software AG

Natural for UNIX

Release Notes for Natural Version 6.3 for UNIX

Version 6.3.8 for UNIX

February 2010

Natural

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1   Release Notes for Natural Version 6.3 for UNIX

These Release Notes summarize the new features and enhancements that are provided with Natural Version 6.3.

In addition to the new features and enhancements described in these Release Notes, this Natural version includes all error corrections, modifications and enhancements provided with previous Natural versions.

For background information, you can also refer to the Release Notes of previous Natural versions. They are available in the archive of the current Natural Documentation DVD.

Update Information for Version 6.3.1, November 2007:

- The section *Migrating Applications to Version 6.3* has been enhanced.
- In the section *Known Issues*, the subsection *Installation of Predict with Natural* has been removed. This information was only applicable to Natural for Windows.

Update Information for Version 6.3.3, January 2008:

- In the section *Known Incompatibilities*, the subsection *Usage of Database Field Short Names* has been added.

Update Information for Version 6.3.*n*, August 2009:

- The section *Supported Operating Systems* has been updated.

This documentation is organized under the following headings:

Natural Version 6.3.1		
	Supported Operating Systems	An overview of the operating systems on which this Natural version can be installed.
	General Information	Information that applies in general to this Natural version.
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2 Supported Operating Systems

The operating systems listed below are supported with this Natural version.

- Solaris 10 - 64 bit (Sun and FSC)
- AIX 5.3 - 64 bit
- AIX 6.1 - 64 bit
- HP-UX 11.i v2 64 bit (PA-RISC)
- HP-UX 11.i v2 64 bit (Itanium)
- HP-UX 11.i v3 64 bit (PA-RISC)
- HP-UX 11.i v3 64 bit (Itanium)
- SUSE Linux Enterprise Server 10 (IA32)
- SUSE Linux Enterprise Server 10 (z/Linux)
- SUSE Linux Enterprise Server 10 for AMD64 and Intel EM64T (x86-64)
- SUSE Linux Enterprise Server 11 (IA32)
- SUSE Linux Enterprise Server 11 (z/Linux)
- SUSE Linux Enterprise Server 11 for AMD64 and Intel EM64T (x86-64)
- Red Hat Enterprise Linux 4.0 (IA32)
- Red Hat Enterprise Linux 4.0 (z/Linux)
- Red Hat Enterprise Linux 4.0 for x86-64 (AMD64, EM64T)
- Red Hat Enterprise Linux 5.0 (IA32)
- Red Hat Enterprise Linux 5.0 (z/Linux)
- Red Hat Enterprise Linux 5.0 for x86-64 (AMD64, EM64T)

See also: *Product Requirements* in the *Installation* documentation.

3 General Information

License Key File Handling

A path to a valid license key file is required during the installation of Natural. The license key file is an XML file which is delivered by e-mail.

Separate license key files are required for Natural for Tamino and Natural Security.

For further information, see the *Installation* documentation.

Migrating Applications to Version 6.3

Applications that were created with Natural for UNIX Version 3.1 and above can be executed with Version 6.3 with the following restriction:

As of Natural Version 6.2 it is no longer recommended to share the system file FUSER with previous Natural versions. When you have two installations of Natural (for example, version 6.1.1 (or below) and version 6.3.1), you have to use two different version-specific FUSER system files. This is because the format of the Natural library directory file *FILEDIR.SAG* has changed as of Natural Version 6.2. *FILEDIR.SAG* is automatically converted into the new format (which is valid as of Natural Version 6.2.) the first time you modify an object in the FUSER. After *FILEDIR.SAG* has been changed to the new format, Natural Version 6.1.1, which is mentioned in the above example, is not longer able to process the FUSER. For detailed information, see *Portable Natural System Files* and its subsection *Migrating an Old FILEDIR.SAG File* in the *Operations* documentation.

Natural Single Point of Development

Natural Single Point of Development (SPoD) connects Natural for UNIX Version 6.3 to

- a Natural for Windows Version 6.3 client (Natural Studio) via the Natural Development Server (NDV) Version 2.2.

This infrastructure enables the developer to create and maintain Natural applications using the Natural Development Server for UNIX to connect to Natural Studio under Windows.

For further information (including any limitations that may apply for your installation), see the separate Natural Single Point of Development documentation and the Natural Development Server documentation.

Changes in the Documentation

A revised and updated documentation set is available with this Natural version.

The information on installing and configuring the Natural Web I/O Interface client for a production environment, which was previously only available on the product CD, is now included in this Natural for UNIX documentation. See the *Natural Web I/O Interface* documentation.

Explanations of the system error messages that may be issued by the Natural nucleus are now included in this Natural for UNIX documentation. See *Messages and Codes*.

Last-Minute Changes

Information on last-minute changes made just before the product release can be found in the file *readme.txt* that is provided on the Natural installation medium.

4 New Features

Natural for Ajax

Using the new product Natural for Ajax, you can create rich internet applications which use the Ajax (Asynchronous JavaScript and XML) technology. These rich internet applications use the Natural Web I/O Interface. This interface is available on UNIX and mainframe platforms only. The language extensions which have been made for this purpose (such as the new statement `PROCESS PAGE`) are listed in the remainder of these Release Notes.

A new example library, `SYSEXNJX`, is available for Natural for Ajax.

For detailed information on the installation and usage of Natural for Ajax, see the new *Natural for Ajax* documentation.

Object Types

The new object type "adapter" is provided in this version. It is used to represent a rich GUI page in a Natural application. For further information on this object type, see *Processing a Rich GUI Page - Adapter* in the *Programming Guide*.

Natural (system commands, utilities, etc.) has been enhanced in order to support this new object type.

> **Note:** The `EDIT` command is not currently supported for this new object type. A specific editor for objects of type "adapter" is planned for a future version.

Statements

The following new Natural statement is provided in this version:

Statement	Description
`PROCESS PAGE`	Passes application data to a rich GUI page.

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 either via the Natural Web I/O Interface or by using Natural for Ajax.
*PAGE-EVENT	Contains the name of the current event delivered from Natural for Ajax. It is used for rich GUI programming with the PROCESS PAGE statement.
*PAGE-LEVEL	Contains the level of the active PROCESS PAGE MODAL statements blocks.

Application Programming Interfaces

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

API	Description
USR2075N	Terminate EntireX Broker Service. Used with **Natural Remote Procedure Call (RPC)**.
USR4003N	Retrieve Natural stack information (alphanumeric).
USR4004N	Retrieve dynamic Natural profile parameters.
USR6303N	Retrieve Natural stack information (Unicode).

5   Changes and Enhancements

Utilities

FTOUCH

You can now define that line numbers are not written to the source code in the file system. See *FTOUCH Utility* in the *Tools and Utilities* documentation.

In the Natural main menu, a minus (-) character after the library name indicates that in this library the line numbers are suppressed in the source code.

INPL

The `INPL` utility now automatically recognizes the type of the load file. It is no longer necessary to specify the correct load file type. See *INPL Utility* in the *Tools and Utilities* documentation.

SYSRPC

See *Natural Remote Procedure Call (RPC)* later in these *Release Notes*.

Parameters

LSTEP

The default value assigned to the profile parameter `LSTEP` has been changed from "STEP" to "SYSTEM". Therefore, you have to take precautions if you create new parameter files and your applications use these newly created parameter files and depend on objects located in the library `STEP` (the former default value). The modification of the default value implies an alteration in the default library search order (steplib). Therefore, your applications might not run properly or might produce unexpected results.

When you are using old parameter files in which the value "STEP" is defined for the profile parameter `LSTEP`, your existing applications which depend on objects located in library `STEP` will still run properly.

If your applications do not expect objects to be located in library `STEP` on `FUSER` or if library `STEP` on `FUSER` is empty, your applications will run properly after the default value change of `LSTEP`. The performance is increased since the library search order decreased in size. You are encouraged to modify `LSTEP` in your current installation to the proposed new default value in order to take advantage of the above mentioned performance increase.

LT

The range of possible values for the profile and session parameter `LT` has been changed from 0 - 99999999 to 0 - 2147483647.

NCFVERS

The new value "3" is now available for the profile parameter `NCFVERS`. This value indicates that a format file of Entire Connection Protocol Version 3 is written, which is created by Natural Version 6.3. The default value of the `NCFVERS` parameter has changed from "2" to "3".

Statements

DECIDE ON
> The `SUBSTRING` option can now be used as *operand1* and *operand2* in the `DECIDE ON` statement. It allows you to check only a certain part of an alphanumeric, Unicode or binary field.

FOR
> An arithmetic expression can now be used as *operand2*, *operand3* and *operand4* in the `FOR` statement.

System Variables

*SERVER-TYPE
> The new value "WEBIO" of the `*SERVER-TYPE` variable indicates that Natural has been started as a Natural Web I/O Interface server.

Web Technology

Natural Web Interface
> The Natural Web Interface now also supports Apache Version 2.2.*x* HTTP servers. For further information, see *Supported HTTP Servers* and *Natural Web Server Extensions for MOD* in the *Web Technology* documentation.
>
> Using the Web Interface on a remote machine without EntireX technology is now possible via the PAL interface as used for the SPoD server.
>
> The server extension program initializes a communication directly to the PAL server instead of, for example, using RPC. Because all Web Interface programs are subroutines, and it is not possible to run a subroutine directly using PAL, a generic stub is necessary. This stub handles steplib setting, parameter transfer and `CALLNAT` of the subprogram.
>
> For further information, see *Communication Using PAL Techniques* and *Functionality* in the *Web Technology* documentation.

Miscellaneous

Buffer Pool

The SHUTDOWN command of the NATBPMON utility has been enhanced to quickly shut down a buffer pool. It is now possible to specify the FORCE option with an optional parameter. If NATBPMON SHUTDOWN FORCE *grace-period* is executed with super user rights, the terminate signal SIGTERM is sent to all active Natural sessions. After the expiry of the seconds defined with the *grace-period* parameter, the IPC resources held by the buffer pool are removed from the system. This command only has effect if executed with super user rights; without these rights, NATBPMON will reject its execution. See *NATBPMON Commands* in the *Operations* documentation.

Printing

When you print an object, the database ID and file number are now included on the printout.

NCF Format Files

The content of the NCF format files which are created for the work file type Entire Connection has changed. Now the information fields that were empty before are also filled with the work file processing information. The content of the information field **File name** has changed; the file name and path are now included in the information field. Since Unicode is now supported for NCD files, a new information field is available in the NCF file, containing code page information.

Tracing the SPoD Protocol

The environment variable SET PALTRACE=nbr has been dropped. If you want to trace the Pal, you have to use NCTR_TRACE for this purpose. The prerequisite is a Natural version which has been optimized for tracing or a debug version. The file *NCTR.cfg* has to be adapted accordingly.

External Editor

The ability to use an external editor like "vi" within a Natural session has been reestablished. However, the use of such an external editor is not recommended as code page conflicts may arise. These conflicts can - but not necessarily must - deteriorate your source code.

6   **Known Issues**

This chapter provides additional information that you should be aware of after having installed Natural.

Terminal Command %=

If the background color of a window is changed with the terminal command %=, this will now also change the background color of the text constants. In earlier versions, the background color of text constants was not changed which caused an uncommon color layout.

7 Natural Remote Procedure Call (RPC)

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.

As of Version 6.2 of Natural Remote Procedure Call (RPC), the enhancements listed in this chapter are available.

New Application Programming Interface

The new application programming interface `USR2075N` enables you to terminate the EntireX Broker Service from within your application. See *Terminating an EntireX Broker Service* in the *Natural Remote Procedure Call (RPC)* documentation.

SYSRPC Utility Enhancements

It is now possible to terminate all server tasks associated with a given EntireX Broker service. See *Terminating a Server* in the *SYSRPC* part of the *Utility* documentation. In previous versions, it was only possible to terminate a single server.

8 Natural Security

The enhancements listed in this chapter are available with Natural Security Version 6.3.1.

FSEC System File

With Version 6.3.1, you can continue to use your existing FSEC system file. No migration of Natural Security data from the previous version to the current version is necessary.

Functional Security

WYSIWYG

If you use functional security within Natural Security, that is, if you use the command processor NSCCMD01 to disallow functions within the library SYSSEC, this now has a "WYSIWYG" effect: If functions are disallowed in NSCCMD01, the corresponding menu items will not be visible on the Natural Security menus. This means that within SYSSEC you will only see the functions you are allowed to use.

New Direct Commands

The following new direct commands - and keywords in NSCCMD01 - are available to invoke Administrator Services functions directly:

Command	Function Invoked
ADMIN_D	Library And User Preset Values
ADMIN_I	Application Programming Interfaces
ADMIN_N	Maintenance Log Records
ADMIN_S	System-Library Definitions
ADMIN_U	User Default Profiles
ADMIN_X	Utility Defaults/Templates
ADMIN_Y	Library Default Profiles
ADMIN_1	Environment Profiles

Administrator Services

Concurrent Modifications Without Notification

With previous versions of Natural Security, the general option **Concurrent Modifications Without Notification** only applied to mailbox profiles. As of this version, it also applies to user profiles, library profiles and special-link profiles.

As a result, Natural Security may react differently when you modify a user, library or special-link profile.

System-Library Definitions

Several new system libraries (that is, libraries whose names begin with "SYS") are provided with this Natural version. They are included in the list of libraries provided by the Administrator Services function **System-Library Definitions**, which you can use to automatically create security profiles for them.

Library Profiles

Adapters

The use of the new Natural object type "adapter" can also be controlled by Natural Security: This is done by allowing/disallowing the editing of the object type "adapter" in the Editing Restrictions section of library profiles.

Utility Profiles

SYSOBJH Object Handler

The initialization of the Natural utility SYSOBJH (Natural Object Handler) under Natural Security has been improved to make the use of the utility more user-friendly: With previous versions, users were not notified that they were not allowed to use a selected function/option until they actually attempted to execute it. Now a disallowed function/option is intercepted at the earliest possible stage in the selection process.

Application Programming Interfaces

New Application Programming Interface NSCXLO

The new application programming interface NSCXLO allows you to read the maintenance log records, which are created by Natural Security if the general option **Logging of Maintenance Functions** has been activated.

Invoking of NSCXRIER

With previous versions of Natural Security, the application programming interface NSCXRIER could only be invoked from within the library SYSSEC. As of this version, it can also be invoked from outside SYSSEC.

9 Removed Features

This chapter provides an overview of functionality no longer supported with this Natural version.

Natural Web Interface

Natural 6.3 is the last version to deliver SYSWEB.

The interface SYSWEB3 is now to be used instead of SYSWEB. SYSWEB is only delivered on the product CD and can only be installed manually. It is therefore recommended that you update your programs written for SYSWEB to run with the new interface SYSWEB3. See *Migrate Natural Web Interface SYSWEB to SYSWEB3* in the *Web Technology* documentation for further information.

Utilities NATUNLD, NATLOAD and SYSTRANS

Natural 6.3 is the last version to deliver the utilities NATUNLD, NATLOAD and SYSTRANS.

The utilities NATUNLD, NATLOAD and SYSTRANS are no longer installed by default. The Natural Object Handler is to be used instead.

However, if you want to continue using these utilities, you can still issue the system commands which invoke these utilities (SYSUNLD and SYSTRANS). When you issue such a system command for the first time, you have the possibility to install the corresponding utility. Follow the installation instructions displayed on the screen. When the installation for a utility has been completed, you can invoke it using the corresponding system command.

The documentation for these utilities can be found as a PDF book in the archive of the Natural Documentation CD.

10   Notice of Future Changes

The following changes are planned for future versions of Natural.

Remote Debugging

Remote debugging (that is debugging a native Natural for UNIX application from a Windows computer) will no longer be supported. The Windows client will no longer be delivered.

Debugging a UNIX application will only be possible with Natural Studio when you are working in a remote UNIX environment using SPoD.

11 Release Information for Natural Version 6.3.2

Changes in the Documentation

The documentation for the `SYSMAIN` utility has been completely revised.

New Features

Application Programming Interfaces

The utility `SYSEXT` provides the following new application programming interface (API):

API	Description
`USR4208N`	Read or write shared resource.

Changes and Enhancements

International Support

Natural for UNIX now includes the international support which was previously only provided with the international version of Natural 6.1.1.

Bidirectional languages and double-byte characters are now supported. For detailed information on how to activate these features, see the sections *Bidirectional Language Support* and *Double-Byte Character Support* in the *Unicode and Code Page Support* documentation.

The following has changed (as compared with the international version of Natural 6.1.1):

- In the map editor, the **Flip Map** command has been renamed to **Reverse Map**.

- The environment variable `RTL_BW_COMP` is no longer supported. Natural no longer supports logical resorting of the characters during input; the characters are always displayed in the keying sequence for left-to-right fields and in the reversed keying sequence for right-to-left-fields.

- The environment variable `NATLANG` is no longer supported. For enabling the international support, the setting of the profile parameter `CP` is now used.

- The locale files (previously installed in *etc/locale*) which were delivered with the international version of Natural 6.1.1 are no longer supported.

  - Month and day names are now retrieved from the Natural text/error message files.

  - Character property information such as "is the character upper case" is retrieved from the ICU library which is used for the Unicode support.

- Using the AM/PM strings from the locale files is no longer supported.

- Using the year edit masks EC, EE, EV and EY is no longer supported.

- Characters which are entered in a right-to-left field are no longer automatically converted according to the keymap defined in the locale files. Natural now uses the characters which are delivered from the operating system, which is compatible to the Windows behavior. Changing the input language has to be achieved by executing the appropriate operating system functions.

Utilities

Object Handler

The Object Handler now automatically recognizes the type of the load file for the load and scan functions. It is no longer necessary to specify the correct load file type. The user interface of the Object Handler has not been changed due to compatibility reasons, however, the **Portable work file** option will not be evaluated for the load and scan functions. See the description of WORKFILETYPE in *Keyword Explanation of option-setting*.

The DELETEALLOWED option can be used in an Object Handler direct command to specify that the delete instructions from work files created with NATUNLD (which is no longer installed by default) are processed. This option is also available as of Natural Version 6.1.

System Commands

CATALL

The system command CATALL can now be used in batch mode. The direct command syntax has been enhanced accordingly.

Known Incompatibilities

This section provides additional information that you should be aware of after having installed Natural.

Error Messages

The following error message is new for this version of Natural in order to improve the edit mask handling and the compatibility between Natural for Windows, Natural for UNIX and Natural for Mainframes.

Error Message	Description
NAT1145	Input does not match edit mask :1:.
	NAT1145 replaces NAT1143 in case of interactive input/output. This new error advises the user of the expected input format for the current field.

Removed Features

This section provides an overview of functionality no longer supported with this Natural version.

Natural Expert

Natural Expert models are no longer displayed in the list of object types.

12 Release Information for Natural Version 6.3.3

New Features

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

With Natural Version 6.3.3, a new database driver (ADA2) is delivered for testing purposes. This database driver supports large objects and LA fields of Adabas 6 (Open Systems) and Adabas 8 (mainframe). This database driver is not yet intended for a production environment since the complete Adabas functionality is not yet supported.

Currently, large objects in MU and PE fields are not supported.

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.

Read-Only Buffer Pool

It is now possible to define a special buffer pool that only allows read access. For a read-only buffer pool, it is also possible to define an alternate buffer pool. See *Read-Only Buffer Pool* in the *Operations* documentation.

Parameters

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

Profile Parameter	Description
BPID2	Specifies the name (ID) of an additional read/write buffer pool to which Natural can attach/detach during execution.
SRVWAIT	Specifies the number of seconds the server is to wait for an RPC client request.

Application Programming Interfaces

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

API	Description
USR4209N	Return short name of subroutine.
USR4210N	Base64 conversion of alphanumeric and binary bytes.

Changes and Enhancements

Configuration Utility

Database Management System Assignments

It is now possible to specify the database type ADA2. This database type supports alphanumeric objects (Adabas LA option) and large object database fields (LOBs), which are dynamically defined inside a view, and view sizes greater than 64KB. It can be used for Adabas as of version 6 on Open Systems and Adabas as of version 8 on mainframes. See *DBMS Assignments* in the *Configuration Utility* documentation.

Buffer Pool Assignments

It is now possible to define a read-only buffer pool and an alternate buffer pool for the read-only buffer pool. See *Buffer Pool Assignments* in the *Configuration Utility* documentation.

Remote Procedure Call

The new profile parameter SRVWAIT can be specified. See *RPC (Server)* in the *Configuration Utility* documentation.

Parameters

ACIVERS

The EntireX ACI Version 9 is now supported by ACIVERS. Therefore, the maximum value has been increased from 8 to 9. See also the corresponding information in the section *Natural Remote Procedure Call (RPC)* below.

STEPLIB

The profile parameter LSTEP has been renamed to STEPLIB. The information which was previously provided for the STEPLIB parameter is now available under *Additional Steplib Assignments* in the *Configuration Utility* documentation.

System Commands

CATALL

The system command CATALL can now also be used to check, save or stow objects. By default, the source-code lines of sources that were saved or stowed are now automatically renumbered.

When Natural Security is active, it is now checked whether the selected action (catalog, check, save or stow) is allowed under Natural Security. When it is not allowed, an occur occurs.

Natural Web I/O Interface Client

The Natural Web I/O Interface client can now be installed on JBoss Application Server 4.0.5. See *Installing the Natural Web I/O Interface Client on JBoss Application Server* in the *Natural Web I/O Interface* documentation.

It is now possible to define the screen resolution for the output window in the configuration file for the session (attributes `rows` and `columns` of the `screen` element). In this file, it is also possible now to define the platform on which user ID and password are to be authenticated (attribute `type` of the `session` element) and whether the input field for the user ID is in upper-case mode (attribute `ucase` of the `user` element). Furthermore, it is now possible to specify the version of the Natural Web I/O Interface protocol that is to be used (attribute `protocol` of the `session` element); the latest Natural versions automatically use the appropriate protocol version. For older Natural versions, it is required to define the appropriate protocol version in the configuration file. See *Overview of Configuration File Elements* in the *Natural Web I/O Interface* documentation.

Application Programming Interfaces

The application programming interface `USR6203N` (available with the utility `SYSEXT`) has been enhanced. It can now be used to add and delete resources.

Error Messages Corresponding to Adabas Response Codes

The Natural error messages that correspond to Adabas response codes have been completely revised with Natural Version 6.3.3.

Natural displays subcodes or other information from Additions fields if they are provided by Adabas.

Known Incompatibilities

This section provides additional information that you should be aware of after having installed Natural.

SQL Databases

When working in structured mode, the format/length of a variable must now be the same for both DDMs and views. With previous versions, it was possible, for example, to define a variable as dynamic in the DDM and with a fixed length in the view. This is no longer possible. When a variable is defined as dynamic in the DDM, it must now also be defined as dynamic in the view.

If you want to retain the previous behavior, you can add a corresponding entry with a fixed length to the DDM (however, this is not recommended).

Usage of Database Field Short Names

In previous versions, a database field short name was not rejected during compilation if the parameter `DBSHORT=ON` and the `DEFINE DATA LOCAL` statement were specified. This problem was corrected with Natural Version 6.3.3 PL 1. The syntax error NAT0981 is now returned. For further information, see the enhanced description of the `DBSHORT` parameter.

Natural Remote Procedure Call (RPC)

With Natural Version 6.3.3 an enhanced Natural Remote Procedure Call (RPC) Version 6.3.1 is delivered that replaces the existing Natural RPC Version 6.2.3.

As of Natural RPC Version 6.3.1, the following enhancements are available:

Wait Time of RPC Server

The new parameter `SRVWAIT` is used to specify the number of seconds the server is to wait for an RPC client request.

ACIVERS Profile Parameter Enhanced

The EntireX ACI Version 9 is now supported by `ACIVERS`. This allows you to enable the EntireX Broker stub to send additional environmental information about client and server to the EntireX Broker, or to use the Integrated Authentication Framework (IAF).

Support of Integrated Authentication Framework (IAF) on Server Side

If Natural Security is installed on the Natural RPC server side and if the EntireX Broker uses IAF for authentication, the Natural RPC server can optionally be configured to use an IAF token for client authentification instead of the Natural Security logon data. The IAF token is provided by the EntireX Broker and contains the user ID that the client has used to log on to the EntireX Broker. As a consequence, after a successful authentication the Natural user ID `*USER` is always identical to the client user ID used by the EntireX Broker. It is no longer possible to use a user ID within Natural that is different from the client user ID used by the Entirex Broker.

To use this feature, the Natural RPC server and IAF must be configured in Natural Security. See the section *Protecting Natural RPC Servers and Services* in the *Natural Security* documentation for details.

No changes are required on the client side.

Natural Security

The following enhancements are provided with Natural Security Version 6.3.3.

- Administrator Services
- Utility Profiles
- Natural RPC Server Profiles

Administrator Services

The following enhancements are provided in Administrator Services:

- Set *APPLIC-NAME Always to Library Name
- Logon/Countersign Errors

Set *APPLIC-NAME Always to Library Name

With previous versions, the Natural system variable `*APPLIC-NAME` either contained the name of the library to which the user was logged on, or, if the user was logged on via a special link, the special-link name.

With this version, a new general option Set *APPLIC-NAME always to library name is available. It can be set so that `*APPLIC-NAME` always contains the library name, regardless of whether the user is logged on via a special link or not.

Logon/Countersign Errors

The functions for the handling of logon/countersign error records have been enhanced. They allow you to selectively handle logon errors which occurred in conjunction with Natural RPC service requests and Natural Web I/O service requests. To do so, you specify the following in the **Start Value** field on the **Logon/Countersign Errors Menu**:

■ RPCSRVRQ - for logon errors in conjunction with Natural RPC service requests.

■ NWOSRVRQ - for logon errors in conjunction with Natural Web I/O service requests.

Utility Profiles

Search Order for Applicable Profile

When a user invokes a utility function and Natural Security searches for appropriate utility profile to be applied, the search sequence, by default, includes user-library-specific and user-specific utility profiles of all groups in which the user is contained. With the new session option *GROUP Only, which can be set in a utility's default profile, you can restrict the search to utility profiles of the current group (as determined by the current value of the Natural system variable `*GROUP`) and exclude the utility profiles of other groups from the search sequence. See the section *Which Utility Profile Applies?* in the Natural Security documentation for details.

SYSOBJH - Object Handler

A new **Additional Option** named Utilities option is available in the default utility profile of the Object Handler (`SYSOBJH` utility). With it, you can make the Utilities option in library profiles apply to `SYSOBJH`.

Natural RPC Server Profiles

Single-Library RPC Servers

For Natural RPC servers which provide services performed by subprograms contained in a single library, a new option **Logon Mode** is available. It can be specified in the security profiles of Natural RPC servers to improve performance.

Setting the option to "S" (Static Mode) has the following effects:

■ The library on the server is set at the start of the server session, and will remain unchanged until the end of the server session.

■ The server will process only service requests for this library. Service requests for any other library will be rejected.

■ If the library is unprotected (People-protected = N), the user's authorization to access the library is not checked. If the library is protected (People-protected=Y), the user's authorization to access the library is checked.

■ After a successful check, the user's conditions of use of the library are determined by the library profile. Even if a special link exists between the user and the library, any settings in the special link profile will be ignored.

See the section *Validation of an RPC Service Request* in the Natural Security documentation for details.

Support of Integrated Authentication Framework

As of this version, Natural Security supports Natural RPC servers which use an Integrated Authentication Framework (IAF) server for token validation. See also *Support of Integrated Authentication Framework (IAF) on Server Side* in the RPC section of these Release Notes.

See the section *IAF Support* in the Natural Security documentation for details.

Notice of Future Changes

The following changes are planned for future versions of Natural.

Versioning Software

If you want to use third-party versioning software together with Natural, it is no longer required that you write your own interface. Therefore, `NATNCVC` will no longer be supported.

It is recommended that you use Local Versioning which is available with Natural Studio when you are working in a remote UNIX environment using SPoD. Using Local Versioning, you can use the source control system Concurrent Versions System (CVS) or Subversion (SVN) from within your Natural environment. To use this functionality, you must have the Subversion or CVS client part (*svn.exe* or *cvs.exe*) installed on your PC and you must have access to a Subversion or CVS repository server which has been installed locally or on a server. When you search the internet, you can find these Subversion or CVS components on several download sites. For detailed information on Local Versioning, see *Natural Studio Extensions* which is part of the Natural for Windows documentation.

Natural Web I/O Interface Daemon

The following environment variables will no longer be supported:

- NWO_PF_MSG_LINES_NATIVE_FORMAT
- NWO_BORDERS
- NWO_PFKEYS

It is recommended that you do not use these environment variables any longer. In a later version, equivalent functionality is planned for the client side.

13 Release Information for Natural Version 6.3.4

New Features

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*.

Parameters

The following new Natural parameter is provided in this version:

Parameter	Description
DO	Specifies how fields are to be interpreted for display on terminals that support bidirectional data.

Changes and Enhancements

Natural Web I/O Interface Daemon

Logging
An enhanced logging information system is now provided. See *Logging Information* in the *Natural Web I/O Interface* documentation.

Daemon Commands
In addition to editing the configuration file *nwosrvd.conf*, it is now also possible to configure the Natural Web I/O Interface daemon by specifying commands at the UNIX command prompt. See *Natural Web I/O Interface Daemon Commands* in the *Installation* documentation.

Natural Web I/O Interface Client

Java Version for J2EE Server
>The prerequisite for using the Natural Web I/O Interface client on a J2EE server has changed. It is now required that Java Runtime 5 or above is installed.

Tracing
>It is now possible to define a different trace directory for IIS.
>
>It is now possible to enable tracing for a session on a J2EE server (Sun Application Server and JBoss Application Server). To do so, you set the `trace` attribute in a session definition to "true".
>
>See *Tracing* in the *Natural Web I/O Interface* documentation.

Logging
>In case of problems with the Natural Web I/O Interface client or Natural for Ajax on a J2EE server, you can now enable logging and thus write the logging information to an output file. See *Logging (J2EE only)* in the *Natural Web I/O Interface* documentation.

Notice of Future Changes

The following changes are planned for future versions of Natural.

Default Setting for Adabas Database Driver

With Natural Version 6.3.4, the database driver ADA is still used by default.

With a future version of Natural, the default setting for the database driver will change to ADA2.

Handling of the TF Parameter

With a future version of Natural, the handling of the `TF` parameter will be changed.

Currently, it is only possible to use the asterisk (*) notation for the database ID (DBID) and file number (FNR) of the production database. In a future version, it will also be possible to use the asterisk notation for the database ID and file number of the test database. It may then be possible that your applications will behave in a different way.

14   Release Information for Natural Version 6.3.5

New Features

Parameters

The following new Natural parameters are provided in this version:

Parameter	Description
RPCSDIR	Specifies the name of the Natural library in which the service directory is located.
SRVCMIT	Specifies the time at which a Natural RPC server automatically commits an RPC conversation or a non-conversational RPC request.
SRVTERM	Specifies the event at which a Natural RPC server is automatically terminated.

Application Programming Interfaces

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

API	Description
USR4005N	Read current PF-key settings.
USR4212N	Read a data area from the system file/file system and return the single entries in a table. This allows you to analyze a data area independent of the way the definitions were done in the data area editor. It also allows you to process data areas in DEFINE DATA format.
USR6304N	Set/get the reliable state for the reliable Natural RPC.
USR6305N	Commit/rollback reliable RPC message(s). This API is required if the reliable RPC state has been set to "client commit".
USR6306N	Retrieve the status of all reliable RPC messages of the user who is currently logged on to the EntireX Broker.

Natural for Ajax

Natural for Ajax is now delivered in the Version 1.2.1 and is based on Application Designer Version 2.4.

Support is now provided for converting character-based Natural applications to Natural for Ajax applications. This support consists of the following: map extraction, INPUT statement extraction, map conversion and code conversion. INPUT statement extraction and code conversion are supported with Natural Engineer Version 6.1.2. See *Application Modernization* in the *Natural for Ajax* documentation.

In order to support the conversion of character-based Natural applications to Natural for Ajax applications, a number of new controls is provided:

NJX:BUTTONITEMLIST
NJX:BUTTONITEM
NJX:BUTTONITEMLISTFIX
NJX:BUTTONITEMFIX
NJX:FIELDLIST
NJX:FIELDITEM
NJX:FIELDVALUE
NJX:NJXVARIABLE

A new control is provided to support event parameters:

NJX:EVENTDATA

The above controls are available in the controls palette of the Layout Painter, in the new section with the name **Natural Extensions**.

Support is now provided for server-side scrolling and sorting. See *Server-Side Scrolling and Sorting* in the *Natural for Ajax* documentation.

The following Natural parameters are now evaluated in Natural for Ajax applications and passed to Application Designer at runtime:

```
DC
DTFORM
```

See also *Natural Parameters and System Variables* in the *Natural for Ajax* documentation.

Configuration Tool for the Natural Web I/O Interface Client and for Natural for Ajax

A configuration tool is now available on J2EE servers. It is used to manage the contents of the configuration files for the session (*sessions.xml*) and for logging (*natlogger.xml*). See *Using the Configuration Tool* in the *Natural Web I/O Interface* documentation.

Changes and Enhancements

Configuration Utility

Remote Procedure Call
The new profile parameters `RPCSDIR`, `SRVCMIT` and `SRVTERM` can be specified. See *Remote Procedure Call* in the *Configuration Utility* documentation.

Natural for Ajax

Natural for Ajax now supports right-to-left languages and bidirectional text. See *Support of Right-to-Left Languages* in the *Natural for Ajax* documentation.

It is now possible to change the language while an application is running. This is done by setting the Natural system variable `*LANGUAGE` in the Natural program. Each time this system variable is changed, Natural for Ajax changes the language code for the web pages when the next update of the page occurs. See also *Multi Language Management* in the *Natural for Ajax* documentation.

Session Configuration for the Natural Web I/O Interface Client and for Natural for Ajax

A number of features that was previously controlled by an XSLT file (colors, fonts, PF key buttons) is now controlled by a style sheet (CSS). As of this version, the XSLT file only provides restricted possibilities (see *Modifying the Field Attributes* in the *Natural Web I/O Interface* documentation). The XSLT files of the previous versions are no longer supported.

> **Note:** As of version 6.3.7, the above chapter is no longer available.

Natural for Ajax is delivered with a number of predefined style sheets. You can edit the predefined style sheets or create your own style sheets. See *Using Style Sheets* in the *Natural Web I/O Interface* documentation.

The new URL parameter `natparamext` extends an existing Natural parameter definition in the configuration file. The extension works in the following way: the Natural parameters defined in the configuration file come first. Then, the Natural parameters defined in the URL parameter `natparamext` are added, separated by a space character. If you want to overrule the definition in the configuration file, use the URL parameter `natparam` instead. See *Starting a Natural Application with a URL* in the *Natural Web I/O Interface* documentation.

It is now possible to define the following new settings in the configuration file for the sessions. The headings below correspond to the options that are used in the new configuration tool (see *Overview of Session Options* in the *Natural Web I/O Interface* documentation). These new options are only available for J2EE servers, not for IIS.

Show style sheet selector

Natural for Ajax only.

By default, the users can switch to another style sheet during a running session. You can disable this feature.

Corresponds to the `styleselect` attribute of the `screen` element in *sessions.xml*.

Style sheet

Natural for Ajax only.

When the name for a style sheet is specified, a fixed style sheet is used. In this case, the corresponding field does not appear on the logon page and the user is thus not able to select a different style sheet.

Corresponds to the `style_sheet` element in *sessions.xml*.

Use SSL

You can enable SSL. A secure connection is then established between the Natural Web I/O Interface client or Natural for Ajax on the application server and the Natural Web I/O Interface server.

Corresponds to the `ssl` attribute of the `session` element in *sessions.xml*.

Save user credentials

Natural for Ajax only. Applies only to applications that are designed as Application Designer workplaces.

By default, the default behavior of the option **Share session user** applies. You can change this default so that the user credentials (user ID and password) are not saved in the Application Designer session and are therefore not available for an Application Designer subsession.

Corresponds to the `savesessionuser` attribute of the `session` element in *sessions.xml*.

Share session user

Natural for Ajax only. Applies only to applications that are designed as Application Designer workplaces.

By default, the user credentials of the main Application Designer session are automatically used in an Application Designer subsession if the server and port of the subsession is the same as in the main session. If the server and port are not the same, the user has to specify the user ID and password in a logon dialog. You can change this default so that the user credentials of the Application Designer main session are always used for all Application Designer subsessions on all involved servers - even if the server and port are different.

Corresponds to the `sharesessionuser` attribute of the `session` element in *sessions.xml*.

Show function key numbers

You can determine whether the PF key numbers are shown next to the PF keys.

Corresponds to the `showfkeynumbers` attribute of the `screen` element in *sessions.xml*.

It is now possible to specify a trust file in the configuration file for the sessions. Trust files are used for a secure connection between the Natural Web I/O Interface server and the Natural Web I/O Interface client or Natural for Ajax. The headings below correspond to the options that are used in the new configuration tool (see *Global Settings* in the *Natural Web I/O Interface* documentation). These new options are only available for J2EE servers, not for IIS.

SSL trust file path
The path to your trust file. For further information, see *Trust Files (J2EE only)* in the *Natural Web I/O Interface* documentation.

Corresponds to the `trustfile_name` element of the `global` section in *sessions.xml*.

SSL trust file password
If your trust file is password-protected, the appropriate password is required.

Corresponds to the `trustfile_password` element of the `global` section in *sessions.xml*.

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 6.3.5, an enhanced Natural Remote Procedure Call Version 6.3.2 is delivered that replaces the existing Natural RPC Version 6.3.1.

As of Version 6.3 of Natural Remote Procedure Call (RPC), the following changes, enhancements and new features are provided:

- Profile Parameters
- Reliable RPC
- Support Logging and Accounting of RPC Program and RPC Library within the EntireX Broker
- Availability of *SERVER-TYPE=RPC Enhanced
- Dynamic Resize of Buffer (MAXBUFF)

- New RPC-Specific Application Programming Interfaces

Profile Parameters

The following new profile parameters are available:

- `SRVCMIT` - Server Commit Time
- `SRVTERM` - Server Termination Event
- `RPCSDIR` - Library for Service Directory

The following profile parameter has been changed:

- `MAXBUFF` - Maximum Buffer Size

  For further information, see *Dynamic Resize of Buffer* and the corresponding parameter description in the *Parameter Reference*.

Reliable RPC

Reliable RPC is the Natural RPC implementation of a reliable messaging system. It combines the Natural RPC technology and persistence, which is implemented by means of units of work that are offered by the EntireX Broker. Reliable RPC is characterized by following features:

- The Natural RPC client executes a `CALLNAT` statement without waiting for a reply from the server (the RPC message is sent in asynchronous mode).
- An RPC server needs not be active at the time the `CALLNAT` is executed.
- The reliable RPC message is stored in the Broker's persistent store until an RPC server is available.
- The Natural RPC server executes the reliable RPC by calling the requested subprogram but does not send a reply to the RPC client.
- A Natural RPC client may ask the status of the sent reliable RPC messages.
- A Natural RPC client may send a reliable RPC message to an EntireX RPC server.
- A Natural RPC server may receive a reliable RPC message from an EntireX RPC client.

For further information, see *Reliable RPC* in the *Natural Remote Procedure Call (RPC)* documentation.

Support Logging and Accounting of RPC Program and RPC Library within the EntireX Broker

The Natural RPC client provides the name of the subprogram that is to be executed and the name of the library from which the subprogram is to be executed to the EntireX Broker.

The Natural RPC server returns the name of the subprogram that has been executed and the name of the library from which the subprogram has actually been executed.

For further information, see *EntireX Broker Support* in the *Natural Remote Procedure Call (RPC)* documentation.

Availability of *SERVER-TYPE=RPC Enhanced

The Natural RPC server shows the system variable content `*SERVER-TYPE=RPC` already during the processing of the commands that have been placed on the Natural stack with the Natural profile parameter `STACK`. With this enhancement, all Natural objects that are executed by the Natural RPC server can check the system variable `*SERVER-TYPE` for RPC.

In previous versions, `*SERVER-TYPE=RPC` was only available during the execution of an RPC request.

Dynamic Resize of Buffer (MAXBUFF)

The size of the buffer which is used to exchange data between client and server will be dynamically increased on demand. The size specified with the profile parameter `MAXBUFF` is used as default value.

This measure will avoid most Natural errors that are reported with Natural error message NAT6964 and reason codes 4, 5 and 7.

New RPC-Specific Application Programming Interfaces

The following RPC-specific application programming interfaces have been added:

API	Purpose
USR6304N	**Set/get reliable state for RPC execution** This API is used to set the reliable RPC mode.
USR6305N	**Commit/rollback reliable RPC message(s)** This API is required if the reliable RPC state has been set to "client commit".
USR6306N	**Status of UOWs of current EntireX Broker user** This API retrieves the status of all reliable RPC messages of the user who is currently logged on to the EntireX Broker.

Purpose and use of these application programming interfaces are described in detail in the section *Reliable RPC* in the *Natural Remote Procedure Call (RPC)* documentation.

Natural Security

The following enhancements are provided with Natural Security Version 6.3.5:

- Administrator Services
- Libraries
- DDMs
- Utilities
- Other Enhancements

Administrator Services

The following enhancements are provided in Administrator Services:

- Logging of Maintenance Functions
- Maintenance Log Records
- Module Protection Mode
- Definition of Undefined Libraries
- Disable Rename and Delete of Library Node

Logging of Maintenance Functions

The general option **Logging of Maintenance Functions** has been enhanced: When you activate the logging for user and library security profiles, you have the option to log the following additional data (extended logging):

- When the functions Copy User and Copy Library are used with the **with links** option, any relationship which the copying has established between the user/library and other objects is logged.

- When the Delete User function is used, any relationship which existed between the user and other objects and which was removed by the deletion is logged.

- When a link between a group and a library is maintained, a list of the group's members is logged.

- When the Disallow/Allow Modules section of a library (or special link) profile is maintained, information on the changed status of any module is logged.

A new **Log File Maintenance** function, **List Log Records Extended**, is available to view the additional data.

The modifications which are logged for a type of security profiles now also include the transfer of security profiles of this type via the Natural Security data transfer programs SECULD2 and SECLOAD.

Maintenance Log Records

With the **Maintenance Log Records** functions you can display for each log record the screen which was modified. These screens now also show the Natural Security version and the FSEC system file with/on which the modification was performed.

> **Note:** This information is not shown for log records which were written with Natural Security versions prior to 4.2.5 on mainframes and 6.3.5 on non-mainframes.

Module Protection Mode

The new option **Module Protection Mode** affects how the **Disallow/Allow Modules** settings in library security profiles are evaluated: You can set it so that they are evaluated in the same way on mainframes and non-mainframe platforms. This may be useful if you transfer a Natural application from a mainframe to a non-mainframe platform and wish to keep your module protection unchanged.

For details, see *Module Protection Mode* under *Library and User Preset Values* in the *Administrator Services* section of the *Natural Security* documentation.

Definition of Undefined Libraries

The new Administrator Services function **Definition of Undefined Libraries** serves the same purpose as the library maintenance enhancement described under *Undefined Libraries* below.

Disable Rename and Delete of Library Node

The new option **Disable Rename and Delete of Library Node** allows you to prevent the inadvertent deletion/renaming of a library in the mapped environment of the Natural Development Server. If it is set, the actions Rename and Delete cannot be selected from the context menu of the library node.

For details, see *Disable Rename and Delete of Library Node* under *Library and User Preset Values* in the *Administrator Services* section of the *Natural Security* documentation.

Libraries

The following enhancements are provided for libraries:

- Source Locking

- Undefined Libraries

Source Locking

Source locking in the case of concurrent updates of Natural source members - as controlled for the Natural session by the Natural profile parameter SLOCK - can now also be controlled for individual libraries by a corresponding setting in the *Session Parameters* section of library profiles.

Undefined Libraries

Library maintenance has been enhanced allowing you to search for undefined libraries - that is, libraries which exist on the system file, but for which no security profiles have been created in Natural Security: You can expand the Library Maintenance selection list to list either all (defined and undefined) libraries or only the undefined ones. You can apply the search for undefined libraries to the current FUSER system file or to another system file of your choice.

For details, see *Listing Undefined Libraries* in the *Library Maintenance* section of the *Natural Security* documentation.

DDMs

The following enhancement is provided for DDMs:

- Support of FDDM Profile Parameter on Non-Mainframes

Support of FDDM Profile Parameter on Non-Mainframes

If a central system file for non-mainframe DDM storage (outside of libraries) is specified with the Natural profile parameter FDDM, the protection of non-mainframe DDMs and the maintenance of their security profiles is performed in the same way as with mainframe DDMs (as described in the section *Protecting DDMs On Mainframes* of the *Natural Security* documentation.

Utilities

The following enhancements are provided for utilities:

- All Utility Profiles
- SYSDDM
- SYSMAIN

- SYSOBJH - Object Handler

All Utility Profiles

In a utility profile, you allow or disallow each option by marking it with "A" or "D" respectively. For ease of maintenance, you can now set all options in a utility profile simultaneously to "A" or "D" by pressing PF16 or PF17 respectively.

SYSDDM

A new SYSDDM function **SQL Services (NSB)** for Natural SQL Gateway support is provided with this Natural version. Its use can also be controlled in SYSDDM utility profiles.

SYSMAIN

In the default utility profile of the SYSMAIN utility, a new **Additional Option** named **Utilities Option** is available. With it, you can make the **Utilities** option in library profiles apply to SYSMAIN.

SYSOBJH - Object Handler

Several new Object Handler functions are provided with this Natural version. Their use can also be controlled in SYSOBJH utility profiles.

Other Enhancements

The following other enhancements are provided:

- Selection Criterion for Link Functions
- Control Use of TEST Command in Environments
- Application Programming Interface NSCLI Enhanced
- New User Exit for LOGOFF

Selection Criterion for Link Functions

Whenever you invoke a link function, a window appears before the list of objects to be linked is displayed. This window, which also allows you to specify a start value for the list to be displayed, used to provide an option **Select only defined ones**. This option has been enhanced and is now called **Selection Criterion**: It allows you to select whether the list is to contain:

- all objects (linked and not linked),

- only objects which are already linked,

- only objects which are not yet linked.

This enhancement is provided for all Natural Security maintenance functions available to link users to libraries, users to applications, users to external objects, and libraries to files.

Control Use of TEST Command in Environments

A new option in the security profiles of environments allows you to control the use of the Natural system command TEST in an environment. You can allow or disallow it altogether, or restrict the use of the debugger. For details, see *Components of an Environment Profile* in the section *Protecting Environments* of the *Natural Security* documentation.

This option only applies to environments on mainframe computers.

Application Programming Interface NSCLI Enhanced

The application programming interface (API) NSCLI has been enhanced: It allows you to list library profiles (and special link profiles) which contain a specific Adabas password, and you can then change the password. For details, see example program PGMLI006 and text member TXTLI006 in the library SYSSEC.

New User Exit for LOGOFF

A new user exit, LOGONEX5, is available; it is invoked by the Natural Security logon program whenever the LOGOFF system command is executed.

Documentation

Editors

The documentation for the program editor and for the data area editor has been revised. See *Program Editor* and *Data Area Editor* in the *Editors* documention.

Natural Web I/O Interface

The documentation for the Natural Web I/O Interface has been revised.

An introduction to the Natural Web I/O Interface is now available.

In addition to the information about the new configuration tool, the installation and configuration information for the Natural Web I/O Interface daemon has been moved to the *Natural Web I/O Interface* documentation. This information was previously available in the *Installation* documentation.

The general term "Natural Web I/O Interface server" is now used instead of "Natural Web I/O Interface daemon".

Natural for Ajax is also a client of the Natural Web I/O Interface server. Therefore, more information about Natural for Ajax documentation is now available the new *Configuring the Client* section of the *Natural Web I/O Interface* documentation.

Known Incompatibilities

As of Natural Version 6.3.5, Natural for Ajax Version 1.2.1 or above is required. Natural Version 6.3.5 is not compatible with Natural for Ajax Version 1.1.

15 Release Information for Natural Version 6.3.6

New Features

Natural for Ajax

Natural for Ajax is now delivered in the Version 1.2.3 and is based on Application Designer Version 2.4.

Support is now provided for the following:

- Applications that organize multiple pages in so-called workplaces. See *Working with Workplaces* in the *Natural for Ajax* documentation.

- Numeric edit mask concept of Natural. See *Usage of Edit Masks* in the *Natural for Ajax* documentation.

- Project-specific online help popups. See *Online Help Management* in the Application Designer documentation (this is not part of the Natural documentation).

- Application-controlled sorting of multiple columns in TEXTGRIDSSS2 and ROWTABLEAREA2. See *Data Structures for Server-Side Scrolling and Sorting* in the *Natural for Ajax* documentation.

- Automatic style sheet selection for different screen models. See *Modifying the Font Size* in the *Natural Web I/O Interface* documentation.

Changes and Enhancements

Utilities

Object Handler

The Object Handler now provides the commands `NATUNLD`, `NATLOAD` and `SYSTRANS`, which are used to migrate the old utilities `NATUNLD`, `NATLOAD` and `SYSTRANS` to the Object Handler. For details, see *Migration from NATUNLD/NATLOAD and SYSTRANS to the Object Handler* in the *Object Handler* section of the *Utilities* documentation.

The Object Handler now provides the `UNDELI` command to process delete instructions with the unload function. For details, see *Basic Command Syntax* in the *Object Handler* section of the *Utilities* documentation.

Natural Web I/O Interface Client

Support is now provided for automatic style sheet selection for different screen models. See *Modifying the Font Size* in the *Natural Web I/O Interface* documentation.

On IIS, you can now determine whether the PF key numbers are shown next to the PF keys. This is done with the `showfkeynumbers` attribute of the `screen` element in *sessions.xml*. See *Overview of Configuration File Elements* in the *Natural Web I/O Interface* documentation. (This feature is already available for J2EE.)

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 6.3.6, an enhanced Natural Remote Procedure Call Version 6.3.3 is delivered that replaces the existing Natural RPC Version 6.3.2.

As of Version 6.3 of Natural Remote Procedure Call (RPC), the following changes, enhancements and new features are provided.

Trace Enhancement

In case of a conversion error, which is reported with Natural error number NAT6974 and reason codes 2 and 3, the position of the erroneous data in the buffer is indicated. This will help you to identify which application data is causing the conversion error.

For further information, see *Using the Server Trace Facility* in the *Natural Remote Procedure Call (RPC)* documentation.

Natural Security

The following enhancements are provided with Natural Security Version 6.3.6.

Logon Records Enhanced

The information stored in the logon records has been expanded: now it also includes the user type and system-file information (`FUSER`, `FNAT`, `FDIC`). With this Natural Security version, this information can only be retrieved via the application programming interface `NSCXR`; see the example program `PGMXR006` in the library `SYSSEC`.

Notice of Future Changes

The following changes are planned for future versions of Natural.

Change in Return Code Handling

With a future version of Natural, the return code handling of batch Natural processing will be changed:

- A `TERMINATE` *nnn* statement will cause *nnn* to be always set as the return code of a Natural run.

- The return code set by a `TERMINATE` statement will override the return code 61 which is set due to a runtime error. Currently, return code 61 overrides the return code set by a `TERMINATE` statement.

- Error message NAT9987 will appear in the file identified by Natural parameter `CMPRINT` if a Natural run was stopped by a `TERMINATE` statement. Currently, the message NAT9978 is displayed if either a runtime error occurred or the session was terminated by executing a `TERMINATE` statement.

Review your batch procedures and check whether there are dependencies related to the above mentioned changes.

External Sort Program

With a future version of Natural, the external sort program SyncSort will no longer be supported.

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). IIS will no longer be supported.

Linux in 32-Bit Mode

With a future version of Natural, Linux in 32-bit mode will no longer be supported.

16 Release Information for Natural Version 6.3.7

New Features

Application Programming Interfaces

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

API	Description
`USR4215N`	Return a list of resources (short object and long resource name) of a Natural library according to the forwarded range parameters.

Natural for Ajax

Natural for Ajax is now delivered in the Version 1.2.4. It is based on Application Designer Version 8.0.

Support is provided for the following:

■ Certain controls can be bound to Natural control variables so that the modification status of a Natural operand that represents the value of the control can be checked with `IF` *`control-variable`* `MODIFIED`. See *XCIDATADEF - Data Definition* in the *Natural for Ajax* documentation.

■ The Natural system variable `*CURS-FIELD` can be used in Natural for Ajax applications to identify the operand that represents the value of the control that has the input focus. When the Natural system function `POS` is applied to a Natural operand that represents the value of a control, it yields the identifier of that operand. See also *Natural Parameters and System Variables* in the *Natural for Ajax* documentation.

■ The `statusprop` property for input controls such as FIELD has been split into two separate properties: `statusprop` and `displayprop`. See *Dynamically Controlling the Visibility and the Display Status of Controls* in the *Natural for Ajax* documentation.

■ It is now possible to define a Natural for Ajax application as a servlet in the file *web.xml*. This makes the definition of security constraints for individual applications easier. See *Wrapping a Natural for Ajax Application as a Servlet* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.

The following new features apply only to Natural maps, not to rich GUI pages:

■ With the configuration tool, it is now possible to configure the behavior of a double-click. The double-click can be assigned to a function key or can be disabled. See *Overview of Session Options* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.

■ With the configuration tool, it is now possible to define that all function keys are to be shown, including those which do not have names. This makes sure that the function keys are always

displayed at the same position. See *Overview of Session Options* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.

Natural Web I/O Interface Client

The Natural Web I/O Interface is now delivered in the Version 1.3.5.

Support is provided for the following:

■ It is now possible to define different styles for output fields which are based on variables and output fields which are based on literals (J2EE only). See *Defining Different Styles for Output Fields* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.

Changes and Enhancements

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.

Compiler Option PCHECK Enhanced

The compiler option `PCHECK` has been enhanced for use in conjunction with objects of type adapter. With `PCHECK` set to `ON`, the `PROCESS PAGE USING` statement now checks the parameter number, format, length and array index boundaries not only at execution time, but already at compile time.

In addition, the parameter check at compile time has been expanded to other invoking statements, such as `PERFORM` (external subroutine), `INPUT USING MAP`, and to the calling of helproutines.

Result Format and Length of an Exponentiation with an Exponent of Format Numeric (N) or Packed (P)

The precision of the result field in an exponentiation with an exponent of format numeric (N) or packed (P) has changed in Natural Version 6.3.7 in order to achieve a result which is more precise.

In case of an exponentiation where the exponent is a numeric or packed operand with one or more digits after the decimal point (for example, `N1.1` or `P1.1`), a result field of format float (F8) instead of format packed (P) is now generated.

The change is effective after a `RUN`, `CATALOG` or `STOW` in Natural Version 6.3.7. An `EXECUTE` of programs which are compiled under a previous version (Natural Version 6.3.6 or below) has no effect.

Example:

```
DEFINE DATA LOCAL
1 #F8 (F8)
END-DEFINE
COMPUTE ROUNDED #F8 = 1 + 5 ** 0.5
/* The result field of the exponentiation 5 ** 0.5 is now F8 instead of P15.0
PRINT #F8
/* After CATALOG, the result in Natural Version 6.3.7 is +3.236067977499789E+00
/* Result in Natural Version 6.3.6 is +3.000000000000000E+00
END
```

The documentation has been adapted accordingly. See *Performance Considerations for Mixed Format Expressions* in the *Programming Guide*.

New DDM for EMPLOYEES File

With Natural Version 6.3.7, the new DDM `EMPLOYEES-V2009` is delivered. This DDM is used by the new sample programs supplied with the `SYSEXV` utility. This DDM makes use of new Adabas data types introduced with Adabas Version 6. The respective `EMPLOYEES` data requires Adabas Version 6.1.6 or higher.

Enhanced Application Programming Interfaces

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

`USR0330N`
   The complete timestamp value for Natural objects is now returned.

`USR0360N`, `USR0421N` **and** `USR1020N`
   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.

Natural Remote Procedure Call (RPC)

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 6.3.7, an enhanced Natural Remote Procedure Call Version 6.3.3.1 is delivered that replaces the existing Natural RPC Version 6.3.3.

As of Version 6.3 of Natural Remote Procedure Call (RPC), the following changes and enhancements are available:

- System Command RPCERR Enhanced
- RPCINFO/RPCINFOL Enhanced
- SYSRPC Stub Generation
- Documentation

System Command RPCERR Enhanced

The system command `RPCERR` has been enhanced to show the full error message text returned by an EntireX RPC server.

RPCINFO/RPCINFOL Enhanced

The following enhancements have been applied to the user application programming interface `RPCINFO` and the parameter data area `RPCINFOL`:

- `RPCINFO` has been enhanced to retrieve the error message text returned by an EntireX RPC server.

- The fields `S-NODE`, `S-NAME`, `C-NODE`, `C-NAME` have been enlarged from A8 to A32 to be more compliant with EntireX.

- `RPCINFO` is loaded to the library `SYSTEM` on system file `FNAT` and is immediately available to all user applications.

All enhancements are compatible with existing applications.

> **Notes:**

1. If you recatalog an existing application that references `RPCINFOL`, you may be concerned if the enlarged fields are displayed. Either adapt your output layout accordingly or add the session parameter `AL=8` where appropriate.

2. You are strongly recommended to remove any copies of `RPCINFO` from the `FUSER` system file.

SYSRPC Stub Generation

The **Stub Generation** function of the `SYSRPC` utility has been enhanced by the direct command `COMPAT IDL` in order to optionally generate stub subprograms that are more compliant with EntireX RPC servers and the reliable RPC. If `COMPAT IDL` is specified and an EntireX RPC server is called by a Natural client, the parameter definitions on the **Stub Generation** screen must correspond to the IDL definition for the EntireX RPC server.

With the next version of Natural, `COMPAT IDL` will be the default. For compatibilty reasons, an option will be provided to generate stub subprograms as in previous Natural versions.

Documentation

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, will no longer be used. In the EntireX documentation, these objects are now referred to as "interface objects". In the Natural Remote Procedure Call documentation, however, the term "stub subprogram" is still prevailing. It will be replaced in one of the next versions of Natural RPC.

Natural Security

The following enhancements are provided with Natural Security Version 6.3.7:

- Users
- Libraries
- Utilities
- Application Programming Interfaces
- Other Enhancements

Users

The following enhancements are provided for users:

- Copying a User

- New User Exit NSCUSEX2

Copying a User

The function **Copy User** has been enhanced: You can enter the name of the new user not only in the new profile but already in the window which is displayed when you invoke the **Copy** function. This name is then written into the new profile (where you can still change it, of course).

New User Exit NSCUSEX2

A new user exit, NSCUSEX2, is provided in the library SYSSEC. It allows you to review the changes you have made to a list of group members. It is invoked when you use the user-maintenance function **Edit Group Members** and CATALOG the changes to the group. It displays a list of the group's members, indicating which members have been added to the group and which have been removed from it.

Libraries

The following enhancements are provided for libraries:

- Copying a Library
- Use of UNIX Shell Commands

Copying a Library

The function **Copy Library** has been enhanced: You can enter the name of the new library not only in the new profile but already in the window which is displayed when you invoke the **Copy** function. This name is then written into the new profile (where you can still change it, of course).

Use of UNIX Shell Commands

UNIX shell commands can be executed from within a Natural program by invoking the Natural user exit SHCMD via the statement CALL SHCMD. With Natural Security you can now control for each library the execution of UNIX shell commands from within Natural programs by allowing/disallowing the execution of the CALL SHCMD statement in the **Command Restrictions** section of library profiles.

Utilities

The following enhancements are provided for utilities:

- SYSERR - Direct Commands
- SYSMAIN and SYSOBJH - Exclude Library Profiles With Co-Owners

SYSERR - Direct Commands

In the security profiles for the `SYSERR` utility, you can now control the use of `SYSERR` direct commands. You can allow or disallow each command for all users, or allow it for Natural Security administrators only.

SYSMAIN and SYSOBJH - Exclude Library Profiles With Co-Owners

The session option **Utilities option** in the default profiles of utilities `SYSMAIN` and `SYSOBJH` has been enhanced: In addition to the existing values `Y` and `N`, you can specify the new value `O`: This is identical to `Y`, but has the following additional effect:

If you use `SYSMAIN` or `SYSOBJH` to process the contents of a library in whose library profile the general option **Utilities** is set to `O` (= processing permitted for owners), and you as an owner require a countersignature, the countersignature prompt will be suppressed; instead, the library will be excluded from `SYSMAIN`/`SYSOBJH` processing.

This enhancement is only relevant online, because in batch mode countersignatures cannot be processed anyhow.

Application Programming Interfaces

The following application programming interfaces (APIs) have been enhanced:

- NSCADM
- NSCXR

NSCADM

The API `NSCADM` has been enhanced. It allows you to compare a preset value (as set in the **Library and User Preset Values**) with the the corresponding actual value in user profiles, and provides a list of all user profiles in which the value differs from the preset value. For details, see example program `PGMADM04` and text member `TXTADM04` in the library `SYSSEC`.

NSCXR

The API `NSCXR` has been enhanced. It allows you to retrieve information about the access rights to an individual module in a library, for all users who have access to the library. For details, see example program `PGMXR018` and text member `TXTXR018` in the library `SYSSEC`.

Other Enhancements

The following other enhancements are provided:

- Suppress Startup Transaction in NDV Mapped Environment
- Copying a Mailbox

Suppress Startup Transaction in NDV Mapped Environment

If a startup transaction is specified in a Natural Security library profile, it will be executed after a successful logon to the library. In a Natural Development Server environment, however, when a library is selected from the tree view in the mapped environment, the execution of a startup transaction may not be desired. A new Administrator Services option **NDV Startup Inactive**, which can be set in the **Library And User Preset Values**, allows you to suppress the execution of startup transactions in a mapped environment.

Copying a Mailbox

The function **Copy Mailbox** has been enhanced: You can enter the name of the new mailbox not only in the new profile but already in the window which is displayed when you invoke the **Copy** function. This name is then written into the new profile (where you can still change it, of course).

Known Incompatibilities

This section provides additional information that you should be aware of after having installed Natural.

Canceling File Transfer with Entire Connection

The following information applies when using Entire Connection Version 4.5.2 or above.

A different error message is now issued when the user cancels a file transfer that has been started with the Natural statement `DOWNLOAD PC FILE` or `UPLOAD PC FILE`. As of Natural Version 6.3.7, the error message NAT1016 is issued.

Up to Natural Version 6.3.6, one of the following error messages was issued: NAT1500, NAT6220, NAT6221.

This change may affect existing Natural applications which handle the error situation inside an `ON ERROR` statement.

Old X Servers

The execution of the Natural installation on an older X server (for example, eXcursion) may cause problems with the user interface (character set etc.).

17 Release Information for Natural Version 6.3.8

New Features

Natural Functions for URL and Base64 Encoding

Natural now provides functions for encoding or decoding URL addresses, and for converting binary data into printable, network-compatible data (or vice versa) using Base64 encoding. For further information, see *Natural Functions* in the *System Functions* documentation.

Application Programming Interfaces

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

API	Description
USR4217N	Send data to the webMethods Optimize for Infrastructure Data Collector.
USR4218N	Provide information on the context in which the Natural Development Server runs, for example, the version of the client.

Natural for Ajax

Natural for Ajax is now delivered in the Version 1.2.5. It is based on Application Designer Version 8.0.

Natural Web I/O Interface Client

The Natural Web I/O Interface is now delivered in the Version 1.3.6.

Support is provided for the following:

- It is now possible to define underlined, blinking, italic and bold text using style sheets. XSLT files are no longer used for this purpose. See *Using Style Sheets (J2EE only)* in *Configuring the Client* which is part of the *Natural Web I/O Interface* documentation.

Changes and Enhancements

Assigning a Floating Point Operand (Format F) to a Numeric or Packed Operand (Format N or P)

When a floating point operand (format F) is assigned to a numeric or packed operand (format N or P), the result as compared to Natural Version 6.3.7 may be different. As of Natural Version 6.3.8, the result of the `COMPUTE` statement will not be rounded any more if the `ROUNDED` option is not used. This applies regardless of whether the operand has been explicitly defined by the user or implicitly created by Natural to hold intermediate results (see example 2 below). This change has been made in the runtime and is therefore effective when executing programs with Natural Version 6.3.8. It is not necessary to recatalog the programs.

Example 1:

```
DEFINE DATA
  LOCAL
  1 #SRC (F8)
  1 #TAR (N2.6)
END-DEFINE
#SRC :=  14.9999999
COMPUTE  #TAR := #SRC
PRINT #TAR
COMPUTE  ROUNDED #TAR := #SRC
PRINT #TAR
END
```

Results in Natural Version 6.3.7:

```
15.000000
15.000000
```

Results in Natural Version 6.3.8:

```
14.999999
15.000000
```

Example 2:

```
DEFINE DATA
  LOCAL
  1 #SRC (N11.7)
  1 #TAR (N2.7)
END-DEFINE
#SRC :=  224.9999999
COMPUTE  #TAR = SQRT(#SRC)  /* INTERMEDIATE F8 FIELD
PRINT #TAR
COMPUTE  ROUNDED #TAR = SQRT(#SRC)
PRINT #TAR
END
```

Results in Natural Version 6.3.7:

```
15.0000000
15.0000000
```

Results in Natural Version 6.3.8:

```
14.9999999
15.0000000
```

Natural Remote Procedure Call (RPC)

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 6.3.8, an enhanced Natural Remote Procedure Call Version 6.3.3.3 is delivered that replaces the existing Natural RPC Versions 6.3.3.1 and 6.3.3.2.

As of Version 6.3 of Natural Remote Procedure Call (RPC), the following changes and enhancements are available.

Stub Subprograms from IDL File

If you have generated a stub subprogram from an IDL file using the **Generate Natural from Software AG IDL** command of NaturalONE or EntireX Workbench, program and library name of the IDL file are incorporated into the generated stub subprogram and passed to the RPC server. This means especially that the name of the program that is executed on the RPC server may be different to the name of the stub subprogram.

Note for Natural RPC servers:

If the Natural client calls a Natural RPC server, the library name of the IDL file is only evaluated by the Natural RPC server if the Natural client has set the **Logon** option.

Notice of Future Changes

The following changes are planned for future versions of Natural.

Adabas Records no Longer in Hold Status when Database Update is not Permitted

With a future version of Natural, Adabas records will no longer be put in hold status if the Natural profile parameter DBUPD is set to OFF (that is, when a database update is not permitted). When set to OFF, the Adabas calls L1, L2, L3, S1, S2, S3 will be generated instead of L4, L5, L6, S4, S5, S6.