

# Changes, Enhancements, New Features

This section describes the changes, enhancements and new features that have been introduced with Natural Version 4.2.6.

**Note:**

The utility SYSEXV gives you access to examples of the new features included in the current Natural versions.

The following topics are covered:

- Programming Language
  - System Commands, Editors and Utilities
  - Miscellaneous Changes and Enhancements
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## Programming Language

The following changes and enhancements have been introduced:

- Support of Processing Rules in Objects of Type Adapter
- PROCESS PAGE Statement Enhanced
- System Variable \*CURS-FIELD

### Support of Processing Rules in Objects of Type Adapter

Processing rules (inline rules and Predict free rules) are now supported in Natural adapters in the same way as in Natural maps.

### PROCESS PAGE Statement Enhanced

A field in a PROCESS PAGE statement can now be associated with a control variable. When the value returned for that field is not equal to the value sent, the field is regarded as modified and the control variable is set to "modified".

### System Variable \*CURS-FIELD

The Natural system variable \*CURS-FIELD can now be used in Natural for Ajax applications to identify the operand that represents the value of the control that has the input focus.

## System Commands, Editors and Utilities

The following changes and enhancements have been introduced:

- System Commands

- Editors
- Utilities

## System Commands

### LISTSQL

As of Natural for DB2 Version 4.3.1, the system command LISTSQL supports batch output without scrolling.

## Editors

### Program Editor

In the editor profile, you can now set an option to remove empty lines from the sources of text objects. See the editor profile option *Empty Line Suppression for Text*. The user exit USR0070N has been enhanced accordingly.

## Utilities

### SYSBPM Utility

#### List Objects Function Enhanced

The **List Objects** screen enables you to obtain statistical data on the directories of Natural objects currently loaded in the buffer pool or the buffer pool cache (if used). In addition, information on the Natural version under which an object was cataloged is now displayed.

### SYSEXV Utility

#### Sample Programs Base on New DDM

Sample programs using the new Adabas data types have been added. These sample programs are based on the new DDM EMPLOYEES-V2009 and require that Adabas Version 8.1.4 is installed.

### SYSMAIN Utility

#### New Parameter for User Exit MAINEX11

The SYSMAIN user exit MAINEX11 (source is delivered as SM-UX-11) has got a new parameter named USE-LAYOUT-DEFINITION. When USE-LAYOUT-DEFINITION is set to Y, all functions for error messages (except the LIST and FIND functions) check the contents of the SYSERR LAYOUT for the source and/or target libraries. Error messages that do not fit into the ranges are not processed.

### SYSPARM Utility

#### Support of Multiple Profile Selection

The List Profiles function of the SYSPARM utility now provides the option to select multiple profiles for processing. For further information, see the relevant section in the *SYSPARM Utility* documentation.

## Expanded Parameter Value List in Batch

SYSPARM in batch now supports updating of parameters by using a list of values. For further information, see the relevant section in the *SYSPARM Utility* documentation for UPDATE ADD and UPDATE SUBTRACT.

## Support of New or Enhanced Profile Parameters

The SYSPARM utility has been updated to support the new or enhanced profile parameters for Natural Version 4.2.6; see *Profile and Session Parameters* in the section *Miscellaneous Changes and Enhancements*.

## SYSTP Utility

### Enhanced Buffer Usage Statistics

The SYSTP utility function Buffer Usage Statistics (BUS) has been enhanced to reflect the individual compression optimization settings and the internal thread buffer statistics.

# Miscellaneous Changes and Enhancements

- Enforced Parameter Settings for Asynchronous Sessions
- Profile and Session Parameters
- Parameter for Storage Compression Optimization for Individual Buffer Types
- Application Programming Interfaces
- Error Messages
- Team Support under Natural for Eclipse
- New DDM for EMPLOYEEES File
- Support of ICU Version 4.0
- Improved ICU Module Performance
- Local ICU Buffer Pool for Enhanced Performance
- NATICU Delivery for z/VSE
- Compiler Option PCHECK Enhanced

## Enforced Parameter Settings for Asynchronous Sessions

Under the TP monitors Com-plete, CICS and UTM, the settings of some Natural parameters gave rise to errors, for example NAT9943 Logic error in Natural program for an asynchronous session. The problem was caused by profile parameter CM=ON (command mode) when the session changed into NEXT mode. To avoid this problem, the profile parameters CM, MENU and PC are now forced to adequate values, that is, they are set to OFF when asynchronous mode is selected, either during session initialization or in the course of the session when using the terminal command %T=.

## Profile and Session Parameters

### New Parameters

The following profile parameters are new:

Parameter	Explanation
CMPR	<p><b>General Default Compression Optimization Algorithm</b></p> <p>Enables the Natural administrator to define three different types of default storage compression variants, or to disable the optimization.</p> <p>See also the new parameter CMPR of the NTBUFID macro, which can be used in the same way to define the optimization variant specifically for individual buffers; see <i>Parameter for Storage Compression Optimization for Individual Buffer Types</i>.</p>
WEBIO	<p><b>Web I/O Interface Screen Rendering</b></p> <p>Allows you to individually enable or disable the rendering of certain features of the Natural Web I/O Interface display on the basis of a style sheet. It corresponds to the NTWEBIO macro in the parameter module NATPARM.</p>

### Changed/Enhanced Parameters

The following profile/session parameters have been enhanced:

Parameter	Explanation	
BPI	<b>Buffer Pool Initialization</b>	
	The following new value has been added to the keyword subparameter TYPE of profile parameter BPI and parameter macro NTBPI:	
	ICU	This value enables the ICU buffer pool; see <i>ICU Buffer Pool</i> in the <i>Unicode and Code Page Support</i> documentation.
CFICU	<b>Unicode and Code Page Support</b>	
	The following new keyword subparameter has been added to the profile parameter CFICU and to the corresponding macro NTCFICU:	
	BPONLY	<b>Use of ICU Buffer Pool</b>  This keyword subparameter can be used in thread environments, for example, under CICS, to specify whether the ICU must use the ICU buffer pool or if it can use thread storage if the ICU buffer pool is not available.
PROFILE	<b>Activate Dynamic Parameter Profile</b>	
	The same behavior as with PROFILE=AUTO has been implemented for PROFILE=PROGRAM and PROFILE=TERMINAL; that is, a profile named PROGRAM or TERMINAL is used if no individual profile for the transaction (*INIT-PROGRAM) or terminal (*INIT-ID) is found.	
TMODEL	<b>IBM 3270 Terminal Model</b>	
	A special setting for use in conjunction with Natural Web I/O Interface (NWO) server terminals has been provided, which allows you to set the number of lines and the number of columns individually.	

## Parameter for Storage Compression Optimization for Individual Buffer Types

The new parameter CMPR in the NTBUFID macro of the NATCONFIG module enables the Natural administrator to specify the type of storage compression optimization for individual buffer types. The setting of this macro parameter overrides the general default setting of the new profile parameter CMPR described above.

For further information, see *Customization of Buffer Characteristics* in the *Operations* documentation.

## Application Programming Interfaces

### Enhanced Application Programming Interfaces

The following application programming interfaces (API) in the library SYSEXT have been enhanced:

API	Enhancement
USR0070P	<p><b>Default Editor Profile SYSTEM</b></p> <p>This user exit routine now supports the new editor profile option <i>Empty Line Suppression for Text</i>.</p>
USR0360N	<p><b>Modify User Short Error Message</b></p> <p>A new optional parameter named LAYOUT-CHECK is available. The layout definition is checked when a value other than blank is specified for this parameter. Error messages that do not fit into the ranges are not processed.</p>
USR0421N	<p><b>Update User Long Error Message on FUSER</b></p> <p>A new optional parameter named LAYOUT-CHECK is available. The layout definition is checked when a value other than blank is specified for this parameter. Error messages that do not fit into the ranges are not processed.</p>
USR1020N	<p><b>Add User Short Error Message on FUSER</b></p> <p>A new optional parameter named LAYOUT-CHECK is available. The layout definition is checked when a value other than blank is specified for this parameter. Error messages that do not fit into the ranges are not processed.</p>

### New Application Programming Interfaces

The following new application programming interfaces (API) have been added to the library SYSEXT:

API	Purpose
USR4214N	<p><b>Enhanced Program Level Information</b></p> <p>This API provides enhanced information about active Natural objects, such as level of active object, object name and type, long name of object, line number of object call, library where the object was found, database ID, file number, buffer pool, and host name.</p> <p><b>Note:</b> USR4214N is an enhanced successor of USR0600N (Display program level information), which continues to be available for downward compatibility reasons.</p>
USR4215N	<p><b>Return a List of Resources of a Natural Library</b></p> <p>This API provides a list of resources (short object and long resource name) of a Natural library according to the forwarded range parameters.</p>
USR4216N	<p><b>Return a List of Natural Objects of a Natural Library</b></p> <p>Returns a list of Natural objects. The resulting list of objects can be controlled by specifying range parameters and can be sorted by different directory fields.</p>
USR4371N	<p><b>Set User ID and ETID for RPC</b></p> <p>Used on the RPC client side, this API sets the user ID and ETID for Natural RPC servers which were configured with <code>Impersonation = A</code> (automatic logon).</p>

### Obsolete Application Programming Interface

As the NaturalX DCOM functionality ceased to apply as of Natural Version 4.1.2, the application programming interface (API) USR2022N has become obsolete. When this API is called, the message USR2022N is obsolete due to discontinued NaturalX DCOM support will appear.

USR2022N will be removed completely with the next version of Natural for Mainframes.

### Error Messages

#### New Error Messages

The following Natural error messages have been added:

<b>Error Number</b>	<b>Enhancement</b>
NAT1392	When more than one parameter inconsistency is detected while the compiler option PCHECK is set to ON, this message is displayed to indicate that several parts of the Natural object need to be inspected.
NAT1393	When Natural is not able to execute a programming object, it is now indicated exactly which object is affected (object name, library, database ID, number of the file from where it was loaded). This applies to objects disabled by a blacklist (NAT4199) or cataloged with a not supported version of Natural (NAT1393).  These messages supersede the message NAT0393, which however is retained for compatibility reasons.
NAT4199	

### Changed/Enhanced Error Messages

The following Natural error messages have been changed or enhanced:

<b>Error Number</b>	<b>Enhancement</b>
NAT0283	This error message now indicates the name of the variable that has been defined more than once.
NAT0393	This message is extensively superseded by the new messages NAT1393 and NAT4199 described above.
NAT1155	This error number is now restricted to those cases where switching between structured mode and reporting mode was effected by a GLOBALS system command.
NAT1395	This error message is now issued when mode switching was caused by reading a source object in the source area. It contains the name and the location (library, database ID, file number) of the relevant source object.
NAT3000 - NAT3255	The error messages NAT3000 to NAT3255, which correspond to the Adabas response codes 0 to 255, have been updated to display a nucleus response subcode if Adabas on mainframes and/or Windows, UNIX, OpenVMS provides a subcode for a specific response code. This may cause the display of subcode 0 in some cases.
NAT9974	This termination message has been enhanced to facilitate debugging.

### Team Support under Natural for Eclipse

Natural Version 4.2.6 supports teams developing Natural applications in a remote mainframe environment under Natural for Eclipse.

### New DDM for EMPLOYEES File

With Natural Version 4.2.6, the new DDM EMPLOYEES-V2009 is delivered, since with Adabas Version 8, some new features (for example, the Unicode data type) have been introduced which are used in the new EMPLOYEES data delivered with Adabas Version 8.1.4 (see sample files ADAVRS.PERS and ADAVRS.PERL).



To make use of the new DDM EMPLOYEES-V2009, these new data and the corresponding file definition table (FDT) must be loaded into the Adabas database.

See also the new sample programs supplied with the SYSEXV utility.

## Support of ICU Version 4.0

Natural Version 4.2.6 provides ICU Version 4.0.1 together with Unicode specification 5.1 and Common Locale Data Repository (CLDR) Version 1.6.

For information on major changes in ICU 4.0, see *International Components for Unicode, Download ICU 4.0 release* at <http://www.icu-project.org/download/4.0.html>.

## Improved ICU Module Performance

The performance of the Natural ICU modules NATICU, NATICUCV and NATICUXL has been improved considerably.

## Local ICU Buffer Pool for Enhanced Performance

A local ICU buffer pool has been introduced to improve NATICU performance if Unicode or code page support is used. Instead of allocating buffers to store ICU related data separately for each Natural session, data is stored in the ICU buffer pool. This will avoid processing of the ICU related data located in the session-specific buffers before and after a terminal I/O. For further information, see *ICU Buffer Pool* in the *Unicode and Code Page Support* documentation.

### Note:

It is not possible to use the ICU Buffer Pool with different NATICU versions. If two different NATICU versions are used in the same environment, the ICU buffer pool is initialized by the first Natural session with the NATICU version of that session. If another Natural session with a different NATICU version is started afterwards, NATICU detects that the ICU buffer pool is already used by another NATICU version, and stores all ICU related data in session-specific buffers as with previous Natural versions.

## NATICU Delivery for z/VSE

For z/VSE, the ICU modules NATICU and NATICUCV are delivered also as a phase to make use of the RCA technique more convenient. See also *ICU Library* in the *Unicode and Code Page Support* documentation.

## Compiler Option PCHECK Enhanced

With Natural Version 4.2.6, the compiler option PCHECK has been enhanced for use in conjunction with the following Natural object types:

- Adapters (invoked by a the PROCESS PAGE USING statement)
- Subroutines (invoked by a PERFORM statement)
- Maps (invoked by an INPUT USING MAP statement)

- Helproutines

If more than one parameter inconsistency is detected within the same Natural object, the new error message NAT1392 is issued. See *New Error Messages* for more information.