Reality v9.0

Release Information

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Document control

Software Version	Document Status	Document Revision	Issue Date	Reason for Change
V9.0	Published	v0.1	June, 2001	Final draft

Table of Contents

Section1: Introduction

The release information that follows refers to Reality V9.0 for UNIX, Windows NT and Windows 2000. Reality V9.0 is certified for use on the following:

Unix:

- SUN Sparc, running Solaris 2.6, 2.7 or 8.0.
- Data General Intel Pentium/Pentium Pro based PC, running DG/UX R4.20.
- Data General Motorola M88K, running DG/UX R4.11 or R4.20.

Windows:

PC with Intel Pentium processor or equivalent, running Windows NT 4.0 (Workstation or Server) plus Service Pack 3 or above, or Windows 2000 (Professional, Server or Advanced Server).

More details are given later in this document (see Prerequisites). These details are also repeated in the Installation Guides (see Related Documents).

Section 2: Related documents

Related documents include:

UM70006847A: Installation Guide – Reality on Uni

UM70006848A: Installation Guide – Reality on Windows

UM70006859A: Installation Guide – Reality Client Components

Section 3: Packaging

All the software comprising this release is supplied on the installation CD, with electronic versions of all documents (including this one). The installation CD contains the PDS History Tool, Reality, the online documentation, and all the Reality client components. In detail, the contents of the CD are:

Software	Version
PDS History Tool	V9.0
Reality Manuals	V9.0
Reality	V9.0
UNIX-Connect	V1.4
Reality Remote Tape	V1.0
Reality Explorer (client)	V1.0
PCSNI (client)	V2.2 Rev C
JReal (client)	V3.0
RealSQL-JDBC (client)	V1.0
RealSQL-ODBC Driver (client)	V2.3
RealWeb HTML Driver (client)	V3.0
RealWeb Servlets (client)	V3.0
WinSQLM (client)	V2.0

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Section 4: Prerequisites

4.1 Reality on UNIX

- One of the following: SUN Sparc running Solaris 2.6, 2.7 or 8.
  DG Intel Pentium Pro based PC running DG/UX 4.20.
  DG Motorola M88K running DG/UX 4.11.
- 128Mb minimum (512Mb recommended, 2-6Mb per Reality User)
- 500 Mb of available space to accommodate setup (actual hard disk used once installed will be between 220Mb and about 350Mb, depending on the system components installed).
- UNIX-Connect for networking (supplied on Reality Solutions CD).
- NEC Customisation CD for SUN (for DG, contact NEC).
- C language software development system or GNU C Compiler (supplied on the NEC Customisation CD for use if a C language software development system is not available).

4.2 UNIX-Connect

4.2.1 Solaris

Linker Requirements: SUNWspro C development system or GNU 'C' Compiler (supplied on Customisation CD).

User id & disk space: 'rosi' UNIX user id with a home directory on a file system with at least 25 Mbytes free.

4.2.2 DG

Linker Requirements: C language software development environment.

Configuration: Loopback drivers and TCP/IP drivers to be configured into the system along with the TIMOD streams module. Also requires STREAMS pipes to be configured.

User id & disk space: 'rosi' UNIX user id with a home directory on a file system with at least 8 Mbytes free.

4.3 NT/Windows 2000 hardware

- PC with Intel Pentium processor or equivalent, 200MHz or faster.
- 64Mb RAM minimum (128Mb recommended, 2-6Mb per Reality User). See also Memory below.
- 500Mb of available space to accommodate setup (actual hard disk used once installed will be between 150Mb and about 350Mb, depending on the system components installed).
- The Reality database can be loaded on to a Primary Domain Controller, Backup Domain Controller, stand-alone member server or WorkStation.
- NEC can take no responsibility on the processor and memory requirements of other applications running on an NT/2000 server. Ideally, Reality should be loaded on a dedicated server.

- Reality backup and restore is supported on 4mm, 8mm and DLT tape units.
- Using at least a dual processor system is highly recommended.

4.4   NT/Windows 2000 software

- Windows NT 4.0 SP3+ or 2000 SP1+
- pcANYWHERE is required if full support is to be provided. (Installed when NEC supplies the machine.)
- It is recommended that Reality is installed on an NTFS partition.

4.4.1 Memory

Reality memory usage is difficult to predict, but as a rough sizing guide use 128Mb for the system and then 2Mb to 6Mb per user, depending on type of user and application. Performance problems are generally caused by lack of memory. If the server is not dedicated to Reality, then other application memory requirements must be added to this.

4.5   RealWeb

- A web server with support for Java servlets. (This can be on the same system as the Reality database or on another system.) On web servers that do not support servlets, plug-ins can be used to add servlet support
- Java Run Time Environment (JRE) version 1.2 or above. If this is not available, it can be downloaded from http://java.sun.com/j2se/
- Remote Basic
- JReal

4.6   Real-SQL JBDC driver

- JReal
- Java Run Time Environment (JRE) version 1.2 or above. If this is not available, it can be downloaded from http://java.sun.com/j2se/

4.7   Reality explorer

- Microsoft Windows 95, 98, ME, NT4.0 or 2000
- NEC PCSNI software V2.2 Rev C or later
- A Winsock compliant TCP/IP transport stack for TCP/IP connections

4.8   RealSQL ODBC driver

- Microsoft Windows 95, 98, ME, NT4.0 or 2000
- NEC PCSNI software V2.2 Rev C or later
- Any ODBC Level 1 or 2 compliant application
- A Winsock compliant TCP/IP transport stack for TCP/IP connections. The PC applications and transport stacks use large amounts of memory. It is therefore essential that PCs running this package are configured for the optimum use of memory, otherwise it is possible that GPFs and other memory type errors will occur

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4.9   WinSQLM

- Microsoft Windows 95, 98, ME, NT4.0 or 2000
- NEC PCSNI software V2.2 Rev C or later
- A Winsock compliant TCP/IP transport stack for TCP/IP connections

4.10 Online manuals

- Internet Explorer 4 or above, OR
- Netscape 4 or above. Internet Explorer is recommended

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Section 5: New features in Reality v9.0

5.1   Exploding indexes

Reality data attributes can be multi-valued and/or sub-valued. A single attribute may contain several multi-values, and each multi-value may contain several sub-values. Both English and SQL allow access to these multi- and sub-values in several ways.

On Reality 8.x only the first sub-value of the first multi-value of any attribute could be indexed. There could be at most one index entry (key) per item in any index. This prevented both English and SQL using indexes to optimise statements that reference multi- and sub-valued data in any but the simplest of ways.

On Reality V9.0, multiple index entries can be generated for an item containing multi and sub-valued data, with one entry per multi- and sub-value. Such an index is described as an exploding index because it explodes out the multiple values into separate index entries. Exploding indexes will be of particular use to the English and SQL optimisers when dealing with statements that access exploded multi- and sub-valued data.

Refer to the following manuals for more details:

- Volume 1: General
- Volume 3: Administration
- DataBasic Reference Manual
- SQL for Reality, Catalog Configuration Guide (formerly the SQL/ODBC for Reality, Developer's Guide).

5.2   SQL Enhancements

These add several new features and performance improvements:

5.2.1 Improved catalog query performance

Catalog queries are used by applications to query the structure of SQL tables (to find out, for example: what tables exist and what columns do they have). They are typically used in two scenarios. Firstly, when a developer or knowledgeable customer is designing reports on a database based on the structure of the tables determined using catalog queries. Secondly, various third-party applications are now using catalog queries to verify that the tables referenced within a report have not changed since the report was defined.

This second use of catalog queries has been found to have large performance implications if applications issue the queries on a frequent basis. Reality v9.0 offers greatly improved response to catalog queries.

5.2.2 Sequential item support

This provides the means of mapping attributes within a selection list to a set of rows within a table. Many Reality applications store lists of item-ids in items, one id per attribute. These are used by the application as Reality Select Lists to cross-reference data in other files. For example, an order processing system might contain a file that

cross-references all orders made by each customer. The item-id would be the customer id and each attribute would contain an order number.

Reality v9.0 provides the following sequential item support:

- E code allows access to such lists from SQL with each attribute mapped to a separate table row.
- NA, NV, and NS pseudo-column types provide simple access to current attribute, value or sub-value numbers in exploding tables.

See the SQL for Reality, Catalog Configuration Guide for details.

5.2.3 SQLM

- Support for exploding indexes.
- Multiple tables per Reality file - allowing different views of the data.
- SQL table regeneration - updates table definition for new or changed dictionary items removing need to do it manually.
- Open-ended lists - allows the mapping of selection lists to rows within a table in similar way to 'exploding multi-values'. Removes need for application groups to provide workarounds. See the SQL for Reality, Catalog Configuration Guide for details.

5.2.4 JDBC driver for Reality

This provides a set of Java classes, enabling Java applications, applets and servlets to issue SQL queries on Reality databases.

- Java software written to access Reality can be made database independent.
- Third party, off-the-shelf, Java software can access the Reality database.

Refer to the SQL for Reality, Connection Configuration Guide (formerly the SQL/ODBC for Reality, Administrator's Guide) and the Reality Java Interface Programming Guide for details.

5.2.5 Remote basic

This allows the Java programmer to call DataBasic subroutines from within an applet, servlet or Java application. Refer to the Reality Java Interface Programming Guide for details.

5.2.6 RealWeb

RealWeb provides the Web developer with access to data held in a Reality database. It makes it possible to call a DataBasic subroutine directly from a Web browser by simply specifying a URL. Subroutines that will be called from RealWeb must be specially written using the supplied DataBasic API - this allows the programmer to fetch arguments passed to RealWeb, and to construct an HTML page that is returned for display in the browser. Alternatively, complete HTML pages and images can be retrieved from a database.

By using an HTML form, information entered by the user can be included in the URL and passed as arguments to a Reality subroutine. These arguments can be used in various ways - for example, to construct queries or to update the database.

An interim version of RealWeb was released for use with Reality 8.1. The version of RealWeb supplied with Reality v9.0 offers a greatly enhanced interface that gives the programmer much greater control of the HTML page by providing access to all available HTML attributes. It also supports features such as Cascading Style Sheets, tables, frames and JavaScript (for client-side processing).

5.2.6.1   Features

RealWeb consists of a set of Java Servlets that run on a Web server and a DataBasic API for constructing the HTML pages that are returned to the browser. Connection between the Web server and Reality is by means of Remote Basic.

RealWeb supports one-shot and persistent connections:

- In one-shot connection mode, a pool of Remote Basic servers can be held open to handle incoming requests efficiently.
- Persistent connection mode will guarantee that a browser that created a connection will get the same connection when accessing a subsequent page. This enables item locks, transaction boundaries and application context to be maintained across several Web pages.
- Persistent connections can also be made secure. If this is done, the user will be prompted for a Reality user ID and password before starting a new connection.

5.2.6.2   The RealWeb API

The RealWeb API is a toolkit that the DataBasic programmer can use to interface to the Web browser - that is, to access arguments passed as part of the URL and to construct the HTML page that will be returned to the browser. Routines are provided to do the following:

- Fetch the values of arguments passed to RealWeb by the browser.
- Start and end an HTML page.
- Format text in various ways - for example, as a heading; left, centre or right aligned; fixed-pitch; in a particular font size and colour.
- Structure text in various ways.
- Create hyperlinks.
- Create an HTML form containing push buttons, text boxes, drop down lists, and so on.
- Create bulleted, numbered and definition lists.
- Fetch and manipulate cookies.
- Manipulate and insert pre-stored text and HTML.
- Lay out a web page using frames.
- Create tables, which can be populated with data extracted from the Reality database.
- Debug RealWeb DataBasic subroutines.

5.2.6.3   RealWeb Servlets

Three servlets are supplied with RealWeb, providing the ability to:

- Remotely call a DataBasic subroutine on a Reality database.
- Display an HTML page or graphic stored in a Reality database.
- Configure connections to Reality databases.

Reality v9.0 includes a Java API that allows developers to write their own servlets. These can be written using JDBC to connect to the database, thus making the web interface database independent.

5.2.7 Enhanced application security features

These can be used to finely control what can and cannot be accessed on the database. The new features are as follows:

- An alternative security profile can be specified for use when connection is via a particular server program.
- The ability to run DataBasic subroutines remotely (using RealWeb, for instance) can be enabled, enabled for specified subroutines only, or disabled completely.

For more details, refer to in Volume 3: Administration.

5.2.8 Remote tape access

This provides means of saving and restoring Reality data on remote tape drives. The remote tape drives are seamlessly integrated, so that they are functionally identical to local drives. The user has full control over the remote tape drive and can use standard tape verbs such as T-ATT, T-DET, T-REW, T-DUMP, T-DEVICE, FILE-SAVE or FILE-RESTORE to access the remote drive directly.

Refer to the following manuals for more details:

- Volume 2: Operation
- Volume 3: Administration

5.2.9 Reality explorer

This extends the standard Windows Explorer to allow access to Reality databases, thus providing the means of inspecting and manipulating Reality databases via a GUI interface. The Reality Explorer is a plug-in to the Windows explorer that allows users to seamlessly browse through both a standard Windows file structure and one or more Reality databases.

On selecting a Reality database, the user can:

- View those accounts, files and items that are permitted by their security settings.
- Create, rename, copy, move and delete files and data sections.
- Create, rename, copy, move and delete items.

For details, refer to the on-line help provided with Reality Explorer.

5.2.10 English

The Tfile conversion code has been enhanced to allow the filename to be determined dynamically. Additional system parameters have been added to the A and F conversion codes to support this. Refer to the English Reference Manual for details.

See also Exploding Indexes.

5.2.11 DataBasic

The DataBasic "/" debugger command has been enhanced to allow variables to be set to NULL.

5.2.12 Documentation

The Reality documentation is now available on-line for viewing in a web browser. Features of the on-line documentation include:

- Expanding hierarchical contents list with links to the text.
- Keyword index with links to the text.
- Full text search.
- Links within the text to related topics.

The Document Directory describes the manuals that are available, both on-line and in printed form. It also describes how to use the on-line documentation.

5.2.13 Improved pricing and packaging

The following features are now included with Reality:

- AutoIndexing
- Partition database
- SQL read only licences
- SQL update licences
- RealWeb
- Remote Subroutine Call, Remote Basic
- Transaction logging
- Reality Explorer

The following features are now included with Reality, but require a software key to enable them:

- ODBC SQL SDK
- Wordmate 2.1
- ALL
- RPL 6.0 for ROS 7.2 and Reality
- RealLink 3.0 Host for ROS 7.2 and Reality
- Reality for Windows Host (UIMS)
- Total ISIS package - enables all ISIS RPQs
- ISIS RPQ R56
- ISIS RPQ R62
- ISIS RPQ R82
- ISIS RPQ R107
- ISIS RPQ R138
- Synchronised Heartbeat (existing customers only).

The following features are chargeable options:

- Connection licences
- Despooler licences
- Shadow database
- FailSafe

Section 6: Functionality/Features restrictions

The following restrictions apply to all versions:

FILE-SAVEs taken from databases running with Reality 8.1 and above, using the new hashing algorithm cannot directly be restored on an earlier release of RealityX or on Series 19/18 proprietary hardware. A special form of file save can be used for backwards compatibility.

The following restrictions apply only to Windows NT and Windows 2000:

- End of tape handling is not supported for any form of file save. If the database cannot be fitted onto one real, then DBSAVE must be used.
- ½" tapes are not supported
- TANDEM is not currently supported.
- LOGTO can only log to another REALITY account. It is not possible to LOGTO a UNIX or DOS shell.

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Section 7: Fault resolutions

Reality v9.0 includes resolutions of the following customer-reported faults, which have been reported since Production Release of Reality v8.1:
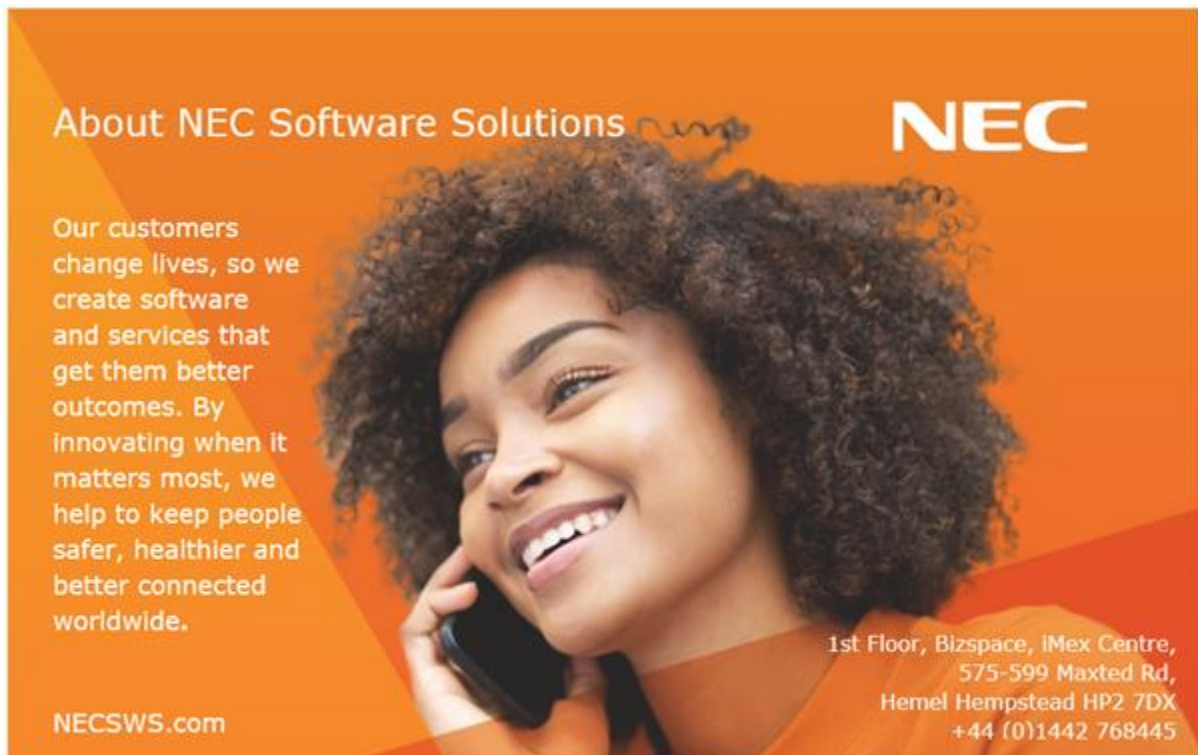
Fault number	Description
084067	Max. length defined in dictionary is too small for MF conversion, error when F-O precedes English statement within RPL proc.
084068	T-STATUS showing "In error" when no tape loaded.
084071	BLIST with the (M) option incorrectly expands INCLUDEs.
084075	Realism user maintenance 'hangs' for 3 mins.
084082	TERMLOAD-SP does not work. Terminal is logged of.
084083	tlmenu - naming of clean logs incorrect.
084085	tlmenu - when file saving the tape deck is not assigned.
084086	Cannot start tl. Error opening file.
084095	SQL statement core dumps when SQL Catalog is corrupt.
084096	SQL warning message "INTERNAL ERROR IN PASS 3.
084097	Despooler error "SUSPENDED, CANT OPEN PIPE".
084098	mkdbase -r fails to action modulo entries in %realdbasepath%/configs/resize.
084102	SQLM - failing to update column definitions correctly.
084114	Reality startup fails to run after boot to run level 3.

084122	Received message appears at cursor position, not on-line 25.
084124	Item deadlock when moving all jobs from a queue while a despooler was active on the queue.
084127	SQL statement fails to return rows when 'equal to' is used.
084131	TL-LOAD fails to restore clean log.
084142	Cannot run tlmenu - show status if there is a password on the SYSMAN user id.
084149	When using tlmenu to file-save the secondary output not formatted correctly.
084157	tlmenu fails if password on SYSMAN ACCOUNT.
084161	T-STATUS reports tape units in use incorrectly.
084163	Restore of secondary system using tlmenu on the primary system - fails on multi-reel file-saves.
084164	dbsave does not do parallel operations.
084165	8.1D has introduced tlmenu faults causing operational problems.
084172	Line 25 messages not being displayed correctly from within Police application.
084183	File save aborts when trying to save an item id > 130 characters.
084184	After installing patch 00, the tlmenu 's' status option no longer cycles.

084185	If logged in as root & su to dbases, tlmenu uses 'root' to 'login' to remote machine for remote operations.
084187	Type ahead does not work in dbsave.
084196	Reality interrupted by SIGBUS signal (10) in Frame 33 when using User Exit U12D5.
084204	Reality SQL - rollback on a CREATE INDEX ... transaction hangs application through JDBC & ODBC.
084208	Error 33 in Frame 93 at line 125 when copying/adding items in Indexed file.
084209	Error 33 in Frame 1658 at line 125 when copying/adding to indexed file.
084217	TANDEM verb not working get error "Can't open monitor output file".
084218	Indexes getting corrupted (details sent separately).
084221	TL event log stops being updated.
084224	Printer definition maintenance - class 9 special effects not actioned when printed.

Section 8: Terms and abbreviations

None.