New Features

This chapter covers the following topics:

- Installation
- Unicode Support in Natural
- Adabas 6 (Open Systems) and Adabas 8 (Mainframe) Support
- Object Types
- Resources
- X-Arrays
- Centralized DDM Storage
- Statements
- System Functions
- Parameters
- System Variables
- System Commands
- Constants
- Utilities
- Application Programming Interfaces

Installation

When installing Natural and Natural Security, you can now choose ApplinX as an additional package to be installed. You choose this package if you plan to use ApplinX and a browser instead of a standard VT terminal emulation. Starting with this version of Natural, the Entire Screen Builder package is no longer used for ApplinX.

Unicode Support in Natural

Unicode is now supported. The new format U has been introduced and there are new/changed statements, parameters, system variables, etc. For details, see the *Unicode and Code Page Support* documentation. See also the example library SYSEXV which provides examples of the new Unicode features in this Natural version.

The new Natural Web I/O Interface is provided. In a remote development environment, it is used to display output which contains Unicode characters. When used in a production environment, the new Natural Web I/O Interface is required for Unicode programs. In the */appserver* directory of the product

CD, there are implementations for both J2EE and .NET servers. See *Natural Web I/O Interface* for further information.

Adabas 6 (Open Systems) and Adabas 8 (Mainframe) Support

With Natural Version 6.3.4, a new database driver ADA2 is delivered that supports features introduced with Adabas 6 (Open Systems) and Adabas 8 (mainframe). This includes support of Adabas large objects fields, Adabas LA fields and extended Adabas buffer lengths. See also *Adabas Database Management Interfaces ADA and ADA2* in the *Programming Guide*.

By default, the "old" database driver ADA is used. This ensures that your Natural applications run as usual; there is no difference to previous Natural versions. Only when you define the database type ADA2 in the Configuration Utility, the new database driver will be used.

Object Types

Function

With this version of Natural, the object type "function" is introduced. See *User-Defined Functions* in the *Programming Guide* for further details.

Resources

As of this version, Natural supports non-Natural files (also known as resources). For more information, see *Using Non-Natural Files - Resource* in the *Programming Guide*.

X-Arrays

With this version of Natural, X-arrays (eXtendible arrays) are supported. For further information on purpose, definition and usage of X-arrays, see *X-Arrays* in the *Programming Guide*.

Centralized DDM Storage

The new system file `FDDM` is a container where all DDMs can be stored. For more information, see *System File FDDM* in the *Operations* documentation.

Statements

The following new Natural statements are provided in this version:

Statement	Description
DEFINE FUNCTION	Create new user-defined functions which may be called instead of operands in the Natural statements.
DEFINE PROTOTYPE	Specify a signature according to a certain function call.
OPTIONS	Used to specify compilation options as parameters for the current Natural programming object.
PARSE XML	Parse XML documents from a Natural program.

System Functions

As of this version, all new system functions are preceded by an asterisk (*) to avoid conflicts with, for example, user-defined variables in existing applications.

The following new Natural system functions are provided in this version:

System Function	Description
*MINVAL/*MAXVAL	Evaluate the minimum/maximum value of all given operand values.
*TRANSLATE	Translate the operand to lower/upper case characters.
*TRIM	Remove leading and/or trailing blanks from a string.

Parameters

The following new Natural profile parameters are provided in this version:

Profile Parameter	Description
CP	Defines the default code page for Natural data. **Note:** The existing CP parameter (used with Natural Remote Procedure Call) has been renamed to CPRPC.
CPCVERR	Specifies whether a conversion error that occurs when converting from Unicode to code page or from code page to Unicode or from one code page to another code page results in a Natural error or not.
CPOBJIN	Specifies the code page of the batch input file which is defined by the Natural profile parameter CMOBJIN.
CPPRINT	Specifies the code page of the batch output file which is defined by the Natural profile parameter CMPRINT.
CPSYNIN	Specifies the code page of the batch input file for commands which is defined by the Natural profile parameter CMSYNIN.

Profile Parameter	Description
CPRPC	Specifies the name of the code page used by the EntireX Broker.
DO	Specifies how fields are to be interpreted for display on terminals that support bidirectional data.
EMFM	Activates/deactivates the Edit Mask Free mode at session startup.
FDDM	Defines five subparameters for the Natural system file for DDMs.
FREEGDA	Releases the GDA in Utility Activation.
KCHECK	Checks field declarations in a programming object against a set of critical Natural keywords.
MASKCME	Used to control Natural's compiler: to make the MASK option compatible to MOVE EDITED.
MAXYEAR	Allows valid year values of up to 9999 instead of 2699 for date and time values.
MFSET	Specifies whether multi-fetch is used to retrieve records from Adabas databases.
NCFVERS	Enables downward compatibility with Natural Versions lower than Version 6.1 and specifies the protocol version of the Entire Connection format file (.NCF) to be used.
NENTRY	Left/right alignment of numeric field entries.
NOSSLPRX	Specifies the domain(s) to be addressed directly, that is, not via the SSL proxy.
PCHECK	Used to control Natural's compiler: to check parameters that are specified in a CALLNAT statement.
PSIGNF	Internal representation of positive sign of packed numbers.
RCFIND	Determines the action to be taken if Adabas Response Code 113 (requested ISN not found) is returned during the execution of a FIND statement processing loop.
RCGET	Determines the action to be taken if Adabas Response Code 113 (requested ISN not found) is returned during the execution of a GET statement.
RTINT	Specifies whether a running Natural application may be interrupted.
SRETAIN	Specifies that all sources have to be saved in their original encoding format.
SSLPRX	Specifies the URL of the (intranet) SSL proxy server through which all requests have to be routed.
SSLPRXPT	Specifies the port number of the SSL proxy.

Profile Parameter	Description
SRVWAIT	Specifies the number of seconds the server is to wait for an RPC client request.
SUBCHAR	Substitution character for code page.
SUTF8	Specifies the default format to be used when Natural sources are saved.
THSEP	Dynamic thousands separator. Enables or disables the use of thousands separators at compilation time.
THSEPCH	Thousands separator. Specifies the character to be used as a thousands separator at runtime.
TQMARK	Controls the translation of a quotation mark (") within a Natural text constant.
WEBIO	Specifies whether the terminal emulation or the new Natural Web I/O Interface, which supports Unicode, is used for input and output.

The following new Natural session parameters are provided in this version:

Session Parameter	Description
DL	Specifies the display length for an alphanumeric map field of format U.
CPCVERR	Specifies whether a conversion error that occurs when converting from Unicode to code page or from code page to Unicode or from one code page to another code page results in a Natural error or not.
EMU	Edit mask in Unicode.
ICU	Insertion character in Unicode.
LCU	Leading characters in Unicode.
TCU	Trailing characters in Unicode.

System Variables

The following new Natural system variables are provided in this version:

System Variable	Description
*BROWSER-IO	Indicates that the application is running in a web browser. An application can run in a web browser via the Natural Web I/O Interface.
*CODEPAGE	Returns the IANA name of the code page currently used.
*CURRENT-UNIT	Contains the name of the currently executed unit.
*LBOUND	Contains the current lower boundary (index value) of an array for the specified dimension(s) (1, 2 or 3) or for all dimensions (* notation).
*LINE	Contains the number of the line currently executed in a Natural object.
*LOCALE	Contains the language and country of the current locale.
*TP	Contains the name of the TP subsystem under which Natural is running.
*TPVERS	Contains the name of the TP subsystem under which Natural is running.
*TYPE	Contains the type of the Natural object which is currently executed.
*UBOUND	Contains the current upper boundary (index value) of an array for the specified dimension(s) (1, 2 or 3) or for all dimensions (* notation).

The following new Natural system variables are automatically created for each PARSE statement issued.

System Variable	Description
*PARSE-COL	Specifies the column where the parser is currently working at.
*PARSE-LEVEL	Specifies the level of currently nested elements.
*PARSE-NAMESPACE-URI	Specifies the namespace URI of the current element/attribute, if the element/attributes belong to a namespace.
*PARSE-ROW	Specifies the row where the parser is currently working at.
*PARSE-TYPE	Specifies the type of the delivered data.

System Commands

The following new Natural system commands are provided in this version:

System Command	Description
LIST ERR	Displays the file information of error message(s) or error message containers of a library.
LIST RES	Displays the file information about resource object(s) of a library.
RENAME	Rename a Natural programming object. **Note:** This system command is not supported in a remote environment.
SYSEXV	This command invokes the SYSEXV application with examples of the new features of the current Natural versions.

Constants

The following new Natural constants are provided in this version:

Type of Constant	Description
Unicode text constant (U)	See *Unicode Constants* in the *Programming Guide*.
Unicode hexadecimal constant (UH)	See *Unicode Hexadecimal Constants* in the *Programming Guide*.

Utilities

The following new Natural utility is provided in this version:

Utility	Description
SYSAPI	Used to locate application programming interfaces (APIs) provided by Natural add-on products. A user interface is only provided via SPoD.

Application Programming Interfaces

The utility SYSEXT provides the following new application programming interfaces (APIs):

API	Description
USR1023N	Convert *TIMESTMP and other variables containing time information into a different format.
USR2018N	Read Natural object directory.
USR2035N	Set SSL parameter string for communication via RPC.
USR2073N	Ping or terminate an RPC server.
USR2075N	Terminate EntireX Broker Service. Used with Natural Remote Procedure Call (RPC).
USR4003N	Retrieve Natural stack information (alphanumeric).
USR4004N	Retrieve dynamic Natural profile parameters.
USR4007N	Get/set current value of profile parameter SYNERR.
USR4201N	Define a data area source.
USR4206N	List objects in a library and return directory information. Avoids combined calls of the application programming interfaces USR1055N (list objects in a library) and USR2018N (read Natural object directory) in order to retrieve directory information.
USR4208N	Read or write shared resource.
USR4209N	Return short name of subroutine.
USR4210N	Base64 conversion of alphanumeric and binary bytes.
USR6001N	Call external XSLT processor.
USR6002N	Get the current values of the internal counters MADIO, MAINPR and MAXCL.
USR6006N	Get path to system file.
USR6202N	Get and set value of an environment variable.
USR6203N	Get the path of a resource. Add and delete resources.
USR6204N	Set Natural profile parameter PROGRAM.
USR6303N	Retrieve Natural stack information (Unicode).