Natural

Release Notes

Version 8.2.3 for Mainframes

July 2013

Natural

This document applies to Natural Version 8.2.3 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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Preface

This document provides a brief summary of the changes and enhancements that have been introduced in Natural Version 8.2.3 for Mainframes and the Natural add-on products released with this version. Revised and updated documentation sets are available with this version.

Update Information

The following modifications and/or amendments to the documentation have been done after the release of Natural Version 8.2.3:

Documentation The section **Software AG Product Versions Required with Natural** has been modified.

	Prerequisites for Installation and Operation	**License File** **Operating/Teleprocessing Systems** **Database Management Systems** **Assemblers**
	Supplied Product Versions	**Overview of New Natural Add-On Product Versions** **Software AG Product Versions Required with Natural** **End of Standard Maintenance of Product Versions**
	Migration	**Changes to Installation** **Compatibility** **Important:** The complete list of migration hints is in *Migrating from Previous Versions of Natural* for z/OS, z/VSE and BS2000/OSD in the Natural *Installation* documentation.
	New and Changed Features of Base Natural	**Customer Enhancement Proposals** **Operations and Performance** **Unicode and Code Page Support** **Programming Language** **System Commands** **Editors** **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 IMS TM Interface** **Natural RPC (Remote Procedure Call)**

		Natural SAF Security Natural Security Natural TSO Interface Natural Web I/O Interface zIIP Enabler for Natural
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1 Prerequisites for Installation and Operation

License File

A product license file for Natural is required. In addition, a license file is required for the *zIIP Enabler for Natural*, if installed.

For information on Software AG's mainframe product licensing, see the *Software AG Mainframe Product Licensing* documentation.

Operating/Teleprocessing Systems

Natural Version 8.2.3 supports the following versions of the operating/teleprocessing systems listed below:

Product	Version
BS2000/OSD	7, 8, 9, Open Net Server 3.2, 3.3, 3.4
z/OS	1.11, 1.12, 1.13
z/VSE	4.2, 4.3, 5.1
Com-plete	See *Software AG Product Versions Required with Natural*
CICS TS for z/OS	3.1, 3.2, 4.1, 4.2
CICS TS for VSE/ESA	1.1.1
CICS/VSE	2.3
IMS TM	10.1, 11.1, 12.1
*open*UTM	5.3, 6.0, 6.1
TIAM	All versions available with the BS2000/OSD versions mentioned above

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

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

Caution: Although it may be technically possible to run a new version of Natural on an old operating/teleprocessing system, Software AG cannot continue to support operating/teleprocessing system versions that are no longer supported by the system's provider. For legal reasons, Software AG does not support Natural Version 8.2.3 for operating/teleprocessing system versions that are not supported by their respective manufacturers for at least one year after the release of Natural Version 8.2.3. This restriction applies in particular to older versions of operating/teleprocessing systems not listed in the table above. Furthermore,

Software AG cannot make any statements about whether it is technically possible to run Natural Version 8.2.3 on any old operating/teleprocessing system version not listed above.

Database Management Systems

Natural Version 8.2.3 supports the following 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
DB2 Server for VSE & VM	7.3, 7.4, 7.5
DL/I	As delivered with the teleprocessing system IMS TM
VSAM	As delivered with the operating system
DFSMStvs	As delivered for the respective VSAM version if transactional VSAM is to be used with Natural for VSAM

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

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

Caution: Although it may be technically possible to run a new version of Natural using an old database management system, Software AG cannot continue to support database management system versions that are no longer supported by the system's provider. For legal reasons, Software AG does not support Natural Version 8.2.3 for database management system versions that are not supported by their respective manufacturers for at least one year after the release of Natural Version 8.2.3. This restriction applies in particular to older versions of database management systems not listed in the table above. Furthermore, Software AG cannot make any statements about whether it is technically possible to run Natural Version 8.2.3 using any old database management system version not listed above.

Assemblers

Natural Version 8.2.3 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).

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

2 Supplied and Supported Product Versions

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	8.2.3
Natural CICS Interface (*)	NCI	8.2.3
Natural Com-plete/SMARTS Interface (*)	NCF	8.2.3
Natural Connection	NTC	8.2.3
Natural Development Server (*)	NDV	8.2.3
Natural for DB2 (*)	NDB	8.2.3
Natural for DL/I	NDL	8.2.3
Natural for SQL/DS	NSQ	8.2.3
Natural for VSAM	NVS	8.2.3
Natural IMS TM Interface (*)	NII	8.2.3
Natural ISPF	ISP	8.2.3
Natural Japanese Language Pack	NCJ	8.2.3
Natural *open*UTM Interface	NUT	8.2.3
Natural Optimizer Compiler	NOC	8.2.3
Natural Review	RNM	8.2.3
Natural RPC (*)	RPC	8.2.3 (RPC is a separate subcomponent of Natural)
Natural SAF Security (*)	NSF	8.2.3
Natural Security (*)	NSC	8.2.3
Natural SQL Gateway	NSB	8.2.3
Natural TIAM Interface	NRT	8.2.3
Natural TSO Interface (*)	NTI	8.2.3
Natural Web I/O Interface (*)	NWO	8.2.3 (server)
Super Natural	NSN	8.2.3
zIIP Enabler for Natural (*)	NAZ	8.2.3

* 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 versions (or higher) are required to use Natural Version 8.2.3 with the Software AG products listed below:

Product Name	Product Code	Minimum Version
Adabas	ADA	8.2.3 8.2.5 for the zIIP Enabler for Natural with Zaps AO825001 and AO825006 (ADASVC) and AI825002 (ADALNK) installed
Adabas CICS Interface	ACI	8.2.3
Adabas IMS/TM Interface	AII	8.2.3
Adabas Online System	AOS	8.2.3
Adabas Review	REV	4.5.2
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 14
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).
EntireX Communicator	EXX	8.2.1 for z/OS 7.2.3 for z/VSE 8.1.1 for BS2000/OSD
International Components for Unicode for Software AG	ICS	1.2.1
Mainframe License Check	MLC	1.2.5
Natural Advanced Facilities	NAF	8.2.3
Natural for Ajax	NJX	8.2.3
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	8.2.3
Natural Com-plete/SMARTS Interface	NCF	8.2.3
Natural Connection	NTC	8.2.3
Natural Construct	CST	5.3.1
Natural for DB2	NDB	8.2.3
Natural Development Server	NDV	8.2.3
Natural for DL/I	NDL	8.2.3
Natural Document Management	NDM	1.6.3 with Service Pack I001 applied
Natural Engineer	NEE	8.2.2
Natural IMS TM Interface	NII	8.2.3
Natural ISPF	ISP	8.2.3
Natural Japanese Language Pack	NCJ	8.2.3
Natural Optimizer Compiler	NOC	8.2.3
Natural RPC	RPC	8.2.3 (RPC is a separate subcomponent of Natural)
Natural Review	RNM	8.2.3
Natural SAF Security	NSF	8.2.3
Natural Security	NSC	8.2.3
Natural for SQL/DS	NSQ	8.2.3 **Note:** IBM also refers to SQL/DS as DB2 Server for VSE & VM.
Natural SQL Gateway	NSB	8.2.3
Natural TIAM Interface	NRT	8.2.3
Natural TSO Interface	NTI	8.2.3
Natural *open*UTM Interface	NUT	8.2.3
Natural for VSAM	NVS	8.2.3

Natural Web I/O Interface	NWO	1.3.11 (client) 8.2.3 (server)
Predict	PRD	4.6.1
Predict Application Control	PAC	2.6.1
SMARTS	APS	2.7.2 Cumulative Fix 20 for BS2000/OSD 3.3.1 Cumulative Fix 14 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 the EntireX Communicator.
Super Natural	NSN	8.2.3
System Automation Tools	SAT	3.3.1
System Maintenance Aid	SMA	2.1.2 Cumulative Fix 2

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.

End of Standard Maintenance of Product Versions

Standard maintenance for Natural Version 4.2.7 and the Natural add-on products listed below ends on **January 31, 2013**:

Product Name	Product Code	Version
Natural Advanced Facilities	NAF	4.2.7
Natural CICS Interface	NCI	4.2.7
Natural Com-plete/SMARTS Interface	NCF	4.2.7
Natural Connection	NTC	4.2.7
Natural Development Server	NDV	2.2.7
Natural for DB2	NDB	4.2.7
Natural for DB2	NDB	4.3.2
Natural for DL/I	NDL	4.2.7
Natural for MBCS	NKA	4.2.7
Natural for SQL/DS	NSQ	4.2.7
Natural for VSAM	NVS	4.2.7

Natural IMS TM Interface	NII	4.2.7
Natural ISPF	ISP	2.6.7
Natural Japanese Language Pack	NCJ	4.2.7
Natural *open*UTM Interface	NUT	4.2.7
Natural Optimizer Compiler	NOC	4.2.7
Natural Review	RNM	4.2.7
Natural RPC	RPC	6.3.4 (RPC is a separate subcomponent of Natural)
Natural SAF Security	NSF	4.2.7
Natural Security	NSC	4.2.7
Natural SQL Gateway	NSB	1.2.3
Natural TIAM Interface	NRT	4.2.7
Natural TSO Interface	NTI	4.2.7
Natural Web I/O Interface	NWO	1.1.6 (server)
Super Natural	NSN	3.5.7

Standard maintenance for Natural Version 8.2.2 and the Natural add-on products listed below ends on **March 31, 2014**:

Product Name	Product Code	Version
Natural Advanced Facilities	NAF	8.2.2
Natural CICS Interface	NCI	8.2.2
Natural Com-plete/SMARTS Interface	NCF	8.2.2
Natural Connection	NTC	8.2.2
Natural Development Server	NDV	8.2.2
Natural for DB2	NDB	8.2.2
Natural for DL/I	NDL	8.2.2
Natural for SQL/DS	NSQ	8.2.2
Natural for VSAM	NVS	8.2.2
Natural IMS TM Interface	NII	8.2.2
Natural ISPF	ISP	8.2.2
Natural Japanese Language Pack	NCJ	8.2.2
Natural *open*UTM Interface	NUT	8.2.2
Natural Optimizer Compiler	NOC	8.2.2
Natural Review	RNM	8.2.2
Natural RPC	RPC	8.2.2 (RPC is a separate subcomponent of Natural)
Natural SAF Security	NSF	8.2.2
Natural Security	NSC	8.2.2
Natural SQL Gateway	NSB	8.2.2

Product Name	Product Code	Version
Natural TIAM Interface	NRT	8.2.2
Natural TSO Interface	NTI	8.2.2
Natural Web I/O Interface	NWO	8.2.2 (server)
Super Natural	NSN	8.2.2

For more information on how long a product is maintained by Software AG, you can access Software AG's Empower website at *https://empower.softwareag.com/* and review the **Product Version Availability** announcements for specific products and releases.

3 Migration

Important: This section provides the latest migration information for this Natural release. For a summary of all migration announcements for Natural Version 8.2, refer to the *Migrating From Previous Natural Versions* section for z/OS, z/VSE and BS2000/OSD in the Natural *Installation* documentation.

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.

- License File for zIIP Enabler for Natural
- Error Messages now Loaded from INPL
- Optional Step for FREG System File
- New Load Modules for LE Support on z/OS and z/VSE
- New SMA Parameter for LE Support on z/OS and z/VSE
- Unicode and Code Page Support: ICU Data Modules
- Documentation
- Upgrade Installations for Natural Security

License File for zIIP Enabler for Natural

In addition to the product license file for Natural, a license file is required for the *zIIP Enabler for Natural*, if installed. The ***zIIP Enabler for Natural*** is a new Natural add-on product (see the relevant section).

Error Messages now Loaded from INPL

The Natural error messages are now contained on the `NAT`*`vrs`*`.INPL` data set and loaded along with the Natural objects thus saving a load step.

As a result, the `NAT`*`vrs`*`.ERRN` data set previously used to load the error messages is no longer delivered.

Optional Step for FREG System File

An optional installation step is provided to load the file definition for the new `FREG` **registry system file**. See the corresponding installation step *Load the FREG System File Definition* for z/OS, z/VSE and BS2000/OSD in *Installing Natural*.

New Load Modules for LE Support on z/OS and z/VSE

z/OS

Since Natural Version 8.2, support for IBM's Language Environment (LE) on z/OS is provided by the `NATOSL` and `NATLEOPT` load modules. These load modules replace the `LE370` parameter previously contained in the `NATOS` source module. See the corresponding installation step *Build the Natural-Specific IBM Language Environment* in *Installing Natural*.

z/VSE

Since Natural Version 8.2, support for IBM's Language Environment (LE) on z/VSE is provided by the `NATVSEL` and `NATLEOPT` load modules. These load modules replace the `LE370` parameter previously contained in the `NATVSE` source module. See the corresponding installation step *Build the Natural-Specific IBM Language Environment* in *Installing Natural*.

New SMA Parameter for LE Support on z/OS and z/VSE

The System Maintenance Aid (SMA) job required to build IBM's Language Environment (LE) on z/OS and z/VSE is now performed when the new SMA parameter `NAT-LE` is set to `Y` (Yes). The default setting is `N` (No). See the corresponding installation step *Link the Nucleus* for z/OS and z/VSE in *Installing Natural*.

Unicode and Code Page Support: ICU Data Modules

The ICU data libraries provided as Natural load modules have changed due to the new ICU version (see also ***Unicode and Code Page Support***):

Old Name	New Name
`ICSDT40E`	`ICSDT49E`
`ICSDT40J`	`ICSDT49J`
`ICSDT40X` (not for z/VSE)	`ICSDT49X` (not for z/VSE)

The `ICSDT49J` data module contains the same code pages and locales as `ICSDT49E` 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*.

Documentation

Unicode and Code Page Support: Installation Chapter Renamed

The chapter *Installation for Unicode and Code Page Support* has been renamed to *Installing International Components for Unicode for Software AG*.

See also ***Software AG ICU Module now Called ICS Module***.

Platform-Specific Migration Summary

A summary of migration information including compatibility issues is now provided in the Natural *Installation* documentation for the appropriate operating system:

- *Migrating from Previous Versions of Natural on z/OS*
- *Migrating from Previous Versions of Natural on z/VSE*
- *Migrating from Previous Versions of Natural on BS2000/OSD*

Upgrade Installations for Natural Security

The Natural objects and Natural error messages required for Natural Security are now loaded immediately after the Natural objects and Natural error messages for base Natural.

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 a summary of all compatibility announcements for Natural Version 8.2, refer to the *Migrating From Previous Natural Versions* section for z/OS, z/VSE and BS2000/OSD in the Natural *Installation* documentation.

- Using a Version 8.2 Authorized Services Manager in Version 4.2
- Using a Version 8.2 Roll Server in Version 4.2
- No Compatibility between Buffer Pools of Versions 4.2 and 8.2
- Arabic Shaping
- Compatibility with Natural for Windows and Natural for UNIX

Using a Version 8.2 Authorized Services Manager in Version 4.2

A Natural Version 8.2 Authorized Services Manager (ASM) can also be used in Natural Version 4.2.

Using a Version 8.2 Roll Server in Version 4.2

A Natural Version 8.2 Roll Server can also be used in Natural Version 4.2.

No Compatibility between Buffer Pools of Versions 4.2 and 8.2

There is no compatibility between buffer pools of Natural Versions 4.2 and 8.2. A Natural Version 4.2 buffer pool is to be started for a Version 4.2 environment, a Version 8.2 buffer pool for a Version 8.2. environment.

Arabic Shaping

Natural expects that Arabic characters are unshaped when they are sent to a 3270 terminal device or to the Web I/O Interface. On a 3270 terminal device, Arabic characters are shaped by the Natural I/O system, when using the Web I/O Interface they are shaped by the rendering machine.

You can unshape Arabic characters in Natural source objects by using the **Convert to Unshaped Form** function of the SYSCP utility, or the **Unshape Arabic characters** transfer option of the Object Handler. For more information, see the relevant sections in the *Utilities* documentation.

Compatibility with Natural for Windows and Natural for UNIX

The following syntax enhancements provided with Natural Version 8.2.3 for Mainframes are not yet supported in the local environments of Natural for Windows Version 6.3.13 and Natural for UNIX Version 6.3.13:

Programming Element	Enhancement
`REQUEST DOCUMENT` statement:	IPv6 support
`SEPARATE` statement:	■ Array as source operand ■ `STARTING FROM POSITION` clause ■ `REMAINDER POSITION` clause
`*LINEX` system variable	New system variable

RDC Replaces RDCSIZE and RDCEXIT for Trace Recording/Data Collection

Since Natural Version 8.2, the dynamic `RDC` profile parameter and corresponding `NTRDC` macro are provided to improve control over trace recording/data collection.

You must set `RDC=ON` to activate trace recording.

In addition, you must set `FNAT=ON` as the keyword subparameter of `RDC` to record Natural system file programs.

The `RDCSIZE` profile parameter can no longer be used to activate trace recording. It can only be used as an alternative for `RDC` to activate the Natural Data Collector at session start.

The `RDCEXIT` profile parameter can no longer be specified in the Natural parameter module. It can only be used as an alternative for `RDC` to define user exits for the Natural Data Collector at session start.

Example of RDC Setting:

At Natural session start:

```
RDC=(SIZE=2,EXIT=(RDCEX3,2000))
```

In the macro:

```
NTRDC SIZE=2,EXIT=(RDCEX3,2000)
```

The profile parameters and macros mentioned above are described in the *Parameter Reference* documentation.

4 New and Changed Features of Base Natural

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

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

Enhancement Proposal (EP) Number	Proposal
3453 and 4590	Enhance data area editor to save an LDA with a view definition as a PDA: See *Data Area Editor*.
5028	Provide option to manage error messages with SYSBPM: see *SYSBPM Utility*.
1002530 and 1009730	Support Predict sets with `CATALL` and `SCAN`: see *CATALL System Command* and *SCAN System Command*.
1009736	Increase maximum value for `MADIO` to avoid program loops: see `MADIO` and `MAXCL` in *Changed/Enhanced Profile Parameters* and API `USR8207N` in *Application Programming Interfaces*.
1009747	Provide option in SYSMAIN to copy objects without XRef data: see *SYSMAIN Utility*.
1025934	Provide system variable to find out whether a Natural object is eligible for the `REINPUT` or `PROCESS PAGE UPDATE` statement: see **REINPUT-TYPE System Variable*.
1032959	Provide statistics report about Natural object types processed with the Object Handler: see *Process Statistics about Object Types - New User Exit Routine*.
1033018	Provide option to limit the number of concurrent logins per user: see *Natural Registry System File*.
1033112 and 1042513	Show source line numbers of all `INCLUDE` instructions used by an executing statement: see **LINEX System Variable*.
1035658	Enhance error processing for the `COMPOPT` compilation options `PCHECK` and `ECHECK`: see `PECK` in *New Profile Parameters*.
1035921	Facilitate administration of transaction codes and PSBs under Natural IMS TM Interface: see *Configuration Changes: New Macros and Parameter Settings*.
1035968	Enhance the debugger `DISPLAY VARIABLE` command to display a single system variable: see *Debugger*.
1035989	Provide debugger option to display a variable in GUI-like manner: see *Debugger*.
1035990	Enhance the debugger `DISPLAY VARIABLE` command to display arrays that contain a variable index: see *Debugger*.
1036042	Enhance the `SEPARATE` statement to allow array ranges as source fields: see *Statements*.

Enhancement Proposal (EP) Number	Proposal
1036070	Enhance the profile options of LIST for batch processing: see *LIST System Command*.
1036156	Suppress execution error NAT0933 for a GDA (global data area) that was not modified but unintentionally cataloged: see the new GDASC option of the COMPOPT system command and the CMPO profile parameter.
1036158	Enhance API USR1043N to receive the value of field ACBXISQG from the Adabas CL command: see *Application Programming Interfaces*.
1038991	Provide option to view parameter and variable definitions of cataloged Natural objects: see APIs USR8205N and USR8206N in *Application Programming Interfaces*.

See also *Customer Enhancement Proposals for Natural Add-On Products*.

Operations and Performance

Roll Server: Low/High Water Marks Available in a Sysplex

The Roll Server now also supports LRB low and high water marks in a sysplex environment. Disk I/O can be significantly reduced by specifying low and high water marks. Roll Server communications in a sysplex have been extended to include a stage request message that forces staging on another z/OS image. The requested thread is then written to disk regardless of the high and low water mark settings on that system.

For compatibility reasons, low and high water marks in a sysplex environment are set to zero by default. This guarantees a staging behavior identical to previous Natural versions. A value of 10 specified as the high water mark causes “staging on demand” which means that a thread is only written to disk if requested on another z/OS image.

See also *Roll Server in a z/OS Parallel Sysplex Environment* in the *Operations* documentation.

Roll Server: CINIT Formatting Function Discontinued

See *Discontinued Support for CINIT Function of Roll Server*.

Swap Pool Cache: New Parameter to Optimize Slot Use

You can now optimize storage utilization of the swap pool cache by adjusting slot sizes with the new `SWPCOPT` keyword parameter of the `NTSWPRM` macro. For detailed information, see the *Operations* documentation.

Message Buffer Pool

The message buffer pool is a new cache memory which is used to store the Natural system messages and the user texts.

Before an error message is output, Natural first checks whether the corresponding message text is available in the message buffer pool. If so, this text is output. Otherwise, the error message is read from the database and then stored in the message buffer pool.

The message buffer pool is available only as a Natural global buffer pool. Its use is optional. When used, the message buffer pool is allocated in a data space.

For more information, see *Message Buffer Pool* in the *Operations* documentation.

Optimize Monitor Buffer Pool for z/VSE

The Software AG product Optimize for Infrastructure enables you to monitor all Software AG component resources in real time. To provide system and operational data for monitoring all Natural components running in one LPAR, the global Optimize Monitor Buffer Pool is now also available in a z/VSE environment. For further information, see *Optimize Monitor Buffer Pool* in the *Operations* documentation.

Natural Registry System File

The Natural `FREG` system file is a new optional system file that contains registry information required to control the number of concurrent user sessions. You can use the new `UCONMAX` profile parameter to limit the number of concurrent sessions and the new `FREG` profile parameter to define the `FREG` system file for your environment. For more information, see the *Parameter Reference* documentation.

The `FREG` system file is not yet supported in a VSAM file system.

Unicode and Code Page Support

ICU Version Upgrade

The ICU (International Components for Unicode) version has been upgraded to ICU 49.1.2 which supports Unicode Version 6.1.

ICU 49.1.2 provides enhanced support for right-to-left (RTL) languages, for example, the shaping of Arabic characters has improved.

ICU has changed the layout of the version number. The first version number field contains the ICU release version number, for example 49. In earlier ICU releases, the first two version fields together indicated the ICU release, for example 4.8. Therefore, the Natural SYSCP utility displays the ICU version in a new layout format. For more information on ICU version numbers, see the ICU User Guide website at to ***http://userguide.icu-project.org/design#TOC-Version-Numbers-in-ICU***.

See also ***Unicode and Code Page Support: ICU Data Modules*** in *Changes to Installation*.

Software AG ICU Module now Called ICS Module

The Software AG ICU module (SAGICU) is now referred to as ICS module where ICS represents *International Components for Unicode for Software AG*.

Programming Language

Statements

REQUEST DOCUMENT Statement

The `REQUEST DOCUMENT` statement now also supports Internet Protocol Version 6 (IPv6). IPv6 expands the IP address space from 32 bits to 128 bits, providing a virtually unlimited supply of IP addresses.

IPv6 support for the `REQUEST DOCUMENT` statement has the following prerequisites and restrictions:

Prerequisites for all Operating Systems

- An activated IPv6 stack must be available on the local host.
- The local network must support IPv6.
- An accessible and IPv6-capable DNS server must be available.
- For IPv6 internet communication, an IPv6 connection from the service provider must be available.
- If both IPv4 and IPv6 are used, a dual stack must be supported.
- IPv6 support must be configured with the appropriate keyword subparameters of the `XML` profile parameter: see ***Changed/Enhanced Profile Parameters***.

Operating/Teleprocessing System-Specific Prerequisites and Restrictions

z/OS:

- No restrictions apply on z/OS for all z/OS versions currently supported.

z/VSE:

- z/VSE Version 5 Release 1 (or above) must be installed.
- BSI TCP/IP Version 2.5.2 must be installed. The CSI TCP/IP stack does not support IPv6.

  (See the appropriate BSI or IBM TCP/IP documentation for more information.)
- For dual stack support, the (BSI) IPv4 and IPv6 stacks must be coupled.

BS2000/OSD:

- BS2000/OSD Version 7 (or above) must be installed.
- Software AG recommends that you use the latest version of the DNS daemon LWRESD.
- IPv6 is not yet supported by the Natural Development Server and the Natural Web I/O Interface.

Note: For more information, see *IPv6 Support for REQUEST DOCUMENT* in the *Programming Guide* and the `REQUEST DOCUMENT` statement in the *Statements* documentation.

SEPARATE Statement

The `SEPARATE` statement provides the following new features:

- It is now possible to define an array as the source operand (*operand1*) to be separated.
- `STARTING FROM POSITION` is a new clause to specify the position at which the separation process starts.
- `REMAINDER POSITION` is a new clause to determine where to place the content of an array if not enough target fields are available.

For more information, see the *SEPARATE* statement in the *Statements* documentation.

System Variables

***LINEX System Variable**

`*LINEX` is a new system variable which returns the source line number of the statement currently executing plus the line numbers of the copycode references (`INCLUDE` statements) in which the statement is embedded.

The line numbers are presented as a path where a slash (/) separates superior from subordinate statement levels (from left to right), for example: `3210/0200/0050`.

***REINPUT-TYPE System Variable**

`*REINPUT-TYPE` is a new system variable that indicates whether an application (for example, a map or web page) is in the state required to perform a `REINPUT` or `PROCESS PAGE` statement.

The new variables are described in the *System Variables* documentation.

System Commands

- CATALL System Command
- COMPOPT System Command
- LIST System Command
- MAINMENU System Command: Development Functions Menu
- SCAN System Command
- ZIIP System Command

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

CATALL System Command

If Predict is installed, the `CATALL` system command can now also be used to catalog objects contained in a Predict set.

COMPOPT System Command

GDASC - GDA Signature Check

`GDASC` is a new `COMPOPT` option to determine whether a GDA signature is stored for a GDA (global data area) and all Natural objects referencing this GDA. The GDA signature does not change for a GDA that is *not* modified but (incidentally) cataloged.

All GDA signatures are compared during execution. If they are identical, Natural continues using the GDA instead of issuing error message `NAT0933 - GDA time-stamp conflict.`

See also the corresponding `GDASC` option of the `CMPO` profile parameter described in the *Parameter Reference* documentation.

DB2TSTI – Generate SQL TIMESTAMP Data Type for Natural TIME Fields

DB2TSTI is a new COMPOPT option to determine whether Natural TIME fields (Natural data format T) are mapped to the SQL TIMESTAMP or SQL TIME data type for relational database access.

See also the corresponding DB2TSTI option of the CMPO profile parameter described in the *Parameter Reference* documentation.

LIST System Command

- It is now possible to set the options for the LIST profile dynamically with the new SET *para=value* command option. For more information, see the syntax element *settings* in the *Syntax Overview* of the LIST command.
- A new option PAGE-TITLE-IN-BATCH is available. For lengthy listings in batch mode, you can now specify whether the page title is to be printed on top of every page or on top of the first page only. This option can be specified in the LIST profile or with SET *para=value*. See *Defining an Individual List Profile*.
- New options are available to route the output in batch mode either to Printer 1, Work File 1, or to a Natural text object. These options can be specified in the LIST profile or with SET *para=value*. See *Defining an Individual List Profile*.
- A new option is available in batch mode to display the total number of source lines of all sources listed in the list of objects. This option can be specified in the LIST profile or with SET *para=value*. See *Defining an Individual List Profile*.

MAINMENU System Command: Development Functions Menu

All **List** functions are now shown as separate menu items and several function codes have changed to improve ease of use, as indicated below:

Function	Old Code	New Code
List Objects or Single Source	**LI**	**L**
List Source with Expanded Sources	**LE**	**O**
List Extended Object Names	**LN**	**N**
List Directory Information	**LD**	**I**
Scan Objects	**O**	**S**
List Used Subroutines, etc.	**S**	**U**

For more information, see *Development Functions* in the *Using Natural* documentation.

SCAN System Command

If Predict is installed, the `SCAN` system command can now also be used to scan objects contained in a Predict set.

ZIIP System Command

The new `ZIIP` system command provides status and processing information on the IBM System z Integrated Information Processors (zIIPs) used in a Natural z/OS environment.

Note: The `SYSTP Z` command used as a temporary solution to provide zIIP statistics in Natural Versions 4.2.6 and 4.2.7 is no longer supported.

Editors

Data Area Editor

The new line command `.VG` of the data area editor converts a view (DDM) definition to a group structure. This provides the option to save a local data area (LDA) or a global data area (GDA) as a parameter data area (PDA).

For more information, see *Line Commands* in *Data Area Editor* in the *Editor* documentation.

Utilities

The following changes and enhancements have been introduced:

- Object Handler
- SYSBPM Utility
- SYSCP Utility
- SYSMAIN Utility
- SYSRPC Utility

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

Object Handler

XRef Setting in Utility Profiles of Natural Security Checked

The load function of the Object Handler now checks the setting of the XREF option against the setting of the new Natural Security **Xref option** for utility profiles when loading cataloged objects in the internal format. See *XREF option with Natural Security* for more information.

The `OBJHEX02` user exit routine has been enhanced accordingly: the new `CAT-REJECTED-XREF` parameter contains the number of cataloged Natural objects that were rejected because of XRef reasons (no XRef data, not documented in Predict, invalid `FDIC` system file).

New Report with Data from Target Environment

The Object Handler provides a new report type for the `UNLOAD` command. In addition to reporting from the source environment where the object has been unloaded, the Object Handler can now also report from the target environment where the object is to be loaded, for example, a change within a parameter such as the library name. You can select a report type by using the `REPORT-FORMAT` option.

New Report Mode Convenient for Mainframe Environments

For direct commands, the Object Handler provides the new report option `REPORT-MODE` to select a layout for the reports to be written. You can choose between a short report to display the most relevant data in the first 80 columns of the report line, and a large report (default) to display data as in previous Natural versions. You can change the default with the `Default-Report-Mode` profile parameter of the Object Handler.

New Return Codes

The Object Handler provides two new return codes for the load function:

Return Code	Explanation
`9995`	Function completed successfully, but object(s) could not be replaced.
`1115`	Function completed successfully, but Natural Security errors occurred and object(s) could not be replaced.

When objects are to be replaced using the load function, the return code 9995 is issued in one of the following situations:

- a Natural source to be loaded is locked,
- a replacement has been rejected by Natural Security,
- a subroutine, resource or class name exists,
- `VERSIONCHECK` has been specified and the Natural version under which the object was cataloged is higher than the Natural version currently used.
- a DDM to be loaded is locked,
- a long error message to be loaded has no corresponding short error message.

Note: In batch mode, the Natural session terminates with the condition code 50 unless the `OBJHEX01` user exit is activated.

In the case of additional Natural Security errors, the return code 1115 is issued instead.

Process Statistics about Object Types - New User Exit Routine

The Object Handler now also provides statistics about the types of Natural object (for example, programs or subroutines) processed during an unload, a load or a scan function. The new statistics are displayed on an extra report screen when the option `Display-Statistics` (see *Profile Parameters*) is active or when the `SHOW STATISTICS` command is issued (see *Commands for Navigation and Special Functions*).

You can obtain and further process the statistics data on the object types by using the new `OBJHEX04` user exit routine. See also *User Exit Routines Available*.

Conversion of Shaped Arabic Characters

The new **Unshape Arabic characters** transfer option is used to convert shaped Arabic characters (IBM-420 code page) to unshaped characters in the Natural source objects specified for an unload or load function. For more information, see *Transfer Options* in *Object Handler*.

SYSBPM Utility

New Buffer Pool Type for Messages

The SYSBPM utility can now also be used to manage message buffer pools. This feature only applies in a z/OS environment. For more information, see *SYSBPM Utility - Buffer Pool Management*.

SYSCP Utility

Conversion of Shaped Arabic Characters

The new **Convert to Unshaped Form** function of **Code Page Maintenance** is used to convert shaped Arabic characters (IBM-420 code page) to unshaped characters in the specified Natural source objects.

ICU Version Field

The ICU version field has a new layout format. See also ***Unicode and Code Page Support***.

SYSMAIN Utility

XREF Option Checks for Predict Entries

The XREF option of the SYSMAIN utility can now be used to check whether any Predict program entries exist for a specified Natural object: see the new `D` (Documented) value setting in *XRef Considerations* for more information.

SYSRPC Utility

The SYSRPC utility is a subcomponent of the Natural RPC: see ***SYSRPC Utility*** in *Natural RPC*.

Debugger

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

New Display Option for Single System Variables

The `DISPLAY VARIABLE` command now also provides the option to specify a single system variable with the command. For more information, see *Display System Variables*.

New Display Option for Arrays with a Variable Index

The `DISPLAY VARIABLE` command now also provides the option to specify arrays with an index expression, where the index contains variables. The variables are evaluated in order to display the selected occurrences. For more information, see *Display Variable - Individual*.

Alternatives for Displaying a Variable in a Source

You can now display a variable from an object source if you position the cursor at a variable name and press ENTER or double-click the name (if Entire Connection is installed). The selected variable will then be displayed in a separate window. For more information, see *Display Variable - Individual*.

Profile Parameters

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
`FREG`	n/a	Registry System File	Specifies the database ID, file number, password and cipher key for the new `FREG` **registry system file**. The `FREG` system file is used when a Natural session is started with the `UCONMAX` profile parameter (see below) set to a value greater than `0`.

Parameter	Corresponding Macro	Task	Description
O4I	n/a	Collect Data for Optimize for Infrastructure	Controls whether performance data is collected in the Optimize Monitor Buffer Pool for Optimize for Infrastructure. See *Optimize Monitor Buffer Pool* in the *Operations* documentation.
PECK	PECK	PCHECK/ECHECK Error Processing	Controls the handling of syntax errors detected during a check with the PCHECK or ECHECK option of the COMPOPT system command.
UCONMAX	n/a	Maximum Number of Concurrent Sessions per User	Determines the maximum number of concurrent logins per user.
ZIIP	NTZIIP	zIIP Processing (z/OS only)	Enables support for IBM's System z Integrated Information Processor (zIIP) and provides configuration settings for zIIP processing. See also ***zIIP Enabler for Natural*** for more information on zIIP support by Natural.

Changed/Enhanced Profile Parameters

Parameter	Corresponding Macro	Task	Change/Enhancement
ASIZE	n/a	Entire System Server Auxiliary Buffer	**New Value Recommendation** The recommended value for this profile parameter has changed from 64 to 96.
CMPO	NTCMPO	Compilation Options	**Signature Check for Global Data Areas (GDAs)** The new keyword subparameter GDASC checks for GDA signatures to avoid unnecessary execution error. See also the corresponding GDASC option of the COMPOPT system command.
			Generate SQL TIMESTAMP for Natural TIME Fields The new keyword subparameter DB2TSTI maps Natural TIME fields to the SQL TIMESTAMP data type. See also the corresponding DB2TSTI option of the COMPOPT system command.
DS	NTDS	Define Size of Storage Buffer	**XSIZE Obsolete** The XSIZE subparameter is no longer evaluated: see ***Natural XSIZE Buffer***.
MADIO	n/a	Specify Maximum Number of DBMS Calls	**Maximum Value Increased** The maximum value of DBMS calls permitted between two screen I/O operations has been increased to 65535.

Parameter	Corresponding Macro	Task	Change/Enhancement
MAXCL	n/a	Specify Maximum Number of Program Calls	**Maximum Value Increased** The maximum value of program calls permitted between two screen I/O operations has been increased to 65535.
PROGRAM	n/a	Non-Natural Program Receiving Control after Termination	**Termination Message Issued** The new MSG and NOMSG options determine whether the Natural termination message is issued before control is assumed by a non-Natural program.
TSOP	NTTSOP	Parameters for Natural TSO Interface	**Behavior of PA2** The new PA2 keyword subparameter of the TSOP profile parameter determines the behavior of the PA2 key.
XSIZE	n/a	Size of Buffer for User Subsystem	**Obsolete Parameter** This profile parameter is no longer evaluated: see *Natural XSIZE Buffer*.
XML	NTXML	Activate PARSE XML and REQUEST DOCUMENT Statements	**Support for IPv6** The following new keyword subparameters support Internet Protocol Version 6 (IPv6) for the REQUEST DOCUMENT statement: RDIPV6 RDPV6 RDPPOV6 RDPSV6 (z/OS only) RDSPOV6 (z/OS only)

Application Programming Interfaces

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

API	Task	Description
USR1043N	Perform Adabas direct calls	This API now also supports the extended Adabas control block (ACBX) for the Adabas CL (close user session) command.
USR4001N	Set profile parameter PROGRAM	This API now also supports the new MSG and NOMSG options of the PROGRAM profile parameter described in the *Parameter Reference* documentation.
USR4342N	Maintain Natural message buffer pool	New API that lists and deletes messages from the Natural **message buffer pool** (see the relevant section) and provides statistical information.

API	Task	Description
USR8202N	Get enhanced error information on error NAT3145	New API that provides extended information on the NAT3145 system error message.
USR8203N	Get profile parameters from the Natural parameter module	New API that reads the profile parameters defined in the Natural parameter module used to start a Natural session.
USR8204N	Perform ZIIP command	New API that supports the functionality of the ZIIP system command described in the *System Commands* documentation.
USR8205N	Get called subprograms with parameters	New API that lists the subprograms called by a cataloged (compiled) Natural object and the parameter definitions passed to these subprograms.
USR8206N	Read variable definitions from a cataloged Natural object	New API that returns the variable definitions contained in a cataloged Natural object.
USR8207N	Maintain the number of DBMS calls, MAXCL and MADIO parameters	New API that retrieves the values of the MADIO and MAXCL profile parameters and the number of database calls since the last I/O operation. You can use these values to avoid program interruptions (Natural error NAT1009). You can reset the counter for DBMS calls and set values for the MADIO and MAXCL parameters in the Natural data format/length I4. If Natural Security is installed, you can only retrieve the values. See also MADIO and MAXCL in ***Changed/Enhanced Profile Parameters***.

5 New and Changed Features of Natural Add-On Products

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

The following is an overview of the customer enhancement proposals that have been implemented in the Natural add-on products released with Natural Version 8.2.3:

Product	Enhancement Proposal (EP) Number	Proposal
Natural for DB2	1032946	Generate SQL TIMESTAMP data type for Natural `TIME` fields: see the new `DB2TSTI` option of the `COMPOPT` system command and the `CMPO` profile parameter.
Natural Security	1043038	Provide option to specify an ETID for a batch session: see *User Profiles - Batch ETID*.

Natural CICS Interface

- Installation: Customization Steps for CICS
- Installation: New SMA Parameter for LE Support
- Installation on z/VSE: SVA Option Supported by SMA

Installation: Customization Steps for CICS

The RDO definitions required to customize CICS are now created and applied by appropriate System Maintenance Aid (SMA) job steps. See the corresponding installation step *Customize CICS* for z/OS and z/VSE in *Installing Natural CICS Interface* (Natural *Installation* documentation).

Installation: New SMA Parameter for LE Support

The System Maintenance Aid (SMA) job required to build IBM's Language Environment (LE) is now performed when the SMA parameter `NAT-LE` is set to `Y` (Yes). The default setting is `N` (No). See the corresponding installation step *Link the Environment-Dependent Nucleus* for z/OS and z/VSE in *Installing Natural CICS Interface* (Natural *Installation* documentation).

Installation on z/VSE: SVA Option Supported by SMA

In a z/VSE environment, all reentrant Natural modules can now be linked with the SVA (shared virtual area) option by performing appropriate System Maintenance Aid (SMA) job steps. See the corresponding installation step *Link the Environment-Dependent Nucleus* in *Installing Natural CICS Interface* (Natural *Installation* documentation).

Natural Com-plete/SMARTS Interface

Installation: New SMA Parameter for LE Support

The System Maintenance Aid (SMA) job required to build IBM's Language Environment (LE) is now performed when the SMA parameter `NAT-LE` is set to `Y` (Yes). The default setting is `N` (No). See the corresponding installation step *Link the Nucleus* for z/OS and z/VSE (Natural *Installation* documentation).

Natural Development Server

For information on changes, enhancements and new features available with the Natural Development Server, see *What's New* in the *Natural Development Server* documentation at ***http://documentation.softwareag.com/***.

Natural for Ajax

For information on changes, enhancements and new features available with Natural for Ajax, see the *Release Notes* in the *Natural for Ajax* documentation at ***http://documentation.softwareag.com/***.

Natural for DB2

SQL TIMESTAMP Data Typ Generated for Natural TIME Format

Natural for DB2 now provides the option to map Natural `TIME` fields to the SQL TIMESTAMP data type: see the new `DB2TSTI` compiler option in *COMPOPT System Command*.

Natural IMS TM Interface

Installation: NIMDRIV Macro Replaced by Load Modules

The `NIMDRIV` macro used to generate the environment-dependent interfaces required for the Natural IMS TM Interface is no longer delivered. It has been replaced by the following load modules:

- `NIIBMP` for BMP environments,
- `NIICONV` for conversational MPP environments,
- `NIINONC` for non-conversational MPP environments,
- `NIINTRD` for message-oriented NTRD environments,
- `NIISFE` for Natural Development Server and Natural Web I/O Interface server environments, and
- `NIISRVD` for server environments.

The load modules are contained in the `NII`*`vrs`*`.LOAD` data set shipped on the installation medium. The resulting changes in installation steps are described in *Installing Natural IMS TM Interface* in the Natural *Installation* documentation.

The parameters previously specified with the `NIMDRIV` macro are now specified with the new `NTIMSP` macro as indicated in the following section.

Configuration Changes: New Macros and Parameter Settings

The Natural IMS TM Interface macros NIMDRIV, NIMPARM, NIMLPCB and NIMTRNTG are no longer delivered.

They have been replaced by the following parameter macros contained in the Natural parameter module:

Old Macro	New Macro in Natural Parameter Module
NIMDRIV	NTIMSP General parameter settings
NIMPARM	NTIMSPE Environment-specific parameter settings
NIMLPCB	NTIMSPT Transaction definitions
NIMTRNTG	

The new macros are described in the *Parameter Reference* documentation.

Compatibility Support for NIITRTAB and NIIPARM

The NIITRTAB transaction code table previously generated by the NIMTRNTG macro is still supported for compatibility reasons. If no NTIMSPE macro exists in the Natural parameter module, the definitions from the NIITRTAB module linked to the Natural IMS TM Interface are used. If no such definitions exist either, the session terminates with an NII3512 user abend code.

The NIIPARM environment table previously generated by the NIMPARM macro is also still supported for compatibility reasons.

Changes to Parameters from NIMDRIV (now: NTIMSP)

In principle, the subparameters provided by the new NTIMSP macro correspond to the parameters that were contained in the old NIMDRIV macro. Any removed parameters or changes to parameter value settings are indicated in the following table:

Parameter	Change	
LE370	This parameter has been removed. It was maintained for compatibility reasons only.	
TRNCODE	New value settings:	Old value settings:
	ON	YES
	OFF	NO
TYPE	This parameter has been removed.	
THRELO	New value settings:	Old value settings:
	ON	YES
	OFF	NO

Changes to Parameters from NIMPARM (now: NTIMSPE)

In principle, the subparameters provided by the new NTIMSPE macro correspond to the parameters that were contained in the old NIMPARM macro. However, the value settings of the following parameters have changed from YES to ON, and from NO to OFF:

ACTACTV
BMPABER
HDENSDU
MONACTV
MSACTV
MSCMPTB
NSBNAME
ROLLSRV
SUPNONC
TERMDB
TERMIPL
THBELOW
USERID

Changes to Parameters from NIMTRNTG and NIMLPCB (now: NTIMSPT)

In principle, the subparameters provided by the new NTIMSPT macro correspond to the parameters that were contained in the old NIMTRNTG and NIMLPCB macros. Any parameters that have been replaced or changes to parameter value settings are indicated in the following table:

Old Parameter	Change	New Subparameter
MSPCB	New value setting: 0 Old value setting: NO	n/a
NAME	Parameter has been replaced.	PCBS
NIIPENT	Parameter has been replaced.	ENVPID
NRASTART	Parameter has been replaced.	NRAST
NUM	Parameter has been replaced.	PCBS
PSBNAME	Parameter has been replaced.	PSB
TRANCODE	Parameter has been replaced.	TRAN

Installation: New SMA Parameter for LE Support

The System Maintenance Aid (SMA) job required to build IBM's Language Environment (LE) is now performed when the SMA parameter NAT-LE is set to Y (Yes). The default setting is N (No). See the corresponding environment-specific installation steps in *Installing Natural IMS TM Interface* in the Natural *Installation* documentation.

NII3970/3971 Errors Replaced by NAT9982 Error

The error messages NII3970 and NII3971 have been replaced by the Natural termination message NAT9982: `Conversation I/O requested, nucleus/thread displaced.`

NII3970 and NII3971 used to occur when a `COMPOSE` issued a terminal I/O that displaced the Natural nucleus or thread, respectively.

Improved Error Handling

For any errors that can occur with the Natural IMS TM Interface, Natural now terminates the session correctly and explicitly closes the database.

Natural also terminates the session correctly for a transaction switch to a non-Natural transaction without session suspend.

AIBTDLI Interface Used Instead of ASMTDLI

Natural now uses the `AIBTDLI` interface instead of the `ASMTDLI` interface to read the SPA (scratch pad area), the input message and the AOI (automated operator interface) contained in the service program `NIICMD`. This guarantees that the storage is not overwritten if the limit set for the I/O area is too small.

Natural RPC

Natural RPC (Remote Procedure Call) is available as a separate subcomponent of Natural. It has its own version number. This measure takes into account that Natural RPC is a cross-platform component and makes it possible to provide new Natural RPC versions independent of new Natural versions for the various platforms supported.

With Natural Version 8.2.3, an enhanced Natural RPC Version 8.2.3 is delivered which introduces the following changes and enhancements:

- NATRPC99 Used for All Normal Server Terminations
- Support for New EntireX IDL Extractor Features for Natural RPC Clients
- Natural RPC Server Start with RPC Server Front-End (z/OS Batch)
- Documentation: RPC-CNTX and API Overview

- SYSRPC Utility

NATRPC99 Used for All Normal Server Terminations

The Natural RPC server termination exit NATRPC99 is now called for all kinds of normal Natural RPC server terminations. It is not called in the case of abnormal terminations.

Support for New EntireX IDL Extractor Features for Natural RPC Clients

The Natural RPC has been extended to support Natural RPC clients using Natural redefinitions (`REDEFINE` statement) and other features introduced in the Software AG IDL Extractor for Natural provided by the EntireX Workbench. The Software AG IDL Extractor for Natural has been extended with a graphical user interface to complete the extraction process with user decisions. This allows modeling of the IDL for a Natural client, which differs from the RPC server interface and enables selection of the appropriate (Natural to IDL) mapping where multiple possibilities exist and where automatic decision making can lead to incorrect or insufficient IDL.

For the IDL extraction and wrapping of Natural RPC clients with the EntireX Workbench, the use of the latest supported EntireX Workbench and the use of the latest supported Natural on the RPC server side is recommended to reach best results.

Natural RPC Server Start with RPC Server Front-End (z/OS Batch)

The third startup parameter determining the number of storage threads is no longer required in a z/OS batch environment and is only accepted for compatibility reasons. You only need to specify this parameter (can be empty) if you use the optional fourth startup parameter `UCTRAN` for uppercase translation.

The number of storage threads is now determined by the value of the keyword subparameter `NTASKS=`*n* of the `RPC` profile parameter or corresponding `NTRPC` macro. See the *Parameter Reference* documentation for more information.

Documentation: RPC-CNTX and API Overview

The new section *APIs for Providing an RPC Context from the Natural Client Side* in the *Natural Remote Procedure Call* documentation provides an overview of the Application Programming Interfaces (APIs) available to set up an RPC environment. The section also provides details on `RPC-CNTX`, an API used to test programs generated by the Natural Wrapper of EntireX.

SYSRPC Utility

PF Key for Server Command Execution

The PF4 key is no longer available in the standard view of the Server Command Execution function. Since Natural Version 8.2, you can use PF11 to toggle between the standard and the extended views of the Server Command Execution function. See also *Server Command Execution* in the *Utilities* documentation.

Natural SAF Security

RDC Parameter for Data Collection and Trace Recording

If you control the execution of Natural objects with Natural SAF Security, use the RDC profile parameter instead of the RDCEXIT and RDCSIZE profile parameters. See also ***RDC Replaces RDCSIZE and RDCEXIT for Trace Recording/Data Collection***.

Natural Security

- Installation: New SMA Step for Natural Security INPL
- Administrator Services
- User Profiles - Batch ETID
- Library Profiles
- Utility Profiles
- RPC Server Profiles - Domain Separator
- Support for Natural Web I/O Interface

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

Installation: New SMA Step for Natural Security INPL

A new System Maintenance Aid (SMA) job step has been implemented to perform the Natural Security INPL immediately after the Natural INPL, thus facilitating the installation procedure. See the corresponding installation step *Load New Natural Objects* for z/OS, z/VSE and BS2000/OSD in *Installing Natural Security* in the Natural *Installation* documentation.

Administrator Services

Access to Administrator Services

Access control to the Administrator Services subsystem has been revised. With previous versions, it was only possible to allow or disallow access to Administrator Services as a whole. As of this version, you can allow/disallow individual functions of Administrator Services. For this purpose, the NSCCMD01 command processor has been enhanced. For more information, see *Access to Administrator Services*.

Authentication Options

The Administrator Services subsystem provides a new function **Authentication Options** (invoked with function code B on the **Administrator Services Menu 1**). It is used to define security profiles for IAF servers. The functionality for the definition of IAF server profiles, which with previous versions used to be invoked with PF10 on the **General Options** screen of **Administrator Services**, has also been incorporated in this new function.

Logon Records

The Administrator Services function **Logon Records** has been enhanced to facilitate the page-by-page deletion of logon records as performed by the functions Delete Logon Records and Delete Logon Records But Last. Instead of invoking these functions from the **Logon Records Menu** with ENTER, you can invoke them with PF4 (Del+): Pressing PF4 on the logon records list itself will then delete the current page of logon records and immediately scroll to the next page, without your having to press PF8. This reduction of keystrokes will be helpful when you delete a large number of logon records.

User Profiles - Batch ETID

The security profiles for users of the types A, P and M provide a new **Batch** field for the **ETID**. This field is used to specify an ETID for a Natural batch-mode session, which is different from the one used for an online session. See *Components of a User Profile* for more information.

Library Profiles

Security Limits

The increased value ranges of the MADIO and MAXCL profile parameters can also be set in the **Security Limits** part of library profiles with the options **Maximum number of Adabas calls** and **Maximum number of program calls**, respectively.

Statement Restrictions

The **Statement Restrictions** section of library security profiles has been revised and the layout of the corresponding screen has been made more consistent. In addition, it is now possible to allow or disallow individual clauses of the PROCESS statement.

Utility Profiles

PROFILER

The use of all PROFILER utility functions is now disallowed if no utility profiles have been defined for the PROFILER. See also *PROFILER Utility Profiles*.

SYSBPM

The use of the new message buffer pool provided by the SYSBPM utility (see ***New Buffer Pool Type for Messages***) can be controlled by allowing/disallowing the corresponding new options in SYSBPM utility profiles. By default, the new options are disallowed.

SYSCP

The use of the new SYSCP utility function **Convert to Unshaped Form** can be allowed or disallowed in SYSCP utility profiles. See also ***SYSCP Utility***.

SYSMAIN and SYSOBJH (Object Handler)

A new **Xref option** is provided to control how Predict cross-reference data related to objects processed with the utilities SYSMAIN and SYSOBJH are handled. See *Additional Options* in *Protecting Utilities* for more information.

SYSOBJH (Object Handler)

The options Del and Par in SYSOBJH profiles can now be allowed for a user, even if the respective function is disallowed for all object types. Both options can only be set in user-specific profiles, but their settings in the user-specific profiles also apply to the library-specific and user-library-specific profiles. For more information, see *SYSOBJH - Object Handler - Utility Profiles*.

NATLOAD, NATUNLD and SYSTRANS

This is the last Natural Security version to support utility profiles for the obsolete Natural utilities NATLOAD, NATUNLD and SYSTRANS. These utilities are no longer supported. Their utility profiles have continued to be available for compatibility reasons only. If you still have utility profiles for these utilities, you have to convert them into corresponding SYSOBJH utility profiles before the next release of Natural Security. For more information, see *Conversion of Utility Profiles*.

RPC Server Profiles - Domain Separator

In some cases, the checking of logon data for an access to a library via a Natural RPC service request includes a check if the Natural RPC user ID is identical to the EntireX user ID. If your external security system uses a so-called “domain separator” to separate the domain name from the user ID, this check may be applied to the wrong data, thus leading to incorrect results. In order to avoid this, a new field is provided in RPC server profiles in which you specify the domain character. This ensures a correct user ID evaluation.

For more information, see the Domain Separator description in *Components of an RPC Server Profile*.

Support for Natural Web I/O Interface

Natural Security now provides the option to control the use of Natural Web I/O Interface servers. For more information, see *Protecting Natural Web I/O Interface Servers*.

Natural TSO Interface

Installation: New SMA Parameter for LE Support

The System Maintenance Aid (SMA) job required to build IBM's Language Environment (LE) is now performed when the SMA parameter `NAT-LE` is set to `Y` (Yes). The default setting is `N` (No). See the corresponding installation step *Link the Nucleus* in *Installing Natural TSO Interface* (Natural *Installation* documentation).

Natural TSO Interface Supported by SYSPROD and DUMP ZAPS

The `SYSPROD` and `DUMP ZAPS` system commands now also display installation information and Zap information, respectively, for the Natural TSO Interface (product code: NTI).

Natural Web I/O Interface

Natural Web I/O Interface Client

Supported Browsers and Servers

As of Version 1.3.10, the Natural Web I/O Interface client supports the following:

- Internet Explorer 7 through 9
- Mozilla Firefox 3.6 through 10

  Mozilla Firefox 10 (Extended Support Release) is supported. In future versions, only the Extended Support Releases of Mozilla Firefox will be explicitly supported.
- Safari 5.1 on Windows and Mac OS X

As of Version 1.3.11, the Natural Web I/O Interface client also supports:

- Google Chrome

  The Google Chrome support is based on Google Chrome Version 19. Due to frequent version upgrades of Google Chrome, compatibility of the Natural Web I/O Interface client Version 1.3.11 with future versions of Google Chrome cannot be fully guaranteed. Possible incompatibilities will be removed during the regular maintenance process of the Natural Web I/O Interface client.

Important: Cookies and JavaScript must be enabled in the browser.

- Oracle GlassFish Server 3.1. See *Installing the Natural Web I/O Interface Client on Oracle GlassFish Server* in the *Natural Web I/O Interface* documentation.
- Apache Tomcat 6. See *Installing the Natural Web I/O Interface Client on Apache Tomcat* in the *Natural Web I/O Interface* documentation.
- Apache Ant 1.8.1 or above is now required to perform the deployment on JBoss Application Server. This tool is freely available at ***http://ant.apache.org/***.

Discontinued Support for IIS

As of Version 1.3.11 of the Natural Web I/O Interface client, Microsoft Internet Information Services (IIS) is no longer supported. Any information on how to install and configure IIS has been removed from the *Natural Web I/O Interface* documentation.

If you are currently using the Natural Web I/O Interface client on IIS, you have to move to another supported server platform. This may be JBoss Application Server, Oracle GlassFish Server or Apache Tomcat. The simplest solution is to migrate the Natural Web I/O Interface client from IIS to Apache Tomcat. For more information, see *Migrating the Natural Web I/O Interface Client from IIS to Apache Tomcat* in the *Natural Web I/O Interface* documentation.

Key Simulation

The following keys can now be simulated for all platforms (see also *Differences between the Natural Web I/O Interface Client and Terminal Emulation* in the *Natural Web I/O Interface* documentation):

- The program attention keys (PA1, PA2 and PA3) are simulated by the key combinations CTRL+SHIFT+F1, CTRL+SHIFT+F2 and CTRL+SHIFT+F3.
- The clear key is simulated by CTRL+SHIFT+F4.

Natural Web I/O Interface Server

Installation of IMS Adapter

The installation of the Natural Web I/O Interface Server IMS Adapter has changed as described in the *Installation Procedure* in the *Natural Web I/O Interface* documentation. This change is a result of the new macros supplied for the Natural IMS TM Interface (see also ***Natural IMS TM Interface***).

zIIP Enabler for Natural

The zIIP Enabler for Natural Version 8.2.3 is a new Natural add-on product that supports use of IBM's System z Integrated Information Processor (zIIP) in z/OS batch, batch server and TSO environments. The zIIP is a speciality engine designed to offload eligible workload from a general central processor.

For more information, see the *zIIP Enabler for Natural* documentation.

Requirements for zIIP Support

The following minimum operating system and hardware requirements must be met to make Natural Version 8.2 eligible for zIIP exploitation:

- the operating system hosting the Natural environment is z/OS Version 1.9 (or above) which executes on an IBM System z9, IBM System z10 or IBM zEnterprise server;
- a `NAZvrs.LICS` license file is installed with the zIIP Enabler for Natural, in addition to the Natural product license file;
- the `ZIIP` profile parameter is set appropriately; see ***New Profile Parameters***;
- the Natural session runs in a z/OS batch, batch server or TSO environment;
- the Natural Authorized Services Manager (ASM) is installed and active.

zIIP Statistics Reports

zIIP status and processing statistics can be obtained with the new `ZIIP` system command described in the *System Commands* documentation.

6 Dropped Features

Features Dropped in this Natural Release

The following features and functionality have been discontinued and are no longer supported in Natural Version 8.2.3 or a Natural add-on product released with this version:

- Natural Web I/O Interface Client: IIS Support
- Natural XSIZE Buffer

Natural Web I/O Interface Client: IIS Support

As of Version 1.3.11 of the Natural Web I/O Interface client, Microsoft Internet Information Services (IIS) will no longer be supported (this has already been announced previously). See also ***Discontinued Support for IIS***.

Natural XSIZE Buffer

Natural no longer supports the XSIZE buffer which was used for user subsystems called by Natural programs. Therefore, the `XSIZE` profile parameter and the `XSIZE` subparameter of the `DS` profile parameter are no longer evaluated. They are only retained for compatibility with earlier versions of Natural.

Features to be Dropped in the Next Version of Natural

The following features and functionality will be discontinued and no longer supported in the next version of Natural or a Natural add-on product released with this version:

- Discontinued Support for CINIT Function of Roll Server
- Delivery of System Interfaces as Sources
- V41COMP and V42COMP Compiler Options
- Natural Security: Utilities Profiles for NATLOAD, NATUNLD and SYSTRANS

Discontinued Support for CINIT Function of Roll Server

The NATRSRFI roll file formatting routine will no longer support the CINIT function in the next version of Natural. 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.

Delivery of System Interfaces as Sources

Natural operating/TP monitor/database management system interfaces currently delivered as assembler source files will be delivered as object modules in future Natural versions. This will eliminate the necessity of manually entering source changes and subsequent assembly and linkage steps during installation or system maintenance.

Caution: Avoid changing source files of Natural operating/teleprocessing system interfaces. Software AG may discontinue delivery of these source files without prior notice. Do not use accidentally discovered information contained in internal Natural control blocks. Software AG may change internal Natural control blocks without prior notice. Instead, use front-end or back-end programs, documented Natural or Adabas user-exit routines or Application Programming Interfaces (APIs).

V41COMP and V42COMP Compiler Options

The V41COMP and V42COMP compiler options of the COMPOPT system command will not be supported in the next Natural version. In Natural Version 8.2, these options are available to 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).

Natural Security: Utilities Profiles for NATLOAD, NATUNLD and SYSTRANS

The utility profiles for the obsolete Natural utilities NATLOAD, NATUNLD and SYSTRANS will not be supported in the next Natural Security version. See also ***Utilities Profiles***.

Natural Parameter Module: Profile Parameter XSIZE

The XSIZE profile parameter will not be supported in the next Natural version (see also ***Natural XSIZE Buffer***). Since XSIZE will be removed from Natural, you may have to adapt your Natural parameter module accordingly.