

Natural

Natural Release Notes for Mainframes

Version 9.2.2

October 2023

This document applies to Natural Version 9.2.2 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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Preface

This document provides a brief summary of the changes and enhancements that have been introduced in Natural Version 9.2.2 for Mainframes and the Natural add-on products released with this version. Revised and updated documentation sets are available with this version.

Supported Environments	Supported Platforms, Requirements, Product Availability, and End of Maintenance TP Monitors/Online Interfaces Database Management Systems Assemblers Authorized Services Manager and Roll Server
Available and Supported Software AG Product Versions	Product Availability and End of Maintenance Overview of New Natural Add-On Product Versions Software AG Product Versions Supported by Natural
Installation and Compatibility	Changes to Installation Compatibility
New and Changed Features of Base Natural	Operations and Performance Operating System Interfaces Unicode and Code Page Support Syntax and Compiler Enhancements System Commands Utilities Profile Parameters Application Programming Interfaces
New and Changed Features of Natural Add-On Products	Natural Development Server NaturalONE Natural RPC (Remote Procedure Call) Natural Web I/O Interface
Dropped Features	Features Dropped with this Natural Version

1 About this Documentation

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Document Conventions

Convention	Description
Bold	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

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

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.

2 Supported Environments

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- TP Monitors/Online Interfaces 6
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- Assemblers 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* web page at <http://www.softwareag.com/>.

Supported Platforms, Requirements, Product Availability, and End of Maintenance

You can view all available Software AG product versions and check the dates when their maintenance ends by using the System Requirements App at:

<https://documentation.softwareag.com/systemrequirements/#/>

Here, you can enter the product name or code in the search field and see the latest information on system requirements and product availability.

TP Monitors/Online Interfaces

Natural Version 9.2.2 supports the versions of the TP monitors/online interfaces listed below:

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

Database Management Systems

Natural Version 9.2.2 supports the versions of the database management systems listed below:

Product	Version
Adabas	See Software AG Product Versions Supported by Natural .
Db2 for z/OS	12.1, 13.1
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 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.

Authorized Services Manager and Roll Server

The Authorized Services Manager (module NATASM92) and the Natural Roll Server (module NATRSM92) supplied with Natural Version 9.2.2 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.

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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:

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

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.

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	9.2.2
Natural CICS Interface	NCI	9.2.2
Natural Com-plete/SMARTS Interface	NCF	9.2.2
Natural Connection	NTC	9.2.2
Natural Development Server	NDV	9.2.2
Natural for Db2	NDB	9.2.2
Natural for Db2 for zIIP	NDZ	1.1.2
Natural for VSAM	NVS	9.2.2
Natural IMS TM Interface	NII	9.2.2
Natural ISPF	ISP	9.2.2
Natural Optimizer Compiler	NOC	9.2.2
Natural Review	RNM	9.2.2
Natural RPC	RPC	9.2.2 (RPC is a separate subcomponent of Natural)
Natural SAF Security	NSF	9.2.2
Natural Security	NSC	9.2.2
Natural TSO Interface	NTI	9.2.2
Natural Web I/O Interface	NWO	9.2.2 (server)
Super Natural	NSN	9.2.2
Natural Batch for zIIP	NAZBT	9.2.2
Natural for CICS for zIIP	NAZCI	9.2.2
Natural for Com-plete for zIIP	NAZCO	9.2.2
Natural for IMS for zIIP	NAZNI	9.2.2

Software AG Product Versions Supported by Natural

Natural Version 9.2.2 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	3.2.1
Mainframe License Check	MLC	1.3.8
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

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

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.

- [Stop and Restart Global Bufferpools](#)
- [System Maintenance Aid: Readme File](#)
- [Software AG Mainframe Product Licensing \(MLC\)](#)
- [License Checks for Selected Add-on Products](#)

Stop and Restart Global Bufferpools

A small change in the layout of the global bufferpool header became necessary.

Therefore it is required to stop active global bufferpools from Natural version 9.2.1 and to restart them with the new modules of Natural 9.2.2, when the installation has been completed.

Follow these steps:

1. Shut down existing version 9.2.1 global bufferpools
2. Relink your global bufferpool module NATGBP92 and include the newest version of module NATBPMGR provided with Natural 9.2.2
3. Restart your global bufferpools

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).

Software AG Mainframe Product Licensing (MLC)

Natural Version 9.2.2 requires MLC version 1.3.8. Previous versions of MLC are no longer supported. Any error detected by the license check during session initialization stops the execution of the product.

Please ensure that your license file contains the tag <CPUIDs> with the correct value(s). This used to be optional for all previous versions of zIIP support products like Natural Batch for zIIP (NAZBT), Natural for CICS for zIIP (NAZCI), etc.

If you have such license files, please contact Software AG to get an updated license file, which can run with MLC version 1.3.8.

License Checks for Selected Add-on Products

In addition to the license checks for Natural for z/OS and Natural for zIIP, license checks for the following add-on products are now performed:

- Natural Optimizer Compiler (version 9.2.2 or higher)
- Predict (version 8.6.1 or higher)

The license files must be installed in your environment when using the Natural Optimizer Compiler and Predict.

For information about the steps for installing the Natural Optimizer Compiler on z/OS, see *Installing Natural Optimizer Compiler on z/OS*.

For information about installing Predict, see the Predict documentation.

For information about the license handling for the Natural Optimizer Compiler, see *Activating the Optimizer Compiler*.

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 [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 9.2.2.

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New and Changed Features of Base Natural

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Operations and Performance

Roll Server

Messages about Roll File Occupation

The Roll Server now issues a message each time the threshold for roll file occupation is exceeded, or if the occupation falls under the minimum value.

The Roll Server issues such a message when executing a cleanup of slots which have not been used for more than the defined timeout value.

You can also see the number of used slots and occupation ratio using the `L` line command in the `SYSTP R` utility for your Natural subsystem.

Operating System Interfaces

Server Interfaces

It is no longer allowed to use non-Language Environment (LE) Natural add-on products such as Natural Development Server (NDV), Natural Web I/O Interface (NWO), and Natural Remote Procedure Call (RPC) as a server environment. Using such add-ons as a server environment can result in receiving S0C4 abend codes.

From version 9.2.2 onwards, such servers are stopped with error message NAT9991:

```
Required module not linked - NATOSL. Please check all your servers for using module ←  
NATOSL and restart Natural.
```

For more information, see Step 14: Link the Nucleus in *Installing Natural on z/OS*.

AMODE64 Support for CALL Statements

The Natural CALL statements now support AMODE64 programs. This applies to TSO and z/OS batch environments.

Unicode and Code Page Support

- [ICU Version Upgrade](#)

ICU Version Upgrade

The ICU (International Components for Unicode) version 3.2.1 has been upgraded to ICU Version 72.1 which supports Unicode Version 15.0.0.

ICU Version 72.1 enhancements include improvements in performance and robustness. For a summary of all changes in ICU Version 72.1 and Unicode Version 15.0.0, see the ICU-TC and the Unicode 15.0.0 websites.

Syntax and Compiler Enhancements

- [Provide DESCENDING read sequence for READ BY ISN statement](#)

Provide DESCENDING read sequence for READ BY ISN statement

If running against Adabas for Mainframe 8.6, the `READ BY ISN` statement has been enhanced by a sequence clause that determines in which direction the `READ` loop is running.

Samples:

```
READ VIEW-NAME DESCENDING BY ISN = 1000 /* Read in fixed descending ISN order, ↵
starting with ISN=1000 (or lower)
READ VIEW-NAME VARIABLE #DIR BY ISN = 1000 /* Read direction is determined at READ ↵
loop start. If field #DIR(A1) contains
/* 'A', the READ loop runs in 'A'scending order, starting with ISN=1000 ↵
(or higher)
/* 'D', the READ loop runs in 'D'ascending order, starting with ISN=1000 (or ↵
lower)
```

For information about how to determine whether the records are to be read in ascending or descending sequence, see the `ASCENDING | DESCENDING | VARIABLE | DYNAMIC SEQUENCE` syntax clause.

To mark an Adabas database version 8.6, use the `NTDB` macro or the `DB` parameter. For more information about the `NTDB` macro and the `DB` parameter, see *DB - Database Types and Options*.

The new functionality can already be used with Adabas for Mainframe version 8.5, if Adabas zap AY854180 is applied. Such a database must also be marked as "ADAV86" with the `NTDB` macro or the `DB` parameter to indicate that this Adabas 8.6 functionality is available for this database.

System Commands

- [New Command WHICH](#)



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

New Command WHICH

The new system command WHICH lets you find objects in the libraries used at run time in the Library Search Order (LSO). For more information, see WHICH in *System Commands*.

Utilities

- [Activation of Natural Profiler Data Processing No Longer Required](#)
- [Natural License Information Function of SYSTP Utility Enhanced](#)



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

Activation of Natural Profiler Data Processing No Longer Required

Activating the data processing functions CONSOLIDATE, READ, LIST, and DELETE of the Profiler utility is no longer required. You can now use these functions without any restrictions. The Natural resource `NaturalONEProfilerKey.nprk` in the system library SYSPRFLR, which contains the generated NaturalONE Profiler key, is no longer needed and can be deleted.

Natural License Information Function of SYSTP Utility Enhanced

The **Natural License Information** function of the SYSTP utility has been enhanced. It is possible now to display the contents of the license files for the Natural base product and of all add-on products successively or directly.

For further information, see *Natural License Information* in the section *General SYSTP Functions* in the *SYSTP Utility* documentation.

Profile Parameters

- [New Profile Parameters](#)
- [Changed/Enhanced Profile Parameters](#)



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

New Profile Parameters

Parameter	Description
ADAV86	ADAV86 has been added as new database type for profile parameter DB, for more information see <i>DB - Database Types and Options > Possible Database Types</i> .

Changed/Enhanced Profile Parameters

Application Programming Interfaces

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

API	Task	Enhancement
USR4002N	Get information on the current system	The API also provides the job ID of the current environment, in the variable #JOBID. This could be the job number of the current batch job. When running in a TP monitor environment (e.g.: CICS), this will be the ID of the started task of the TP monitor.
USR9201N	Convert time-related variables	The API now supports smart store clock (1900 - 38434) which helps to overcome the year 2042 issue. Additional to the API, several copycodes are provided for converting time-related variables. For more detailed information, see <i>Programming Guide > Further Programming Aspects > Processing of Store Clock Values</i> .
USR9202N	Delete a dynamically loaded 3GL program.	The API now supports the formats (A) DYNAMIC and (A70) for the parameter Return-Message. When the API is executed on the RPC server side (see also RPC API USR9204N), the parameter Return-Message requires the format (A70).
USR9205N	Create a hash value using SHA-256 or others	The API creates a hash value for a variable input. It supports the hash methods MD5, RPMD-160, SHA-1, SHA-224, SHA-256, SHA-384,

API	Task	Enhancement
		and SHA-512. The API is the successor of USR4011N which supports only the hash method SHA-1.

6 New and Changed Features of Natural Add-On Products

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- NaturalONE 26
- Natural RPC (Remote Procedure Call) 26
- Natural Web I/O Interface 27



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 Development Server

This section describes the new features provided with Natural Development Server Version 9.2.2.

- [Modernized User Interface of HTML Monitor](#)
- [New parameter SECURITY_SYSLOG](#)

Modernized User Interface of HTML Monitor

Natural Version 9.2.2 introduces a modernized User Interface for the HTML Monitor to conform with modern browser standards.

New parameter SECURITY_SYSLOG

The Natural Development Server has been enhanced to write security messages to the console. This is controlled with the new parameter SECURITY_SYSLOG.

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 RPC (Remote Procedure Call)

With Natural Version 9.2.2, an enhanced Natural RPC Version 9.2.2 is delivered which introduces the following changes and enhancements:

- [Running a Natural RPC Server without ICS](#)
- [Steplib Handling for NATRPCxx](#)

- [Application Programming Interfaces \(APIs\)](#)

Running a Natural RPC Server without ICS

A Natural RPC server may run without the installation of ICS (International Components for Unicode for Software AG). Encoded passwords passed to the RPC server can still be converted to the code page of the RPC server.

Software AG still recommends to install ICS in an RPC server environment to have full Unicode support available.

Steplib Handling for NATRPCxx

A search in the defined steplibs is now performed when the Natural RPC user exits NATRPC01, NATRPC02, or NATRPC03 are executed.

Application Programming Interfaces (APIs)

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

API	Task	Description
USR9204N (new)	Send command to RPC server.	<p>The RPC API sends a send-command request with the sequence number to the EntireX Broker.</p> <p>The command transports a subprogram or an RPC command with the sequence number for an RPC server (or all sequence numbers of an RPC service).</p> <p>The EntireX Broker 11.0 with CIS version 13 or higher is required.</p> <p>For detailed information, see <i>Natural RPC > Operating a Natural RPC Environment > Sending Command to RPC Server</i>.</p>

Natural Web I/O Interface

This section describes the new features provided with Natural Web I/O Interface Server Version 9.2.2.



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

- New parameter `SECURITY_SYSLOG`

New parameter `SECURITY_SYSLOG`

The Natural Web IO Interface has been enhanced to write security messages to the console. This is controlled with the new parameter `SECURITY_SYSLOG`.

7 Dropped Features

- Features Dropped with this Natural Version 30

Features Dropped with this Natural Version

The following features or Natural add-on products are discontinued and no longer supported in Natural Version 9.2.2:

- [Discontinued Support for Natural for DL/I \(NDL\)](#)

Discontinued Support for Natural for DL/I (NDL)

Natural for DL/I (NDL) is no longer delivered and supported.

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