` of profile parameter `RPC`

The following features are available both with Natural Version 4.2 for Mainframes and Natural Version 6.3 for Windows, UNIX and Linux:

- New statement `PROCESS PAGE`
- New session parameter `DL`

Special-Purpose Zaps

The following table lists Version 4.1 special-purpose Zaps and their Version 4.2 successors.

Version 4.1 Zap	Version 4.2 Zap (4.2.3 or below)	Version 4.2 Zap (4.2.4 or above)	Function
NA61004	NA71002	NA74001	Allow 24:00 for hours in `INPUT`, `IS(T)` option and `MOVE EDITED`.
NA61005	NA71003	NA74011	Shift printouts one byte to the right for microfiche printing.
NA61006	NA71004	NA74007	Generate filler character blank instead of `X'00'`.
NA61059	NA71005	NA74002	Set indicator in buffer pool that an object is not found on the system file.
NA62122	NA71006	NA74003	Allow more than 128 entries in the fast locate table.
NA64257	NA73067	NA74004	Allow more than 128 entries in the subroutine cache.

Zaps for Different System Maintenance (SM) Levels

For technical reasons, it will not be possible to apply Zaps for Natural Version 4.2.4 or above to Natural Version 4.2.3 or below. This restriction will also be indicated in the Zap itself. A separate Zap will be provided for Natural Version 4.2.3 or below. Zaps for add-on products are not affected. `INPL` updates and source changes for base Natural and for Natural add-on products are not affected. See ***Overview of New Natural Add-On Product Versions*** for an overview of the add-on products.

Handling of Maps Converted with Natural for MBCS

Editing, compilation and execution of maps that have been converted with Natural for MBCS (product code NKA) require that Natural Version 4.2.4 or above is installed. It is not possible to edit, compile or execute these converted maps with Natural version 4.2.3 or below. See the *Natural for MBCS* documentation for more information.

PARSE XML Character Data Parsing

With Natural versions prior to Version 4.2.5, parsing of character data causes a break or a loop path if the parsed string contains whitespace characters or predefined XML entities. This problem has been solved with Natural Version 4.2.5. Correction of this problem also has ascertained compatibility with Natural for Windows, UNIX and Linux. For further information, see *Processing of XML Whitespace Characters and Predefined Entities* in the *Programming Guide*.

End of Maintenance of Natural Versions

For Natural for Mainframes, the following end-of-maintenance dates apply:

Natural Version	End of Maintenance
4.2.4	With the release of Natural Version 4.2.6
4.2.5	October 31, 2010

End of Maintenance of Add-On Product Versions

For the Natural add-on unit versions listed below, the following end-of-maintenance dates apply:

Natural Add-on Unit Version	End of Maintenance
Natural ISPF Version 2.6.4	With the release of Natural ISPF Version 2.6.6
Natural Review Version 4.2.4	With the release of Natural Review Version 4.2.6
Super Natural Version 3.5.4	With the release of Super Natural Version 3.5.6
Natural ISPF Version 2.6.5	October 31, 2010
Natural Review Version 4.2.5	October 31, 2010
Super Natural Version 3.5.5	October 31, 2010

Natural and Other Software AG Products

To use the following Software AG products with Natural Version 4.2.6, the following product versions (or above) are required:

Product	Prod. Code	Version
Adabas	ADA	8.1.3
Adabas CICS Interface	ACI	8.1.3
Adabas IMS TM Interface	AII	8.1.3
Adabas Online System	AOS	8.1.3
Adabas Review	REV	4.4.1 (4.3.2 for VM/CMS)
Adabas Text Retrieval	TRS	2.1.4
Adabas UTM Interface	AUT	7.4.4
Com-plete	COM	6.6.1 with SMARTS Version 3.3.1 Patch Level 1

Con-form	CMF	3.4.2
Con-nect	CNT	3.4.2
ConnecX SQL Engine	CXX	1.1.3
Entire Connection	PCC	4.5.2
Entire DB Engine	AER	1.5.5 with Zap EN53021 applied.
Entire Event Management	NCL	2.2.1 (2.1.2 for z/VSE)
Entire Net-Work	WCP	6.2.1 (This product is required if you are using Natural Security in a heterogeneous environment.)
Entire Operations	NOP	5.2.1
Entire Output Management	NOM	3.2.1
Entire System Server	NPR	3.4.2
Entire Transaction Propagator	ETP	1.5.2 Apply Zap ET52001 (for ETP); if you are using the additional Entire Transaction Propagator CICS Interface (ETC), apply Zap EZ52005 (for ETC) in addition.
EntireX Communicator	EXX	8.0 for z/OS 7.2.3 for z/VSE 7.1.4 for BS2000/OSD
Natural Advanced Facilities	NAF	4.2.6
Natural for Ajax	NJX	1.2.4
Natural Business Services	NBS	5.3.1
Natural CICS Interface	NCI	4.2.6
Natural Com-plete/SMARTS Interface	NCF	4.2.6
Natural Connection	NTC	4.2.6
Natural Construct	CST	5.3.1
Natural for DB2	NDB	4.2.6
Natural Development Server	NDV	2.2.6
Natural for DL/I	NDL	4.2.6
Natural Document Management	NDM	1.6.3 with Service Pack I001 applied.
Natural Elite	NER	3.1.1
Natural Engineer	NEE	6.2.1
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 Review	RNM	4.2.6
Natural SAF Security	NSF	4.2.6

Natural Security for Mainframes	NSC	4.2.6
Natural for SQL/DS	NSQ	4.2.6 **Note:** IBM also refers to SQL/DS as DB2 Server for VSE & VM.
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)
Predict	PRD	4.5.2
Predict Application Control	PAC	2.6.1
Predict Case	PCA	2.5.2 with Service Pack I001 applied.
SMARTS	APS	3.3.1 Patch Level 1 for z/OS and z/VSE 2.7.2 Patch Level 16 for BS2000/OSD
Software AG Security eXtension	SSX	2.2.3 if Integrated Authentication Framework (IAF) is to be used. SSX is delivered together with the EntireX Communicator.
Super Natural	NSN	3.5.6
System Automation Tools	SAT	3.2.1

Although it may be technically possible to run versions of other Software AG products which are older than the ones listed above with a new version of Natural, this is not recommended because, for legal reasons, Software AG cannot continue to support such combinations and cannot make any statement whether it is technically possible to run a new version of Natural with versions of other Software AG products which are older than the ones listed above.

Information on Upcoming Versions

Changes and Enhancements Planned for the Next Version of Natural

With the next version of Natural, the following changes and enhancements will be provided:

Discontinued Support of Utilities SYSTRANS and NATUNLD/NATLOAD

With the next version of Natural, the utilities `SYSTRANS` and `NATUNLD/NATLOAD` will cease to be available. The functionality provided by `SYSTRANS` and `NATUNLD/NATLOAD` is available with the Natural Object Handler which was introduced with Natural Version 4.1.

Please note that the documentation for the utilities `SYSTRANS` and `NATUNLD/NATLOAD` is no longer contained in the product documentation for this version, but can be found as a PDF book in the archive on the Natural Documentation CD.

Changed Default of Data Area Source Format

The default format for storing data areas in the `FUSER` system file is the format compatible with Natural Version 3.1. With the next version of Natural, the default will be changed to the new and extended format introduced with Natural Version 4.1.

Discontinued Support of V41COMP Compiler Option

The `V41COMP` compiler option of the system command `COMPOPT` will cease to be available. In Natural Version 4.2, this option is available to disallow the use of new Natural Version 4.2 programming language enhancements for compatibility purposes with Natural Version 4.1.

Discontinued Support of Profile Parameters SO and SI

With the next version of Natural, the profile parameters `SO` and `SI` will cease to be available. As of Natural Version 4.2.4, the functionality of these parameters is covered by the profile parameter `SOSI`.

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.

Discontinued Delivery of Operating/Teleprocessing System Interfaces as Source

To ease installation and maintenance for the customer, Natural operating/teleprocessing system interfaces currently delivered as assembler source files will be delivered as load modules in future Natural versions. This will eliminate the necessity of manually entering source changes and subsequent assembly and linkage steps.

Caution: You should avoid customer specific changes to source files of Natural operating/teleprocessing system interfaces. Delivery of these source files may be discontinued without prior notice to ease installation and maintenance for customers. Do not use accidentally discovered information contained in internal Natural control blocks. Internal Natural control blocks may be changed without prior notice. Instead, front-end or back-end programs, documented Natural or Adabas user exits or user application programming interfaces (APIs) should be used.

Changes to SYSRPC Stub Generation

With the next version of Natural, the **Stub Generation** function of the `SYSRPC` utility will be changed to generate stub subprograms that are more compliant with EntireX RPC servers and the reliable RPC. If 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.

For compatibility reasons, an option will be provided to generate stub subprograms as in previous Natural versions.

Customer Change/Enhancement Requests

The following is an overview of the customer change/enhancement requests that have been implemented in Natural Version 4.2.6:

- Natural Related C/E Requests

- Add-On Product and Subproduct Related C/E Requests

Natural Related C/E Requests

The following is an overview of the enhancement proposals that have been implemented in base Natural Version 4.2.6:

Enhancement Proposal Number	Description
3551	Enhance error message NAT0393 to indicate the affected object. See ***Changed/Enhanced Error Messages*** in the section *Changes, Enhancements, New Features*.
-	Enhance error message NAT0283 to indicate the name of the offending variable. See ***Changed/Enhanced Error Messages*** in the section *Changes, Enhancements, New Features*.
-	Enhance error message NAT1155 to indicate the affected object. See ***Changed/Enhanced Error Messages*** in the section *Changes, Enhancements, New Features*.
-	Enhance error message NAT9974 to facilitate debugging. See ***Changed/Enhanced Error Messages*** in the section *Changes, Enhancements, New Features*.
-	Enhance error messages NAT3000 - NAT3255 to display the Adabas subcode, if it is available. See ***Changed/Enhanced Error Messages*** in the section *Changes, Enhancements, New Features*.
-	Allow to define storage compression for individual Natural buffers. See ***Parameter for Storage Compression Optimization for Individual Buffer Types*** in the section *Changes, Enhancements, New Features*.
-	Enhance the **List Profiles** function of the `SYSPARM` utility to allow the selection of multiple profiles for processing. See ***SYSPARM Utility*** in the section *Changes, Enhancements, New Features*.
-	Enhance the `SYSPARM` batch support to allow updating of parameters by using a list of values. See ***SYSPARM Utility*** in the section *Changes, Enhancements, New Features*.
-	Enhance the **List Objects** function of the `SYSBPM` utility to display the Natural version under which an object was cataloged. See ***SYSBPM Utility*** in the section *Changes, Enhancements, New Features*.
5021	Enhance the `SYSMAIN` utility to check the contents of the `SYSERR LAYOUT` for source and/or target libraries. See ***SYSMAIN Utility*** in the section *Changes, Enhancements, New Features*.
3164	Provide an application programming interface (API) that returns enhanced information about active Natural objects. See ***New Application Programming Interfaces*** in the section *Changes, Enhancements, New Features*.
-	Provide an option in the program editor profile to remove empty lines from the sources of text objects. See ***Program Editor*** in the section *Changes, Enhancements, New Features*.
-	Enforce parameter settings for asynchronous sessions to prevent errors. See ***Enforced Parameter Settings for Asynchronous Sessions*** in the section *Changes, Enhancements, New Features*.
-	Provide the ability to apply a default profile for transactions or terminals for which no individual profile exists. See ***Changed/Enhanced Parameters*** in the section *Changes, Enhancements, New Features*.

Enhancement Proposal Number	Description
-	Support processing rules for adapters. See ***Support of Processing Rules in Objects of Type Adapters*** in the section *Changes, Enhancements, New Features*.
-	Provide parameter check for adapters, maps, helproutines and subroutines similar to subprograms. See ***Compiler Option PCHECK Enhanced*** in the section *Changes, Enhancements, New Features*.

Add-On Product and Subproduct Related C/E Requests

The following is an overview of the enhancement proposals that have been implemented in Natural add-on products and subproducts that are released in synchronism with Natural Version 4.2.6. These requests are sorted alphabetically by product name.

Product Name/Enhancement Proposal Number	Description
Natural for Ajax	
5344	Allow to check the modification status of a Natural operand that represents the value of the control. See ***Natural for Ajax*** in the section *Add-On Products*.
-	Allow to identify the operand that represents the value of the control that has the input focus. See ***Natural for Ajax*** in the section *Add-On Products*.
Natural for MBCS	
-	Provide uppercase English *Standard Natural Output Texts* as an option. See ***Optional Uppercase Standard Natural Output Texts*** in the section *Add-On Products*.
Natural Remote Procedure Call	
5547	Support long error message texts returned by an EntireX RPC server. See ***System Command RPCERR Enhanced*** in the section ***Add-On Products***.
-	Allow for impersonation without password check. See ***Impersonation without Password Check*** in the section ***Add-On Products***.
5756	Enhance the **Stub Generation** function of the `SYSRPC` utility to optionally generate stub subprograms that are more compliant with EntireX RPC servers. See ***SYSRPC Stub Generation*** in the section *Add-On Products*.
5780	Provide an application programming interface to set the user ID and ETID for Natural RPC servers which were configured with `Impersonation = A` (automatic logon). **Note:** This enhancement proposal has been solved partially. The task will be completed with the next version of Natural. For details, see ***New RPC-Specific Application Programming Interface*** in the section *Add-On Products*.
Natural Security	

Product Name/Enhancement Proposal Number	Description
3032	Retrieve information on users' access rights to a single module in a library. See ***NSCXR*** in the section *Add-On Products*.
4754	Suppress the execution of startup transactions in mapped environments on Natural Development Server clients. See ***Suppress Startup Transaction in NDV Mapped Environment*** in the section *Add-On Products*.
5021	Control the use of `SYSERR` direct commands. See ***SYSERR - Direct Commands*** in the section *Add-On Products*.
5382	Allow owners to perform a maintenance function and obtain the permission from a co-owner afterwards. See ***Deferred Countersigning*** in the section *Add-On Products*.
5479	Compare user-profile values with preset values. See ***NSCADM*** in the section *Add-On Products*.
5539	Control the execution of UNIX shell commands. See ***Use of UNIX Shell Commands*** in the section *Add-On Products*.
5545	List logon records in chronological order of time-stamps. See ***Logon Records*** in the section *Add-On Products*.
5607	Exclude libraries which require countersignatures from `SYSMAIN/SYSOBJH` processing. See ***SYSMAIN and SYSOBJH - Exclude Library Profiles With Co-Owners*** in the section *Add-On Products*.
Natural Web I/O Interface	
-	Allow for variable terminal screen sizes. See ***Variable Terminal Screen Sizes*** in the section *Add-On Products*.
-	Allow to define different styles for output fields. See ***Different Styles for Output Fields*** in the section *Add-On Products*.
-	For Natural maps, allow to configure the behavior of a double-click. See ***Configurable Behavior of Double-Click*** in the section *Add-On Products*.
-	For Natural maps, allow to configure that all function keys are to be shown. See ***Show PF Keys with Numbers*** in the section *Add-On Products*.
-	Allow to individually enable or disable rendering of certain display features, such as position of PF keys and the message line. See ***Enhanced Web I/O Interface Screen Rendering*** in the section *Add-On Products*.

3 Changes, Enhancements, New Features

This section describes the changes, enhancements and new features that have been introduced with Natural Version 4.2.6.

Note: The utility SYSEXV gives you access to examples of the new features included in the current Natural versions.

Programming Language

The following changes and enhancements have been introduced:

- Support of Processing Rules in Objects of Type Adapter
- PROCESS PAGE Statement Enhanced
- System Variable *CURS-FIELD

Support of Processing Rules in Objects of Type Adapter

Processing rules (inline rules and Predict free rules) are now supported in Natural adapters in the same way as in Natural maps.

PROCESS PAGE Statement Enhanced

A field in a PROCESS PAGE statement can now be associated with a control variable. When the value returned for that field is not equal to the value sent, the field is regarded as modified and the control variable is set to “modified”.

System Variable *CURS-FIELD

The Natural system variable *CURS-FIELD can now be used in Natural for Ajax applications to identify the operand that represents the value of the control that has the input focus.

System Commands, Editors and Utilities

The following changes and enhancements have been introduced:

- Editors

- Utilities

Editors

Program Editor

In the editor profile, you can now set an option to remove empty lines from the sources of text objects. See the editor profile option *Empty Line Suppression for Text*. The user exit USR0070N has been enhanced accordingly.

Utilities

- SYSBPM Utility
- SYSEXV Utility
- SYSMAIN Utility
- SYSPARM Utility
- SYSTP Utility

SYSBPM Utility

List Objects Function Enhanced

The **List Objects** screen enables you to obtain statistical data on the directories of Natural objects currently loaded in the buffer pool or the buffer pool cache (if used). In addition, information on the Natural version under which an object was cataloged is now displayed.

SYSEXV Utility

Sample Programs Base on New DDM

Sample programs using the new Adabas data types have been added. These sample programs are based on the new DDM EMPLOYEES-V2009 and require that Adabas Version 8.1.4 is installed.

SYSMAIN Utility

New Parameter for User Exit MAINEX11

The SYSMAIN user exit MAINEX11 (source is delivered as SM-UX-11) has got a new parameter named USE-LAYOUT-DEFINITION. When USE-LAYOUT-DEFINITION is set to Y, all functions for error messages (except the LIST and FIND functions) check the contents of the SYSERR LAYOUT for the source and/or target libraries. Error messages that do not fit into the ranges are not processed.

SYSPARM Utility

Support of Multiple Profile Selection

The List Profiles function of the SYSPARM utility now provides the option to select multiple profiles for processing. For further information, see the relevant section in the *SYSPARM Utility* documentation.

Expanded Parameter Value List in Batch

SYSPARM in batch now supports updating of parameters by using a list of values. For further information, see the relevant section in the *SYSPARM Utility* documentation for UPDATE ADD and UPDATE SUBTRACT.

Support of New or Enhanced Profile Parameters

The SYSPARM utility has been updated to support the new or enhanced profile parameters for Natural Version 4.2.6; see *Profile and Session Parameters* in the section *Miscellaneous Changes and Enhancements*.

SYSTP Utility

Enhanced Buffer Usage Statistics

The SYSTP utility function Buffer Usage Statistics (BUS) has been enhanced to reflect the individual compression optimization settings and the internal thread buffer statistics.

Miscellaneous Changes and Enhancements

- Compiler Option PCHECK Enhanced

Enforced Parameter Settings for Asynchronous Sessions

Under the TP monitors Com-plete, CICS and UTM, the settings of some Natural parameters gave rise to errors, for example NAT9943 `Logic error in Natural program for an asynchronous session`. The problem was caused by profile parameter `CM=ON` (command mode) when the session changed into `NEXT` mode. To avoid this problem, the profile parameters `CM`, `MENU` and `PC` are now forced to adequate values, that is, they are set to `OFF` when asynchronous mode is selected, either during session initialization or in the course of the session when using the terminal command `%T=`.

Profile and Session Parameters

- New Parameters
- Changed/Enhanced Parameters

New Parameters

The following profile parameters are new:

Parameter	Explanation
`CMPR`	**General Default Compression Optimization Algorithm** Enables the Natural administrator to define three different types of default storage compression variants, or to disable the optimization. See also the new parameter `CMPR` of the `NTBUFID` macro, which can be used in the same way to define the optimization variant specifically for individual buffers; see ***Parameter for Storage Compression Optimization for Individual Buffer Types***.
`WEBIO`	**Web I/O Interface Screen Rendering** Allows you to individually enable or disable the rendering of certain features of the Natural Web I/O Interface display on the basis of a style sheet. It corresponds to the `NTWEBIO` macro in the parameter module `NATPARM`.

Changed/Enhanced Parameters

The following profile/session parameters have been enhanced:

Parameter	Explanation	
BPI	**Buffer Pool Initialization** The following new value has been added to the keyword subparameter TYPE of profile parameter BPI and parameter macro NTBPI:	
	ICU	This value is enables the ICU buffer pool; see *ICU Buffer Pool* in the *Unicode and Code Page Support* documentation.
CFICU	**Unicode and Code Page Support** The following new keyword subparameter has been added to the profile parameter CFICU and to the corresponding macro NTCFICU:	
	BPONLY	**Use of ICU Buffer Pool** This keyword subparameter can be used in thread environments, for example, under CICS, to specify whether the ICU must use the **ICU buffer pool** or if it can use thread storage if the ICU buffer pool is not available.
PROFILE	**Activate Dynamic Parameter Profile** The same behavior as with PROFILE=AUTO has been implemented for PROFILE=PROGRAM and PROFILE=TERMINAL; that is, a profile named PROGRAM or TERMINAL is used if no individual profile for the transaction (*INIT-PROGRAM) or terminal (*INIT-ID) is found.	
TMODEL	**IBM 3270 Terminal Model** A special setting for use in conjunction with Natural Web I/O Interface (NWO) server terminals has been provided, which allows you to set the number of lines and the number of columns individually.	

Parameter for Storage Compression Optimization for Individual Buffer Types

The new parameter CMPR in the NTBUFID macro of the NATCONFG module enables the Natural administrator to specify the type of storage compression optimization for individual buffer types. The setting of this macro parameter overrides the general default setting of the new profile parameter CMPR described **above**.

For further information, see *Customization of Buffer Characteristics* in the *Operations* documentation.

Application Programming Interfaces

Enhanced Application Programming Interfaces

The following application programming interfaces (API) in the library SYSEXT have been enhanced:

API	Enhancement
USR0070P	**Default Editor Profile SYSTEM** This user exit routine now supports the new editor profile option *Empty Line Suppression for Text*.
USR0360N	**Modify User Short Error Message** A new optional parameter named LAYOUT-CHECK is available. The layout definition is checked when a value other than blank is specified for this parameter. Error messages that do not fit into the ranges are not processed.
USR0421N	**Update User Long Error Message on FUSER** A new optional parameter named LAYOUT-CHECK is available. The layout definition is checked when a value other than blank is specified for this parameter. Error messages that do not fit into the ranges are not processed.
USR1020N	**Add User Short Error Message on FUSER** A new optional parameter named LAYOUT-CHECK is available. The layout definition is checked when a value other than blank is specified for this parameter. Error messages that do not fit into the ranges are not processed.

New Application Programming Interfaces

The following new application programming interfaces (API) have been added to the library SYSEXT:

API	Purpose
USR4214N	**Enhanced Program Level Information** This API provides enhanced information about active Natural objects, such as level of active object, object name and type, long name of object, line number of object call, library where the object was found, database ID, file number, buffer pool, and host name. **Note:** USR4214N is an enhanced successor of USR0600N (Display program level information), which continues to be available for downward compatibility reasons.

API	Purpose
USR4215N	**Return a List of Resources of a Natural Library** This API provides a list of resources (short object and long resource name) of a Natural library according to the forwarded range parameters.
USR4216N	**Return a List of Natural Objects of a Natural Library** Returns a list of Natural objects. The resulting list of objects can be controlled by specifying range parameters and can be sorted by different directory fields.
USR4371N	**Set User ID and ETID for RPC** Used on the RPC client side, this API sets the user ID and ETID for Natural RPC servers which were configured with `Impersonation = A` (automatic logon).

Obsolete Application Programming Interface

As the NaturalX DCOM functionality ceased to apply as of Natural Version 4.1.2, the application programming interface (API) `USR2022N` has become obsolete. When this API is called, the message `USR2022N is obsolete due to discontinued NaturalX DCOM support` will appear.

`USR2022N` will be removed completely with the next version of Natural for Mainframes.

Error Messages

- New Error Messages
- Changed/Enhanced Error Messages

New Error Messages

The following Natural error messages have been added:

Error Number	Enhancement
NAT1392	When more than one parameter inconsistency is detected while the compiler option `PCHECK` is set to `ON`, this message is displayed to indicate that several parts of the Natural object need to be inspected.
NAT1393 NAT4199	When Natural is not able to execute a programming object, it is now indicated exactly which object is affected (object name, library, database ID, number of the file from where it was loaded). This applies to objects disabled by a blacklist (NAT4199) or cataloged with a not supported version of Natural (NAT1393). These messages supersede the message NAT0393, which however is retained for compatibility reasons.

Changed/Enhanced Error Messages

The following Natural error messages have been changed or enhanced:

Error Number	Enhancement
NAT0283	This error message now indicates the name of the variable that has been defined more than once.
NAT0393	This message is extensively superseded by the new messages NAT1393 and NAT4199 described above.
NAT1155	This error number is now restricted to those cases where switching between structured mode and reporting mode was effected by a `GLOBALS` system command.
NAT1395	This error message is now issued when mode switching was caused by reading a source object in the source area. It contains the name and the location (library, database ID, file number) of the relevant source object.
NAT3000 - NAT3255	The error messages NAT3000 to NAT3255, which correspond to the Adabas response codes 0 to 255, have been updated to display a nucleus response subcode if Adabas on mainframes and/or Windows, UNIX, OpenVMS provides a subcode for a specific response code. This may cause the display of subcode 0 in some cases.
NAT9974	This termination message has been enhanced to facilitate debugging.

Team Support under Natural for Eclipse

Natural Version 4.2.6 supports teams developing Natural applications in a remote mainframe environment under Natural for Eclipse.

New DDM for EMPLOYEES File

With Natural Version 4.2.6, the new DDM `EMPLOYEES-V2009` is delivered, since with Adabas Version 8, some new features (for example, the Unicode data type) have been introduced which are used in the new `EMPLOYEES` data delivered with Adabas Version 8.1.4 (see sample files `ADA`*`vrs`*`.PERS` and `ADA`*`vrs`*`.PERL`).

To make use of the new DDM `EMPLOYEES-V2009`, these new data and the corresponding file definition table (FDT) must be loaded into the Adabas database.

See also the new sample programs supplied with the `SYSEXV` utility.

Support of ICU Version 4.0

Natural Version 4.2.6 provides ICU Version 4.0.1 together with Unicode specification 5.1 and Common Locale Data Repository (CLDR) Version 1.6.

For information on major changes in ICU 4.0, see *International Components for Unicode, Download ICU 4.0 release* at ***http://www.icu-project.org/download/4.0.html***.

Improved ICU Module Performance

The performance of the Natural ICU modules `NATICU`, `NATICUCV` and `NATICUXL` has been improved considerably.

Local ICU Buffer Pool for Enhanced Performance

A local ICU buffer pool has been introduced to improve `NATICU` performance if Unicode or code page support is used. Instead of allocating buffers to store ICU related data separately for each Natural session, data is stored in the ICU buffer pool. This will avoid processing of the ICU related data located in the session-specific buffers before and after a terminal I/O. For further information, see *ICU Buffer Pool* in the *Unicode and Code Page Support* documentation.

Note: It is not possible to use the ICU Buffer Pool with different `NATICU` versions. If two different `NATICU` versions are used in the same environment, the ICU buffer pool is initialized by the first Natural session with the `NATICU` version of that session. If another Natural session with a different `NATICU` version is started afterwards, `NATICU` detects that the ICU buffer pool is already used by another `NATICU` version, and stores all ICU related data in session-specific buffers as with previous Natural versions.

NATICU Delivery for z/VSE

For z/VSE, the ICU modules `NATICU` and `NATICUCV` are delivered also as a phase to make use of the RCA technique more convenient. See also *ICU Library* in the *Unicode and Code Page Support* documentation.

Compiler Option PCHECK Enhanced

With Natural Version 4.2.6, the compiler option `PCHECK` has been enhanced for use in conjunction with the following Natural object types:

- Adapters (invoked by a the `PROCESS PAGE USING` statement)
- Subroutines (invoked by a `PERFORM` statement)
- Maps (invoked by an `INPUT USING MAP` statement)
- Helproutines

If more than one parameter inconsistency is detected within the same Natural object, the new error message NAT1392 is issued. See *New Error Messages* for more information.

4 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.

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
Natural Advanced Facilities *	NAF	4.2.6	These versions contain ■ all Zaps, ■ `INPL` updates, ■ early warnings and ■ source changes applied to their respective predecessor versions as error corrections.
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 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 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

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	**Set User ID and ETID for RPC** Used on the RPC client side, this API sets the user ID and ETID for Natural RPC servers which were configured with Impersonation = A (automatic logon).

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.

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

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:

- 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

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

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 Web I/O Interface

The following changes/enhancements are provided:

Natural Web I/O Interface Client

Support is provided for the following:

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

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.