

Natural

Release Notes

Version 8.2.2 for Mainframes

January 2012

This document applies to Natural Version 8.2.2 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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1 Release Notes

This document gives an overview of the changes and enhancements provided with Natural Version 8.2.2 for Mainframes and the add-on products released with this version.

The *Release Notes* for all currently supported versions of Natural for Mainframes are available in the archive of the current Natural Documentation DVD.

Update Information

The following modifications and/or amendments to the documentation have been done after the release of Natural Version 8.2.2:

System Command COMPOPT
In the <i>System Commands</i> documentation, the subsection <i>Compilation Options for Ensuring Version Compatibility</i> of the COMPOPT system command description has been enhanced. This concern the topics <i>V41COMP - Disable Version 4.2 and 8.2 Syntax</i> and <i>V42COMP - Disable Version 8.2 Syntax</i> .
Parameter Macro NTCSTAT
The way to specify NTCSTAT macro parameters has changed as of Natural Version 8. Therefore, in the <i>Parameter Reference</i> documentation, the description of profile parameter CSTATIC and the corresponding macro NTCSTAT has been modified. For details, see CSTATIC in Changed/Enhanced Profile Parameters in these <i>Release Notes</i> .
Profile Parameters ASIZE and DS
The range of possible settings determining the size of the Entire System Server auxiliary buffer (ASIZE buffer) has been changed: Former range of settings: 0 or 1 - 64 KB; new range of settings: 0 or 64 - 512 KB. For details, see the corresponding notes in the ASIZE profile parameter description.
O4I

Profile parameter 04I, which controls the performance data collection in the Optimize Monitor Buffer Pool for Optimize for Infrastructure, has been added; see also *Optimize Monitor Buffer Pool* in the *Operations* documentation.

Documentation

The following documents have been revised and updated in addition: *Operations, Parameter Reference, System Commands, Terminal Commands, Statements.*

●	Prerequisites for Installation and Operation	<p>License File Operating/Teleprocessing Systems Database Management Systems Assemblers</p>
●	Supplied Product Versions	<p>Overview of New Add-On Product Versions Software AG Product Versions Required with Natural End of Standard Maintenance of Product Versions</p>
●	Migration	<p>Changes to Installation Storage Requirements Using a Version 4.2 FUSER System File Sharing an FUSER System File by Versions 4.2 and 8.2 Using a Version 4.2 FDIC System File Using a Version 4.2 FSEC System File No Migration of a Version 4.2 Editor Buffer Pool Work File Required Fixes Supplied with this Natural Version Special-Purpose Zaps Replaced by Parameters Including the Latest USR* Subprograms No Reinstallation of Add-on Products Required with a Version 4.2 FNAT System File Migration from NATUNLD/NATLOAD and SYSTRANS Migrating to IMS TM with Natural IMS TM Interface Version 8.2 Migrating Natural Advanced Facilities Migrating the Natural Com-plete/SMARTS Interface Migration when Using the Entire System Server Migrating Natural for VSAM on VSAM System Files</p>
●	Compatibility	<p>Using Natural Objects Created in Previous Natural Versions Using Natural Version 8.2 Objects in Version 4.2 or 4.1 Handling of Migrated KAPRI Maps Compatibility with Natural for Windows, UNIX and Linux Special-Purpose Zaps Different Treatment of Dynamic Variables in READ WORK FILE RDC Trace Recording/Data Collection Controlled by RDC Parameter</p>
●	New and Changed Features of Base Natural	<p>Customer Enhancement Proposals Operations and Performance Operating System Interfaces Unicode and Code Page Support Programming Language System Commands Editors</p>

		Utilities Profile and Session Parameters Application Programming Interfaces Documentation
	New and Changed Features of Add-On Products	Customer Enhancement Proposals for Add-On Products Documentation Natural CICS Interface Natural Com-plete/SMARTS Interface Natural Development Server Natural for Ajax Natural for DB2 Natural for SQL/DS Natural for VSAM Natural IMS TM Interface Natural ISPF Natural <i>open</i>UTM Interface Natural Optimizer Compiler Natural Remote Procedure Call Natural SAF Security Natural Security Natural SQL Gateway Natural TIAM Interface Natural TSO Interface Natural Web I/O Interface Super Natural
	Dropped Features	Features Dropped in this Natural Release Features to be Dropped in the Next Version of Natural

2 Prerequisites for Installation and Operation

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- Operating/Teleprocessing Systems 6
- Database Management Systems 7
- Assemblers 8

License File

A product license file is required. For information on Software AG mainframe product licensing, read *Software AG Mainframe Product Licensing*.

See also [New License Check Software](#).

Operating/Teleprocessing Systems

Natural Version 8.2.2 supports the following versions of the following operating/teleprocessing systems:

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

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



Caution: Although it may be technically possible to run a new version of Natural on an old operating/teleprocessing system, Software AG cannot continue to support operating/teleprocessing system versions that are no longer supported by the system's provider. For legal reasons, Software AG does not support Natural Version 8.2.2 for operating/teleprocessing system versions that are not supported by their respective manufacturers for at least one year after the release of Natural Version 8.2.2. This restriction applies in particular to older versions of operating/teleprocessing systems not listed in the table above. Furthermore,

Software AG cannot make any statement whether it is technically possible to run Natural Version 8.2.2 on any old operating/teleprocessing system version not listed above.

Database Management Systems

Natural Version 8.2.2 supports the following versions of the following database management systems:

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.
DFSMSStvs	As delivered for the respective VSAM version, if transactional VSAM is to be used with Natural for VSAM.

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

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

 **Caution:** Although it may be technically possible to run a new version of Natural using an old database management system, Software AG cannot continue to support database management system versions that are no longer supported by the system's provider. For legal reasons, Software AG does not support Natural Version 8.2.2 for database management system versions that are not supported by their respective manufacturers for at least one year after the release of Natural Version 8.2.2. This restriction applies in particular to older versions of database management systems not listed in the table above. Furthermore, Software AG cannot make any statement whether it is technically possible to run Natural Version 8.2.2 using any old database management system version not listed above.

Assemblers

Natural Version 8.2 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.

3 Supplied Product Versions

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Overview of New Add-On Product Versions

With Natural Version 8.2.2, new versions of the following add-on products or subcomponents are provided as indicated 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	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 Optimizer Compiler (*)	NOC	8.2.2
Natural Remote Procedure Call (*)	RPC	8.2.2 (RPC is a separate subcomponent of Natural)
Natural Review	RNM	8.2.2
Natural SAF Security	NSF	8.2.2
Natural Security	NSC	8.2.2
Natural SQL Gateway (*)	NSB	8.2.2
Natural TIAM Interface	NRT	8.2.2
Natural TSO Interface (*)	NTI	8.2.2
Natural openUTM Interface (*)	NUT	8.2.2
Natural Web I/O Interface (*)	NWO	8.2.2 (server)

Super Natural (*)	NSN	8.2.2
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* Product-specific changes and/or enhancements are described in *New and Changed Features of Add-On Products*.

Software AG Product Versions Required with Natural

To use the following Software AG products with Natural Version 8.2.2, the following product versions (or above) are required:

Product Name	Product Code	Version
Adabas	ADA	8.2.2
Adabas CICS Interface	ACI	8.2.2
Adabas IMS/TM Interface	AII	8.2.2
Adabas Online System	AOS	8.2.2
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 Patch Level 9
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	3.5.1
Entire Transaction Propagator	ETP	1.5.2 To use ETP with Adabas Version 8, apply Zaps ET52001 and ET52003 (for ETP); if you are using the additional Entire Transaction Propagator CICS Interface (ETC), apply Zap EZ52005 (for ETC) in addition.

Supplied Product Versions

EntireX Communicator	EXX	8.1.1 for z/OS 7.2.3 for z/VSE 8.1.1 for BS2000/OSD
International Components for Unicode for Software AG	ICS	1.1.3
Mainframe License Check	MLC	1.2.3
Natural Advanced Facilities	NAF	8.2.2
Natural for Ajax	NJX	8.2.3
Natural Business Services	NBS	5.3.1 (5.3.1 Patch Level 8 if the enhanced loading of fixes introduced for the INPL utility is to be used)
Natural CICS Interface	NCI	8.2.2
Natural Com-plete/SMARTS Interface	NCF	8.2.2
Natural Connection	NTC	8.2.2
Natural Construct	CST	5.3.1
Natural for DB2	NDB	8.2.2
Natural Development Server	NDV	8.2.2
Natural for DL/I	NDL	8.2.2
Natural Document Management	NDM	1.6.3 with Service Pack I001 applied.
Natural Elite	NER	3.1.1
Natural Engineer	NEE	6.2.1 Patch Level 3
Natural IMS TM Interface	NII	8.2.2
Natural ISPF	ISP	8.2.2
Natural Japanese Language Pack	NCJ	8.2.2
Natural Optimizer Compiler	NOC	8.2.2
Natural Remote Procedure Call (*)	RPC	8.2.2 (RPC is a separate subcomponent of Natural)
Natural Review	RNM	8.2.2
Natural SAF Security	NSF	8.2.2
Natural Security for Mainframes	NSC	8.2.2
Natural for SQL/DS	NSQ	8.2.2 Note: IBM also refers to SQL/DS as DB2 Server for VSE & VM.
Natural SQL Gateway	NSB	8.2.2
Natural TIAM Interface	NRT	8.2.2
Natural TSO Interface	NTI	8.2.2
Natural <i>open</i> UTM Interface	NUT	8.2.2
Natural for VSAM	NVS	8.2.2

Natural Web I/O Interface	NWO	1.3.9 (client) 8.2.2 (server)
Predict	PRD	4.6.1
Predict Application Control	PAC	2.6.1
Predict Case	PCA	2.5.2 with Service Pack I001 applied.
SMARTS	APS	2.7.2 Patch Level 16 for BS2000/OSD 3.3.1 Patch Level 11 for z/OS and z/VSE
Software AG Security eXtension	SSX	8.2.2 if Integrated Authentication Framework (IAF) is to be used. SSX is delivered together with the EntireX Communicator.
Super Natural	NSN	8.2.2
System Automation Tools	SAT	3.3.1
System Maintenance Aid	SMA	2.1.2 Patch Level 1

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

End of Standard Maintenance of Product Versions

Standard maintenance for Natural Version 4.2.7 and the add-on products listed in the following table 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 for DB2	NDB	4.2.7
Natural for DB2	NDB	4.3.2
Natural Development Server	NDV	2.2.7
Natural for DL/I	NDL	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

Supplied Product Versions

Natural for MBCS	NKA	4.2.7
Natural Optimizer Compiler	NOC	4.2.7
Natural Remote Procedure Call	RPC	6.3.4 (RPC is a separate subcomponent of Natural)
Natural Review	RNM	4.2.7
Natural SAF Security	NSF	4.2.7
Natural Security	NSC	4.2.7
Natural for SQL/DS	NSQ	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 <i>open</i> UTM Interface	NUT	4.2.7
Natural for VSAM	NVS	4.2.7
Natural Web I/O Interface	NWO	1.1.6 (server)
Super Natural	NSN	3.5.7

Standard maintenance for Natural Version 4.2.6 and the add-on products listed in the following table ends on **September 30, 2011**:

Product Name	Product Code	Version
Natural Advanced Facilities	NAF	4.2.6
Natural CICS Interface	NCI	4.2.6
Natural Com-plete/SMARTS Interface	NCF	4.2.6
Natural Connection	NTC	4.2.6
Natural for DB2	NDB	4.2.6
Natural Development Server	NDV	2.2.6
Natural for DL/I	NDL	4.2.6
Natural IMS TM Interface	NII	4.2.6
Natural ISPF	ISP	2.6.6
Natural Japanese Language Pack	NCJ	4.2.6
Natural for MBCS	NKA	4.2.6
Natural Optimizer Compiler	NOC	4.2.6
Natural Remote Procedure Call	RPC	6.3.3 (RPC is a separate subcomponent of Natural)
Natural Review	RNM	4.2.6
Natural SAF Security	NSF	4.2.6
Natural Security	NSC	4.2.6
Natural for SQL/DS	NSQ	4.2.6
Natural SQL Gateway	NSB	1.2.2
Natural TIAM Interface	NRT	4.2.6

Product Name	Product Code	Version
Natural TSO Interface	NTI	4.2.6
Natural <i>open</i> UTM Interface	NUT	4.2.6
Natural for VSAM	NVS	4.2.6
Natural Web I/O Interface	NWO	1.1.5 (server)
Super Natural	NSN	3.5.6

Standard maintenance for Natural Version 8.2.1 and the add-on products listed in the following table ends with the release of Natural Version 8.2.2:

Product Name	Product Code	Version
Natural Advanced Facilities	NAF	8.2.1
Natural CICS Interface	NCI	8.2.1
Natural Com-plete/SMARTS Interface	NCF	8.2.1
Natural Connection	NTC	8.2.1
Natural Development Server	NDV	8.2.1
Natural for DB2	NDB	8.2.1
Natural for DL/I	NDL	8.2.1
Natural for VSAM	NVS	8.2.1
Natural IMS TM Interface	NII	8.2.1
Natural ISPF	ISP	8.2.1
Natural Optimizer Compiler	NOC	8.2.1
Natural Remote Procedure Call	RPC	8.2.1 (RPC is a separate subcomponent of Natural)
Natural Security	NSC	8.2.1
Natural TSO Interface	NTI	8.2.1
Natural Web I/O Interface	NWO	8.2.1 (server)
Super Natural	NSN	8.2.1

For further 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.

4 Migration

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Changes to Installation

The installation of Natural and Natural add-on products has changed as described in the *Natural Installation for z/OS* documentation (see also [Restructured and Revised Natural Installation Documentation](#) below).

For information on particular installation changes to Natural add-on products, see the *Changes to Installation* sections in [New and Changed Features of Add-On Products](#).

If you do not use System Maintenance Aid (SMA) for installation, refer to the example installation jobs supplied on the installation tape.

- [General Hints for Non-SMA Installation](#)
- [Restructured and Revised Natural Installation Documentation](#)
- [New License Check Software](#)
- [z/OS and z/VSE Batch Interfaces Now Configured with Profile Parameters](#)
- [New Object Modules for LE Support on z/OS and z/VSE](#)
- [New Object Modules for LE Support under IMS TM](#)
- [Software AG Editor Installed by Default on z/OS and z/VSE](#)
- [Unicode and Code Page Support: NATICU Modules Replaced](#)
- [Unicode and Code Page Support under BS2000/OSD](#)
- [Entire System Server Modules Delivered with Natural](#)

General Hints for Non-SMA Installation

Terminal Converter Routines

The converter routines provided for various terminal types are already linked to the module NATURAL. It is no longer required to manually link these terminal converter routines with the module NATURAL.

Changed Module Names

The names of the following modules have been changed:

Natural Version 8.2	Natural Version 4.2
NATASM82	NATASM42
NATRPC82	NATRPC63
NATRSM82	NATRSM42

Restructured and Revised Natural Installation Documentation

The Natural *Installation* documentation has been restructured according to platform-specific features and requirements:

- *Installation for z/OS*
- *Installation for BS2000/OSD*
- *Installation for z/VSE*

The Natural *Installation* documentation now also includes those installation instructions which in earlier versions were to be found in the documentation sets of Natural add-on products.

As a result, each of the new platform-specific installation documentation parts contains comprehensive information on base Natural, optional components, TP monitor interfaces, DBMS interfaces, and the following add-on products: Entire Transaction Propagator, Natural Advanced Facilities, Natural Connection, Natural Optimizer, Natural SAF Security, Natural Security and Natural Review.

New License Check Software

The licensing process for Natural has been updated to support changes in the standard Software AG mainframe product licensing software. New MLC license data sets with new license check software, including the LICUTIL license utility, are now provided for installation.

LICUTIL is mainly used to check your license file and convert it to assembler source, thus replacing the programs NATLICAM (z/OS), NATLICAV (z/VSE) and NATLICAB (BS2000/OSD) used for conversion in previous releases of Natural.

As a result of the new license check software, some installation steps have changed as described in the appropriate installation procedures for base Natural.

For general information on Software AG mainframe product licensing, read *Software AG Mainframe Product Licensing*.

z/OS and z/VSE Batch Interfaces Now Configured with Profile Parameters

The assembler macros and source modules used to configure the batch interfaces for z/OS and z/VSE are no longer delivered. They have been replaced by the interface-specific macros NTOSP and NTVSEP in the Natural parameter module and the corresponding dynamic profile parameters OSP and VSEP.

This reduces installation and maintenance efforts since assembly and linkage steps are no longer required and source changes must no longer be entered manually.

You can modify the default settings of the subparameters contained in the macros but also dynamically specify a setting at the start of a Natural session as demonstrated in the following example.

Example Setting for z/OS Batch:

OSP profile parameter:

```
OSP=(USERID=ON,LBPNAME=BPOOL01)
```

Corresponding NTOSP macro in the Natural parameter module:

```
NTOSP USERID=ON,LBPNAME=BPOOL01
```

Example Setting for z/VSE Batch:

VSEP profile parameter:

```
VSEP=(FILMNGR=OFF,FILSCAN=OFF,SEGMENT=ON,USERID=ON)
```

Corresponding NTVSEP macro in the Natural parameter module:

```
NTVSEP FILMNGR=OFF,FILSCAN=OFF,SEGMENT=ON,USERID=ON
```

The following table lists the obsolete source modules and macros, the new macros and the corresponding dynamic profile parameters:

Batch Interface	Old Source Module	Old Macro	New Macro in Parameter Module	New Profile Parameter
z/OS	NATOS	NTOS	NTOSP	OSP
z/VSE	NATVSE	NTVSE	NTVSEP	VSEP

The new macros and dynamic profile parameters are described in the *Parameter Reference* documentation.

The changes in environment-specific installation steps are described in the Natural *Installation* documentation for the appropriate operating system.

Changes to Subparameters in NTOSP

In principle, the subparameters provided by the new parameter macro NTOSP and the profile parameter OSP correspond to the generation parameters that were contained in the old NTOS macro. Any new or removed subparameters or changes to subparameter value settings are indicated in the following table:

Subparameter	Change				
ABEXIT	<table border="1"> <tr> <td>New value setting:</td> <td>Old value setting:</td> </tr> <tr> <td>OFF</td> <td>NONE</td> </tr> </table>	New value setting:	Old value setting:	OFF	NONE
New value setting:	Old value setting:				
OFF	NONE				
LE370	This subparameter has been removed. Its functionality is now provided by additional modules for LE support. See New Object Modules for LE Support on z/OS and z/VSE .				
LEHDLR	New subparameter to specify whether Natural uses an LE error handler for LE subprogram calls. See also New Object Modules and Subparameter for LE Support below.				

Subparameter	Change						
TI0BSZ	New subparameter to specify the size of the primary I/O buffer for batch and/or server processing.						
TI0BSZ1	This subparameter has been removed. Its functionality is now provided by the TI0BSZ subparameter.						
TI0BSZ2	This subparameter has been removed. Its functionality is now provided by the new TI0BSZ subparameter.						
USERID	<table border="1"> <thead> <tr> <th>New value settings:</th> <th>Old value settings:</th> </tr> </thead> <tbody> <tr> <td>ON</td> <td>YES</td> </tr> <tr> <td>OFF</td> <td>NO</td> </tr> </tbody> </table>	New value settings:	Old value settings:	ON	YES	OFF	NO
New value settings:	Old value settings:						
ON	YES						
OFF	NO						

Changes to Subparameters in NTVSEP

In principle, the subparameters provided by the new parameter macro NTVSEP and the profile parameter VSEP correspond to the generation parameters that were contained in the old NTVSE macro. Any new or removed subparameters or changes to subparameter value settings are indicated in the following table:

Subparameter	Change						
BUFSIZE	This subparameter has been removed. Its functionality is now provided by the TI0BSZ subparameter.						
CANCEL	This subparameter has been removed. It was used to specify the kind of dump the Natural z/VSE batch interface is to produce. CANCEL was supplied for compatibility with older versions of VSE that did not support conditional job control. The CANCEL functionality can be easily and efficiently accomplished with z/VSE conditional JCL.						
DSECTS	This subparameter has been removed since it is no longer needed. It was used to list DSECT assembler instructions for the NATVSE source module.						
FILMNGR	<table border="1"> <thead> <tr> <th>New value settings:</th> <th>Old value settings:</th> </tr> </thead> <tbody> <tr> <td>ON</td> <td>YES</td> </tr> <tr> <td>OFF</td> <td>NO</td> </tr> </tbody> </table>	New value settings:	Old value settings:	ON	YES	OFF	NO
New value settings:	Old value settings:						
ON	YES						
OFF	NO						
FILSCAN	<table border="1"> <thead> <tr> <th>New value settings:</th> <th>Old value settings:</th> </tr> </thead> <tbody> <tr> <td>ON</td> <td>YES</td> </tr> <tr> <td>OFF</td> <td>NO</td> </tr> </tbody> </table>	New value settings:	Old value settings:	ON	YES	OFF	NO
New value settings:	Old value settings:						
ON	YES						
OFF	NO						
FLUSH	<table border="1"> <thead> <tr> <th>New value settings:</th> <th>Old value settings:</th> </tr> </thead> <tbody> <tr> <td>ON</td> <td>YES</td> </tr> <tr> <td>OFF</td> <td>NO</td> </tr> </tbody> </table>	New value settings:	Old value settings:	ON	YES	OFF	NO
New value settings:	Old value settings:						
ON	YES						
OFF	NO						
IDUMP	This subparameter has been removed. It was used to specify the dump to be produced by the Natural z/VSE batch interface. The IDUMP functionality has been implemented as a standard feature.						
LE370	This subparameter has been removed. Its functionality is now provided by separate modules. See New Object Modules and Subparameter for LE Support .						

Subparameter	Change	
NAME	This subparameter has been removed since it is no longer needed. It was used as an assembly time parameter for the NATVSE source module.	
RJEUSER	New value settings:	Old value settings:
	ON	YES
	(ON,VSE)	(YES,VSE)
	(ON,NAT)	(YES,NAT)
	OFF	NO
SEGMENT	New value settings:	Old value settings:
	ON	YES
	OFF	NO
SPOOLID	New subparameter to specify a string which is checked against the start of a DLBL file ID or the file ID supplied by a DEFINE PRINTER or DEFINE WORK FILE statement.	
THDSIZE	This subparameter has been removed.	
TIOBSZ	New subparameter to specify the size of the primary I/O buffer for batch and/or server processing. Replaces the subparameter BUFSIZE.	
USERID	New value settings:	Old value settings:
	ON	YES
	OFF	NO

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

Support for IBM's Language Environment (LE) in z/OS and z/VSE environments is now provided by the object modules NATOSL and NATLEOPT, respectively.

These object modules replace the LE370 parameter previously contained in the NATOS and NATVSE source modules.

The changes in interface-specific installation steps are described in the Natural *Installation* documentation for the appropriate operating system.

New Object Modules for LE Support under IMS TM

Support for IBM's Language Environment (LE) under IMS TM is now provided by the object modules NIILESTB and NATLEOPT, respectively.

These object modules replace the LE370 parameter previously contained in the NIMDRIV source module.

The changes in the interface-specific installation steps are described in the Natural *Installation* documentation for the appropriate operating system.

Software AG Editor Installed by Default on z/OS and z/VSE

The Software AG Editor is now installed by default on z/OS and z/VSE operating systems. This eliminates the need for setting the SMA (System Maintenance Aid) parameter `SAG-EDITOR` to Y (Yes).

As a result, some installation instructions have changed as described in *Installing Software AG Editor* in the Natural *Installation* documentation for the appropriate operating system.

Unicode and Code Page Support: NATICU Modules Replaced

The modules `NATICU`, `NATICUCV` and `NATICUCX` have been replaced by the Software AG `ICU` module and `ICU` data libraries.

As a result, the installation steps for Unicode and code page support have changed as described in *Installation for Unicode and Code Page Support* in the Natural *Installation* documentation for the appropriate operating system. See also [NATICU Replaced by Software AG ICU Module and Data Libraries](#).

Unicode and Code Page Support under BS2000/OSD

Since the size of the resulting module will exceed 16 MB, the environment-independent nucleus has to be linked with the linkage editor `BINDER` if `ICU` data libraries are to be added to `SAGICU`.

Entire System Server Modules Delivered with Natural

The Entire System Server modules that are required to support writing from Natural to the JES spool (for z/OS) or POWER spool (for z/VSE) are now delivered with Natural instead of the Entire System Server.

To use this feature, the Entire System Server needs to be installed. For more information on the installation of these modules, see *Installing Entire System Server Interface on z/OS, Activating the Write-To-Spool Feature* in the *Installation for z/OS* documentation or *Installing Entire System Server Interface on z/VSE, Activating the Write-To-Spool Feature* in the *Installation for z/VSE* documentation.

Storage Requirements

This section covers the following topics:

- [Storage Requirements for the Natural Web I/O Interface](#)

- [Storage Requirements in Conjunction with Natural for Ajax](#)

Storage Requirements for the Natural Web I/O Interface

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

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

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

Storage Requirements in Conjunction with Natural for Ajax

When you are using rich GUI applications involving the use of Natural for Ajax, the Software AG ICU (`SAGICU`) module will also be required and you should consider the storage requirements mentioned in [Storage Requirements for the Natural Web I/O Interface](#). See also [NATICU Replaced by Software AG ICU Module and Data Libraries](#).

Using a Version 4.2 FUSER System File

If you want to use an existing Natural Version 4.2 `FUSER` system file for Natural Version 8.2 but do *not* want to share it between Natural Version 4.2 and 8.2, you only need to perform the following steps for the Natural application programming interfaces (APIs) you use:

- Delete all Natural APIs (`USR*` subprograms) you copied with Natural Version 4.2 from the system library `SYSEXT` in the `FNAT` system file to your user libraries in the `FUSER` system file.

You can use the **Find** function of the Natural `SYSMAIN` utility (see the *Utilities* documentation) to locate the APIs in your user libraries or in the entire `FUSER` system file.

- Define the system library `SYSEXT` in the `FNAT` system file of the appropriate Natural version as the `steplib` library for the user libraries containing the Natural objects that use the APIs.

Alternatively, copy the required APIs from library `SYSEXT` to the system library `SYSTEM` in the `FNAT` system file. If `Predict` is installed, you can use cross-reference data to determine these APIs.

For further information on using APIs, see the section *Using a Natural API in SYSEXT Utility* in the *Utilities* documentation.

Sharing an FUSER System File by Versions 4.2 and 8.2

If you want use an existing Natural Version 4.2 FUSER system file and share it between Natural Versions 4.2 and 8.2, you must upgrade your Natural installation to Natural Version 4.2.7. This upgrade requires Natural Version 4.2.7 Cumulative Fix 5 or a subsequent Cumulative Fix.

If you want to use Natural application programming interfaces (APIs), proceed as follows:

- Delete all Natural APIs (USR* subprograms) you copied with Natural Version 4.2 from the system library SYSEXT in the FNAT system file to your user libraries in the FUSER system file.

You can use the **Find** function of the Natural SYSMAN utility (see the *Utilities* documentation) to locate the APIs in your user libraries or in the entire FUSER system file.

- Define the system library SYSEXT (FNAT) of the appropriate Natural version as the steplib library for the user libraries containing the Natural objects that use the APIs.

Alternatively, copy the required APIs from SYSEXT to the system library SYSTEM in the FNAT system file for both Natural Version 4.2 and Natural Version 8.2. If Predict is installed, you can use cross-reference data to determine the APIs used.

For further information on using APIs, see the section *Using a Natural API in SYSEXT Utility* in the *Utilities* documentation.

 **Important:** If a Natural FUSER system file is located on a VSAM system file, it *cannot* be shared by Version 4.2 and Version 8.2. See also [Migrating Natural for VSAM on VSAM System Files](#).

Using a Version 4.2 FDIC System File

If you do not use Predict, an existing FDIC system file created with Natural Version 4.2 may be used with Natural Version 8.2 without migration.

An existing FDIC system file can be shared between Natural Version 4.2.7 and Natural Version 8.2.

DDMs created with Natural Version 8.2 that contain definitions of packed or unpacked fields that have more than 7 digits after the decimal point cannot be used or modified with Natural Version 4.2.7.

Using a Version 4.2 FSEC System File

An existing FSEC system file created with Natural Security Version 4.2 may be used with Natural Security Version 8.2 without migration. However, any changes to the FSEC system file should only be performed using Natural Security Version 8.2.

No Migration of a Version 4.2 Editor Buffer Pool Work File Required

The recovery feature of the Software AG Editor provides the option to share buffer pools and their work files between Natural Versions 4.2 and 8.2.

Fixes Supplied with this Natural Version

Natural Version 8.2.2 and the add-on products released with this version contain all defect fixes (Zaps, early warnings, source changes and INPL updates) applied to their respective previous versions.

Customer-specific fixes are not supplied with a new version. They are shipped on request only. You can view the numbers of all special source changes and special-purpose Zaps applied to your current Natural installation by using the system commands `DUMP SZAP` or `DUMP SSRC`, respectively. See the *System Commands* documentation for details.

Special-Purpose Zaps Replaced by Parameters

As of Version 8.2, special-purpose Zap NA74002 of Version 4.2 (set indicator in buffer pool that an object is not found on the system file) is replaced by the profile parameter `BP82`.

As of Version 8.2, the special-purpose Zaps NA74004 (allow more than 128 entries in the subroutine cache) and NA76021 (allow more than 128 entries in the fast locate table) of Version 4.2 are replaced by the keyword subparameter `FLTUSER` of profile parameter `DS`.

As of Version 8.2, special-purpose Zap NA74011 of Version 4.2 (shift printouts one byte to the right) is replaced by the keyword subparameter `SHIFT` of profile parameter `PRINT`.

Including the Latest USR* Subprograms

Make sure that you use the latest Natural application programming interfaces (APIs) supplied as USR* subprograms in the system library SYSEXT.

If you have copied USR* subprograms from SYSEXT to the system library SYSTEM in the FNAT or FUSER system file, you may have to replace them before use.

No Reinstallation of Add-on Products Required with a Version 4.2 FNAT System File

Natural can be installed on an existing Version 4.2 FNAT system file, which eliminates the need for reinstalling all Natural add-on products and significantly reduces the time and effort required to install a new Natural version. However, only the product combinations for Natural Version 8.2 as listed in the table [Software AG Product Versions Required with Natural](#) are allowed. For example, when upgrading a secured Natural Version 4.2 FNAT system file to Version 8.2, Natural Security Version 8.2 must be installed as well.



Important: If a Natural FNAT system file is located on a VSAM system file, it *cannot* be used to install Natural Version 8.2. See also [Migrating Natural for VSAM on VSAM System Files](#).

Migration from NATUNLD/NATLOAD and SYSTRANS

The utilities SYSTRANS and NATUNLD/NATLOAD are no longer available. The functionality provided by SYSTRANS and NATUNLD/NATLOAD is available with the Object Handler. For detailed information on how to migrate to the Object Handler, see the section *Migration from NATUNLD/NATLOAD and SYSTRANS to the Object Handler* in *Object Handler* in the *Utilities* documentation.

Migrating to IMS TM with Natural IMS TM Interface Version 8.2

The LE370 parameter previously contained in the NIMDRIV source module is now obsolete. For further information, see [New Object Modules for LE Support under IMS TM](#).

Migrating Natural Advanced Facilities

When upgrading from Natural Advanced Facilities Version 4.2 to Natural Advanced Facilities Version 8.2, you need not generate a new spool file because the Adabas FDT used in Natural Advanced Facilities Version 8.2 is compatible with the one used in Version 4.2.

Migrating the Natural Complete/SMARTS Interface

When upgrading from Natural Complete/SMARTS Interface Version 4.2 to Natural Complete/SMARTS Interface Version 8.2, make sure that appropriate `SENDER` and `OUTDEST` destinations are specified for an asynchronous Natural session; otherwise, any output will lead to an abnormal termination. The setting `OUTDEST=TID` is no longer valid, it needs to be `OUTDEST=LUNAME`. See *Asynchronous Natural Processing under Complete/SMARTS* in the *TP Monitor Interfaces* documentation.

Migration when Using the Entire System Server

When using the Entire System Server under Natural Version 8.2, increase the value of profile parameter `ASIZE` to at least 64 to avoid runtime errors.

Migrating Natural for VSAM on VSAM System Files

As of Natural for VSAM Version 8.2, the maximum record size of the Natural system files `FNAT` and `FUSER` on VSAM system files has been increased from 5784 to 10127 bytes in order to enable **Natural extended code page support** for all Natural source objects. As a consequence,

- it is not possible to install Natural Version 8.2 into an existing Version 4.2 Natural `FNAT` system file on a VSAM system file.
- a Natural `FUSER` system file located on a VSAM system file *cannot* be shared by Version 4.2 and Version 8.2. To migrate all Natural objects from the Natural Version 4.2 system file to the Natural Version 8.2 `FUSER` system file, use the Natural Object Handler to unload all Natural objects from the Natural Version 4.2 `FUSER` system file and load them to the Natural Version 8.2 `FUSER` system file.



Note: The `VSIZE` parameter value for VSAM system files must be increased to 160.

5 Compatibility

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- Using Natural Version 8.2 Objects in Version 4.2 or 4.1 30
- Handling of Migrated KAPRI Maps 30
- Compatibility with Natural for Windows, UNIX and Linux 31
- Special-Purpose Zaps 31
- Different Treatment of Dynamic Variables in READ WORK FILE 31
- RDC Trace Recording/Data Collection Controlled by RDC Parameter 31

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

Using Natural Objects Created in Previous Natural Versions

Natural objects that were created with Natural Version 2.3, 3.1, 4.1 or 4.2 for Mainframes can be executed with Natural Version 8.2 without any adjustments to the objects or any conversion or migration procedure being required. This also applies to objects that have been cataloged with the Natural Optimizer Compiler.

 **Important:** Objects cataloged with a Natural Version prior to 2.3 must be recataloged before execution with Version 8.2. This also applies to data areas that are used by these objects.

Software AG strongly recommends that any existing objects be recataloged with Natural Version 8.2 to take advantage of improved performance.

Using Natural Version 8.2 Objects in Version 4.2 or 4.1

If you want to use Natural Version 4.2 or 4.1 for Mainframes to execute Natural objects that were cataloged with Natural Version 8.2, you have to recatalog the objects with Natural Version 4.2 or 4.1, respectively.

When creating objects with Natural Version 8.2, you can reject syntax constructs that are supported by Version 8.2 but not by Version 4.2 by using the `V42COMP` option of system command `COMPOPT`.

When creating objects with Natural Version 8.2 or 4.2, you can reject syntax constructs that are supported by Version 8.2 or 4.2 but not by Version 4.1 by using the `V41COMP` option of system command `COMPOPT`.

Handling of Migrated KAPRI Maps

Map sources that have been created with Natural Version 3.1 and KAPRI and that have been migrated using the migration functionality provided by the Natural map editor cannot be edited or compiled with Natural Version 4.2.3 or below. For further information, see the section *Migrating Maps Created with KAPRI* in *Map Editor* in the *Editors* documentation.

Compatibility with Natural for Windows, UNIX and Linux

Natural Version 8.2 for Mainframes is syntax compatible with Natural for Windows, UNIX and Linux as of Version 6.3.10.

Special-Purpose Zaps

The following table lists Version 4.2 special-purpose Zaps and their Version 8.2 successors.

Version 4.2 Zap	Version 8.2 Zap	Function
NA74001	NA92003	Allow specification of 24:00 for hours in INPUT and MOVE EDITED and for IS(T) option.
NA74007	NA92004	Generate filler character blank (X'40') instead of binary zero (X'00').

Different Treatment of Dynamic Variables in READ WORK FILE

With Natural Version 8.2, the READ WORK FILE statement executed on a dynamic variable from a FORMATTED work file always resizes the variable to match the exact length of a record and obtain the rest of the record being read. In previous Natural versions, a dynamic variable was only filled to the length currently defined for it.

For further information, see *READ WORK FILE* in the *Statements* documentation.

RDC Trace Recording/Data Collection Controlled by RDC Parameter

To improve control over trace recording/data collection, it is no longer sufficient to specify a value for RDCSIZE that is greater than or equal to 2 to activate trace recording/data collection. The new profile parameter RDC must be set to ON in order to activate trace recording/data collection.

As an alternative to RDCSIZE, you can now use the equivalent subparameter SIZE of Natural profile parameter RDC or macro NTRDC.

6 New and Changed Features of Base Natural

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

Customer Enhancement Proposals

The following is an overview of the customer enhancement proposals that have been implemented in base Natural Version 8.2.2:

Enhancement Proposal (EP) Number	Proposal
n/a	Enhance SYSEXT utility. See SYSEXT Utility .
n/a	Simplify function processing of Object Handler. See Object Handler .
n/a	Provide option to suppress memory allocation for unused Level 1 fields or groups. See COMPOPT system command.
n/a	Improve performance of CALL statement. See Improved Performance of CALL Statement .
n/a	Support higher number of call levels at runtime. See Higher Number of Call Levels at Runtime .
n/a	Support long DY parameter strings. See Map Editor .
n/a	Support global editor buffer pool under Com-plete. See Support of Global Editor Buffer Pool under Com-plete .
n/a	Allow to specify control variables as field attributes for the MARK option of the REINPUT statement. See New or Changed Statements .
n/a	Provide possibility to define properties of external subprograms. See New Profile Parameters .
n/a	Prompt for confirmation only if profile parameter modified. See Editor Profile .
n/a	Enhance profile parameter BPI to allow for deletion of all buffer pool definitions of a specific type. See Changed/Enhanced Profile Parameters .
n/a	Simplify basic tasks in the Object Handler. See Object Handler .
n/a	Allow for deletion of SCTAB, TABxx and UTABx parameter definitions to avoid conflicts with profile parameter CP=ON. See Changed/Enhanced Profile Parameters .
n/a	Provide option to define hexadecimal control characters for primary I/O to be passed through unchanged. See New Profile Parameters .
51 and 3555	Increase precision of numbers. See Extended Precision .
119	Enhance profile parameter BPSFI to enable a third type of search sequence. See Changed/Enhanced Profile Parameters .
663 and 2532	Change system messages for compatibility of IMSG and ITERM. See New Messages for Initialization Errors in Batch Mode .
2316	Provide option to set an indicator in the buffer pool that an object is not found on the system file. See New Profile Parameters .

Enhancement Proposal (EP) Number	Proposal
2345	Provide possibility to read all parameters defined in the Natural parameter module that was used at session start. See <i>New Application Programming Interfaces</i> .
2414	Remove 64 KB limit on GPTs (NAT0881). See <i>Limit of 64 KB Removed for GPT of Cataloged Objects</i> .
3402 and 5418	Process work files with large block sizes on tape devices under z/OS. See <i>Support of Work Files with Large Blocks</i> .
3717	Provide option to restrict the MOVE ALL operation to a certain part of a source or target field. See MOVE ALL in <i>New or Changed Statements</i> .
3932	Resize X-arrays and dynamic variables when reading work files. See READ WORK FILE in <i>New or Changed Statements</i> .
4013	Enhance handling of profiles for system command LIST. See <i>LIST System Command</i> .
4255	Provide option for the DECIDE ON operation to check only a certain part of a field. See DECIDE ON in <i>New or Changed Statements</i> .
4256	Allow expression as value in FOR statement. See <i>New or Changed Statements</i> .
4353	Support Natural objects of type function. See <i>Full Support of Object Type Function</i> .
4549	Provide URL encoding support. See <i>New Functions for URL and Base64 Encoding</i> .
4698	Provide DIRECTION and POSITION options for EXAMINE statement. Enable search for and replacement of multiple values. See <i>New or Changed Statements</i> .
5569	Allow system variables for WRITE WORK FILE. See <i>New or Changed Statements</i> .
5669	Provide toggle keys for Server Command Execution screens of SYSRPC utility. See <i>SYSRPC Utility</i> .
5730	Provide option to restrict Object Handler report data to error messages. See <i>Object Handler</i> .
1009725	Provide option to check the existence of a programming object that is specified in an object calling statement. See <i>COMPOPT System Command</i> .
1024418	Provide option for PROCESS PAGE UPDATE statement so that the MODIFIED status of control variables is not reset. See <i>New or Changed Statements</i> .
1032942	Allow to display the properties of a profile. See <i>SYSARM Utility</i> .
1032976	The LIST DIRECTORY system command should display date and time when a used GDA has been cataloged. See <i>LIST System Command</i> .
1035657	Provide new profile parameter to define the default report form in direct command mode. See <i>Object Handler</i> .

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

Operations and Performance

The following changes and enhancements have been introduced:

- Limit of 64 KB Removed for GPT of Cataloged Objects
- Improved Performance of CALL Statement
- Natural 3GL CALLNAT Interface
- New Messages for Initialization Errors in Batch Mode
- Support of Work Files with Large Blocks
- Enhanced Editor Work File Check
- Check and Initialization of Software AG Editor at Session Start
- Support of Global Editor Buffer Pool under Com-plete
- Authorized Services Manager under z/OS
- Optimize Monitor Buffer Pool
- Alternate Text Module NATTXT2U

Limit of 64 KB Removed for GPT of Cataloged Objects

In previous Natural versions, the size of the GPT (generated program table) generated for a cataloged (compiled) Natural object was limited to 64 KB. This limitation no longer exists.

In theory, the GPT size of a cataloged object can now be up to 1 MB, with the restriction that the total size of all tables and the control information generated for a cataloged object is also limited to 1 MB. In practice, the size of a cataloged object is ultimately limited by the storage capacity of the operating/teleprocessing system installed.

The size limitation of 64 KB for an individual program statement still applies.

Improved Performance of CALL Statement

The performance of the CALL statement has been improved:

- Called programs are located faster since they are retrieved from a Natural external program list that is now sorted, thus allowing a binary rather than a sequential search.
- Called Natural internal programs are now identified by tokens allowing direct access to them without scanning the Natural external program list. This results in faster execution of Natural functions, mainly system commands, utilities and user exits.

Natural 3GL CALLNAT Interface

The interface modules NATXCAL and NATXCAL4 have been combined into one new Natural version-independent NATXCAL module. For further information, see *Environment Dependencies* in the section *Natural 3GL CALLNAT Interface - Purpose, Prerequisites, Restrictions* in the *Operations* documentation.

New Messages for Initialization Errors in Batch Mode

If an initialization error occurs in batch mode but the Natural session continues due to profile parameter setting ITERM=OFF (see the *Parameter Reference* documentation), the session now terminates with condition code 4 instead of 0. In addition, the new termination message NAT9964 is now displayed instead of NAT9995.

Support of Work Files with Large Blocks

Natural now supports IBM's large block interface (LBI) that allows work files with block sizes greater than 32 KB for tape and cassette devices.

Enhanced Editor Work File Check

The Software AG Editor now ensures that one editor work file matches one editor buffer pool.

Operating system ID and buffer pool name (global buffer pool) or job name (local buffer pool) are now stored in the control record of the editor work file and checked during a buffer pool start. If ID and name do not match, access to the work file is denied.

For detailed information, see the sections *Control Record, Editor Work File under z/OS, z/VSE and BS2000/OSD* and *Initializing the Editor Buffer Pool* in the *Operations* documentation.

Check and Initialization of Software AG Editor at Session Start

The Software AG Editor can now be checked and initialized during the start of the Natural session rather than at the first call of the Software AG Editor. See profile parameter EDBP in *Changed/Enhanced Profile Parameters*.

Support of Global Editor Buffer Pool under Com-plete

The global editor buffer pool of the Software AG Editor is now also supported in Com-plete environments. For further information, see *Editor Buffer Pool* in the *Operations* documentation.

Authorized Services Manager under z/OS

The Authorized Services Manager (ASM) has been changed to run the Session Information Pool (SIP) service in 64-bit addressing mode. The Session Information Pool is now acquired above the bar through the IEAV64 system service. The SIP API has not been changed.

Optimize Monitor Buffer Pool

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, a global buffer pool, called Optimize Monitor Buffer Pool, has been introduced. For further information, see *Optimize Monitor Buffer Pool* in the *Operations* documentation.

Alternate Text Module NATTXT2U

The alternate text module NATTXT2U contains certain keywords for English language in all upper case that are contained in mixed case in text module NATTXT2. NATTXT2U should be linked to the Natural nucleus instead of NATTXT2 in environments where lower case code points H'81' to H'A9' are used to display national characters.

Operating System Interfaces

The following changes and enhancement have been introduced to operating system interfaces:

- [z/OS and z/VSE Batch Mode Interfaces Now Configured with Profile Parameters](#)
- [Discontinued Support of Generation Parameters for Batch z/OS and z/VSE](#)
- [BS2000/OSD Batch Mode Interface](#)

[z/OS and z/VSE Batch Mode Interfaces Now Configured with Profile Parameters](#)

The configuration of the batch mode interfaces for z/OS and z/VSE is now performed through profile parameters in the Natural parameter module. For detailed information, see [z/OS and z/VSE Batch Interfaces Now Configured with Profile Parameters](#) in *Migration*.

Discontinued Support of Generation Parameters for Batch z/OS and z/VSE

The following generation parameters previously supplied with the NTOS macro in the NATOS module are no longer supported for batch z/OS:

LE370
TIOBSZ1
TIOBSZ2

The following generation parameters previously supplied with the NTVSEP macro in the NTVSE module are no longer supported for batch z/VSE:

BUFSIZE
CANCEL
DSECTS
IDUMP
LE370
THDSIZE

For detailed information, see the sections [z/OS and z/VSE Batch Interfaces Now Configured with Profile Parameters](#) in *Migration*.

BS2000/OSD Batch Mode Interface

In the macro NAMBS2 of the Natural BS2000/OSD batch mode interface, the keyword subparameter TIMESTMP has been added. It determines the timebase for all system variables and timestamps derived from the machine time.

Unicode and Code Page Support

The following changes and enhancements have been introduced:

- NATICU Replaced by Software AG ICU Module and Data Libraries
- ICU Buffer Pool No Longer Available

- [Code Page Support for Object Types](#)

NATICU Replaced by Software AG ICU Module and Data Libraries

The modules NATICU, NATICUCV and NATICUCX have been replaced by the Software AG ICU module (SAGICU) and separate ICU data libraries.

The Software AG ICU module and the ICU data libraries guarantee support of the same Unicode features across multiple Software AG products and improve the maintainability of the Unicode/code page environment. For example, you can now either statically link the Software AG ICU module and/or a specific ICU data library, or dynamically load the module and/or library at session start.

For detailed information, see *Software AG ICU Module (SAGICU)* and *ICU Data Libraries for Different Purposes* in the *Unicode and Code Page Support* documentation, and *Installation for Unicode and Code Page Support* in the *Installation for z/OS* documentation.

ICU Buffer Pool No Longer Available

See [ICU Buffer Pool](#) in *Dropped Features*.

Code Page Support for Object Types

Code page support for Natural object types has been extended to cover the following object types:

- data areas, maps, map profiles,
- DDMs,
- error messages,
- help texts.

For further information, see *Program Sources* in the section *Configuration and Administration of the Unicode/Code Page Environment* in the *Unicode and Code Page Support* documentation.

Programming Language

The following changes and enhancements have been introduced:

- [Higher Number of Call Levels Supported at Runtime](#)
- [Extended Precision](#)
- [Precision of Results of Arithmetic Operations Revised](#)
- [Full Support of Object Type Function](#)
- [New or Changed Statements](#)

Full Support of Object Type Function

Natural objects of type function are now fully supported by Natural on the mainframe. You can create, modify, save and compile a function by using the system commands `EDIT`, `SAVE`, `CATALOG` and `STOW`. You can also use a function with other Natural system commands and with utilities. For detailed information about objects of type function, see *Function* in the *Programming Guide*.

New or Changed Statements

The statements listed in the following table are new or have been changed or enhanced. Unless otherwise noted, refer to the updated descriptions of these statements in the *Statements* documentation.

Statement	Description
CALL	<p>The performance of the <code>CALL</code> statement has been improved, see Improved Performance of CALL Statement.</p> <p>The new profile parameter <code>PGP</code> allows to define properties permanently for external programs instead of setting them temporarily using a <code>SET CONTROL 'P=x'</code> statement prior to the <code>CALL</code> statement.</p>
COMPOSE	The length specifications of certain operands have been increased.
DECIDE ON	The <code>SUBSTRING</code> option has been added to check only a certain part of a field.
DEFINE FUNCTION	This new statement creates new user-defined functions, which may be called stand-alone in a programming object or instead of certain operands in Natural statements. Functions can be defined inside the object type function only. See also <i>Function</i> and <i>User-Defined Functions</i> in the <i>Programming Guide</i> .
DEFINE PROTOTYPE	This new statement creates a prototype definition, which may be used to define the call interface of a certain function.
EXAMINE	<p>The following clauses have been added:</p> <ul style="list-style-type: none"> ■ <code>DIRECTION</code> ■ <code>POSITION</code> <p>It is now possible to search and replace multiple values.</p>
FIND	<p>The following clauses, which can be used only for access to Adabas databases, have been added:</p> <ul style="list-style-type: none"> ■ <i>SHARED HOLD Clause</i> ■ <i>SKIP RECORD(S) IN HOLD Clause</i>
FOR	It is now possible to specify any arithmetic expression instead of a single value.
MOVE ALL	The <code>SUBSTRING</code> clause has been added to restrict the <code>MOVE ALL</code> operation to a certain part of a source or target field.
PROCESS PAGE UPDATE	The <code>DATA</code> option has been added. This option behaves like the <code>FULL</code> option, with the exception that the <code>MODIFIED</code> status of the control variables is not reset.

Statement	Description
READ	The following clauses, which can be used only for access to Adabas databases, have been added: <ul style="list-style-type: none"> ■ <i>SHARED HOLD Clause</i> ■ <i>SKIP RECORD(S) IN HOLD Clause</i>
READ WORK FILE	It is now possible to resize the following: <ul style="list-style-type: none"> ■ X-arrays with the new ADJUST option. ■ Dynamic variables for work files of type FORMATTED. See also Different Treatment of Dynamic Variables in READ WORK FILE in this documentation.
READLOB	This new statement, which can only be used for access to Adabas databases, is used to read a LOB field (Large Object field) in fixed length segments using multiple database calls.
REINPUT	The MARK option can now also be used to specify control variables as field attributes.
REDUCE	It is no longer possible to reduce the number of occurrences of an X-array to zero by specifying zero (0) as the upper bound in an ARRAY clause, for example, REDUCE ARRAY #XARR TO (1:0). Instead, use the statement REDUCE ARRAY #XARR TO 0.
UPDATELOB	This new statement, which can only be used for access to Adabas databases, is used to update a data segment of a LOB field (Large Object field) in a database record.
WRITE WORK FILE	It is now possible to specify system variables as <i>operand1</i> .

New System Functions and Natural Functions

In addition to some new Natural system functions, a new type of functions, called “Natural Functions”, has been introduced:

New System Functions

System Function	Purpose
*MINVAL *MAXVAL	Evaluate the Minimum/Maximum See <i>*MINVAL/*MAXVAL</i> in the <i>System Functions</i> documentation.
*TRANSLATE	Translate to Lower/Upper Case See <i>*TRANSLATE</i> in the <i>System Functions</i> documentation.
*TRIM	Remove Leading and/or Trailing Blanks See <i>*TRIM</i> in the <i>System Functions</i> documentation.

Natural Functions for URL and Base64 Encoding

Natural now provides functions for encoding or decoding URL, and for converting binary data into printable, network-compatible data (or vice versa) using Base64 encoding.

See *Natural Functions* in the *System Functions* documentation.

System Commands

The following changes and enhancements have been introduced:

- [COMPOPT System Command](#)
- [LIST System Command](#)
- [MAINMENU System Command](#)
- [PROFILER System Command](#)
- [RDC System Command](#)
- [SYSPROD System Command](#)
- [TECH System Command](#)

COMPOPT System Command

The following options are new in the COMPOPT system command:

DB2BIN - Generate SQL Binary Data Types for Natural Binary Fields

DB2BIN can be used to support the DB2 data types `BINARY` and `VARBINARY`.

ECHECK - Existence Check for Object Calling Statements

ECHECK causes the compiler to check for the existence of a programming object that is specified in an object calling statement.

MAXPREC - Maximum Number of Digits after Decimal Point

MAXPREC determines the maximum number of digits in the fractional part of the result of an arithmetic operation. See also [Extended Precision](#).

MEMOPT - Memory Optimization for Local Variables

MEMOPT determines whether memory is allocated for unused Level 1 fields or groups of fields defined in a `DEFINE DATA LOCAL` statement.

V42COMP - Disable New Version 8.2 Syntax

V42COMP disables the new Natural Version 8.2 syntax, thus allowing easy migration. See also [Using Natural Version 8.2 Objects in Version 4.2 or 4.1](#).

LIST System Command

The following options are new in the LIST system command:

LIST COMPOUT - Displaying Compiler Output of a Cataloged Object

LIST COMPOUT displays compiler information from the cataloged object in a report that can be displayed on screen or written to work file 1 or to a Natural source of type TEXT. If no additional options are specified or if required options are missing in the command, a map is displayed where the desired options and the output destination can be specified.

This is also available as function code L0.

LIST DIRECTORY - Displaying Directory Information

If LIST DIRECTORY is executed for a programming object that uses a global data area (GDA), the date and time when the GDA was cataloged is now displayed in addition to the name of the GDA.

LIST UNCONVERTED - List Source in Code Page as Stored on System File

If profile parameter SRETAIN is set to OFF, sources are now listed in the session code page (see system variable *CODEPAGE) by default. To list the source unconverted (that is, in the code page as stored on the system file), you can use the new LIST command option UNCONVERTED. This is also available as subcommand UNCONVERTED when a source is listed, and as function code LU to perform a function on an object in the selection list.

New Profile Handling in LIST System Command

The handling of the LIST profile has been enhanced. Now the LIST-internal command LISTPROF provides functionality to set individual parameters in the LIST profile, see *Defining an Individual List Profile* in the *System Commands* documentation.

MAINMENU System Command

New Items in the Development Functions Menu

Scan Objects

Executes scan operations on single or multiple objects.

List Objects

Executes different list operations on single or multiple objects.

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

New Item in the Maintenance and Transfer Utilities Menu

Maintain Code Page Information

Invokes the SYSCP utility for code page administration.

For further information, see the sections *Maintenance and Transfer Utilities* in *Using Natural* and *SYSCP Utility* in the *Utilities* documentation.

Items Removed from the Maintenance and Transfer Utilities Menu

Transfer Objects to Other System Files

Used to invoke the SYSUNLD utility (NATLOAD/NATUNLD).

Transfer Objects to Other Platforms

Used to invoke the SYSTRANS utility.

See also *Utilities SYSTRANS and NATUNLD/NATLOAD* in *Dropped Features*.

PROFILER System Command

This new system command can be used to invoke the PROFILER utility. See also *PROFILER Utility*.

RDC System Command

This new system command can be used to activate or deactivate the trace recording function of the Natural Data Collector. See *RDC* in the *System Commands* documentation.

SYSPROD System Command

New Map Name

The map output by the SYSPROD command has been renamed from **Product Information** to **Installed Products**.

New Column with Installation Component

A new column has been added to the **Installed Products** map. It indicates whether the installation refers to an INPL or a nucleus assembly.

Also, the Natural application programming interface USR2031N has been enhanced to support these changes.

Different Display of Product Version and Installation Date

There are changes to the fields and columns for the product version and the installation date output by the SYSPROD system command.

TECH System Command

The `TECH` system command now outputs the product version as **Natural Version** with a new format of *n.n.n.n* (for example, 8.2.2.0). See also system command `TECH` in the *System Commands* documentation.

The Natural application programming interface `USR2026N` has been enhanced to support this new format.

Terminal Commands

The following new commands have been introduced:

%<RDC+ and %<RDC- Terminal Commands

These commands can be used to activate or deactivate the trace recording function of the Natural Data Collector. See `%<RDC+` and `%<RDC-` in the *Terminal Commands* documentation.

Editors

The following changes and enhancements have been introduced:

- [Changes to Fields and Columns Containing a Product Version](#)
- [Editor Profile](#)
- [Program Editor](#)
- [Data Area Editor](#)
- [Map Editor](#)

Changes to Fields and Columns Containing a Product Version

There are changes to the fields and columns that contain a Software AG product version shown on a utility screen, for example, different field or column names, or different field formats/lengths.

Editor Profile

Enhanced Exit Function

The exit function now only opens its confirmation window if a profile parameter setting has been changed during the maintenance session. See also *Exit Profile Maintenance* in *Editor Profile* in the *Editors* documentation.

REFRESH Renamed to RESET

The REFRESH command has been renamed to RESET, and has been reassigned from PF13 to PF6.

FLIP Removed

As the REFRESH command has been renamed to RESET, the FLIP command and the corresponding PF keys (PF6 and PF18) used to switch PF-key lines are no longer required and have been removed from the editor profile.

See also *Direct Commands* in *Editor Profile* in the *Editors* documentation.

Program Editor

Creating and Editing Objects of Type Function

The program editor now provides the option to create and modify objects of type function (see also *Full Support of Object Type Function*). For further information, see the sections *Function* in the *Programming Guide* and *Program Editor* in the *Editors* documentation.

Enhanced SPLIT Command

The SPLIT command now provides the option to specify the extended name (long name) of objects of type subroutine, function or class to be displayed in the split-screen area of the program editor.

The SPLIT command can now be issued without any parameter to display the source again previously contained in the split-screen area of the editor.

For further information, see *Split-Screen Commands* in the *Editors* documentation.

Enhanced Exit Function

The exit function now prompts you for an object name and type if no name has been defined for the source currently contained in the editor. For further information, see the section *Exit Function* in *Program Editor* in the *Editors* documentation.

New Location of Modification Indicator (*)

The modification indicator (*) in the command line (see *Program Editor* in the *Editors* documentation) of the editor has been relocated: it is now positioned before the object name.

Data Area Editor

New Default Format for Data Area Sources

The data area editor now uses the Natural Version 4.1 format as the default format for storing data area sources in the FUSER system file. The new default format does not require any changes to existing data areas. For detailed information, see *Source Format for Data Area Storage in Data Area Editor* in the *Editors* documentation.

Support of Unicode Edit Masks

The extended field definition editing function of the data area editor now provides the option to define and save an edit mask as a Unicode edit mask. See also *Extended Field Definition Editing in Data Area Editor* in the *Editors* documentation.

New Location of Modification Indicator (*)

The modification indicator (*) in the top information line (see the section *Exit Function in Data Area Editor* in the *Editors* documentation) of the editor has been relocated: it is now positioned before the object name.

Enhanced Exit Function

The exit function now prompts you for an object name and type if the source currently contained in the editing area has not yet been saved as a source object. For further information, see the section *Exit Function in Data Area Editor* in the *Editors* documentation.

New Copy Options for Variables

The line command `. I (obj)` now also provides the option to specify whether used and/or unused variables are to be copied from another object into a data area. For detailed information, see *Line Commands in Data Area Editor* in the *Editors* documentation.

Map Editor

Functionality of Natural for MBCS Now Integrated in Map Editor

The functionality of Natural for MBCS (product code NKA) has been integrated into the map editor; see the section *Using the Outline Editor in Map Editor* in the *Editors* documentation.

Delivery of Natural for MBCS has been discontinued.

Full Support of Long DY Parameter Strings

The map editor now supports a maximum of 59 characters as value string for the DY session parameter. For further information, see the description of the **DY** field in the section *Fields in the Extended Field Editing* in *Map Editor* in the *Editors* documentation.

Support of Unicode Edit Masks

The extended field editing function of the map editor now provides the option to define a Unicode edit mask by using the new **EMU** field. For further information, see the section *Fields in the Extended Field Editing Area* in *Map Editor* in the *Editors* documentation.

Utilities

The following changes and enhancements have been introduced:

- Changes to Fields and Columns Containing a Product Version
- SYSAPI Utility
- SYSCP Utility
- SYSDDM Utility
- SYSERR Utility
- SYSEXT Utility
- SYSPARM Utility
- SYSRDC Utility
- SYSRPC Utility
- SYSTP Utility
- Object Handler
- PROFILER Utility

Changes to Fields and Columns Containing a Product Version

There are changes to the fields and columns that contain a Software AG product version shown on a utility screen, for example, different field or column names, or different field formats/lengths.

SYSAPI Utility

The SYSAPI utility now provides the following:

- New input fields to filter APIs (application programming interfaces) according to names, short descriptions and keywords.
- Enhanced navigation and selection options through new PF keys and line command.
- Enhanced keyword search option that replaces the previous PF5 (**Keyw**) search command.

See also *SYSAPI Utility* in the *Utilities* documentation.

SYSCP Utility

Display Information on ICU Used

The SYSCP utility now provides the option to display information on the ICU (International Components for Unicode) used in the current Natural environment. See also *ICU Information* in *SYSCP Utility* in the *Utilities* documentation.

Additional Code Page Maintenance Functions

The SYSCP utility now offers the possibility to change the code page assignment of programming objects, DDMs, profiles, and user and system error messages, or to convert code pages for these objects.

SYSDDM Utility

The SYSDDM utility now supports code pages. See also *SYSDDM Utility* in the *Editors* documentation.

SYSERR Utility

The SYSERR utility now supports code pages.



Note: Error messages unloaded with the ERRULDUS utility of Natural Version 8.2 cannot be loaded with the ERRLODUS utility of Natural Version 4.2 because the ERRLODUS utility of Natural Version 4.2 does not support code pages.

See also *SYSERR Utility* in the *Utilities* documentation.

SYSEXT Utility

New Selection Criteria and Search Options

The SYSEXT utility menu has been redesigned: it now provides input fields to filter APIs (application programming interfaces) according to names, short descriptions, product codes, categories and keywords.

In addition, all available keywords and categories can be listed and selected as search criteria to filter APIs.

New Preference Settings and Navigation Options

It is now possible to set display preferences for the SYSEXT utility menu: you can show or hide the product code or category column, change the sort order of the API list, or display only the most recent (current) APIs.

Additional PF keys are provided to scroll through the API list.

Enhanced USR* Text Objects

The `USRnnnnT` text objects have been enhanced:

All user API descriptions have been revised and standardized.

All user APIs of the same purpose but with different parameters are now listed as interface versions.

A category now indicates the functional area or purpose of an API, for example, `SYSTEM COMMANDS` or `ERROR HANDLING`.

Code Page Support for Error Messages

User APIs which handle error messages have been changed to support code pages. By default, read error messages are converted into the current session code page if the session parameter `CP` is not `OFF` and code page information is attached to an error message. If an error message is saved or updated, a code page is attached to an error message depending on the session parameter `SRETAIN`.

For further information, see *SYSEXT Utility* in the *Utilities* documentation.

SYSPARM Utility

Help on Parameters and Subparameters from the Command Line

You can now invoke help on a specific parameter or subparameter from the command line. For each of the categories `ADD-ON`, `DRIVER` and `MAIN` you can list all specific parameters containing subparameters.

Displaying Properties of a Profile

You can now view properties of a profile. The following properties can be viewed:

- The code page of a profile.
- When and by whom a profile has been modified last.
- The Natural version that was current when a profile has been modified last.

However, the profile whose properties are to be viewed must have been saved under Natural Version 8.2.1 or higher.

SYSRDC Utility

Validity Checks for Debugging I/O Errors

The `SYSRDC` utility now provides the option to debug I/O errors such as `NAT1132` by capturing and validating trace records of appropriate I/O buffer data.

For further information, see the section *Internal Validity Check and Tracing for I/O-related Statements* in *SYSRDC Utility* in the *Utilities* documentation.

Profile Parameter to Configure the Natural Data Collector

Profile parameter `RDC` and the corresponding macro `NTRDC` have been provided to configure the Natural Data Collector and its trace recording function. The latter is used by the `SYSRDC` utility and the **PROFILER** utility.

The trace recording function of the `SYSRDC` utility is no longer started automatically at session start but by setting profile parameter `RDC` to `ON`.

See profile parameter `RDC` and macro `NTRDC` in the *Parameter Reference* documentation.

SYSRPC Utility

The SYSRPC utility is a subcomponent of the Natural Remote Procedure Call. See [SYSRPC Utility](#) in the section *Natural Remote Procedure Call*.

SYSTP Utility

The SYSTP utility now provides an option to display the contents of the license file in different formats.

For further information, see *Natural License Information in SYSTP Utility* in the *Utilities* documentation.

Object Handler

Compact Mode

The Object Handler now provides the compact mode, which can be used to perform unload, load or scan functions in only two steps. In compact mode, you can specify all basic processing instructions in two input maps. Additional input maps for further processing instructions can still be used but are optional to call. You can start a function in compact mode but also continue in compact mode during advanced-user or wizard processing to skip any remaining processing steps.

For further information, see the section *Compact Mode in Object Handler* in the *Utilities* documentation.

New Profile Handling

The handling of the Object Handler profile has been enhanced. Now the internal Object Handler command `PROFILE` provides functionality to set individual parameters in the Object Handler profile.

For further information, see *Profile Settings* in the *Object Handler* documentation.

New Option

The Object Handler now provides the new option `Report-Option-1` that allows you to restrict the report data to error messages only or to split the report into the success messages and into error messages (in batch mode only).

For further information, see *Profile Parameters in Object Handler* in the *Utilities* documentation.

New Profile Parameters

The Object Handler provides the following new profile parameters:

- **Default-Report-Option-1**

Allows you to define the default setting for the option `Report-Option-1`.

■ **Default-Report-Direct-Command**

Allows you to define the default report form in direct command mode (batch and online mode).

For further information, see *Profile Settings in Object Handler* in the *Utilities* documentation.

PROFILER Utility

This new utility can be used to control and maintain trace data recorded by the Natural Data Collector. The menu-based utility provides functions to control the profiler tracing, to select required event types and to maintain the trace records with their data.

For further information, see *PROFILER Utility* in the *Utilities* documentation.

Profile and Session Parameters

The profile and session parameters listed in this section are new or have been enhanced. Unless otherwise noted, refer to the updated descriptions of these parameters in the *Parameter Reference* documentation.

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

New Profile Parameters

The following profile parameters are new:

Parameter	Description
BP82	Buffer Pool Placeholder when Object not Found Specifies whether or not a placeholder is put into the Natural Buffer Pool when an object was not found in a library.
CCHAR	CCHAR - Define Output Control Characters Allows you to define hexadecimal control characters for primary I/O to be passed through unchanged.
COMP	Parameters for the Natural Com-plete Interface Provides parameters to configure the Natural Com-plete interface. Corresponding macro: NTCOMP.

Parameter	Description
	See also Changes to Installation and New Options for Configuration Settings in <i>Natural Com-plete/SMARTS Interface</i> .
DB2	<p>Parameters for SQL Database Management Interfaces</p> <p>Provides parameters to configure Natural for DB2, Natural for SQL/DS and Natural SQL Gateway. Corresponding macro: NTDB2.</p> <p>See also Changes to Installation and New Options for Configuration Settings in <i>Natural for DB2</i>.</p>
FPROF	<p>Natural System File for Parameter Profiles</p> <p>Specifies a system file for parameter profiles. This file is used to read parameter profiles specified with the profile parameter PROFILE, provided no database information is supplied as subparameter of PROFILE.</p>
04I	<p>Collect Data for Optimize for Infrastructure</p> <p>Used to control the performance data collection in the Optimize Monitor Buffer Pool for Optimize for Infrastructure.</p>
OSP	<p>Parameters for z/OS Batch</p> <p>Provides parameters to configure the z/OS batch interface. Corresponding macro: NTOSP.</p> <p>See also z/OS and z/VSE Batch Interfaces Now Configured with Profile Parameters.</p>
PGP	<p>Properties for External Programs</p> <p>This profile parameter defines properties permanently for external programs used in a CALL statement. In previous Natural versions, these properties could only be defined temporarily by a SET CONTROL 'P=x' statement preceding the CALL.</p> <p>PGP corresponds to the NTPGP macro in the Natural parameter module.</p>
RDC	<p>Configure the Natural Data Collector</p> <p>Used to configure the Natural Data Collector and its trace recording function, which is used by the SYSRDC utility and the PROFILER utility. Corresponding macro: NTRDC.</p>
TSOP	<p>Parameters for Natural TSO Interface</p> <p>Provides parameters to configure the Natural TSO Interface. Corresponding macro: NTTSOP.</p> <p>See also Changes to Installation and New Options for Configuration Settings in <i>Natural TSO Interface</i>.</p>
VSAM	<p>Parameters for Natural for VSAM</p> <p>Provides parameters to configure Natural for VSAM. Corresponding macro: NTVSAM.</p>

Parameter	Description
	See also Changes to Installation and New Options for Configuration Settings under <i>Natural for VSAM</i> .
VSEP	<p>Parameters for z/VSE Batch</p> <p>Provides parameters to configure the z/VSE batch interface. Corresponding macro: NTVSEP.</p> <p>See also z/OS and z/VSE Batch Interfaces Now Configured with Profile Parameters.</p>

Changed/Enhanced Profile Parameters

The following profile parameters have been enhanced or changed:

Parameter/Description	Change/Enhancement
ASIZE Entire System Server Auxiliary Buffer	<p>New Range of Possible Settings</p> <p>The range of possible settings determining the size of the Entire System Server auxiliary buffer (ASIZE buffer) has been changed:</p> <p>Former range of settings: 0 or 1 - 64 KB; new range of settings: 0 or 64 - 512 KB.</p> <p>For details, see the corresponding notes in the ASIZE parameter description.</p>
BPI Buffer Pool Initialization	<p>Deletion of All Buffer Pool Definitions</p> <p>The OFF option BPI=(TYPE=<i>type</i>, OFF) now also allows deletion of all buffer pool definitions made for the specified buffer pool <i>type</i>. See also <i>BPI Parameter Syntax</i>.</p> <hr/> <p>Specification of Buffer Pool Type ICU</p> <p>The option TYPE=ICU of keyword subparameter TYPE has been removed since it is no longer required. See ICU Buffer Pool in <i>Dropped Features</i>.</p>
BPSFI Specification of Buffer Pool Type ICU	<p>New Value</p> <p>New value LIB to enable a third type of search sequence.</p>
CFICU Unicode and Code Page Support	<p>Specification of ICU Buffer Pool</p> <p>The keyword subparameter BPNLY of the NTCFICU macro has been removed since it is no longer required. See ICU Buffer Pool in <i>Dropped Features</i>.</p>
CSTATIC Statically Linked Modules	<p>The way to specify NTCSTAT macro parameters has changed as of Natural Version 8:</p> <ul style="list-style-type: none"> ■ NTCSTAT allows just one module specification per macro call. ■ If the external reference (<i>entry-name</i>) is different from the module name, the entry name can be specified as a second macro parameter, using the following syntax:

Parameter/Description	Change/Enhancement										
	<p>NTCSTAT <i>module-name, entry-name</i></p>										
<p>CMPO Compilation Options</p>	<p>The following new keyword subparameter have been added to the profile parameter CMPO and to the corresponding macro NTCMPO:</p> <p>Generate SQL Binary Data Types for Natural Binary Fields</p> <table border="1" data-bbox="537 512 1476 590"> <tr> <td data-bbox="537 512 849 590">DB2BIN</td> <td data-bbox="854 512 1476 590">Can be used to support the DB2 data types BINARY and VARBINARY.</td> </tr> </table> <p>Existence Check for Object Calling Statements</p> <table border="1" data-bbox="537 680 1476 793"> <tr> <td data-bbox="537 680 849 793">ECHECK</td> <td data-bbox="854 680 1476 793">This keyword subparameter can be used to cause a compiler check for the existence of a programming object that is specified in an object calling statement.</td> </tr> </table> <p>Maximum Precision for Numbers</p> <table border="1" data-bbox="537 890 1476 1035"> <tr> <td data-bbox="537 890 849 1035">MAXPREC</td> <td data-bbox="854 890 1476 1035">This keyword subparameter can be used to specify the maximum number of digits allowed in the fractional part of a number. See also Extended Precision.</td> </tr> </table> <p>Memory Optimization for Local Variables</p> <table border="1" data-bbox="537 1129 1476 1274"> <tr> <td data-bbox="537 1129 849 1274">MEMOPT</td> <td data-bbox="854 1129 1476 1274">This keyword subparameter can be used to determine whether memory is allocated for unused Level 1 fields or groups defined in a DEFINE DATA LOCAL statement.</td> </tr> </table> <p>Disable New Version 8.2 Syntax</p> <table border="1" data-bbox="537 1369 1476 1514"> <tr> <td data-bbox="537 1369 849 1514">V42COMP</td> <td data-bbox="854 1369 1476 1514">This keyword subparameter can be used to disable the new Natural Version 8.2 syntax, thus allowing easy migration. See also Using Natural Version 8.2 Objects in Version 4.2 or 4.1.</td> </tr> </table>	DB2BIN	Can be used to support the DB2 data types BINARY and VARBINARY.	ECHECK	This keyword subparameter can be used to cause a compiler check for the existence of a programming object that is specified in an object calling statement.	MAXPREC	This keyword subparameter can be used to specify the maximum number of digits allowed in the fractional part of a number. See also Extended Precision .	MEMOPT	This keyword subparameter can be used to determine whether memory is allocated for unused Level 1 fields or groups defined in a DEFINE DATA LOCAL statement.	V42COMP	This keyword subparameter can be used to disable the new Natural Version 8.2 syntax, thus allowing easy migration. See also Using Natural Version 8.2 Objects in Version 4.2 or 4.1.
DB2BIN	Can be used to support the DB2 data types BINARY and VARBINARY.										
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V42COMP	This keyword subparameter can be used to disable the new Natural Version 8.2 syntax, thus allowing easy migration. See also Using Natural Version 8.2 Objects in Version 4.2 or 4.1.										
<p>DB Database Types and Options</p>	<p>Specification of ConnecX SQL Engine Databases</p> <p>The profile parameter DB now also provides the option to specify the database ID and type of a ConnecX SQL Engine database.</p> <p>New Default Setting</p> <p>The default setting (ADABAS, *) of this profile parameter and the corresponding macro NTDB has been changed to indicate Adabas Version 8.2.2 instead of Adabas Version 7.</p>										

Parameter/Description	Change/Enhancement					
DS	<p>New Range of Settings for Some Buffers</p> <p>The following new subparameter has been added to the profile parameter DS and to the corresponding macro NTDS:</p> <table border="1" data-bbox="440 384 1373 806"> <tr> <td data-bbox="440 384 727 688">ASIZE</td> <td data-bbox="732 384 1373 688"> <p>The range of possible settings determining the size of the Entire System Server auxiliary buffer (ASIZE buffer) has been changed:</p> <p>Former range of settings: 0 or 1- 64 KB; new range of settings: 0 or 64 - 512 KB.</p> <p>For details, see the corresponding notes in the ASIZE profile parameter description.</p> </td> </tr> <tr> <td data-bbox="440 695 727 806">FLTUSER</td> <td data-bbox="732 695 1373 806"> <p>This keyword subparameter can be used to define the size of the buffer for fast locate table and subroutine cache.</p> </td> </tr> </table>		ASIZE	<p>The range of possible settings determining the size of the Entire System Server auxiliary buffer (ASIZE buffer) has been changed:</p> <p>Former range of settings: 0 or 1- 64 KB; new range of settings: 0 or 64 - 512 KB.</p> <p>For details, see the corresponding notes in the ASIZE profile parameter description.</p>	FLTUSER	<p>This keyword subparameter can be used to define the size of the buffer for fast locate table and subroutine cache.</p>
ASIZE	<p>The range of possible settings determining the size of the Entire System Server auxiliary buffer (ASIZE buffer) has been changed:</p> <p>Former range of settings: 0 or 1- 64 KB; new range of settings: 0 or 64 - 512 KB.</p> <p>For details, see the corresponding notes in the ASIZE profile parameter description.</p>					
FLTUSER	<p>This keyword subparameter can be used to define the size of the buffer for fast locate table and subroutine cache.</p>					
EDBP Software AG Editor Buffer Pool Definitions	<p>Check/Initialization of Software AG Editor Buffer Pool Definitions</p> <p>The following new keyword subparameter has been added to the profile parameter EDBP and to the corresponding macro NTEDBP:</p> <table border="1" data-bbox="440 957 1373 1142"> <tr> <td data-bbox="440 957 789 1142">CHECK</td> <td data-bbox="794 957 1373 1142"> <p>This keyword subparameter can be used to determine whether the Software AG Editor is checked and initialized during the start of the Natural session rather than at the first call of the Software AG Editor.</p> </td> </tr> </table>		CHECK	<p>This keyword subparameter can be used to determine whether the Software AG Editor is checked and initialized during the start of the Natural session rather than at the first call of the Software AG Editor.</p>		
CHECK	<p>This keyword subparameter can be used to determine whether the Software AG Editor is checked and initialized during the start of the Natural session rather than at the first call of the Software AG Editor.</p>					
ISIZE	<p>New Default Setting</p> <p>The default setting of this profile parameter has been changed from 12 to 16 KB.</p>					
ITERM Session Termination in Case of Initialization Error	<p>New Messages for Initialization Errors in Batch Mode</p> <p>If set to OFF, the profile parameter ITERM now terminates the session with condition code 4 instead of 0 if an initialization error occurs in batch mode. In addition, the new termination message NAT9964 is now displayed instead of NAT9995.</p>					
PRINT Print File Assignments	<p>Right Shift of Print Records</p> <p>The following new keyword subparameters have been added to the profile parameter PRINT and to the corresponding macro NTPRINT:</p> <table border="1" data-bbox="440 1623 1373 1850"> <tr> <td data-bbox="440 1623 773 1734">CCHAR</td> <td data-bbox="777 1623 1373 1734"> <p>This keyword subparameter can be used to define hexadecimal control characters for primary I/O to be passed through unchanged.</p> </td> </tr> <tr> <td data-bbox="440 1740 773 1850">SHIFT</td> <td data-bbox="777 1740 1373 1850"> <p>This keyword subparameter can be used to enable a right shift of the print records by the specified number of bytes.</p> </td> </tr> </table>		CCHAR	<p>This keyword subparameter can be used to define hexadecimal control characters for primary I/O to be passed through unchanged.</p>	SHIFT	<p>This keyword subparameter can be used to enable a right shift of the print records by the specified number of bytes.</p>
CCHAR	<p>This keyword subparameter can be used to define hexadecimal control characters for primary I/O to be passed through unchanged.</p>					
SHIFT	<p>This keyword subparameter can be used to enable a right shift of the print records by the specified number of bytes.</p>					
RDCEXIT	<p>Define Natural Data Collector User Exits</p>					

Parameter/Description	Change/Enhancement
	<p>In the Natural parameter module NATPARM, the profile parameter RDCEXIT cannot be specified any longer.</p> <p>Instead of RDCEXIT, use the equivalent macro NTRDC and its subparameter EXIT.</p>
RDCSIZE	<p>Size of Buffer for the Natural Data Collector</p> <p>As an alternative to RDCSIZE, you can now use the equivalent Natural subparameter SIZE of profile parameter RDC or macro NTRDC.</p> <p>To improve control over trace recording/data collection, specifying a value for RDCSIZE greater than or equal to 2 no longer automatically starts trace recording/data collection. The new profile parameter RDC must be set to ON in order to activate trace recording/data collection.</p>
SUBSID Subsystem ID under z/OS and z/VSE	<p>New Default Setting</p> <p>The default setting of this profile parameter has been changed from NAT4 to NAT8.</p>
SCTAB, TAB, TAB1, TAB2, TABA1, TABA2, TABL, UTAB1, UTAB2	<p>Deletion of SCTAB, TAB_{xx} and UTAB_x Parameter Definitions</p> <p>The OFF option now enables the deletion of all static and dynamic definitions made for the corresponding parameter; then the default table is used instead. This setting can be used to avoid conflicts with profile parameter CP=ON.</p>

New Session Parameters

The following session parameters are new:

Parameter	Description
EMU	<p>Unicode Edit Mask</p> <p>This session parameter specifies a Unicode edit mask for an input and/or output field that is used in certain statements. The syntax of EMU is identical to that of the session parameter EM.</p>
ICU	<p>Unicode Insertion Character</p> <p>This session parameter is identical to the session parameter IC. The difference is that the insertion characters are always stored in Unicode format.</p>
LCU	<p>Unicode Leading Characters</p> <p>This session parameter is identical to the session parameter LC. The difference is that the leading characters are always stored in Unicode format.</p>
TCU	<p>Unicode Trailing Characters</p> <p>This session parameter is identical to the session parameter TC. The difference is that the trailing characters are always stored in Unicode format.</p>

Changed/Enhanced Session Parameters

The following session parameter has been enhanced or changed:

Parameter/Description	Change/Enhancement
NL	<p>Numeric Length for Output</p> <p>There is a new limit for the length of the fractional part of a number. The maximum number of digits allowed in the fractional part (after the decimal point) has been increased from 7 to 29.</p> <p>See also <i>Extended Precision</i>.</p>

Application Programming Interfaces

The following Natural application programming interfaces (APIs) are new or have been changed, enhanced, or removed:

- [New Application Programming Interfaces](#)
- [Changed/Enhanced Application Programming Interfaces](#)
- [Removed Application Programming Interfaces](#)
- [Enhanced SYSEXT Utility and API Descriptions in USR* Text Objects](#)

New Application Programming Interfaces

The following Natural application programming interfaces (APIs) have been added in the library SYSEXT:

API	Description
USR8201N	<p>Get the Natural version</p> <p>This new API supports the Natural version field in the format/length N4.</p>
USR8202N	<p>Get enhanced error information on error NAT3145</p> <p>This new API can be used to get enhanced information on error NAT3145, that is, response code 145 from Adabas.</p>
USR8203N	<p>Get profile parameters from the Natural parameter module</p> <p>This new API reads the parameters defined in the Natural parameter module that was used at session start.</p>

Changed/Enhanced Application Programming Interfaces

The following Natural application programming interfaces (APIs) in the library SYSEXT have been enhanced or changed:

API	Description
USR0120N	Read Natural short error message This API now supports the code page support for error messages.
USR0220N	Read Natural long error message This API now supports the code page support for error messages.
USR0320N	Read user short error message from FNAT or FUSER This API now supports the code page support for error messages.
USR0330N	Read Natural object directory This API now supports the Natural product version as returned by the *NATVERS system variable, in the format/length A8.
USR0360N	Modify user short error message on FNAT or FUSER This API now supports the code page support for error messages.
USR0420N	Read user long error message from FUSER This API now supports the code page support for error messages.
USR0421N	Maintain user long error message on FUSER This API now supports the code page support for error messages.
USR1020N	Add user short error message to FUSER This API now supports the code page support for error messages.
USR1027N	Search user short error message on FNAT or FUSER This API now supports the code page support for error messages.
USR1035N	Maintain objects using the Software AG editor engine This API now also edits sources of Natural objects of the type function.
USR1058N	Read a DDM source code into an array This API now supports the code page support for DDMs.
USR2014N	Maintain objects using the Software AG editor engine This API now also edits sources of Natural objects of the type function.
USR2018N	Read Natural object directory This API now returns the complete strings of the NOC (Natural Optimizer Compiler) options and the complete strings of the initial, final and changed compiler options.

API	Description
	In addition, this API now supports the Natural product version as returned by the *NATVERS system variable, in the format/length A8.
USR2026N	<p>Get TECH information</p> <p>This API now supports the new enhanced Natural version field in the format/length A10 which is output by the TECH system. See also TECH System Command.</p> <p>The old Natural version field in the format/length A2 is still supported. However, if one of the version numbers changes to two digits, this number will be replaced by an asterisk (*). Software AG, therefore, recommends you to use the new enhanced Natural A10 version field instead.</p>
USR2028N	<p>Get the Natural version</p> <p>The API supports the Natural version field in the format/length A2. However, if one of the version numbers changes to two digits, this number will be replaced by an asterisk (*). Software AG, therefore, recommends you to use the new API USR8201N (Natural version in the format/length A10) or the *NATVERS system variable (Natural version in the format/length A8).</p>
USR2031N	<p>Get SYSPROD information</p> <p>This API now supports the modified product version fields and columns output by the SYSPROD system command. See also SYSPROD System Command.</p>
USR2034N	<p>Read any error message from FNAT or FUSER</p> <p>This API now supports the code page support for error messages.</p>
USR3320N	<p>Find user short error message (including steplibs search)</p> <p>This API now supports the code page support for error messages.</p>
USR4206N	<p>List objects in a library</p> <p>This API now supports the Natural product version as returned by the *NATVERS system variable, in the format/length A8.</p>
USR4215N	<p>Get list of resources in a Natural library</p> <p>This API now supports the Natural product version as returned by the *NATVERS system variable, in the format/length A8.</p>
USR4216N	<p>List objects in a library with extended selection</p> <p>This API now supports the Natural product version as returned by the *NATVERS system variable, in the format/length A8.</p>

Removed Application Programming Interfaces

The following Natural application programming interfaces (APIs) are obsolete and have been removed from the system library SYSEXT:

API	Previous Use
USR2015N	<p>EBCDIC or ASCII translation table for Natural RPC</p> <p>This API was used to provide EBCDIC or ASCII translation tables for Natural Remote Procedure Calls. This is now done automatically.</p>
USR2022N	<p>Insert GUID into saved data area</p> <p>This API was used to support NaturalX DCOM functionality.</p>

Enhanced SYSEXT Utility and API Descriptions in USR* Text Objects

The SYSEXT utility has been redesigned, and the API (application programming interfaces) descriptions contained in the USR $nnnn$ T text objects in the system library SYSEXT have been enhanced. See [SYSEXT Utility](#).

Documentation

A revised and updated documentation set is available with this Natural version. In particular, the following parts of the documentation have been revised or reorganized:

Overview Page

The documentation overview page has been reorganized due to the restructured Natural *Installation* documentation.

Natural Installation Documentation

The Natural *Installation* documentation has been revised and restructured according to operating system specific requirements. In addition, it now includes installation instructions for additional Natural add-on products. See [Restructured and Revised Natural Installation Documentation](#) under *Migration*.

Enhanced Full-Text Search

The full-text search now provides the option to restrict the search to one or more of the following documentation sets according to the categories on the documentation overview page:

- Language
- Development Environment
- Administration

- Installation and Getting Started

Programming Guide

The *Programming Guide* has been revised and partially reorganized to reflect new functionality such as object type function, Function Call, and user-defined functions.

Parameter Reference

The *Parameter Reference* documentation now also includes descriptions of parameters which in earlier versions were to be found in the *Installation* documentation of the following Natural add-on products: Natural for DB2, Natural for SQL/DS, Natural SQL Gateway and Natural for VSAM. These parameters are now available as keyword subparameters of profile parameters (DB2, VSAM) and their corresponding macros (NTDB2, NTVSAM).

Several parameters are new or have been enhanced, see *Profile and Session Parameters*.

For changes to the documentation of add-on products, see the pertinent information in the section *New and Changed Features of Add-On Products*.

7

New and Changed Features of Add-On Products

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This section contains information on new or changed features of the Natural add-on products released with Natural Version 8.2.2.

For an overview of all Natural add-on products for which new versions are available, see [Overview of New Add-On Product Versions](#).

Customer Enhancement Proposals for Add-On Products

The following is an overview of the customer enhancement proposals that have been implemented in the add-on products released with Natural Version 8.2.2. These proposals are sorted alphabetically by product name.

Product Name/Enhancement Proposal (EP) Number	Proposal
Natural CICS Interface	
n/a	Enhance node error program to optionally force purge active Natural sessions. See Node Error Program now Purges Lost Active Sessions .
Natural for DB2	
13436	Support of row-value-expressions in SQL syntax. See Row Value Expression in the <i>Statements</i> documentation.
5240	Provide ISQL interface <code>NDBISQLD</code> for large SQL strings (LOB) as Natural dynamic variables. See NDBISQLD Subprogram in the <i>Natural for DB2</i> documentation.
Natural Security	
5733	Provide user exits to be invoked after invoking a maintenance function and before processing the data entered. See New User Exits in the <i>Natural Security</i> section.
Natural SQL Gateway	
n/a	Support stored procedures. See Support of CALLDBPROC Statement and READ RESULT SET Statement .

Documentation

Revised and updated documentation sets are available with the Natural add-on products released with Natural Version 8.2.2. In particular, the following parts of the documentation have been revised or reorganized:

- [Parameter Descriptions of Add-On Units Now Included in Parameter Reference](#)

- [Installation of Add-On Units Now Included in Natural Installation Documentation](#)

Parameter Descriptions of Add-On Units Now Included in Parameter Reference

The *Parameter Reference* documentation now also includes descriptions of parameters which in earlier versions were to be found in the *Installation* documentation of the following Natural add-on products: Natural for DB2, Natural Natural for VSAM, Natural for SQL/DS, Natural SQL Gateway, and the Natural Com-plete/SMARTS Interface.

These parameters are now available as keyword subparameters of profile parameters (DB2, VSAM, COMP) and their corresponding macros (NTDB2, NTVSAM, NTCOMP).

Installation of Add-On Units Now Included in Natural Installation Documentation

The Natural *Installation* documentation now also includes installation instructions which used to be contained in the documentation sets of Natural add-on products. See [Restructured and Revised Natural Installation Documentation](#) under *Migration*.

Natural CICS Interface

The following changes and enhancements are provided with Natural CICS Interface Version 8.2.2:

- [Changes to Installation](#)
- [Node Error Program now Purges Lost Active Sessions](#)
- [Changes to CICS Generation Parameters](#)
- [New Subprogram Calls](#)
- [New User Exits](#)
- [New DTP Terminal Exit Interface NCIDTPEX](#)
- [New Transaction ID Exit Interface NCIXIDEX](#)

Changes to Installation

New Transaction Definition for NEP Program

The installation of the Natural CICS Interface has been enhanced to allow transaction definitions for the node error program (NEP). See also [Node Error Program now Purges Lost Active Sessions](#).

Node Error Program now Purges Lost Active Sessions

The node error program (NEP) of the Natural CICS Interface now provides the option to force “purge active Natural sessions” that fail to terminate properly, for example, when a program loops.

For detailed information, see the section *NCIZNEP Functionality in CICS Node Error Program Considerations for Natural* in the *TP Monitor Interfaces* documentation.

Changes to CICS Generation Parameters

The following parameters have been removed from the NCMPRM macro of the Natural CICS Interface:

- COMACAL

This parameter was used to determine usage of the CICS COMMAREA facility for external subroutine calls.

- COMAMSG

This parameter was used to determine usage of the CICS COMMAREA facility for termination messages.

- FLDLEN

This parameter was used to supply field length list addresses for external subroutines calls.

The functionality of these parameters is now covered by the following new parameters:

- BACKRPL

This parameter controls where and how the back-end parameters are passed to a back-end program. For further information, see the section *BACKRPL - Location of Parameter List for Back-End Program* in *Natural CICS Generation Parameters* in the *TP Monitor Interfaces* documentation.

- CALLRPL

This parameter controls where and how the CALL parameter lists are passed to external subroutine programs. For detailed information, see the section *CALLRPL - Location of Parameter List for External Subroutine Programs CALLED by Natural via EXEC CICS LINK* in *Natural CICS Generation Parameters* in the *TP Monitor Interfaces* documentation.

New Subprogram Calls

The following subprogram calls have been added:

Name	Language	Function
XNCI3GC3	COBOL	This program provides a sample COBOL call to a Natural subprogram under CICS.
XNCI3GP3	PL/1	This program provides a sample PL/1 call to a Natural subprogram under CICS

New User Exits

The following user exits have been added:

Name	Purpose
XNCIXIDX	This Assembler program provides a sample user exit to test/set the pseudo-conversational transaction ID.
XNCIDTPX	This Assembler program provides a sample user exit to do DTP, that is, APPC or MRO terminal I/Os.

New DTP Terminal Exit Interface NCIDTPEX

The NCIDTPEX DTP terminal exit interface clarifies the scenario executing Natural sessions using CICS Dynamic Transaction Processing (DTP), that is, using APPC or MRO conversations:

When the exit is not available, such Natural sessions are treated by default as asynchronous sessions, while when the exit is available, Natural sets up terminal bound sessions (TTYE=3270) and terminal input and output operations are passed to the exit for further processing.

New Transaction ID Exit Interface NCIXIDEX

The NCIXIDEX transaction ID exit interface can be used to change the Natural pseudo-conversational transaction ID. For further information, see *NCIXIDEX - Transaction ID Exit Interface* in *Natural CICS Interface Functionality* in the *TP Monitor Interfaces* documentation.

Natural Com-plete/SMARTS Interface

The following changes/enhancements are provided with Natural Com-plete/SMARTS Interface Version 8.2.2:

Changes to Installation and New Options for Configuration Settings

The parameter macro `NFMPRM` and the parameter module `NCFPARM` used to configure the Natural Com-plete/SMARTS Interface are no longer delivered.

The parameters required for configuration are now predefined as subparameters in the interface-specific macro `NTCOMP` in the Natural parameter module. You can modify the default parameter settings in the macro and also dynamically specify a setting at the start of a Natural session by using the new profile parameter `COMP`.

In principle, the subparameters provided with `NTCOMP` and `COMP` correspond to the parameters in the old `NFMPRM` macro. However, for all subparameters affected, the value settings `YES` and `NO` have changed to `ON` and `OFF`, respectively. For details, see [Changes to Subparameters in NTCOMP](#).

As a result of the new `NTCOMP` macro, some installation instructions have changed as described in *Installing Natural Com-plete/SMARTS* in the *Natural Installation for z/OS* documentation or *Installing Natural Com-plete/SMARTS* in the *Natural Installation for z/VSE* documentation.

Support of Global Editor Buffer Pool

A global editor buffer pool is supported now. If you want to make use of it, specify a corresponding editor work file as described in *Installing Software AG Editor on z/OS* in the *Natural Installation for z/OS* documentation or *Installing Software AG Editor on z/VSE* in the *Natural Installation for z/VSE* documentation.

Changes to Subparameters in NTCOMP

In principle, the subparameters provided with the new `NTCOMP` macro and the `COMP` parameter correspond to the generation parameters provided with the old `NFMPRM` macro. Any changes to subparameter value settings are indicated in the following table:

Subparameter	Change	
	New value setting:	Old value setting:
HCDTID	ON or OFF	YES or NO
LC	ON or OFF	YES or NO
LE370	ON or OFF	YES or NO
MSGHDR	ON or OFF	YES or NO
SERVER	Default value: NCFNAT82	NCFNAT42
SPIEA	ON or OFF	YES or NO
THABOVE	ON or OFF	YES or NO
UCTRAN	ON or OFF	YES or NO
U2PRINT	ON or OFF	YES or NO

Change to Destination Settings for Asynchronous Natural Processing

Make sure that appropriate `SENDER` and `OUTDEST` destinations are specified for an asynchronous Natural session; otherwise, any output will lead to an abnormal termination. The setting `OUTDEST=TID` is no longer valid, it needs to be `OUTDEST=LUNAME`. See *Asynchronous Natural Processing under Com-plete/SMARTS* in the *TP Monitor Interfaces* documentation.

Natural Development Server

With Natural Version 8.2.2 for Mainframes, Version 8.2.2 of Natural Development Server is available. For information on changes, enhancements and new features available with Version 8.2.2, see *What's New* in the *Natural Development Server* documentation.

Natural for Ajax

The Natural for Ajax documentation has been removed from this Natural documentation. The latest Natural for Ajax documentation is always available at <http://documentation.softwareag.com/>.

Natural for DB2

The following changes and enhancements are provided with Natural for DB2 Version 8.2.2:

- [Changes to Installation and New Options for Configuration Settings](#)
- [Support of DB2 Version 10 Features](#)

Changes to Installation and New Options for Configuration Settings

The macros `NDBPRM` and `NDBID` previously contained in the `NDBPARM` module are no longer delivered. They were used to configure Natural for DB2, Natural SQL/DS and Natural SQL Gateway.

The parameters required for configuration are now provided in macros in the Natural parameter module. This reduces installation and maintenance efforts since assembly and linkage steps are no longer required and source changes need no longer be entered manually.

NDBPRM Replaced by NTDB2

The parameters previously contained in the `NDBPRM` macro are now predefined in the new `NTDB2` macro in the Natural parameter module.

You can modify the default parameter settings in the macro and also dynamically specify a setting at the start of a Natural session by using the new profile parameter `DB2`.

In principle, the subparameters provided with the NTDB2 macro correspond to the subparameters in the old NDBPRM macro. Any changes to the subparameters are indicated in the following table:

Subparameter	Change
DELIMID	New value setting: DQ, SQ or OFF (default).
	Old value setting: ", ' or no value (default)
NSBAHOST	Subparameter has been renamed to NSBHOST.
NSBAPORT	Subparameter has been renamed to NSBPORT.

For detailed information on NTDB2, see *DB2 - Parameters for SQL Database Management Interfaces* in the *Parameter Reference* documentation.

NDBID Integrated in NTDB

The database specifications previously contained in the NDBID macro are now contained in the NTDB macro in the Natural parameter module.

You can modify the default parameter settings in the macro and also dynamically specify a setting at the start of a Natural session by using the new profile parameter DB.

For detailed information on NTDB, see *DB - Database Types and Options* in the *Parameter Reference* documentation.

The changes in installation steps are described in *Installing Natural for DB2 on z/OS* in the *Natural Installation for z/OS* documentation.

DB2 Connecting and Resource Functionality Added to NTDB2 Macro and DB2 Parameter

The DB2 connecting and resource functionality previously provided by the NATAPLAN program is now provided as a subparameter in the NTDB2 macro and in the DB2 profile parameter.

The NTDB2 macro and the DB2 profile parameter has been enhanced by adding the special keyword subparameters DB2COLL, DB2GROV, DB2PLAN, DB2SSID, and DB2XID, which specify the DB2 sharing group or subsystem name to connect to and the DB2 plan or collection ID for environments which use the DB2 Call Attachment Facility or the DB2 Resource Recovery Services Attachment Facility.

For detailed information on NTDB2, see *DB2 - Parameters for SQL Database Management Interfaces* in the *Parameter Reference* documentation.

Support of DB2 Version 10 Features

This section describes the new features that have been implemented in the SQL statements of Natural for DB2 in support of DB2 Version 10.

Unless otherwise noted, refer to the updated descriptions of these statements in *SQL Statements* in the *Statements* documentation.

TIMESTAMP with Extended Precision

The `TIMESTAMP` data type has been extended to support a precision in the range of 0 to 12 digits after the decimal point. For further information, see *Natural Formats and SQL Data Types*.

TIMESTAMP with TIMEZONE

Natural for DB2 now supports the new data type `TIMESTAMP(n) WITH TIMEZONE`. For further information, see *Natural Formats and SQL Data Types*.

Aggregation Specification in OLAP Expressions

Natural for DB2 now provides the option to specify aggregations in online analytical processing (OLAP) expressions. Aggregations are used to retrieve aggregated data in a query that is performed relative to the current row. It is now possible to specify how and which partitioned data relative to the current row is aggregated (moving sum or moving average). For syntax details, see the section *Factor in Scalar Expressions*.

Period Specification and Period Clause for Temporal and Versioned Data Tables

Natural for DB2 now supports temporal and versioned data tables to keep a history of data table contents: a period can be defined in the `SELECT` statement and the new *Period Clause* of the `DELETE` and `UPDATE` statements.

XMLMODIFY Function for Updates of XML Subdocuments

Natural for DB2 supports the `XMLMODIFY` function, which can be used to update an XML subdocument without having to replace the entire XML document. See also *scalar-function* in *Natural for DB2* in the *Database Management Interfaces* documentation.

Natural for SQL/DS

The following changes are provided with Natural for SQL/DS Version 8.2.2:

Changes to Installation and New Options for Configuration Settings

The macros `NDBPRM` and `NDBID` previously contained in the module `NDBPARM` are no longer delivered. `NDBPRM` has been replaced by the macro `NTDB2` and the database specifications in `NDBID` are now contained in the macro `NTDB`. Both macros are contained in the Natural parameter module.

For further information, see [Changes to Installation and New Options for Configuration Settings](#) under *Natural for DB2*.

Natural for VSAM

The following changes and enhancements are provided with Natural for VSAM Version 8.2.2:

- [Changes to Installation and New Options for Configuration Settings](#)
- [Changes to Installation with VSAM System Files](#)
- [Changes to Subparameter FORMAT](#)

Changes to Installation and New Options for Configuration Settings

The source module `NVSPARM` and the assembler macros `NVMPARM`, `NVMEXIT` and `NVMTVS` are no longer delivered. They contained parameters used to configure the VSAM environment.

The parameters required for configuration are now predefined in the macros `NTVSAM`, `NTVEXIT`, `NTVLSR` and `NTVTVSD` in the Natural parameter module. This reduces installation and maintenance efforts since assembly and linkage steps are no longer required and source changes need no longer be entered manually.

You can modify the default parameter settings in the macro and also dynamically specify a setting at the start of a Natural session by using the new profile parameter `VSAM`.

As a result, some installation steps have changed as described in *Installing Natural for VSAM* in the Natural *Installation for z/OS* documentation.

Changes to Installation with VSAM System Files

The assembler sources for `z/OS` and `z/VSE` batch interfaces are no longer delivered (see also [z/OS and z/VSE Batch Interfaces Now Configured with Profile Parameters](#) in *Migration*).

As a result, the installation steps required to install Natural for VSAM on a VSAM file system have changed as described in *Installing Natural for VSAM on VSAM System Files* in the Natural *Installation for z/OS* documentation.



Note: The `VSIZE` parameter value for VSAM system files must be increased to 160.

Changes to Subparameter FORMAT

The subparameter `FORMAT` of profile parameter `VSAM` and parameter macro `NTVSAM` has been changed. This subparameter, which supports the formatting of VSAM records referenced in a `STORE` or `UPDATE` statement, now also offers an option to support the formatting of all VSAM keys in accordance with the DDM field type.

Old Format:	New Format:
FORMAT=ON/OFF	FORMAT=(ON/OFF, KEYS/NOKEYS)

The old subparameter syntax is still supported for compatibility reasons.

For detailed information on possible values and value combinations, see *VSAM - Parameters for Natural for VSAM* in the *Parameter Reference* documentation.

Natural IMS TM Interface

The following changes and enhancements are provided with Natural IMS TM Interface Version 8.2.2:

NIMDRIV Macro Parameters

In the `NIMDRIV` macro, the following parameters were subject to changes:

Parameter	Description
LE370	This parameter can still be specified for compatibility reasons, however, it is not honored any longer.
TYPE	A new value <code>SFE</code> has been provided, which enables the generation of a Natural Development Server or Natural Web I/O Interface server environment. See also <i>Introducing the Natural Development Server IMS Adapter</i> in the <i>Natural Development Server</i> documentation and Natural Web I/O Interface Server IMS Adapter in <i>New and Changed Features of Add-On Products</i> .

Natural ISPF

The following enhancement is provided with Natural ISPF Version 8.2.2:

- Full Support of Natural Objects of Type Function
- Changes to Fields and Columns Containing a Product Version

Full Support of Natural Objects of Type Function

Full support of Natural objects of type function is now also provided by Natural ISPF. You can create, modify, save and compile a function by using the system commands `EDIT`, `SAVE`, `CATALOG` and `STOW`.

For detailed information on objects of type function, see *Function* in the *Natural Programming Guide*, and also the *Natural ISPF* documentation.

Changes to Fields and Columns Containing a Product Version

There are changes to the fields and columns on Natural ISPF screens that contain a Software AG product version, in particular, on screens that list Natural objects. There are, for example, different field or column names, or different field formats/lengths.

Natural openUTM Interface

The following changes and enhancements are provided with Natural *openUTM* Interface Version 8.2.2:

Parameters in Macro NATUTM

In the macro `NATUTM`, the following parameters have been added or removed:

Parameter	Description
<code>TIMESTMP</code>	This new parameter determines the timebase for all system variables and timestamps derived from the machine time.
<code>ULANG</code>	This new parameter replaces the <code>UMODE</code> parameter in that it determines the language of the restart message, the logoff message and the “free-running messages”.
<code>UMODE</code>	This parameter has been removed, because it was partially obsolete. The setting of the language used in certain messages is now accomplished with the new <code>ULANG</code> parameter.

Natural Optimizer Compiler

The following enhancements are provided with Natural Optimizer Compiler Version 8.2.2:

- Processing Time for Array Assignments Significantly Reduced
- Optimized Performance of Large Variables
- Improved Performance of EXAMINE Statement

Processing Time for Array Assignments Significantly Reduced

The processing of array assignments where the selected occurrences of both the source and target array are aligned in contiguous storage locations has been further optimized for all Natural data formats except D (date), handle, N (unpacked numeric), P (packed numeric) and T (time) where format and length of source and target are the same. These array assignments are optimized by performing a single copy operation of the contents of the source array instead of copying the value of each individual array occurrence.

This optimization applies to assignments where source and target specify complete arrays:

- `TARGET(*) := SOURCE(*)`
- `TARGET(*, *) := SOURCE(*, *)`
- `TARGET(*, *, *) := SOURCE(*, *, *)`

Assignments are also optimized if source and target denote ranges so that all dimensions except for the last one denote a single occurrence:

- `TARGET(range) := SOURCE(range)`
- `TARGET(single-occurrence, range) := SOURCE(single-occurrence, range)`
- `TARGET(single-occurrence, single-occurrence, range) ↔ := SOURCE(single-occurrence, singleoccurrence, range)`

The following example demonstrates the significant difference in CPU usage when the Natural Optimizer Compiler is used for array processing:

```
DEFINE DATA LOCAL
1 A (A5/10,20,1000)
1 B (A5/10,20,1000)
1 I (I4) INIT <20>
1 J (I4) INIT <990>
1 K (I4) INIT <10>
1 L (I4) INIT <980>
END-DEFINE
A(2,3,I:J) := B(6,8,K:L)
END
```

For this example, CPU usage with the Version 8.2 Natural Optimizer Compiler has been measured to be less than one percent of the CPU used with the Version 8.2 Natural standard runtime.

For this example, CPU usage with the Version 8.2 Natural Optimizer Compiler has been measured to be less than ten percent of the CPU used with the Version 4.2 Natural Optimizer Compiler.



Note: Depending on the installed hardware and your system configuration, performance gains may differ from the above measured values.

Optimized Performance of Large Variables

The Natural Optimizer Compiler has been improved to optimize the performance of alphanumeric or binary variables with a maximum length of 16777215 bytes ($2^{24} - 1$).

Improved Performance of EXAMINE Statement

The Natural Optimizer Compiler has been improved to further optimize the performance of the EXAMINE statement. The Natural Optimizer Compiler

- Optimizes the performance of the EXAMINE statement if the string to be examined contains only blanks or mostly trailing blanks.
- Supports the GIVING NUMBER and the GIVING POSITION clauses even if both are defined in the same EXAMINE statement.
- Supports array fields with single occurrences. Example: EXAMINE #A(#IND) FOR.
(Ranges of occurrences are not supported. Example: EXAMINE #A(#IND1:#IND2) FOR.)
- Supports the DIRECTION clause for fields defined as constants. Example: EXAMINE DIRECTION 'F'.
(Variables are not supported. Example: EXAMINE DIRECTION #DIR.)

Natural Remote Procedure Call

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

With Natural Version 8.2.2, an enhanced Natural Remote Procedure Call Version 8.2.2 is delivered that replaces the existing Natural RPC Version 6.3.4.

As of Version 8.2 of Natural Remote Procedure Call (RPC), the following changes, enhancements and new features are provided:

- [Migration](#)
- [SYSRPC Utility](#)
- [Documentation](#)

Migration

The following information is only for non-SMA users:

In the link JCL of your Natural, you must replace `NATRPC6n` by `NATRPC82`.

SYSRPC Utility

Enhanced SYSRPC Interface Object Generation

The **Generating Interface Object** function of the `SYSRPC` utility (described in *SYSRPC Utility* in the *Utilities* documentation) now generates interface objects that are more compliant with EntireX RPC servers and the reliable RPC. If an EntireX RPC server is called by a Natural client, the parameter definitions on the **Interface Object Generation** screen must correspond to the IDL definition for the EntireX RPC server.

For compatibility reasons, an option is provided to generate interface objects as in previous Natural versions.

New Toggle Commands for Server Command Execution Views

The PF-key `PF11` or the greater than sign (`>`) can now be used to toggle between the standard and the extended views of **Server Command Execution**. See also *Server Command Execution* in *SYSRPC Utility* in the *Utilities* documentation.

Discontinued Support of Remote Directory Maintenance Function

The **Remote Directory Maintenance** function has been removed from the `SYSRPC` utility. The directory for a remote server can now be created and maintained with the **Service Directory Maintenance** function of the `SYSRPC` utility. For detailed information, see the relevant section in *SYSRPC Utility* in the *Utilities* documentation.

Documentation

A revised and updated *Natural Remote Procedure Call* documentation is available with this version.

Please note that the term *stub subprogram*, which in earlier versions of EntireX was also used to refer to application-dependent, Workbench-generated pieces of code for issuing and receiving remote procedure calls, is no longer used. In the *EntireX* documentation and in the *Natural Remote Procedure Call* documentation, these objects are now referred to as *interface objects*.

Natural SAF Security

The following enhancements are provided with Natural SAF Security Version 8.2.2:

- Password Case-Sensitivity for All External Security Systems
- Invoking NSF Options
- Installation

Password Case-Sensitivity for All External Security Systems

The NSF user option **Password Case-Sensitive**, which with previous versions could only be used in conjunction with RACF, can now be used with all supported external security systems.

Invoking NSF Options

The user interface of Natural Security's Administrator Services has been revised: The **General NSF Options**, which used to be a subset of Natural Security's **General Options**, can now be invoked directly from the **Administrator Services Menu 1**.

Installation

The Natural SAF Security load module NATGWSAF has been replaced by the load module NSFNUC. For details, see *Installing Natural SAF Security on z/OS* in the *Natural Installation* documentation

Natural Security

The following enhancements are provided with Natural Security Version 8.2.2:

- Administrator Services - Logon Records
- Support of NaturalONE Development Mode
- New User Exits
- Application Programming Interface NSCADM Enhanced

- [User Exit for SYSAOS Enhanced](#)

Administrator Services - Logon Records

The user interface of the Logon Records functions has been enhanced and now provides more and improved selection options. At the same time, the performance of these functions has been enhanced.

Support of NaturalONE Development Mode

Natural Security's protection mechanisms for Eclipse Navigator view actions have been enhanced and now support the NaturalONE development mode. For details, see the section *Protecting the Navigator View* in the *Natural Security* documentation.

New User Exits

New user exits NSCXXEX3 (where *XX* is the object type) are provided. They are invoked when a maintenance function has been invoked and after data have been entered - but before these data are validated and processed by Natural Security. For details, see the section *Other User Exits* in the *Natural Security* documentation.

Application Programming Interface NSCADM Enhanced

The application programming interface (API) NSCADM has been enhanced: It allows you to process logon records with time-stamp-related ETIDs. For details, see the example program PGMADM05 and text member TXTADM05 in the library SYSSEC.

User Exit for SYSAOS Enhanced

The maximum number of database profiles which can be maintained with the user exit NSCA0SE1 has been increased from 156 to 400. For details, see the section *SYSAOS under Natural Security* in the *Natural Security* documentation.

Natural SQL Gateway

The following enhancements are provided with Natural SQL Gateway Version 8.2.2:

- [Support of CALLDBPROC Statement and READ RESULT SET Statement](#)

- [Changes to Installation and New Options for Parameter Settings](#)

Support of CALLDBPROC Statement and READ RESULT SET Statement

Natural SQL Gateway now supports the `CALLDBPROC` statement and the `READ RESULT SET` statement in order to invoke stored procedures and to read the result set created by the stored procedure.

As a prerequisite for this feature, ConnecX SQL Engine 11.0.3 or higher is required.

The following restrictions apply to Natural SQL Gateway:

- Only one result set can be processed per stored procedure and at any point of time (no nested and parallel result sets).
- The `CALLDBPROC` statement and the `READ RESULT SET` statement must be coded in the same Natural program.
- If the stored procedure called produces a result set, parameters of type `INOUT` and `OUT` are only returned to the calling program after the result set has been read completely.

Changes to Installation and New Options for Parameter Settings

The macros `NDBPRM` and `NDBID` previously contained in the module `NDBPARM` are no longer delivered. `NDBPRM` has been replaced by the macro `NTDB2`, and the database specifications in `NDBID` are now contained in the macro `NTDB`. Both macros are contained in the Natural parameter module. For further information, see [Changes to Installation and New Options for Configuration Settings](#) under *Natural for DB2*.

Natural TIAM Interface

The following change/enhancement is provided with Natural TIAM Interface Version 8.2.2:

Parameters in Macro NAMTIAM

In the macro `NAMTIAM`, the following change/enhancement is provided:

- **TIMESTMP Parameter**

The `TIMESTMP` parameter has been added. It determines the timebase for all system variables and timestamps derived from the machine time.

- **UMODE Parameter**

The `UMODE` parameter, which was provided to specify the mode of operation and the language indicator, has been removed because it is no longer needed.

Natural TSO Interface

The following enhancements are provided with Natural TSO Interface Version 8.2.2:

- [Changes to Installation and New Options for Configuration Settings](#)
- [New Object Modules for LE Support](#)

Changes to Installation and New Options for Configuration Settings

The assembler macro `NTTSO` and the source module `NATTSO` used to configure the Natural TSO Interface are no longer delivered. They have been replaced by the interface-specific `NTTSOP` macro in the Natural parameter module. This reduces installation and maintenance efforts since assembly and linkage steps are no longer required and source changes need no longer be entered manually. The resulting changes in installation steps are described in *Installing Natural TSO Interface on z/OS* in the *Natural Installation for z/OS* documentation.

You can modify the default subparameter settings in the macro and also dynamically specify a setting at the start of a Natural session by using the new profile parameter `TSOP` described in the *Parameter Reference* documentation.

Changes to Subparameters in NTTSOP Macro

In principle, the subparameters provided with the new `NTTSOP` macro and the `TSOP` parameter correspond to the generation parameters provided with the old `NTTSO` macro. Any new or removed subparameters or changes to subparameter value settings are indicated in the following table:

Subparameter	Change	
ABEXIT	New value setting: OFF	Old value setting: NONE
ALTSCRN	New value settings: ON OFF	Old value settings: YES NO
LE370	This subparameter has been removed. Its functionality is now provided by additional modules. For LE support, see New Object Modules and Subparameter for LE Support .	
LEHDLR	New subparameter to specify whether Natural uses an LE error handler for LE subprogram calls.	
NDBFSRV	New value settings: ON OFF	Old value settings: YES NO
SWAPKEY	New value setting:	Old value setting:

Subparameter	Change
	OFF no value

New Object Modules for LE Support

Support for IBM's Language Environment (LE) in TSO environments is now provided by the object modules NATTSOL and NATLEOPT.

These object modules replace the LE370 parameter previously contained in the NTTS0 macro in the NATTS0 source module.

The changes in installation steps are described in *Installing Natural TSO Interface on z/OS* in the *Natural Installation for z/OS* documentation.

Natural Web I/O Interface

The following changes and enhancements are provided with Natural Web I/O Interface (Client Version 1.3.9, Server Version 8.2.2):

- [Natural Web I/O Interface Client](#)
- [Natural Web I/O Interface Server](#)
- [Natural Web I/O Interface Server IMS Adapter](#)
- [Natural Web I/O Interface Documentation](#)

Natural Web I/O Interface Client

Check for Numeric Input

Using the new session option **Check for numeric input**, you can now decide whether numeric input fields are to be validated or not. See *Overview of Session Options* in *Configuring the Client*, which is part of the *Natural Web I/O Interface* documentation.

Cursor (Caret) on Output Fields

It is now possible to set the cursor (caret) to output fields. The Natural system variables *CURS-LINE, *CURS-COL and *CURSOR are now set correctly when placed on an output field. It is no longer required to enable caret browsing in the web browser.

Change in Conversion from Internal XML Format to HTML

With the XSLT files that are used for the conversion of the Natural Web I/O Interface screens from the internal XML format to HTML, the output fields are now generated as HTML read-only <input> elements instead of elements.

Using Your Own XSLT Files

It is now possible to use your own XSLT files with Internet Explorer and Firefox (Java EE only). These files must have special names. See XSLT Files in *Configuring the Client*, which is part of the *Natural Web I/O Interface* documentation.

Support of Firefox 4.0 and 5.0

The Natural Web I/O Interface now also supports Firefox 4.0 and 5.0.

Deployment on JBoss Application Server

Apache Ant 1.8.1 or above is now required to perform the deployment on JBoss Application Server. This tool is freely available on <http://ant.apache.org/>.

Dynamically Changing the CICS Transaction Name when Starting a Session

At logon, the CICS transaction name determined by the configuration parameter RFE_CICS_TA_NAME can now be overwritten by the user in order to switch to a different CICS transaction on a mainframe. See the section *Dynamically Changing the CICS Transaction Name when Starting a Session* in the *Natural Web I/O Interface* documentation.

Natural Web I/O Interface Server

Natural ICU Handler Replaced by Software AG ICU Handler

The Natural ICU Handler (NATICU) has been replaced by the Software AG ICU Handler (SAGICU). See also [NATICU Replaced by Software AG ICU Module and Data Libraries](#).

As a result, the prerequisites for installing the Natural Web I/O Interface server have changed as described in *General Prerequisites for Web I/O Interface Server Installation* in the *Natural Web I/O Interface* documentation.

Natural Web I/O Interface Server IMS Adapter

This new adapter enables the use of a Natural Web I/O Interface server running under z/OS in batch mode within an IMS TM environment.

For further information, see *Introducing the Natural Web I/O Interface IMS Adapter* in the *Natural Web I/O Interface* documentation.

Natural Web I/O Interface Documentation

The *Natural Web I/O Interface* documentation has been changed in such a way that it now only contains the configuration information for the Natural Web I/O Interface client and server. All information concerning the client configuration for Natural for Ajax is now available in the above mentioned Natural for Ajax documentation.

Super Natural

With Super Natural Version 8.2.2, the following limitation applies and the following language-specific changes should be taken into account:

- [No Support of Source Object Locking](#)
- [Language-Dependent Modules](#)

No Support of Source Object Locking

Super Natural Version 8.2.2 does not support the locking mechanism of Natural source objects, which is activated with the Natural profile parameter `SLOCK`. Software AG highly recommends that you set `SLOCK` to `OFF` when working in a Super Natural environment. This is to guarantee that `SLOCK` is deactivated and that no unpredictable errors occur.

Language-Dependent Modules

If you use or supply Super Natural Version 8.2.2 in a language other than English or German, you must make source changes in certain language-dependent modules. Language-dependent modules can be, for example, maps, subprograms or command processors.

8 Dropped Features

- Features Dropped in this Natural Release 88
- Features to be Dropped in the Next Version of Natural 91

Features Dropped in this Natural Release

The following features and functionality have been discontinued and are no longer supported in Natural Version 8.2.2 or an add-on product released with this version:

- Sources for Batch z/OS and z/VSE Interfaces
- Generation Parameters for Batch z/OS and z/VSE Interfaces
- Generation Parameters for the Natural CICS Interface
- Generation Parameters for the Natural TSO Interface
- Generation Parameters for the Natural IMS Interface
- Generation Parameters for the Natural openUTM Interface
- Generation Parameters for the Natural TIAM Interface
- Sources for Natural Com-plete/SMARTS Interface
- Natural for MBCS
- Profile Parameters SO and SI
- ICU Buffer Pool
- Utilities SYSTRANS and NATUNLD/NATLOAD
- Remote Directory Maintenance Function of SYSRPC Utility

Sources for Batch z/OS and z/VSE Interfaces

The NATOS module and the NTOS macro used to configure the batch interface for z/OS are no longer delivered.

The NATVSE module and the NTVSE macro used to configure the batch interface for z/VSE are no longer delivered.

For detailed information, see *z/OS and z/VSE Batch Interfaces Now Configured with Profile Parameters in Migration*.

Generation Parameters for Batch z/OS and z/VSE Interfaces

The following generation parameters previously supplied with the NTOS macro in the NATOS module are no longer supported for batch z/OS:

LE370
TIOBSZ1
TIOBSZ2

The following generation parameters previously supplied with the NTVSEP macro in the NTVSE module are no longer supported for batch z/VSE:

BUFSIZE
CANCEL

DSECTS
IDUMP
LE370
NAME
THDSIZE

For detailed information, see the sections [z/OS and z/VSE Batch Interfaces Now Configured with Profile Parameters](#) in *Migration*.

Generation Parameters for the Natural CICS Interface

The following generation parameters previously supplied with the NCMPRM macro in the NCIPARM module are no longer supported for the Natural CICS Interface:

COMACAL
COMAMSG
FLDLEN

For detailed information, see [Changes to CICS Generation Parameters](#) in *Natural CICS Interface*.

Generation Parameters for the Natural TSO Interface

The following generation parameter previously supplied with the NTTSO macro is no longer supported for the Natural TSO Interface:

LE370

For detailed information, see [Changes to Installation and New Options for Configuration Settings](#) in *Natural TSO Interface*.

Generation Parameters for the Natural IMS Interface

The following generation parameter previously contained in the NIMDRIV source module is now obsolete:

LE370

For detailed information, see [New Object Modules for LE Support under IMS TM](#).

Generation Parameters for the Natural openUTM Interface

The generation parameter `UMODE` previously supplied with the `NATUTM` macro is no longer supported.

Generation Parameters for the Natural TIAM Interface

The generation parameter `UMODE` previously supplied with the `NAMTIAM` macro is no longer supported.

Sources for Natural Com-plete/SMARTS Interface

The `NFMPARM` macro and the `NCFPARM` module used to configure the Natural Com-plete/SMARTS Interface are no longer delivered. For detailed information, see [Changes to Installation and New Options for Configuration Settings](#) in *Natural Com-plete/SMARTS Interface*.

Natural for MBCS

Natural for MBCS (product code NKA) has been discontinued and is no longer delivered and supported. The functionality of Natural for MBCS has been integrated in the Natural map editor; see the section *Using the Outline Editor in Map Editor* in the *Editors* documentation.

Profile Parameters SO and SI

The profile parameters `SO` (used to specify a shift-out code) and `SI` (used to specify a shift-in code) have been discontinued and are no longer supported. As of Natural Version 4.2.4, the functionality of these parameters is covered by the profile parameter `SOSI`.

ICU Buffer Pool

The ICU buffer pool is no longer supported. Its functionality is now implemented in the Software AG ICU module (see also [NATICU Replaced by Software AG ICU Module and Data Libraries](#)).

As a result, the ICU buffer pool options of the `BPI` and `CFICU` profile parameters are no longer available (see also [Changed/Enhanced Profile Parameters](#)).

Utilities SYSTRANS and NATUNLD/NATLOAD

The utilities `SYSTRANS` and `NATUNLD/NATLOAD` have been discontinued and are no longer supported. The functionality provided by `SYSTRANS` and `NATUNLD/NATLOAD` is available with the Object Handler. See also the section *Migration from NATUNLD/NATLOAD and SYSTRANS to the Object Handler* in *Object Handler* in the *Utilities* documentation.

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

Remote Directory Maintenance Function of SYSRPC Utility

The **Remote Directory Maintenance** function has been removed from the SYSRPC utility and is no longer supported. The directory for a remote server can now be created and maintained with the **Service Directory Maintenance** function of the SYSRPC utility. For detailed information, see the relevant section in *SYSRPC Utility* in the *Utilities* documentation.

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 an add-on product released with this version:

- [Delivery of System Interfaces as Sources](#)
- [V41COMP and V42COMP Compiler Options](#)
- [Natural Web I/O Interface Client](#)

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 system command `COMPOPT` 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 Web I/O Interface Client

Support of Natural Web I/O Interface Client on IIS

With a future version of Natural, it will no longer be possible to use the Natural Web I/O Interface client with Microsoft Internet Information Services (IIS). A migration path will then be offered.

Notice of Other Future Changes

Natural Web I/O Interface Version 1.3.9 is the last version which supports the following:

- Internet Explorer 6.0
- Mozilla Firefox 3.0 through 3.6
- Sun Java System Application Server 8.1 and 8.2
- JBoss Application Server 4.0