

# Natural

## Natural Release Notes for Mainframes

Version 9.2.1

October 2022

This document applies to Natural Version 9.2.1 and 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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## Table of Contents

Preface .....	v
1 About this Documentation .....	1
Document Conventions .....	2
Online Information and Support .....	2
Data Protection .....	3
2 Supported Environments .....	5
Operating Systems .....	6
TP Monitors/Online Interfaces .....	6
Database Management Systems .....	6
Assemblers .....	7
IBM z/OS Authorized Code Scanner (zACS) .....	7
Authorized Services Manager and Roll Server .....	7
3 Available and Supported Software AG Product Versions .....	9
Product Availability and End of Maintenance .....	10
Overview of New Natural Add-On Product Versions .....	10
Software AG Product Versions Supported by Natural .....	12
4 Installation and Compatibility .....	15
Changes to Installation .....	16
Compatibility .....	16
5 New and Changed Features of Base Natural .....	19
Operations and Performance .....	20
Unicode and Code Page Support .....	22
Syntax and Compiler Enhancements .....	22
System Commands .....	24
Terminal Commands .....	24
Editors .....	24
Utilities .....	25
Profile Parameters .....	25
Application Programming Interfaces .....	26
6 New and Changed Features of Natural Add-On Products .....	29
Natural CICS Interface .....	30
Natural Development Server .....	31
Natural for Db2 .....	32
Natural for Db2 for zIIP .....	33
NaturalONE .....	33
Natural Optimizer Compiler .....	33
Natural Review .....	34
Natural RPC (Remote Procedure Call) .....	34
Natural Security .....	35
Natural for VSAM .....	37
7 Dropped Features .....	39
Features Dropped with this Natural Version .....	40
Features Dropped with a Future Natural Version .....	41

8 Planned Changes with Future Versions .....	43
License Checks for Add-On Products .....	44

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## Preface

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This document provides a brief summary of the changes and enhancements that have been introduced in Natural Version 9.2.1 for Mainframes and the Natural add-on products released with this version. Revised and updated documentation sets are available with this version.

<b>Supported Environments</b>	<b>Operating Systems</b> <b>TP Monitors/Online Interfaces</b> <b>Database Management Systems</b> <b>Assemblers</b> <b>IBM z/OS Authorized Code Scanner (zACS)</b> <b>Authorized Services Manager and Roll Server</b>
<b>Available and Supported Software AG Product Versions</b>	<b>Product Availability and End of Maintenance</b> <b>Overview of New Natural Add-On Product Versions</b> <b>Software AG Product Versions Supported by Natural</b>
<b>Installation and Compatibility</b>	<b>Changes to Installation</b> <b>Compatibility</b>
<b>New and Changed Features of Base Natural</b>	<b>Operations and Performance</b> <b>Unicode and Code Page Support</b> <b>Syntax Enhancements</b> <b>System Commands</b> <b>Terminal Commands</b> <b>Editors</b> <b>Utilities</b> <b>Profile Parameters</b> <b>Application Programming Interfaces</b>
<b>New and Changed Features of Natural Add-On Products</b>	<b>Natural CICS Interface</b> <b>Natural Development Server</b> <b>Natural for Db2</b> <b>Natural for Db2 for zIIP</b> <b>NaturalONE</b> <b>Natural Optimizer Compiler</b> <b>Natural Review</b> <b>Natural RPC (Remote Procedure Call)</b> <b>Natural Security</b> <b>Natural for VSAM</b>
<b>Dropped Features</b>	<b>Features Dropped with this Natural Version</b> <b>Features Dropped with a Future Natural Version</b>
<b>Planned Changes with Future Versions</b>	<b>License Checks for Add-On Products</b>

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# 1 About this Documentation

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- Document Conventions ..... 2
- Online Information and Support ..... 2
- Data Protection ..... 3

## Document Conventions

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Convention	Description
<b>Bold</b>	Identifies elements on a screen.
Monospace font	Identifies service names and locations in the format <code>folder.subfolder.service</code> , APIs, Java classes, methods, properties.
<i>Italic</i>	Identifies:  Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
Monospace font	Identifies:  Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.
	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the   symbol.
[ ]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [ ] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

## Online Information and Support

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### Product Documentation

You can find the product documentation on our documentation website at <https://documentation.softwareag.com>.

In addition, you can also access the cloud product documentation via <https://www.software-ag.cloud>. Navigate to the desired product and then, depending on your solution, go to “Developer Center”, “User Center” or “Documentation”.

### Product Training

You can find helpful product training material on our Learning Portal at <https://knowledge.softwareag.com>.



## Tech Community

You can collaborate with Software AG experts on our Tech Community website at <https://tech-community.softwareag.com>. From here you can, for example:

- Browse through our vast knowledge base.
- Ask questions and find answers in our discussion forums.
- Get the latest Software AG news and announcements.
- Explore our communities.
- Go to our public GitHub and Docker repositories at <https://github.com/softwareag> and <https://hub.docker.com/publishers/softwareag> and discover additional Software AG resources.

## Product Support

Support for Software AG products is provided to licensed customers via our Empower Portal at <https://empower.softwareag.com>. Many services on this portal require that you have an account. If you do not yet have one, you can request it at <https://empower.softwareag.com/register>. Once you have an account, you can, for example:

- Download products, updates and fixes.
- Search the Knowledge Center for technical information and tips.
- Subscribe to early warnings and critical alerts.
- Open and update support incidents.
- Add product feature requests.

## Data Protection

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Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

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## 2 Supported Environments

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▪ Operating Systems .....	6
▪ TP Monitors/Online Interfaces .....	6
▪ Database Management Systems .....	6
▪ Assemblers .....	7
▪ IBM z/OS Authorized Code Scanner (zACS) .....	7
▪ Authorized Services Manager and Roll Server .....	7

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 [Product Compatibility for IBM Platforms](http://www.softwareag.com/) web page at <http://www.softwareag.com/>.

## Operating Systems

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Software AG provides Natural support for the operating systems and versions listed in the [Product Version Availability](https://empower.software-ag.com/) 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

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Natural Version 9.2.1 supports the versions of the TP monitors/online interfaces listed below:

Product	Version
Com-plete	See <a href="#">Software AG Product Versions Supported by Natural</a> .
CICS TS for z/OS	5.4, 5.5, 5.6, 6.1
IMS TM	15.2

## Database Management Systems

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Natural Version 9.2.1 supports the versions of the database management systems listed below:

Product	Version
Adabas	See <a href="#">Software AG Product Versions Supported by Natural</a> .
Db2 for z/OS	12.1, 13.1
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

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Natural Version 9.2 requires "HL" Assembler as delivered with the operating system for the assembly of its source modules.



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

## IBM z/OS Authorized Code Scanner (zACS)

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All Natural Program Calls (PC) have been validated with the IBM z/OS Authorized Code Scanner (zACS) toolkit. All found vulnerabilities have been fixed, therefore all Natural PCs are vulnerability-free now. For more information about zACS, please refer to the corresponding IBM documentation at <https://www.ibm.com/docs/en/zos/2.5.0?topic=zos-authorized-code-scanner>.

## Authorized Services Manager and Roll Server

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The Authorized Services Manager (module NATASM92) and the Natural Roll Server (module NATRSM92) supplied with Natural Version 9.2.1 employ machine instructions from the IBM General Instructions Extension Facility. They will not execute successfully on machines for which IBM does not supply this extension facility.



# 3 Available and Supported Software AG Product Versions

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- Product Availability and End of Maintenance ..... 10
- Overview of New Natural Add-On Product Versions ..... 10
- Software AG Product Versions Supported by Natural ..... 12

## 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 in to 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:

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

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.

The Zap solutions and fixes mentioned in the following table can be downloaded from the **Product Fixes** section of the Software AG Empower website at <https://empower.softwareag.com/>.

Product Name	Product Code	Version
Natural Advanced Facilities	NAF	9.2.1
Natural CICS Interface	NCI	9.2.1
Natural Com-plete/SMARTS Interface	NCF	9.2.1
Natural Connection	NTC	9.2.1
Natural Development Server	NDV	9.2.1
Natural for Db2	NDB	9.2.1
Natural for Db2 for zIIP	NDZ	1.1.1
Natural for VSAM	NVS	9.2.1
Natural IMS TM Interface	NII	9.2.1
Natural ISPF	ISP	9.2.1
Natural Optimizer Compiler	NOC	9.2.1
Natural Review	RNM	9.2.1
Natural RPC	RPC	9.2.1 (RPC is a separate subcomponent of Natural)
Natural SAF Security	NSF	9.2.1
Natural Security	NSC	9.2.1
Natural TSO Interface	NTI	9.2.1
Natural Web I/O Interface	NWO	9.2.1 (server)
Super Natural	NSN	9.2.1
Natural Batch for zIIP	NAZBT	9.2.1
Natural for CICS for zIIP	NAZCI	9.2.1
Natural for Com-plete for zIIP	NAZCO	9.2.1
Natural for IMS for zIIP	NAZNI	9.2.1

### On Demand Only - Restricted Release

Product Name	Product Code	Version
Natural for DL/I	NDL	9.2.1

For more information, see [Discontinued Support for Natural for DL/I](#).

## Software AG Product Versions Supported by Natural

Natural Version 9.2.1 and the add-on products released with this version support the minimum versions and fixes (or higher) of the optional Software AG products listed in the following table. In general, Software AG recommends using the latest product versions supported by Natural to take advantage of new features and enhancements provided by these products.

Product Name	Product Code	Minimum Version
Adabas	ADA	8.5
Adabas CICS Interface	ACI	8.5
Adabas IMS/TM Interface	AII	8.5
Adabas Online System	AOS	8.5
Adabas Review	REV	5.2
Adabas Text Retrieval	TRS	2.1.4
Com-plete	COM	6.8.1 Cumulative Fix 19 with SMARTS Version 3.3.1 Cumulative Fix 35 6.8.2 with SMARTS Version 3.3.2
Con-form	CMF	3.4.3
Con-nect	CNT	3.4.3
Entire Connection	PCC	9.1.4
Entire Event Management	NCL	2.2.1
Entire Net-Work	WCP	6.3 (This product is required if you are using Natural Security in a heterogeneous environment.)
Entire Operations	NOP	5.5.1
Entire Output Management	NOM	3.5.1
Entire System Server	NPR	3.7.1
International Components for Unicode for Software AG	ICS	3.1.1
Mainframe License Check	MLC	1.3.7
Natural Business Services	NBS	8.2.2
Natural Construct	CST	8.2.2
Natural Document Management	NDM	1.6.3 with Service Pack I001 applied
Natural Engineer	NEE	9.1.1
NaturalONE	ONE	9.1.4
Natural Web I/O Interface	NWO	9.1.4 (client)
Predict	PRD	8.5.1
Predict Application Control	PAC	2.6.1

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SMARTS	APS	3.3.1 Cumulative Fix 35 3.3.2
System Automation Tools	SAT	3.5.1
webMethods EntireX (before: EntireX Communicator)	EXX	10.7

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.



# 4 Installation and Compatibility

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- Changes to Installation ..... 16
- Compatibility ..... 16

## Changes to Installation

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This section describes the changes in the installation process of base Natural and the Natural add-on products released with this Natural version.

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

- [NDBPARAM Obsolete](#)
- [System Maintenance Aid: Readme File](#)
- [Changes to ICU Data Libraries](#)

### NDBPARAM Obsolete

NDBPARAM is obsolete for the link of the environment-dependent nucleus and is, hence, no longer delivered.

### System Maintenance Aid: Readme File

For installation guidance and information on new or changed System Maintenance Aid (SMA) parameters and Natural features, you can view the product-specific Readme files by using the appropriate SMA function.

#### ➤ To view a product-specific Readme

- From the product list on an SMA **Maintenance** screen, execute the RM (**Show Readme File**) command for the required product(s).

### Changes to ICU Data Libraries

**ICS versions** 3.1.1 and above do not support Data Libraries.

## Compatibility

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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 [Product Compatibility for IBM Platforms](http://www.softwareag.com/) web page at <http://www.softwareag.com/>.

- Special-Purpose Zaps

### Special-Purpose Zaps

The following table lists Natural Version 9.2 Zaps and the special purposes they support:

Zap	Special Purpose	
NA21002	Suppress NAT3145 error information	<p>Suppress extra L2 calls to Adabas after a NAT3145 error has occurred.</p> <p>If this Zap is applied, the application programming interface USR8202N no longer provides extended information on the NAT3145 error message.</p>
NA21003	Resolve problems (RSP=46) during Natural mainframe calls to Adabas for Windows, Linux and Cloud	<p>Resolve problems that can arise when Natural calls Adabas on Linux, UNIX or Windows from a mainframe platform: an unexpected RSP=46 can occur if a READ loop at the level 1 (*LEVEL=1) ends with an End-of-File (RSP=3) and is executed multiple times. This occurs because Natural on the mainframe does not send a final RC command to release the Adabas Format Buffer if the READ receives RSP=3.</p>



**Note:** Former special purpose zaps are either replaced by parameters (e.g. Support for the Arabic shaped format) or will no longer be required for Natural version 9.2.1.





# 5

## New and Changed Features of Base Natural

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▪ Operations and Performance .....	20
▪ Unicode and Code Page Support .....	22
▪ Syntax and Compiler Enhancements .....	22
▪ System Commands .....	24
▪ Terminal Commands .....	24
▪ Editors .....	24
▪ Utilities .....	25
▪ Profile Parameters .....	25
▪ Application Programming Interfaces .....	26

## Operations and Performance

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- [Authorized Services Manager](#)
- [Roll Server](#)
- [Natural Global Buffer Pools](#)
- [Message Buffer Pools](#)

### Authorized Services Manager

- [HELP syntax command](#)

#### HELP syntax command

A new HELP command is added to the Authorized Services Manager. It is used to display all available syntax. For more information, see *ASM Operator Commands in Authorized Services Manager under z/OS*.

### Roll Server

- [Improved Startup Message](#)
- [HELP syntax command](#)

#### Improved Startup Message

If no roll files are used, the startup message now shows the current slot size. A similar line is shown in the STATS command.

The following is an example startup message for a roll server with no roll files and a slot size of 56 kB:

```
RSM0062 NATRSM92: Running with in-core roll file.
RSM0064 NATRSM92: High/low water marks ignored.
RSM0086 NATRSM92: Roll compression will run on zIIP.
RSM0119 NATRSM92: Roll Server settings in effect:
RSM0119 NATRSM92: Natural subsystem ID: NA92
RSM0119 NATRSM92: LRB slot size: 57344 bytes
RSM0119 NATRSM92: Number of Roll Files: 0
RSM0119 NATRSM92: Number of LRB slots per Roll File: 100
RSM0119 NATRSM92: Coupling Facility structure name: (not used)
RSM0119 NATRSM92: Staging low/high water marks: n/a
RSM0119 NATRSM92: Non-activity time: 2 hours
RSM0119 NATRSM92: REPEAT interval set to 360 minutes
RSM0119 NATRSM92: Timeout check scheduled for 08:00h
RSM0019 NATRSM92: Roll Server Version 921 is active
```

### HELP syntax command

A new HELP command is added to the Roll Server. It is used to display all available syntax. For more information, see *Operating the Roll Server* in *Natural Roll Server Operation*.

### Natural Global Buffer Pools

- [Support for 64bit memory cache for Natural Global Buffer pool under Z/OS](#)
- [HELP syntax command](#)

### Support for 64bit memory cache for Natural Global Buffer pool under Z/OS

You can now create a cache for the Natural Buffer Pool as a 64bit "above the bar" common memory object. Previously, a cache could only be created as a dataspace with a size limit of 2 GB. If a cache is defined as an "above the bar" memory object, it has a size limit of 56 GB. The new C64 parameter is introduced to define the type of the cache storage. By default, the cache is created as a dataspace. For more information about Natural Buffer Pool cache, see *Buffer Pool Cache* in the *Operations* part of the Natural for Mainframes documentation.

For more information about the C64 parameter, see [C64 parameter](#)

### HELP syntax command

A new HELP command is added to the Natural Global Buffer Pool. It is used to display all available syntax. For more information, see the *HELP operating function* in *Natural Global Buffer Pool under z/OS*.

### Message Buffer Pools

- [HELP syntax command](#)

### HELP syntax command

A new HELP command is added to the Message Buffer Pool. It is used to display all available syntax. For more information, see the *HELP command* in *Message Buffer Pool*.

## Unicode and Code Page Support

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- [ICU Version Upgrade](#)
- [Localization Data in Newer ICU Releases](#)

### ICU Version Upgrade

The ICS (International Components for Unicode) version 3.1.1 has been upgraded to ICU Version 65.1 which supports Unicode Version 12.0.

ICU Version 65.1 enhancements include improvements in performance and robustness.

For a summary of all changes in ICU Version 65.1 and Unicode Version 12, see the Download ICU 65 website at <http://site.icu-project.org/download/65> and the Unicode 12.0.0 website at <http://www.unicode.org/versions/Unicode12.0.0/>, respectively.

See also [Changes to ICU Data Libraries](#).

### Localization Data in Newer ICU Releases



**Note:** For more information on using localization data based on ICS 311, see *Unicode and Code Page Support > ICS 311* and *Unicode and Code Page Support in the Natural Programming Language*.

## Syntax and Compiler Enhancements

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- [New System Variable \\*TIMESTMPX](#)
- [COMPRESS](#) allows edit mask (EM) and format logical
- [Enhancements in DEFINE WORK FILE, READ WORK FILE, WRITE WORK FILE, CLOSE WORK FILE](#)

- [Enhanced Error Handling for MOVE BY NAME and MOVE BY POSITION Statements](#)

### New System Variable \*TIMESTMPX

The new system variable \*TIMESTMPX supports extended store clock values. For more information, check *Processing of Store Clock Values > Extended Store Clock* in the *Programming Guide*.

### COMPRESS allows edit mask (EM) and format logical

Operand1 of a COMPRESS statement can now be of format logical.

An edit mask can also be defined for operand1.

For more information, see COMPRESS in the *Statements* part of the *Natural for Mainframes* documentation.

### Enhancements in DEFINE WORK FILE, READ WORK FILE, WRITE WORK FILE, CLOSE WORK FILE

You can now define the work file number of a DEFINE WORK FILE, READ WORK FILE, WRITE WORK FILE, or CLOSE WORK FILE statement as a variable as well. The variable has to be of type B/N/P/I and defined with a CONST clause which assigns a value in the range 1:32.

For more information, check *DEFINE WORK FILE*, *READ WORK FILE*, *WRITE WORK FILE*, and *CLOSE WORK FILE* in the *Statements* part of the *Natural for Mainframes* documentation.

### Enhanced Error Handling for MOVE BY NAME and MOVE BY POSITION Statements

The Natural compiler has been improved and now displays mismatching field names for a MOVE BY NAME or MOVE BY POSITION statement. The new error message NAT0321 has been introduced:

```
NAT0321 Error :1: in :2: processing fields :3:.
```

Parameter :1: is filled with the underlying error (e.g. 300 for "Operands are not data transfer compatible.")

Parameter :2: is filled with either statement MOVE BY NAME or statement MOVE BY POSITION.

Parameter :3: is filled with the field name or the pair of fields causing the error.

With the additional information provided, you will be able to locate errors in large structures faster.

## System Commands

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- [DUMP System Command](#)
- [COMPOPT System Command](#)
- [LIST System Command](#)



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

### DUMP System Command

The DUMP system command now provides the option to list Zaps applied to a single Natural product or module. For more information, see [DUMP](#) in *System Commands*.

### COMPOPT System Command

The new option `V82COMP` checks for new Natural 9.2 syntax. For more information, see `V82COMP` in *System Commands > COMPOPT* system command.

### LIST System Command

The LIST system command now provides a range specification for the size of the NOC code when calling the list of objects. You can also specify the size of the NOC code in the SORT subcommand. For more information, see [Range-Clause](#) in *System Commands > LIST* system command.

## Terminal Commands

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

## Editors

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

## Ignoring Case Sensitivity in Program Editor

The editor commands `SCAN` and `CHANGE` have been enhanced to be able to operate by ignoring case sensitivity. You can use either the new editor command `SET IGNORECASE` in the program editor or the new editor profile option **Ignore Case Mode for SCAN/CHANGE** to set this functionality.

For more information, see **Ignore Case Mode for SCAN/CHANGE** in *Editor Profile* or `SET IGNORECASE` in *Editor Commands*.

## Utilities

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- [Object Handler](#)
- [SYSRPC](#)



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

### Object Handler

The properties that can be specified for processing Natural library objects have been enhanced. You can now use the new **Check date for object kind** option to search for save or catalog dates of Natural objects for a given date or date range. This option is described in *Natural Library Object Properties* in the section *Object Handler*.

The corresponding `DATECHECK` option of an Object Handler direct command is described for the *select-clause* in the section *Object Handler*.

### SYSRPC

You can now get or set the trace level for the Natural RPC server trace with server commands.

For more information, see the `TL`, `Tn`, and `T*` line commands in *SYSRPC Utility > Server Command Execution > Line Commands: Server Command Execution*.

## Profile Parameters

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- [Changed/Enhanced Profile Parameters](#)



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

## Changed/Enhanced Profile Parameters

Parameter	Corresponding Macro	Task	Change/Enhancement
DELETE		Deletion of Dynamically Loaded Programs	<p><b>Delete</b></p> <p>This parameter formerly did not apply in an IBM Language Environment. The restriction has been removed. As of this version, all options of the DELETE parameter are now available in an IBM Language Environment.</p>
VSAM	NTVSAM	Parameters for Natural for VSAM	<p><b>Multi-Fetch Factor</b></p> <p>The new MF keyword subparameter specifies the multi-fetch factor for VSAM I/O through Natural statements.</p>
ZIIP	NTZIIP	zIIP Processing	<p><b>Introduce automatic buffer flush after one minute</b></p> <p>The IOCSIZE keyword subparameter is with an updated functionality. Now the system limits the caching duration for CMPRINT records to one minute.</p>

## Application Programming Interfaces

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

API	Task	Enhancement
USR0070P	Define editor default profile SYSTEM	<p>New option EDITOR-IGNORE-CASE added to the default profile.</p> <p>For more information, see <i>Editor Defaults &gt; Ignore Case Mode for SCAN/CHANGE</i>.</p>
USR1009N	Convert store clock with sliding window into microseconds	<p>The API converts a store clock value into microseconds since 1900-01-01. The store clock value is interpreted by default without sliding window (range 1900-2042). An optional parameter is now available to interpret the store clock value with the sliding window (range 1971-2114).</p> <p>For detailed information, see <i>Programming Guide &gt; Further Programming Aspects &gt; Processing of Store Clock Values</i>.</p>
USR1023N	Convert time-related variables	<p>The API and the related copycodes have not been changed. The original store clock (1900 – 2042) is used. We strongly recommend using the new API USR9201N instead of USR1023N. Otherwise, store clock values will be incorrect interpreted after 2042.</p>



API	Task	Enhancement
		For detailed information, see <i>Programming Guide &gt; Further Programming Aspects &gt; Processing of Store Clock Values</i> .
USR2036N	Convert binary variable (B8) into numeric variable (P20)	The API has not been changed. The related example program USR2036P has been improved for a more useful purpose.
USR8220N	Trigger the server-side termination of the Natural RPC server that is running this API.	The description of the API is more detailed.
USR9175N	Ping, terminate, or trace a Natural RPC server.	This API can now get or set the trace level for a Natural RPC server in addition to the previous capabilities to ping or to terminate it.
USR9178N (new)	Maintain local store clock value	<p>This API maintains local store clock values. It supports store clock with sliding window (1971 - 2114).</p> <p>Additional to the API, copycodes are provided for maintaining local store clock values.</p> <p>For detailed information, see <i>Programming Guide &gt; Further Programming Aspects &gt; Processing of Store Clock Values &gt; Local Store Clock</i>.</p>
USR9201N (new)	Convert time-related variables	<p>The API is the successor of USR1023N. It supports store clock with sliding window (1971-2114) and extended store clock (1900 - 38434).</p> <p>Additional to the API, several copycodes are provided for converting time-related variables.</p> <p>For detailed information, see <i>Programming Guide &gt; Further Programming Aspects &gt; Processing of Store Clock Values</i>.</p>
USR9202N (new)	Delete a dynamically loaded 3GL program	This API removes a dynamically loaded 3GL program from the region (e.g., z/OS Batch, TSO). The next call to such a 3GL program will load a new copy of the 3GL program.
USR9203N (new)	Check availability of Adabas descriptor	This API checks whether the given descriptor, subdescriptor, superdescriptor, or hyperdescriptor is available in the given Adabas file. The USR9203P example program can be used to check whether the Natural hyperdescriptors are installed in the current FNAT or FUSER system file.



# 6 New and Changed Features of Natural Add-On Products

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▪ Natural CICS Interface .....	30
▪ Natural Development Server .....	31
▪ Natural for Db2 .....	32
▪ Natural for Db2 for zIIP .....	33
▪ NaturalONE .....	33
▪ Natural Optimizer Compiler .....	33
▪ Natural Review .....	34
▪ Natural RPC (Remote Procedure Call) .....	34
▪ Natural Security .....	35
▪ Natural for VSAM .....	37



**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](#).

## Natural CICS Interface

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- [Revised Installation Documentation](#)
- [Enhanced NTCICSP Macro Functionality](#)
- [New Application Programming Interface in Natural Library SYSEXTP](#)

### Revised Installation Documentation

The installation procedure for Natural CICS Interface has been revised. Furthermore, the names of the following delivered modules has been changed:

Old name	New name
NCINUCM	NCINUC
NCIXCALM	NCIXCALL
NCIZNEPM	NCIZNEP
NCIXFATM	NCIXFATU
NCISFEDM	NCISFED

See the updated instructions in *Installing Natural CICS Interface on z/OS* in the *Installation* documentation.

### Enhanced NTCICSP Macro Functionality

The NTCICSP macro has been enhanced to improve verification checks and dispose of obsolete parameters.

Furthermore, the STORVIO parameter reaction values 32768 through 65535 have been replaced by the literal values S0C3 and NOMSG to allow that either an S0C3 abend is raised or no message is issued.

As a result, the documentation of *CICSP - Environment Parameters for Natural CICS Interface* in the *Parameter Reference* documentation has been revised.

## New Application Programming Interface in Natural Library SYSEXTP

The new Application Programming Interface `NCIGSIFN` retrieves the contents of the CICS terminal control table user area (TCTUA) and the CICS Execute Interface Block (EIB) for the current Natural session. The example program `NCIGSIFP` shows the use of `NCIGSIFN`.

## Natural Development Server

---

This section describes the new features provided with Natural Development Server Version 9.2.1.



**Note:** The sections indicated for more information are contained in the *Natural Development Server* documentation in the **Documentation** section of Software AG's Empower web site at <https://empower.softwareag.com/>, unless otherwise noted.

### New Session Parameters `SECURITY_CACHING` and `SECURITY_TIMEOUT` for z/OS (Batch)

The following two new session parameters have been added to the Natural Development Server for z/OS (Batch).

#### `SECURITY_CACHING`

enables a client directory that stores user information for subsequent actions

#### `SECURITY_TIMEOUT`

manages the life time of clients

These parameters are available via two additional buttons in the HTML Monitor Client that list or cancel clients and their respective sessions.

### Delete Documentation with Deletion of Natural Member

The documentation of a Predict Program object, with the object's implementation pointer completely filled (i.e. Natural member name, library name, user system file number, and user system file database id), is deleted when the Natural member is deleted in an NDV environment.

By default, the switch "**Delete documentation with deletion of Natural member**" is initialized with "Y", i.e. deleting the existing documentation.

If you wish to keep the documentation set this new switch to "N".

Start a Predict session and go into the defaults settings, **Protection**.

```

07:38:48                ***** P R E D I C T *****                2021-10-08
                          - Protection -
                                Modified 2021-08-05 at 13:07
                                by User

SYSDDM utility .....* A Allowed
AOS .....* C Connected
SYSDB2 utility .....* A Allowed
Rule in map editor .....* N No check is performed
Rule in SYSDIC .....* N No check is performed
Scan texts allowed .....* A All allowed
PC text modifiable on Mainframe .. N (Y,N)
Protect current Predict file ..... N (Y,N)
  DBnr of NSC file .....
  Fnr of NSC file .....
  Password .....
  Cipher .....
Delete Documentation with deletion
of Natural member in NDV ..... Y (Y,N)

For HELP enter '?' in the first field.
    
```

## Natural for Db2

---

This section describes the new features provided with Natural for Db2 Version 9.2.1.

- The maximum value of the DB2SIZE parameter has been enhanced to 32767K from 64K.
- The version parameter NDBGENI can now be set to DB2V13 for DB2 Version 13 when you are generating the NDBIOM0 module for SQL access in dynamic mode.
- The SQL syntax parsing by Natural for Db2 Version 9.2.1 has been enhanced to include items introduced by Db2 for z/OS Version 12 function levels 501, 504, 505, 506, and 507.

Some of these enhancements include several scalar and aggregate functions and special registers. Some of these functions require the Db2 Analytics accelerator. For more information regarding the Db2 Analytics accelerator, refer to the Db2 documentation of IBM.

- The SQL syntax parsing by Natural for Db2 Version 9.2.1 has been enhanced to include items introduced by Db2 for z/OS Version 13.

Some of these enhancements include the AI functions AI\_ANALOGY, AI\_SEMANTIC\_CLUSTER, and AI\_SIMILARITY.

## Natural for Db2 for zIIP

---

Natural for Db2 for zIIP is a new Natural Add-On product that allows you to offload workload to an IBM System z Integrated Information Processor (zIIP) when calling Db2 from Natural via the Natural Db2 Interface (Natural for Db2). For further information, please see Natural for Db2 for zIIP.

## NaturalONE

---

For information on changes, enhancements and new features available with NaturalONE, see the *Release Notes* in the *NaturalONE* documentation in the **Documentation** section of Software AG's Empower web site at <https://empower.softwareag.com/>.

## Natural Optimizer Compiler

---

This section describes the new features provided with Natural Optimizer Compiler Version 9.2.1.

From Natural Version 9.2.1 onwards, the Compiler is available on z/OS platforms only.

The new version comes with maintenance updates and program fixes. Furthermore, some Natural statements are optimized and some sections in the generated machine code were reworked to run faster. These include optimizations for:

- faster execution of `EXAMINE (FULL) <fld> FOR 'A' REPLACE 'B'` if the `EXAMINE` field is of type Alpha in the length range (1:256) and the `Search/Replace` fields are of type (A1).
- the `EXAMINE .. TRANSLATE INTO (UPPER/LOWER) CASE` statement.
- addressing code for parameters. This affects all optimized statements where parameters are involved.
- faster execution of operations where Unicode fields are used.
- `COMPRESS` which now works with all formats, such as Natural types (A, N, B) and (I, P, F, D, T, L).
- some operations where Target fields with a size higher than 16MB are used.

## Natural Review

---

With Natural Review 9.2.1 the Natural Review Repository File layout has been changed. If you want to reuse an existing Natural Review Repository File, an additional migration step needs to be performed.

For more information, see the chapter *Installing Natural Review*.

## Natural RPC (Remote Procedure Call)

---

With Natural Version 9.2.1, an enhanced Natural RPC Version 9.2.1 is delivered which introduces the following changes and enhancements:

- [Support for Password Phrases for Natural RPC Server with Impersonation](#)
- [No APF Authorization Required for Natural RPC Server with Impersonation](#)
- [Application Programming Interfaces \(API\)](#)

### Support for Password Phrases for Natural RPC Server with Impersonation

Password phrases (passwords which are longer than 8 characters) have been supported in previous versions with Natural Security only. Starting with Natural version 9.2.1 the Natural RPC server supports also password phrases for Natural RPC server with impersonation.

### No APF Authorization Required for Natural RPC Server with Impersonation

Starting with Natural version 9.2.1 the impersonation is done via Natural Authorized Services Manager (NATASMvv). Therefore, in order to run a Natural RPC server, AFP authorization is no longer required.

### Application Programming Interfaces (API)

The following Natural RPC-specific APIs are new in the SYSEXT system library or have changed:

API	Purpose
USR8225N	Provide access to message ID and correlation ID in Natural RPC clients.  See <i>Maintain Message ID and Correlation ID of EntireX</i> in <i>Operating a Natural RPC Environment</i> .



## Natural Security

---

The following enhancements are provided with Natural Security Version 9.2.1:

- Password Rules for User “DBA”
- Administrator Services – Maintenance Log Records
- Protecting a Natural Server Used in Eclipse – Development Mode Options
- Improved Error Information
- New API for Maintenance Log Records
- Application Programming Interfaces (APIs)

### Password Rules for User “DBA”

The first step after the installation is the change of the password for the administrator user ID “DBA”. To improve password security, the new password for the user “DBA” can no longer be freely chosen. As of this version, it must comply with the following rules:

- Its length must be 8 characters.
- It must contain at least one upper-case letter.
- It must contain at least one number.
- It must contain at least one special character.
- It must not contain the character sequence *DBA*.
- Every character may appear only once within the password.

For details, see *Natural Security > First Steps After the Installation*.

### Administrator Services – Maintenance Log Records

The menu for the processing of maintenance log records provides several new options:

- **Time from/to** – This option allows you to list only log records written within a specific period of time.
- **Function** – This option allows you list only log records written for a specific maintenance function (for example, Modify, Delete, Rename).
- **Ascending/Descending** – This option allows you to list log records in either ascending or descending chronological order.
- **Display modification** – This option allows you to display intensified the actual modifications in the security profiles.

For details, see *Natural Security > Administrator Services > Maintenance Log Records*.

## Protecting a Natural Server Used in Eclipse – Development Mode Options

The option to log on with the user name as user ID has already been available in conjunction with user authentication via an LDAP server. Now, this option is also supported in conjunction with Natural RPC service requests which use LDAP.

For details, see *Natural Security > Administrator Services > Authentication Options (LDAP)*.

## Improved Error Information

The return codes returned by several application programming interfaces (in the field PRC) refer to Natural error numbers. In several cases, the same return code / error number was used for different error situations, and the texts of the corresponding error messages were not always specific enough to identify the cause of the error.

This has been rectified: Different new return codes / error numbers have been introduced for different error situations. In addition, the corresponding message texts have been enhanced to provide more specific information on the errors in question.

For details, see *Natural Security > Application Programming Interfaces* .

## New API for Maintenance Log Records

The new application programming interface NSCXLI allows you to display a single maintenance log record.

For details, see *Natural Security > Application Programming Interfaces* .

## Application Programming Interfaces (APIs)

- [Improved Error Information](#)
- [New API for Maintenance Log Records](#)

## Improved Error Information

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For details, see *Natural Security > Application Programming Interfaces*.

## New API for Maintenance Log Records

The new application programming interface NSCXLI allows you to display a single maintenance log record.

For details, see *Natural Security > Application Programming Interfaces*.

## Natural for VSAM

The enhancement provided with Natural for VSAM Version 9.2.1 is described in the following section:

- [VSAM extended-format Datasets](#)
- [MF Subparameter - Multi-Fetch Factor](#)

### VSAM extended-format Datasets

Natural for VSAM supports extended-format data sets for all types of VSAM data set organization. Please refer to the Natural for VSAM documentation *Environment-Specific Considerations* for further information.

Extended-format datasets are marked in the DDM - see *Natural File Access*. When you access an extended ESDS VSAM file, the \*ISN format/length is generated as P19 to support the 8 bytes RBA.

### MF Subparameter - Multi-Fetch Factor

`MF=value` specifies the multi-fetch factor for VSAM I/O through Natural statements.

Value	Explanation
1 - 28000	Multi-fetch factor used during Natural I/O statements.
0	This is the default value.



#### Notes:

1. The multi-fetch factor is only applicable for batch processing.
2. The multi-fetch factor is only applicable to L1, L2, L3, and L9 calls.
3. The maximum value for a multi-fetch factor for a VSAM file is 28000.



# 7 Dropped Features

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- Features Dropped with this Natural Version ..... 40
- Features Dropped with a Future Natural Version ..... 41

## Features Dropped with this Natural Version

---

The following features or Natural add-on products are discontinued and no longer supported in Natural Version 9.2.1:

- Discontinued Support for z/VSE and BS2000
- Discontinued Support for Natural Telex Driver NATTLX
- Discontinued Support for Natural Swap Pool
- Discontinued Support for Natural Net Data Driver NATNETTO
- Discontinued Support for Optimize for Infrastructure (O4I)
- Discontinued Support for Compiler Option LUWCOMP
- Discontinued Support for Parameter UPSI
- Discontinued Support for Special Purpose Zaps for Arabic Shaping

### Discontinued Support for z/VSE and BS2000

Natural version 9.2.1 is no longer delivered for the operating systems BS2000 and z/VSE. The previous version of Natural is supported for BS2000 and z/VSE until the End of Maintenance (EOM) date has been reached.

### Discontinued Support for Natural Telex Driver NATTLX

The Natural Telex Diver NATTLX is no longer delivered and supported.

As a result, the following parameter is no longer provided by the %T= terminal command:

TLXI

### Discontinued Support for Natural Swap Pool

The Natural swap pool is no longer delivered and supported. The Natural Roll Server can be used instead.

The corresponding functionality in SYSTP – Natural Swap Maintenance Services, has therefore been removed as well.

### **Discontinued Support for Natural Net Data Driver NATNETTO**

The Natural Net Data Driver NATNETTO is no longer delivered and supported.

As a result, the following parameters are no longer provided by the %T= terminal command:

- NETF
- NETT
- NEF2

### **Discontinued Support for Optimize for Infrastructure (O4I)**

Optimize for Infrastructure (O4I) is no longer delivered and supported..

### **Discontinued Support for Compiler Option LUWCOMP**

The Compiler Option LUWCOMP is no longer delivered and supported.

### **Discontinued Support for Parameter UPSI**

The parameter UPSI is no longer used and has therefore been removed.

The Natural Application Programming Interface USR4002N and the corresponding example program USR4002P in the system library SYSEXT have been adopted as well as the output of the Natural command DUMP SVAR.

### **Discontinued Support for Special Purpose Zaps for Arabic Shaping**

As of Version 9.2, special-purpose Zaps NA95017, NA95018, NA95019, NA95020, NA95021, NA95022, and NA97176 are removed. They are replaced by the profile parameter SHAPED.

## **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 Natural for DL/I \(NDL\)](#)

### **Discontinued Support for Natural for DL/I (NDL)**

Natural for DL/I (NDL) will no longer be supported with the next release of Natural (9.2.2 and onwards). Therefore NDL is already indicated as "on demand only".

Please migrate your DL/I data to other databases systems. We recommend Adabas, because Natural programs accessing DL/I can easily be adapted for Adabas access. We may support you with the migration of your data to other databases. Contact your closest Software AG representative for further assistance.



# 8

## Planned Changes with Future Versions

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- License Checks for Add-On Products ..... 44

## License Checks for Add-On Products

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For the next release of Natural, Software AG intends to introduce additional license checks for selected add-on products. Preliminary plans are targeting:

Natural Optimizer Compiler (NOC)  
the Natural-based product Predict (PRD)

The license checks will simplify the maintenance and usage of your product(s) and increase your safety regarding contract compliance. There will be no impact on usage, performance, or security.