

Natural

Release Notes

Version 8.2.4 for Mainframes

October 2014

This document applies to Natural Version 8.2.4 for Mainframes.

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

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Table of Contents

Preface	v
1 Supported Environments	1
Operating Systems	2
TP Monitors/Online Interfaces	2
Database Management Systems	2
Assemblers	3
2 Available and Required Software AG Product Versions	5
Product Availability and End of Maintenance	6
Overview of New Natural Add-On Product Versions	6
Software AG Product Versions Required with Natural	8
3 Installation and Compatibility	11
Changes to Installation	12
Compatibility	14
4 New and Changed Features of Base Natural	17
Customer Enhancement Proposals	18
Operations and Performance	18
Unicode and Code Page Support	19
Programming Language	21
Adabas Multi-Fetch Processing	22
System Commands	22
Utilities	23
Debugger	25
Profile Parameters	25
Application Programming Interfaces	27
5 New and Changed Features of Natural Add-On Products	29
Customer Enhancement Proposals for Natural Add-On Products	30
Natural CICS Interface	30
Natural Com-plete/SMARTS Interface	31
Natural for DB2	31
Natural ISPF	32
NaturalONE	32
Natural Optimizer Compiler	32
Natural RPC	32
Natural Security	34
Super Natural	36
6 Most Recent Natural Add-On Product Versions	37
7 Natural for DB2 Version 8.3.1	39
Support for DB2 Version 11 Features	40
Enhanced Exit Routine for Unique CICS TS Queues	41
8 Natural Optimizer Compiler Version 8.3.1	43
Architecture Levels for z/OS and z/VSE	44
9 Dropped Features	45
Features Dropped with this Natural Version	46

Features Dropped with a Future Natural Version 46

Preface

This document provides a brief summary of the changes and enhancements that have been introduced in Natural Version 8.2.4 for Mainframes and the Natural add-on products released with this version. Revised and updated documentation sets are available with this version.

Update Information, October 2014:

- *Changes for LE Support on z/OS* has been added to the section *Installation and Compatibility*.

Supported Environments	Operating Systems TP Monitors/Online Interfaces Database Management Systems Assemblers
Available and Required Software AG Product Versions	Product Availability and End of Maintenance Overview of New Natural Add-On Product Versions Software AG Product Versions Required with Natural
Installation and Compatibility	Changes to Installation Compatibility
New and Changed Features of Base Natural	Customer Enhancement Proposals Operations and Performance Unicode and Code Page Support Programming Language Adabas Multi-Fetch Processing System Commands Utilities Debugger Profile Parameters Application Programming Interfaces
New and Changed Features of Natural Add-On Products	Customer Enhancement Proposals for Natural Add-On Products Natural CICS Interface Natural Com-plete/SMARTS Interface Natural for DB2 Natural ISPF NaturalOne Natural Optimizer Compiler Natural RPC (Remote Procedure Call) Natural Security Super Natural
Most Recent Natural Add-On Product Versions	Natural for DB2 Version 8.3.1 Natural Optimizer Compiler Version 8.3.1
Dropped Features	Features Dropped with this Natural Version Features Dropped with a Future Natural Version

1 Supported Environments

▪ Operating Systems	2
▪ TP Monitors/Online Interfaces	2
▪ Database Management Systems	2
▪ Assemblers	3

Software AG provides Natural support for the versions of the operating systems, TP monitors, database management systems and assemblers supported by their respective manufacturers. In general, when the provider of an operating system, TP monitor, database management or assembler system stops supporting a version of an operating system, TP monitor, database management system or assembler, Software AG will stop supporting that version of the operating system, TP monitor, database management system or assembler.



Note: For information regarding Software AG product compatibility with IBM platforms and any IBM requirements for Software AG products, please review the [Software AG IBM Product Availability](#) web page.

Operating Systems

Software AG provides Natural support for the operating systems and versions listed in the [Product Version Availability](#) section of Software AG's Empower web site at <https://empower.software-ag.com/> (see also [Product Availability and End of Maintenance](#)).

TP Monitors/Online Interfaces

Natural Version 8.2.4 supports the versions of the TP monitors/online interfaces listed below:

Product	Version
Com-plete	See Software AG Product Versions Required with Natural
CICS TS for z/OS	3.1, 3.2, 4.1, 4.2, 5.1
CICS TS for VSE/ESA	1.1.1
IMS TM	10.1, 11.1, 12.1
openUTM	5.3, 6.0, 6.1, 6.2
TIAM	13.1, 13.2

Database Management Systems

Natural Version 8.2.4 supports the versions of the database management systems listed below:

Product	Version
Adabas	See Software AG Product Versions Required with Natural
DB2 for z/OS	9.1, 10.1, 11.1
DB2 Server for VSE & VM	7.3, 7.4, 7.5
DL/I	As delivered with the TP monitor IMS TM
VSAM	As delivered with the operating system
DFSMSStvs	As delivered for the respective VSAM version if transactional VSAM is to be used with Natural for VSAM

Assemblers

Natural Version 8.2.4 requires one of the following assemblers for the assembly of its source modules:

- “HL” Assembler Version 1.6 (z/OS and z/VSE operating systems),
- “Assembh” Assembler (BS2000/OSD operating systems).



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

2 Available and Required Software AG Product Versions

- Product Availability and End of Maintenance 6
- Overview of New Natural Add-On Product Versions 6
- Software AG Product Versions Required with Natural 8

Product Availability and End of Maintenance

You can view all available Software AG product versions and check the dates when their maintenance ends by visiting Software AG's Empower web site at <https://empower.softwareag.com/>:

1. Log into Empower.
2. Expand **Products** in the left menu of the page and select **Product Version Availability**:

Product Version Availability

General Availability (GA), Platform retirement, End of Maintenance (EOM), and End of Sustained Support (EOSS) dates for your products. [View a description of these terms in our Maintenance Policy.](#)

Product Line: [-] OR Product Family: [-]

Product Name: [-]

Product Version: [-]

Operating System: [-] Operating System Version: [-]

Show prior Product Versions:

Sort by Product Version: Descending Ascending Rows per Page: [100]

[SEARCH] [CANCEL]

Rows 1 - 100 of 6022 | Rows per page: 100 | Click for Printable Version of below Table: [Print]

Product Line Product - Product Version	Version Lifecycle Milestone			
	GA	OS Retirement	EOM	EOSS
Operating System and Hardware *				

3. Select the required filter criteria from the drop-down list boxes and click on the **SEARCH** button.

A list of supported Software AG products that meet the filter criteria is shown. In addition, the end-of-standard- maintenance dates are indicated in the **EOM** column.

If you mark **Show prior Product Versions**, only product versions that are out of maintenance are listed.

Overview of New Natural Add-On Product Versions

This release of Natural provides new versions of the Natural add-on products (or subcomponents) listed in the following table. These versions contain

- all Zaps,
- INPL updates,
- early warnings and

- source changes

applied to their respective predecessor versions as error corrections.

Product Name	Product Code	Version
Natural Advanced Facilities	NAF	8.2.4
Natural CICS Interface (*)	NCI	8.2.4
Natural Com-plete/SMARTS Interface (*)	NCF	8.2.4
Natural Connection	NTC	8.2.4
Natural Development Server	NDV	8.2.4
Natural for DB2 (*)	NDB	8.2.4
		8.3.1
Natural for DL/I	NDL	8.2.4
Natural for SQL/DS	NSQ	8.2.4
Natural for VSAM	NVS	8.2.4
Natural IMS TM Interface	NII	8.2.4
Natural ISPF (*)	ISP	8.2.4
Natural Japanese Language Pack	NCJ	8.2.4
Natural <i>open</i> UTM Interface	NUT	8.2.4
Natural Optimizer Compiler (*)	NOC	8.2.4
		8.3.1
Natural Review	RNM	8.2.4
Natural RPC (*)	RPC	8.2.4 (RPC is a separate subcomponent of Natural)
Natural SAF Security	NSF	8.2.4
Natural Security (*)	NSC	8.2.4
Natural SQL Gateway	NSB	8.2.4
Natural TIAM Interface	NRT	8.2.4
Natural TSO Interface	NTI	8.2.4
Natural Web I/O Interface	NWO	8.2.4 (server)
Super Natural (*)	NSN	8.2.4
zIIP Enabler for Natural	NAZ	8.2.4

* Product-specific changes and/or enhancements are described in *New and Changed Features of Natural Add-On Products*.

Software AG Product Versions Required with Natural

The following minimum product versions/fixes (or higher) are required to use Natural Version 8.2.4 with the Software AG products listed below:

Product Name	Product Code	Minimum Version
Adabas	ADA	8.2.4 8.2.5 for the zIIP Enabler for Natural with Zaps AO825001 through AO825006 (ADASVC) and AI825002 (ADALNK) installed
Adabas CICS Interface	ACI	8.2.4
Adabas IMS/TM Interface	AII	8.2.4
Adabas Online System	AOS	8.2.4
Adabas Review	REV	4.6.1
Adabas Text Retrieval	TRS	2.1.4
Adabas UTM Interface	AUT	7.4.4
Com-plete	COM	6.7.1 with SMARTS Version 3.3.1 Cumulative Fix 18
Con-form	CMF	3.4.3
Con-nect	CNT	3.4.3
ConnecX SQL Engine	CXX	11.0.2
Entire Connection	PCC	4.5.2
Entire DB Engine	AER	1.5.7
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	5.3.1
Entire Output Management	NOM	3.3.1
Entire System Server	NPR	3.5.2
Entire Transaction Propagator	ETP	1.5.2 Apply Zaps ET52001 and ET52003 (for ETP) to use ETP with Adabas Version 8. If you are also using the additional Entire Transaction Propagator CICS Interface (ETC), in addition, apply Zap EZ52005 (for ETC).
International Components for Unicode for Software AG	ICS	1.3.2

Mainframe License Check	MLC	1.2.7
Natural Advanced Facilities	NAF	8.2.4
Natural for Ajax	NJX	8.2.4
Natural Business Services	NBS	5.3.1 (5.3.1 Cumulative Fix 15 if the enhanced loading of fixes introduced for the INPL utility is to be used)
Natural CICS Interface	NCI	8.2.4
Natural Com-plete/SMARTS Interface	NCF	8.2.4
Natural Connection	NTC	8.2.4
Natural Construct	CST	5.3.1
Natural for DB2	NDB	8.2.4
		8.3.1
Natural Development Server	NDV	8.2.4
Natural for DL/I	NDL	8.2.4
Natural Document Management	NDM	1.6.3 with Service Pack I001 applied
Natural Engineer	NEE	8.2.2
Natural IMS TM Interface	NII	8.2.4
Natural ISPF	ISP	8.2.4
Natural Japanese Language Pack	NCJ	8.2.4
Natural Optimizer Compiler	NOC	8.2.4
		8.3.1
Natural RPC	RPC	8.2.4 (RPC is a separate subcomponent of Natural)
Natural Review	RNM	8.2.4
Natural SAF Security	NSF	8.2.4
Natural Security	NSC	8.2.4
Natural for SQL/DS	NSQ	8.2.4
		Note: IBM also refers to SQL/DS as DB2 Server for VSE & VM.
Natural SQL Gateway	NSB	8.2.4
Natural TIAM Interface	NRT	8.2.4
Natural TSO Interface	NTI	8.2.4
Natural <i>open</i> UTM Interface	NUT	8.2.4
Natural for VSAM	NVS	8.2.4
Natural Web I/O Interface	NWO	1.3.13 (client)
		8.2.4 (server)
Predict	PRD	8.2.2

Available and Required Software AG Product Versions

Predict Application Control	PAC	2.6.1
Predict Case	PCA	2.5.2 with Service Pack I001 applied
SMARTS	APS	2.7.2 Cumulative Fix 20 for BS2000/OSD 3.3.1 Cumulative Fix 18 for z/OS and z/VSE
Software AG Security eXtension	SSX	8.2.3 if Integrated Authentication Framework (IAF) is to be used SSX is delivered together with webMethods EntireX (before: EntireX Communicator).
Super Natural	NSN	8.2.4
System Automation Tools	SAT	3.3.1
System Maintenance Aid	SMA	2.1.2 Cumulative Fix 2
webMethods EntireX (before: EntireX Communicator)	EXX	8.2.2 for z/OS 7.2.3 for z/VSE 8.1.1 for BS2000/OSD

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 statements about 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.

3 Installation and Compatibility

- Changes to Installation 12
- Compatibility 14

 **Important:** This section provides the latest installation and compatibility information for this Natural release. For a summary of installation changes and migration announcements for older versions of Natural, refer to the *Migrating from Previous Versions of Natural* section in the *Installation* documentation for Natural Version 8.2.3.

Changes to Installation

Particular installation changes to Natural add-on products are described in the relevant sections in *New and Changed Features of Natural Add-On Products*.

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

- [No Deletion of Old Natural Objects](#)
- [New ICS Modules for Support of IBM Architecture Levels](#)
- [New ICU Data Modules](#)
- [SMA Parameter Changes for LE Support](#)
- [Documentation: Migrating Chapter Removed](#)

No Deletion of Old Natural Objects

The optional installation step to delete obsolete Natural objects from previous installations is not required for Natural Version 8.2.4. As a result, the corresponding job/step is not performed by System Maintenance Aid and the NAT vrs .LDEL data set is not distributed for this Natural version.

New ICS Modules for Support of IBM Architecture Levels

(See also: [Support for Architecture Levels on z/OS and z/VSE](#).)

The new ICS (International Components for Unicode for Software AG) load modules provided for support of the IBM architecture levels 5 and 9 are listed in the following table. The ICS module to be used depends on the IBM hardware facility installed.

Architecture Level	ICS Module
0	SAGICU (no architecture level used)
5	SAGICUA5
9	SAGICUA9

 **Caution:** Continue to use the ICS module SAGICU on a mainframe platform (for example, BS2000/OSD) that does not support IBM architecture levels. Otherwise, an abnormal termination (SOC1) can occur when executing a Natural program.

You can either link the ICS module during the installation of Natural or dynamically load the module with the `RCA` profile parameter at session start: see the corresponding installation procedure for z/OS and z/VSE in *Installing International Components for Unicode for Software AG*.

New ICU Data Modules

The ICU data libraries provided as Natural load modules with ICS (International Components for Unicode for Software AG) have changed due to the new ICU version (see also [ICU Version Upgrade](#)):

Old Name	New Name
ICS DT49E	ICS DT51E
ICS DT49J	ICS DT51J
ICS DT49X (not for z/VSE)	ICS DT51X (not for z/VSE)

The ICS DT51J data module contains the same code pages and locales as ICS DT51E plus all Japanese code pages. For more information, see *ICU Data Libraries* in the *Unicode and Code Page Support* documentation.

For the resulting changes in installation steps, see the *Installation Procedure* for z/OS, z/VSE and BS2000/OSD in *Installing International Components for Unicode for Software AG*.

SMA Parameter Changes for LE Support

The SMA (System Maintenance Aid) parameter `NATXML-ASSLE` has been replaced by the new `NAT-LEOPT` parameter. This parameter is used to build the IBM Language Environment (LE) options for z/OS and z/VSE. `NATXML-ASSLE` is still supported for compatibility with previous versions of Natural.

In addition, the new `NAT-LEOPT-AMODE24` parameter is provided to support 24-bit mode subprograms. This parameter is only required for z/OS.

For more information, see the corresponding installation step *Build the Natural-Specific IBM Language Environment* for z/OS and z/VSE in *Installing Natural*.

Documentation: Migrating Chapter Removed

The chapter *Migrating from Previous Versions of Natural* has been removed from the *Installation* documentation. For information on upgrading from an older version of Natural, refer to the *Installation* documentation for Natural Version 8.2.3.

Compatibility

This section provides the latest information for this Natural release regarding compatibility with earlier versions of Natural for Mainframes as well as with Natural on other platforms.



Note: For information regarding Software AG product compatibility with IBM platforms and any IBM requirements for Software AG products, please review the [Software AG IBM Product Availability](#) web page.

- [Changes for LE Support on z/OS](#)
- [Running Different Natural 8.2 Versions in One Complete/SMARTS Region](#)
- [Classic Adabas Control Block Used by Default](#)
- [Support for the Arabic Shaped Format](#)
- [User Exits for the Natural Data Collector](#)
- [RPC Subparameter ACIVERS Ignored on z/OS](#)

Changes for LE Support on z/OS

The delivered NATLEOPT load module no longer supports the IBM Language Environment (LE) options ALL31=(OFF) and STACK=(, , BELOW) on z/OS.

If you still use non-Natural programs running in 24-bit addressing mode and if your installation does not specify these IBM LE options as the default for all applications, you must set the new SMA (System Maintenance Aid) parameters NAT-LEOPT and NAT-LEOPT-AMODE24 in order to run SMA Job I055/Step 0130.

For more information, see the corresponding installation step in *Build the Natural-Specific IBM Language Environment Options* in the *Installation for z/OS* documentation.

Running Different Natural 8.2 Versions in One Complete/SMARTS Region

If you want to run Natural Version 8.2.4 and Natural Version 8.2.2 or 8.2.3 in the same Complete/SMARTS region, you must apply Zap NP93005 to the Natural Complete/SMARTS Interface of your old Version 8.2.2 or 8.2.3.

Classic Adabas Control Block Used by Default

By default, Natural now uses the classic Adabas control block (ACB) to access Natural system files and load Natural objects. If you want to use the extended Adabas control block (ACBX) instead, set the new `ADAAACBX` profile parameter as described in the *Parameter Reference* documentation.

Support for the Arabic Shaped Format

Since Natural Version 8.2.3, Natural Arabic characters are internally represented in the unshaped format instead of the shaped format. If you want to keep the shaped format of Arabic characters produced in a previous Natural version, apply the following contiguous special-purpose Zaps: NA93194, NA93195, NA93196, NA93197, NA93198 and NA93199.

For more information on Arabic shaping, see the relevant section in the *Unicode and Code Page Support* documentation.

User Exits for the Natural Data Collector

The layout of the global data area defined in the `NAMRDC` macro has changed in that the `RDCGWRKL` field was moved into a reserved area. If you use `RDCGWRKL`, you must reassemble all user-written user exit routines that are called by the Natural Data Collector (RDC). This requirement applies to user exit routines you assembled in Natural Version 8.2.3 or in a previous version.

RPC Subparameter ACIVERS Ignored on z/OS

The `ACIVERS` keyword subparameter of the `RPC` profile parameter is no longer required on z/OS platforms and is therefore ignored: see [Highest EntireX API Version Now Used on z/OS](#).

4 New and Changed Features of Base Natural

▪ Customer Enhancement Proposals	18
▪ Operations and Performance	18
▪ Unicode and Code Page Support	19
▪ Programming Language	21
▪ Adabas Multi-Fetch Processing	22
▪ System Commands	22
▪ Utilities	23
▪ Debugger	25
▪ Profile Parameters	25
▪ Application Programming Interfaces	27



Note: The SYSEXV utility gives you access to examples of new features available in the current and in some earlier versions of Natural. SYSEXV is described in the *Utilities* documentation.

Customer Enhancement Proposals

This is an overview of the customer enhancement proposals that have been implemented in base Natural:

Enhancement Proposal (Brainstorm) ID	Proposal
1039557	Enhance application programming interfaces to allow appropriate security settings: see Specification of FSEC System File .
1041638	Provide option for the LIST subcommands SCAN and FIND to find lowercase characters in sources: see Case-Sensitive Search for Listed Sources .
1042495	Enhance the LIST COUNT command to support the same selection criteria that can be specified with the range clause of LIST: see LIST COUNT in LIST System Command .
1043135	Allow separate data sets for different dumps for z/OS batch: see the new DUMPDSN keyword subparameter of the OSP profile parameter described in the Parameter Reference documentation.
1046500	Provide option to copy Predict sets with SYSMAIN: see SYSMAIN Utility .
1057344	Provide subcommand for the LIST system command to scroll up/down half a page in a source: see Half-Page Scrolling for Listed Sources in LIST System Command .
1074887	Enhance the USR3003N application programming interface for Natural Security/Natural SAF Security support: see Application Programming Interfaces .

See also [Customer Enhancement Proposals for Natural Add-On Products](#).

Operations and Performance

- [Swap Pool: Increased Upper Limit for Slot Sizes](#)
- [Support for Optimize Monitor Buffer Pool on BS2000/OSD](#)

- [New Trap Routine for Compression/Decompression Errors](#)

Swap Pool: Increased Upper Limit for Slot Sizes

The slot of a logical swap pool can now be set to a size greater than 998 KB in the `NTSWPRM` macro and the `SYSTP` utility to allocate sufficient storage for large user sessions.

For more information, see *SWPSLSZ - Number of Logical Swap Pools, Slot Sizes in the Operations* documentation.

Support for Optimize Monitor Buffer Pool on BS2000/OSD

The Optimize Monitor Buffer Pool can now also be used on BS2000/OSD platforms. The Optimize Monitor Buffer Pool is required for infrastructure and application monitoring with Optimize for Infrastructure.

For more information, see *Optimize Monitor Buffer Pool* in the *Operations* documentation and the *Guide for Enterprise Transaction Systems* in the *Optimize for Infrastructure* documentation. For the resulting changes in installation, see the new installation step *Link and Start the Optimize Monitor Buffer Pool* in the *Natural Installation* documentation.

New Trap Routine for Compression/Decompression Errors

The new `RDCCMPTR` error trap routine can be used to detect compression/decompression errors at an early stage. This routine checks all Natural buffers for integrity and consistency whenever an RDC event occurs. Since this routine slows down performance, we strongly recommend that you only use it when requested by Software AG technical support for problem analysis.

`RDCCMPTR` is a built-in function you can activate with the `RDCEXIT` profile parameter. For more information, see the explanations provided in the new **Debugging Hints** section of the `SYSEXV` utility.

Unicode and Code Page Support

- [Support for Architecture Levels on z/OS and z/VSE](#)
- [ICU Version Upgrade](#)

- [Support for the Arabic Shaped Format](#)

Support for Architecture Levels on z/OS and z/VSE

ICS (International Components for Unicode for Software AG) now provides new load modules that support the IBM hardware architecture levels 5 and 9 on z/OS and z/VSE platforms.

Architecture levels employ instructions available with IBM hardware facilities that significantly improve performance. Under heavy workload, you can expect an increase in performance of between 5 and 15 percent when using level 5, and of between 10 and 20 percent when using level 9. As for Natural, you can expect better performance for Natural statements that use Unicode variables or code-page encoding instructions (for example, `MOVE ENCODED`).

For more information on architecture levels, see the related documentation from IBM.

For more information on the new ICS load modules, see [New ICS Modules for Support of IBM Architecture Levels](#) and *Alternative ICS Modules for Support of Architecture Levels in the Unicode and Code Page Support* documentation.

ICU Version Upgrade

The ICU (International Components for Unicode) version has been upgraded to ICU 51.2 which supports Unicode Version 6.2 (see also [New ICU Data Modules](#)).

The changes provided with ICU 51.2 include fixes for thread safety of locale ID functions which are used, for example, in the Unicode-specific `CHARPOSITION` clause of the Natural `EXAMINE` statement.

For a summary of all changes in ICU 51.2 and Unicode Version 6.2, see the Download ICU 51 website at <http://site.icu-project.org/download/51> and the Unicode 6.2.0 website at <http://www.unicode.org/versions/Unicode6.2.0/> respectively.

Support for the Arabic Shaped Format

Since Natural Version 8.2.3, Natural Arabic characters are internally represented in the unshaped format instead of the shaped format. If you want to keep the shaped format of Arabic characters produced in a previous Natural version, apply the following contiguous special-purpose Zaps: NA93194, NA93195, NA93196, NA93197, NA93198 and NA93199.

For more information on Arabic shaping, see the relevant section in the *Unicode and Code Page Support* documentation.

Programming Language

- [No More Renumbering for Constants](#)
- [Separable Parameters in Function Calls](#)
- [Statements](#)
- [System Variables](#)

No More Renumbering for Constants

Alphanumeric constants are no longer changed when a Natural source is renumbered. For more information, see *Renumbering of Source-Code Line Number References* in the *Programming Guide*.

Separable Parameters in Function Calls

Parameters provided in a function call can now be separated from each other by a blank or the input delimiter character. (This enhancement was introduced in Natural Version 8.2.3 with the Zap NA93293.)

For more information, see *parameter* in the syntax description of function calls in the *Programming Guide*.

Statements

MOVE ALL Statement

The `MOVE ALL` statement is now documented with the `MOVE` statement: see *Syntax 9 - MOVE ALL*.



Note: As a result, you can no longer select `MOVE ALL` from the *Quick Reference* selection box of the *Statements* overview page.

READ, FIND and HISTOGRAM

The multi-fetch option of the `READ`, `FIND` and `HISTOGRAM` statement has been enhanced to retrieve additional records per database call: see [Adabas Multi-Fetch Processing](#).

System Variables

*ERROR-LINE System Variable

The *ERROR-LINE system variable is now reset to 0 when a Level 1 program starts executing. For more information, see the *System Variables* documentation.

Adabas Multi-Fetch Processing

Natural now supports the Adabas multi-fetch feature for FIND, READ and HISTOGRAM statements with a total record buffer size greater than 32 KB. As a result, additional records can be read with a single multi-fetch call. (This enhancement was introduced in Natural Version 8.2.3 with the Zap NA93234.)

For multi-fetch calls that exceed 32 KB, Natural now automatically uses the ACBX (extended Adabas control block) layout instead of the limited ACB (Adabas control block). If required, you can limit the number of records read by a multi-fetch call by specifying a maximum size for the Natural multi-fetch buffer (MULFETCH) with the DS profile parameter (see the *Parameter Reference* documentation).

For more information, see the MULTI-FETCH clause described in the *Programming Guide*.

System Commands

- [CATALL System Command](#)
- [LIST COUNT System Command](#)
- [LIST System Command](#)



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

CATALL System Command

With Natural Version 8.2., the sequence in which the CATALL system command processes Natural objects has slightly changed to improve the migration of Natural applications.

As a result, subprograms are now processed *before* external subroutines. For more information on the object processing sequence, see TYPES in *Direct Command Syntax*.

LIST COUNT System Command

The LIST COUNT system command is now documented with the LIST system command: see *Syntax Overview* and *Displaying Numbers and Sizes of Objects in LIST*.



Note: As a result, you can no longer select LIST COUNT from the *Quick Reference* selection box of the *System Commands* overview page.

LIST System Command

Half-Page Scrolling for Listed Sources

The LIST system command provides the new subcommands +H and -H to scroll half a page in a source listing. See also *Subcommands for Listed Source*.

Case-Sensitive Search in Listed Sources

The FIND, SCAN and REF subcommands of LIST now provide case-sensitive search options to distinguish between uppercase and lowercase letters used as search value in a listed source. For more information, see *List of Source*.

LIST COUNT: More Selection Options and Improved Size Results

- The LIST COUNT command now provides the same object selection criteria as the base LIST command (*object-name-range*, *range-clause* and *settings*). See *Syntax Overview* and *Displaying Numbers and Sizes of Objects* for more information.
- The selection criteria currently in effect on a **LIST Objects** screen can now be used for a LIST COUNT operation (see LISTCOUNT in *Subcommands for the Selection List*).
- LIST COUNT now provides more accurate size results since byte values are rounded at a later stage.

Utilities

- [Object Handler](#)
- [SYSBPM Utility](#)
- [SYSEXV Utility](#)
- [SYSMAIN Utility](#)



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

Object Handler

New Transfer Option for Line Number Increments

The Object Handler now provides the new command option `USE-LINE-NUMBER-INCREMENT` to unload the line number increments of Natural source objects and to rebuild the line numbers accordingly when loading the objects.

For more information, see the transfer options of the *option-setting* clause.

New Profile Parameter for Line Number Increments

The Object Handler now provides the new profile parameter `Option-TR-Line-Number-Increment` to specify the default setting for the `USE-LINE-NUMBER-INCREMENT` command option (see above). Make sure to use the `UPDATE` command of the Object Handler Profile Maintenance tool when you include the new parameter in your profile.

For more information, see *Profile Parameters* in the section *Profile Settings*.

SYSBPM Utility

New Options for Message Buffer Pool

You can now select and monitor any message buffer pool defined for your Natural subsystem.

For more information, see *Invoking Select Message Pool* in *SYSBPM Utility*.

SYSEXV Utility

Hints for Debugging

The SYSEXV utility now also provides information on Natural features which are frequently used and requested. The new **Debugging Hints** menu option is used to document internal Natural features that can be used for error trapping.

SYSMAIN Utility

New Option for Predict Sets

The SYSMAIN utility now provides the option to copy, delete, list, move or rename Predict sets. For more information, see *Processing Predict Sets* in *SYSMAIN Utility*.

You can control processing of Predict sets with Natural Security.

Debugger



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

Debugging Mainframe Applications with NaturalONE

You can now use the NaturalONE debugger to debug mainframe applications located on a z/OS or z/VSE host. Instructions for accessing the NaturalONE debugger with the debug attach server are provided in *Preparing Natural for Attached Debugging*.

See also `DBGAT` in *New Profile Parameters* and the changes to installation in the *Natural Development Server* documentation.

For more information on the debug attach server, see the appropriate section in the *NaturalONE* documentation.

Profile Parameters

- [New Profile Parameters](#)
- [Changed/Enhanced Profile Parameters](#)
- [Documentation of RPC Keyword Subparameters](#)



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

New Profile Parameters

Parameter	Corresponding Macro	Task	Description
ABLOG	NTPRM	Log Program Execution Errors	Logs Natural errors that occur during program execution.
ADAACBX	NTPRM	Use of the Extended Adabas Control Block	Determines whether the extended Adabas control block (ACBX) is used for Natural system file access instead of the classic Adabas control block (ACB). See also <i>Classic Adabas Control Block Used by Default</i> .
DBGAT	NTDBGAT	Debug Attach Server for NaturalONE	Activates the debug attach server to debug mainframe applications on z/OS or z/VSE using NaturalONE. See also <i>Debugging Mainframe Applications with NaturalONE</i> .

Parameter	Corresponding Macro	Task	Description
PDPSIZE	NTPRM	Size of the Profiler Data Pool	<p>Determines the size of the NaturalONE Profiler data pool required for the NaturalONE Profiler.</p> <p>For information on the NaturalONE Profiler, see the relevant section in the <i>NaturalONE</i> documentation at http://documentation.softwareag.com/.</p>

Changed/Enhanced Profile Parameters

Parameter	Corresponding Macro	Task	Change/Enhancement
EDPSIZE	NTBPI	Size of Software AG Editor Auxiliary Buffer Pool	<p>Compression Improved</p> <p>The storage compression has been improved by defragmenting unused and used blocks to minimize the used length of the buffer.</p>
ESIZE	NTPRM	Size of User-Buffer Extension Area	<p>Maximum Size Increased</p> <p>The buffer size limit has been raised to 32767 KB.</p>
FC	NTPRM	Filler Character for INPUT Statement	<p>New Default for Web I/O</p> <p>The default setting for web I/O has changed from low value to blank.</p>
ISIZE	NTPRM	Size of Initialization Buffer	<p>Maximum Size Increased</p> <p>The buffer size limit has been raised to 32767 KB.</p>
OSP	NTOSP	Dump Data Set Name Prefix	<p>Dynamical Dump Allocation</p> <p>The new DUMPDSN keyword subparameter is provided for dynamic transaction dump support for z/OS batch and server environments.</p>
RPC	NTRPC	Remote-Procedure-Call Settings	<p>Highest EntireX API Version for z/OS</p> <p>The ACIVERS keyword subparameter is no longer required on z/OS: see Highest EntireX API Version Now Used on z/OS.</p> <p>See also Documentation of RPC Keyword Subparameters.</p>
XML	NTXML	Activate PARSE XML and REQUEST DOCUMENT Statements	<p>Timeout for HTTP Requests</p> <p>The new RDTOUT subparameter is provided to set timeouts for ongoing HTTP requests.</p> <p>Support for IPv4-Mapped IPv6 Addresses</p>

Parameter	Corresponding Macro	Task	Change/Enhancement
			The new RDV4MAP subparameter is provided to allow/disallow IPv4-mapped IPv6 addresses.

Documentation of RPC Keyword Subparameters

All keyword subparameters of the `RPC` profile parameter are now described in the [RPC](#) section of the *Parameter Reference* documentation.

As a result, you can no longer select `RPC` keyword subparameter from the *Quick Reference* selection box of the *Parameter Reference* overview page.

Application Programming Interfaces

The following Natural application programming interfaces (APIs) in the `SYSEXT` system library are new or have been enhanced:

API	Task	Enhancement
USR2021N	Perform dynamic data set allocation	This API is now enabled to create a PDSE library.
USR3003N	Initialize logical file table or set FDIC file	This API is now working in a Natural Security and Natural SAF Security (if installed) environment.
USR8210N	Maintain Natural Profiler monitoring	This new API enhances profiler monitoring with the NaturalONE Profiler and the Natural Profiler utility in batch mode. You can start or pause Profiler monitoring or view the current state of the Profiler monitoring process.

Specification of FSEC System File

The following Natural APIs in the `SYSEXT` system library now provide the option to specify an FSEC system file:

API	Task
USR1055N	List objects in a library
USR1056N	List DDMs on the FDIC file or in a library
USR1057N	Read Natural source code into an array
USR1058N	Read DDM source code into an array
USR2019N	Read or save Natural source code from/to the source area
USR2034N	Read any error message from FNAT or FUSER
USR4201N	Maintain data area sources

API	Task
USR4206N	List objects in a library
USR4208N	Read or write a Natural resource
USR4212N	Analyze data area
USR4215N	Get list of resources in a Natural library

See also *New RPC-Specific Application Programming Interface*.

For information on API handling, see the SYSEXT utility described in the *Utilities* documentation.

5

New and Changed Features of Natural Add-On Products

▪ Customer Enhancement Proposals for Natural Add-On Products	30
▪ Natural CICS Interface	30
▪ Natural Com-plete/SMARTS Interface	31
▪ Natural for DB2	31
▪ Natural ISPF	32
▪ NaturalONE	32
▪ Natural Optimizer Compiler	32
▪ Natural RPC	32
▪ Natural Security	34
▪ Super Natural	36



Note: For an overview of all Natural add-on products and the new product versions available, see [Overview of New Natural Add-On Product Versions](#).

Customer Enhancement Proposals for Natural Add-On Products

This is an overview of the customer enhancement proposals that have been implemented in the following Natural add-on products released with Natural Version 8.2.4:

Product	Enhancement Proposal (Brainstorm) ID	Proposal
Natural for DB2	1046582	Accept DATE, TIME and TIMESTAMP constants without parentheses: see Support for SQL Datetime Constants .
Natural Security	1039557	Check Natural application programming interfaces (USR* objects) for Natural Security settings: see Access to current FSEC .
Natural Security	1042456	Provide Natural application programming interface to check utility profiles: see NSCXUTC in Application Programming Interfaces .
Natural Security	1043038	Provide option in Natural Security to define ETID for batch jobs: see Batch ETID .
Natural Security	1074887	Enhance the USR3003N application programming interface for Natural Security/Natural SAF Security support: see Application Programming Interfaces .

Natural CICS Interface

New NCMPRM Parameter to Control Console Communication

The NCMPRM macro can now also be used to control session and device characteristics for a Natural session started with a console device. For more information, see the new TTYCNLS parameter described in the *TP Monitor Interfaces* documentation.

Natural Complete/SMARTS Interface

Compatibility: Running Different Natural 8.2 Versions in One Region

If you want to run Natural Version 8.2.4 and Natural Version 8.2.2 or 8.2.3 in the same Complete/SMARTS region, you must apply Zap NP93005 to the Natural Complete/SMARTS Interface of your old Version 8.2.2 or 8.2.3.

Natural for DB2



Notes:

1. The new features provided with *Natural for DB2 Version 8.3.1* are described in a separate section of these release notes.
2. The sections indicated for more information are contained in the *Statements* documentation, unless otherwise noted.
 - [Installation: No Deletion of Old Natural Objects](#)
 - [Support for SQL Datetime Constants](#)

Installation: No Deletion of Old Natural Objects

The optional installation step to delete obsolete Natural objects from previous installations is not required for Natural Version 8.2.4. As a result, the corresponding job/step is not performed by System Maintenance Aid, and the `NDBvrs.LDEL` data set is not distributed for this Natural version.

Support for SQL Datetime Constants

Natural for DB2 now also supports the format of SQL datetime constants. This format supports date, time and time stamp constants that are defined, for example, without parentheses. For more information, see *Constants* in *Natural SQL Statements*.

Natural ISPF

System Log now Shows Date and Time on z/VSE

The system log produced by the **Display system log** function of the operations facility now also provides the date and time when a log record is written to a z/VSE console device. Prerequisite: Entire System Server Version 3.5.3 (or higher) must be installed on z/VSE.

For more information, see the appropriate sections in the Natural ISPF documentation.

NaturalONE

The NaturalONE Profiler has been enhanced. For detailed information see the *NaturalONE* documentation at <http://documentation.softwareag.com/>.

For information on all changes, enhancements and new features available with NaturalONE, see the *Release Notes* in the *NaturalONE* documentation.

Natural Optimizer Compiler



Note: The new features provided with *Natural Optimizer Compiler Version 8.3.1* are described in a separate section of these release notes.

Natural RPC

- Application Monitoring
- External Password Check for Impersonation under CICS
- Highest EntireX API Version Now Used on z/OS
- New RPC-Specific Application Programming Interface
- No Roll Server for z/OS Batch Required

- [Documentation: EntireX Broker Stub Renamed to BROKER](#)

Application Monitoring

Natural RPC (Remote Procedure Call) now supports application monitoring on the RPC client and the server side.

External Password Check for Impersonation under CICS

A password check on a Natural RPC server that runs in impersonation mode under CICS performs an EXEC CICS VERIFY PASSWORD (...) USERID (...) operation. As a result, the password of an RPC client is no longer checked against Natural Security but against the external security manager used by CICS (for example, RACF).

Highest EntireX API Version Now Used on z/OS

The highest API version of the EntireX ACI that Natural RPC, the EntireX Broker stub and the EntireX Broker support is now determined automatically on z/OS platforms.

As a result, the ACIVERS keyword subparameter of the RPC profile parameter has become obsolete and is ignored on z/OS. ACIVERS is described in the *Parameter Reference* documentation.

New RPC-Specific Application Programming Interface

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

API	Task
USR8208N	<p>Terminate EntireX Broker service</p> <p>Pings or terminates an RPC (Remote Procedure Call) server or terminates an EntireX Broker service. Displays the EntireX Broker version and other information from the EntireX Broker Command and Information Service (CIS).</p> <p>USR8208N is an enhanced version of API USR2075N.</p> <p>See also <i>Using Application Programming Interface USR8208N</i> in the <i>Natural RPC</i> documentation.</p>

No Roll Server for z/OS Batch Required

A Natural RPC server that is started with the Natural RPC server front-end in z/OS batch mode no longer uses the Natural Roll Server. This makes it easier to set up an RPC server with the RPC server front-end.

Documentation: EntireX Broker Stub Renamed to BROKER

The name of the EntireX Broker stub used in the *Natural RPC* documentation has changed from BKIMBTSO to BROKER.

Natural Security

- [Installation: No Deletion of Old Natural Objects](#)
- [Administrator Services](#)
- [User Profiles](#)
- [Utility Profiles](#)
- [RPC Server Profiles](#)
- [Application Programming Interfaces](#)



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

Installation: No Deletion of Old Natural Objects

The optional installation step to delete obsolete Natural objects from previous installations is not required for Natural Version 8.2.4. As a result, the corresponding job/step is not performed by System Maintenance Aid, and the NSCVRS.LDEL data set is not distributed for this Natural version.

Administrator Services

Access to current FSEC

Administrator Services provides a new general option **Access To Current FSEC**. It determines whether the Natural Security data stored on the FSEC system file may be accessed - with application programming interfaces - from a Natural Security session running with another FSEC system file. For more information, see *Access To Current FSEC*.

User Profiles

Batch ETID

The **Batch ETID** field in user profiles now allows you to use the value of the `*INIT-PROGRAM` system variable as an End of Transaction ID (ETID) in batch mode. In addition, the functionality of the field has been enhanced as described under *Components of a User Profile*.

Additional Options - Groups/Members

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

Utility Profiles

Profiler

The use of the Profiler utility in batch mode can now be allowed or disallowed in Profiler utility profiles.

SYSBPM

The use of the SYSBPM commands `INITIALIZE MP`, `RESET MP` and `SELECT MP` can now be allowed or disallowed in SYSBPM utility profiles.

SYSMAIN

The processing of Predict sets can be controlled with SYSMAIN utility profiles. See also [New Option for Predict Sets](#) under *SYSMAIN Utility*.

RPC Server Profiles

ETID

The **ETID** field in RPC server profiles provides the new `C` setting. It allows you to use an ETID value supplied by the client. See *Components of an RPC Server Profile* for more information.

Application Programming Interfaces

NSCDEF

The NSCDEF application programming interface provides the new `PPARM1` parameter, which can be used to specify an FSEC system file. This allows you to check whether an object is defined on the specified FSEC system file and whether the security profile of the object is identical to that on the current FSEC system file. For more information, see the `PGMDEF` example program and the `TXTDEF` text object in the `SYSSEC` system library.

NSCXRUTC

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

Super Natural

Increased Upper Limit for Multiple-Value Fields and Periodic Groups

Super Natural has increased the upper limit for multiple-value fields and periodic groups to a maximum of 999 occurrences when the Adabas MUXEX (Set Maximum Count for MU and PE Fields) function is used.

This applies to all transactions created in the new version of Super Natural. If you want to use the new 999-occurrences limit for old transactions, you must set the **DDM Check on modify** option to **Yes** in the required user profiles before you modify these transactions.

For more information, see the relevant sections in the *Adabas* and the *Super Natural* documentation.

6 Most Recent Natural Add-On Product Versions

Natural for DB2 Version 8.3.1

Natural Optimizer Compiler Version 8.3.1

7 Natural for DB2 Version 8.3.1

- Support for DB2 Version 11 Features 40
- Enhanced Exit Routine for Unique CICS TS Queues 41

Natural for DB2 Version 8.3.1 (and any subsequent version) is available from Natural Version 8.2.4 onwards.

For the changes in installation, see *Installing Natural for DB2 Version 8.3.1* in the *Natural Installation* documentation.

Support for DB2 Version 11 Features

This section describes the new features that have been implemented in the SQL statements of Natural for DB2 Version 8.3.1 in support of DB2 Version 11:

- [XQuery for FLWOR Expressions](#)
- [Scalar Functions](#)
- [Special Registers](#)
- [Business Analytics Enhancements](#)

XQuery for FLWOR Expressions

Natural for DB2 Version 8.3.1 supports XQuery to write FLWOR (For, Let, Where, Order, Return) expression queries against XML data.

Scalar Functions

Natural for DB2 Version 8.3.1 supports the following scalar functions:

- BITAND, BITANDNOT, BITNOT, BITOR, BITXOR,
- PACK, UNPACK,
- DECFLOAT_FORMAT, DECODE, NVL, TIMESTAMPDIFF, TO_NUMBER, TRIM, and
- XMLXSROBJECTID.

For more information, see the *IBM SQL Reference Guide*.

See also *Using Natural Statements under Natural for DB2 Version 8.3.1* in the *Database Management System Interfaces* documentation.

Special Registers

Natural for DB2 Version 8.3.1 supports the following special registers:

- CURRENT APPLICATION COMPATIBILITY,
- CURRENT CLIENT_CORR_TOKEN,
- CURRENT GET_ACCEL_ARCHIVE,
- CURRENT QUERY ACCELERATION,
- CURRENT TEMPORAL BUSINESS_TIME, and
- CURRENT TEMPORAL_SYSTEM_TIME.

See also *Using Natural Statements under Natural for DB2 Version 8.3.1* in the *Database Management System Interfaces* documentation.

Business Analytics Enhancements

Natural for DB2 Version 8.3.1 supports grouping sets and super groups specified in the GROUP BY clause. For more information, see *GROUP BY Clause* in *Select Expressions under Natural for DB2 Version 8.3.1* in the *Database Management System Interfaces* documentation.

Enhanced Exit Routine for Unique CICS TS Queues

Natural for DB2 Version 8.3.1 provides an enhanced NDBUEXT exit routine to allow unique TS queue names within a CICS SYSPLEX environment. This is achieved by placing either the remote or the local CICS system identifier into a TS queue name. For more information, see *Dynamic and Static SQL Support under Natural for DB2 Version 8.3.1* in the *Database Management System Interfaces* documentation.

8

Natural Optimizer Compiler Version 8.3.1

- Architecture Levels for z/OS and z/VSE 44

The Natural Optimizer Compiler Version 8.3.1 (and any subsequent version) is available from Natural Version 8.2.4 onwards. Prerequisite: Natural Version 8.2.4 must be installed.

Architecture Levels for z/OS and z/VSE

Architecture levels are used to exploit new instructions available with IBM hardware facilities in order to enhance the performance of generated code.

Natural Optimizer Compiler Version 8.3.1 provides the new `ARCH` option to specify architecture levels on z/VSE and z/OS platforms.



Note: You can easily test the new `ARCH` option by setting the Natural profile parameter `RCA` at the start of a Natural session as described under *Dynamically Load Modules* in the installation procedure for z/OS and z/VSE.

The hardware requirements and the `ARCH` option settings are described in *Optimizer Options under Natural Optimizer Compiler Version 8.3.1* in the *Natural Optimizer Compiler* documentation.

For the changes in installation, see *Installing the Natural Optimizer Compiler Version 8.3.1* on z/OS and z/VSE in the *Natural Installation* documentation.

9 Dropped Features

- Features Dropped with this Natural Version 46
- Features Dropped with a Future Natural Version 46

Features Dropped with this Natural Version

The following features are discontinued and no longer supported in Natural Version 8.2.4:

- [Natural Security: Utilities Profiles for NATLOAD, NATUNLD and SYSTRANS](#)
- [Natural Parameter Module: Profile Parameter XSIZE](#)

Natural Security: Utilities Profiles for NATLOAD, NATUNLD and SYSTRANS

Natural Security no longer supports the utility profiles for the obsolete Natural utilities NATLOAD, NATUNLD and SYSTRANS.

Natural Parameter Module: Profile Parameter XSIZE

Natural no longer supports the `XSIZE` profile parameter and has removed the parameter from the Natural parameter module; you may have to adapt your Natural parameter module accordingly.

Features Dropped with a Future Natural Version

The following features will be discontinued or will no longer be supported in a future version of Natural:

- [Discontinued Support for V41COMP and V42COMP Compiler Options](#)
- [Discontinued Support for EntireX Location Transparency](#)
- [Discontinued Support for CINIT Function of Roll Server](#)

Discontinued Support for V41COMP and V42COMP Compiler Options

Effective with the next Natural version, the `V41COMP` and `V42COMP` compiler options of the `COMPOPT` system command and the `CMPO` profile parameter will no longer be supported. These compiler options disallow the use of new Natural Version 8.2 programming language enhancements for compatibility purposes with Natural Version 4.1 (`V41COMP`) or 4.2 (`V42COMP`).

Discontinued Support for EntireX Location Transparency

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

Discontinued Support for CINIT Function of Roll Server

Effective with the next Natural version, the NATRSRFI roll file formatting routine will no longer support the CINIT function. As a result, you need to change all jobs that use CINIT and use the FORMAT function instead. For more information, see *Formatting the Roll File* in the *Operations* documentation.

