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INFORMATION SOLUTIONS

RealityX

Release 3.1

Differences Supplement

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Purpose of this Manual

This manual describes differences between the user environments supported by Reality X Releases 3.1 and that supported by the REALITY operating system Release 7.0.

The Reality X user environment is highly compatible with that of REALITY Release 7.0, so that a large portion of the information in the set of reference manuals supplied for REALITY Release 7.0, is also applicable to Reality X. There are, however, some differences between the two environments. These are highlighted in this manual.

This is not intended to be a stand-alone manual, but should be used to supplement the information given in the Release 7.0 manuals.

Note, however, that the Release 7.0 *Starting Up and Shutting Down the System* manual is not applicable to Reality X users and the Release 7.0 *Data Structures* manual is largely inapplicable. Startup and shutdown procedures are a function of the UNIX operating system under which Reality X runs.

Information required to administer Reality X, not covered in this manual, is given in the *Reality X Reference Manual Volume 3: Administration*.

What is Reality X?

Reality X is an application which enables a user to create a REALITY applications environment on a UNIX-based computer. It can, therefore, coexist with a variety of other UNIX applications, such as PRO-IV, Oracle, Ingres, word processors, and so on.

The REALITY applications environment supported by Reality X provides the user with much of the functionality of the REALITY Release 7.0 operating system, including all the main processors, TCL, PROC, DATA/BASIC, ENGLISH, and EDITOR, all highly compatible with Release 7.0.

Low level system functions, however, such as, device management, memory management and process management, are carried out by the UNIX operating system, enabling REALITY applications and UNIX applications to be managed on the same system in a consistent way.

Although Reality X is highly compatibile with REALITY Release 7.0 for both users and applications writers, there are a number of important differences in the way the system operating tasks and administrative tasks are performed. This is because Reality X is an application not an operating system and such tasks are performed as part of the overall management of the system using UNIX tools.

Release 7.0 Facilities Not Currently Supported by Reality X

Reality X applications software is designed to provide a high level of 7.0 functionality. However, there are some 7.0 facilities which are not currently supported. They are:

- FTU, and other McDonnell Douglas communications software packages
- General Asynchronous Driver
- CO3, Siemens and Realcomms.

Contents

References

Listed below are the REALITY Release 7.0 manuals applicable to Reality X and used in conjunction with this manual.

Note: This manual only describes differences between Reality X and REALITY Release 7.0. Users of earlier REALITY releases will need to know how their previous REALITY system differs from Release 7.0. These differences are documented in the *Release 7.0 Differences Supplement.*

REALITY Release 7.0 System Manuals

The following Release 7.0 System Manuals are used together with this manual.

User's Guide to REALITY Migration Utilities

DATA/BASIC Reference Manual

PROC Reference Manual

EDITOR Reference Manual

ENGLISH Reference Manual

Document Directory and Index

Glossary of Terms

General Utilities and Printing

Administering and Maintaining the System

Saving and Restoring the System

Using the Magnetic Tape System

Using the Spooler

Using the Terminal Independent Process Handler (TIPH)

TCL Commands

Managing Accounts and Files

Data Structures

Configuring and Securing the System

Guide to Networking for REALITY Users

Release 7.0 Differences Manual

Reality X Reference Manuals

The *Reality X Reference Manual Volume 3: Administration* provides a comprehensive description of the facilities provided to administer Reality X, both from within the Reality X environment and from outside in the UNIX system environment.

UNIX Reference Manuals

For information on UNIX utilities and procedures, refer to the reference manuals supplied with your system.

Conventions

This manual uses the following conventions:

`Text` — Bold text shown in this typeface is used to indicate input which must be typed at the terminal.

`Text` — Text shown in this typeface is used to show text that is output to the screen.

Bold text — Bold text in syntax descriptions represents characters typed exactly as shown. For example

WHO

text — Characters or words in italics indicate parameters which must be supplied by the user. For example in

LIST *file-name*

the parameter *file-name* is italicized to indicate that you must supply the name of the actual file defined on your system.

Italic text is also used for titles of documents referred to by this document.

{Braces} — Braces enclose options and optional parameters. For example in

BLIST {**DICT**} *file-name item-id* {**(***options*}

- the word DICT can optionally be typed to specify the dictionary of the file.
- *file-name* and *item-id* must be supplied
- one or more single-letter options can be included, as defined for the command; these must be preceded by an open parenthesis, can be given in any order, and are not separated by spaces. Any number of options can be used except where specified in text.

SMALL CAPITALS — Small capitals are used for the names of keys such as RETURN.

Enter — To enter means to type text then press RETURN. For instance, 'Enter the WHO command' means type **`WHO`**, then press RETURN.

In general, the RETURN key (shown as ENTER or ¿ on some keyboards) must be used to complete all terminal input unless otherwise specified.

Release 7.0 Compatibility

Reality X is largely a direct portation of REALITY Release 7.0 onto UNIX, providing an environment which is highly compatible with 7.0.

The migration utilities described in the 7.0 manual *User's Guide to the Migration Utilitie*s can, therefore, also be used to migrate between REALITY Releases 2.3, 3.0, 5.3 or 6.0 and Reality X.

Note, however, that when you run the File Sizing Report and Disc Space Report utilities, to upgrade to Reality X, described in Chapter 3 of *User's Guide to the Migration Utilitie*s, the file size data in Reports #1 and #2 are only an approximation to the actual file sizes and disc space for the newly created Reality X database. Overheads for Reality X programs, associated UNIX programs and so on, are not included.

Migration utilities are not required to migrate between release 7.0 and Reality X. It is necessary only to file-save the REALITY database and restore it on the new system, as described in the Installation Advisory.

Reality X cataloged programs have a different format from those on 7.0. Hence, after completing the restore process, all cataloged programs must be re-cataloged.

Reality X Differences from Release 7.0

DATA/BASIC functionality on Reality X is almost completely supported to that of REALITY Release 7.0. The few differences are detailed in this chapter.

Compatibility between REALITY Release 7.0 and Reality X extends to both source and object code. This means that both DATA/BASIC source and object code compiled on 7.0 are supported by Reality X, except where a program contains GAD statements.

Any programs previously cataloged on REALITY must be cataloged again on Reality X. Refer to the section on the CATALOG command.

Statements Not Supported By Reality X

The following statements relating to the GAD are not supported.

ATTACH

DETACH

GET

GETCOUNT

PUT

PUTCONTROL

The SHARE statement is not supported either, although existing code containing this statement will compile and execute without error.

Statements Changed for Reality X

CONNECT Statement

In the syntax element *rmt-sys*, **system** is an entry in the file /etc/ROUTE-FILE.

PERFORM Statement

Only eight PERFORM statements can be nested and not 32 as for Release 7.0.

The PASSLIST, RTNLIST, PASSDATA and RTNDATA parameters are not supported when executing the SYS command.

Functions Changed for Reality X

The way in which the SPOOLER and SYSTEM functions have changed from Release 7.0 functionality is described in the next two sections.

SPOOLER Function

sp-function=1 and =2 return information that equates to the information displayed on the Reality X SP-STATUS and SP-JOBS screens. This is different from Release 7.0.

sp-function=3 and =4 only apply to your current port.

SYSTEM Function

This function is largely supported by Reality X. However, differences in information returned for the following arguments are detailed below.

9 The CPU usage count in Reality X is only accurate to the nearest 20 ms.

12 The current system time in Reality X is only accurate to the nearest second.

14 Returns a 1, if typeahead data is present in the buffer. If no data is present, it returns a zero (0); it does not return the typeahead data count.

22 This argument returns a dynamic array of 13 parameters, of which six are not applicable to Reality X. These are:

Field No.	
1	System serial number; Only supported on targeted systems, otherwise, returns zero (0).
2	Firmware type; returns zero (0).
3	Firmware version number; returns zero (0).
5	Number of ABS frames; returns 2047 indicating compatibility with REALITY Release 7.0.
7	Session manager's number; returns -1
8	Maximum FID; returns -1

A typical display is:

0^0^0^1^2047^800^-1^-1^6^400^1^4096^3

The fixed integers have no meaning other than to indicate that the associated parameter is not relevant.

The Number of ABS frames 2047, displayed in field 4 of the array represents the full complement of ABS frames for Release 7.0. Reality X does not have an ABS area, therefore the number is not meaningful, except to indicate the high level of compatibility between Reality X and REALITY 7.0.

Only seven parameter fields contain information relevant to Reality X. They are:

Field No.	
4	Wordmate (1, if allowed, otherwise 0)
6	Number of configured processes (800 shown in the example given)
9	Number of workspace frames
10	Number of physical ports (400 shown in the example given)
11	1 for UK system
12	memory size = 4096 (4 Megabytes)
13	System type (3 = Reality X)

36	Not used. returns zero. (Collation tables not supported by Reality X denationalisation.)
41	Returns the literal 7.0. This does not refer directly to the version of Reality X, but indicates compatibility with Release 7.0
44	Returns system type 3 for Reality X.
53	Only returns the current system time in the first attribute.
56	Not applicable to Reality X. Returns a null.

CATALOG Command

When used in Reality X, this TCL command produces a cataloged DATA/BASIC program with a different format from that on Release 7.0. This means that cataloged program items produced in one environment cannot be transferred directly to the other. Object code must be transferred first, then cataloged again in the new database. It will then run, provided it does not contain GAD statements.

Limit on Program Size

A maximum of 16 Mbytes of workspace can be allocated to a process for user data. This places an upper limit on the number of lines of code that can be written in one program. If you exceed this limit an error condition occurs.

Release 7.0 Compatibility

The following REALITY Release 7.0 applications are fully supported by Reality X.

- PQ and PQN PROCs
- ENGLISH enquiry language
- Line EDITOR
- Screen Editor

Limit on Workspace

> CAUTION
>
> A maximum of 16 Mbytes of workspace can be allocated to a process for user data.

The above limit places a restriction on the size of an item that can be processed by PROC, ENGLISH or the editors. Processing that exceeds the limit will result in an error condition.

In particular, this limit on workspace limits the number of items that can be SELECT'ed and in some cases where the selection criteria are complex, it may limit the number of items that can be listed.

If the average item-id size is 15 bytes, the maximum number of items that can be put in a SELECT list is 1 million.

Associated 7.0 Manuals

The following Release 7.0 manuals are equally applicable to Reality X.

- *PROC Reference Manual*
- *ENGLISH Reference Manual*
- *EDITOR Reference Manual*
- *Screen Editor Reference Manual*

Overview

This chapter describes the differences between the TCL command set supported by Reality X Releases 3.1 and that supported by the REALITY operating system Release 7.0.

The majority of 7.0 TCL commands are supported by Reality X. However, there are a number that are either not supported, or their functionality has changed in Reality X, either, because:

1. Some REALITY Release 7.0 features are not applicable to the Reality X environment, particularly those relating to system management. In some cases an equivalent command exists in UNIX that achieves similar results.

2. A small number of Release 7.0 features have not yet been implemented on Reality X. Refer, etc.

3. The way in which Reality X achieves REALITY functionality under UNIX is different from Release 7.0.

TCL Commands

Three categories of TCL command are detailed.

- Release 7.0 Commands not supported by Reality X.
- Release 7.0 Commands changed for Reality X.
- New TCL Commands for Reality X, including:

  CLEAR-SP-LOCK

  DIR-VIEW

  FIX-SP-ERRORS

  NET-LOGON

  START-NET-PTR

  SYS

TCL Commands Not Supported by Reality X

The following 7.0 commands are not supported by Reality X.

:ABS/FILES

:ABSLOAD

:APPLY .PATCH

:IL-NEWTAB

:FILES

:RUL-NEWTAB

ABORT-PORT

BASIC-SAVE

BUFFERS

BUILD-DEVICES

CALCFID

CLAIM

CLEAR-GROUP-LOCKS

CLEAR-SYSTEM-LOCKS

CORRELATE-FID

DEVICE-STATUS

DISABLE-TAPE-DENSITY

DISCIO

DSKAD

DUMP

EDNA

ENABLE-TAPE-DENSITY

FIX-FILE-ERRORS

FLUSH

GROUP

IOP.DEBUG

IOP.STATUS

ITEM

LIMITS

LINKS

LISTPU

LOAD-T23

LOCK-FRAME

MEM-DIAG

MLOAD

MT-LOAD

MT-VERIFY

MVERIFY

P-ATT

P-DET

PH-RESUME

PH-SUSPEND

POVF

SET-DATE

SET-PORT

SET-SYM

SET-SYM2

SET-TIME

SHARE

SIZE-GROUP-LOCKS

SIZE-ITEM-LOCKS

START-DEV

START-SM

STOP-DEV

STOP-SM

SYS-GEN

TE-VERIFY

TO-VERIFY

TIMESLICE

UNLOCK-FRAME

WHAT

WHERE-PROCS

WORKSPACE

TCL Commands Changed For Reality X

The following 7.0 commands are supported by Reality X, but with different functionality. Differences are detailed in the section following.

:SP-NEWTAB

ACCOUNT-SAVE

ACCOUNT-RESTORE

ASSIGN

BKOFF

BKON

BREAK-KEY-ON

BREAK-KEY-OFF

CHARGES

CREATE-ACCOUNT

DATE-FORMAT

ENABLE-LOGONS

F-S and FILE-SAVE

INHIBIT-LOGONS

LISTACC

LISTDFILES

LISTFILES

LIST-SYSTEM-LOCKS

LOGON

M-A-S

MESSAGE

OFF

OLD-ACCOUNT-SAVE

OLD-FILE-SAVE

PCM

PH-ALLOCATE

PH-START

SAVE

SET-PORT

SET-PRIV

SHOW-ITEM-LOCKS

SHUTDOWN

SP-ALIGN

SP-ASSIGN

SP-CLEAR

SP-COPIES

SP-CREATE

SP-DELETE

SP-DEVICE

SP-EDIT

SP-EJECT

SP-FQDELETE

SP-JOBS

SP-LOOK

SP-MOVEQ

SP-OPTS

SP-PRIORITY

SP-RESUME

SP-SKIP

SP-STATUS

SP-STOP

SP-SUSPEND

SP-SWITCH

SSM

START-PRINTER

SYSTEM-SETUP

T-ATT

T-DET

TERM

TRANSLATE

TYPEAHEAD-OFF

WHERE

WHO

:SP-NEWTAB

Disk space occupied by print jobs is not lost when :SP-NEWTAB is executed.

ACCOUNT-RESTORE

Two new options are supported by Reality X, as follows:

O overwrites all existing files and items with those of the same name on tape. New files and items on tape are added, and existing files and items not on tape remain unchanged.

> **CAUTION**
>
> The O option should be used with extreme caution. Before use, ensure that you fully understand its effect on your database. Use without understanding may result in the corruption and loss of data on the database.

To restore a complete Reality X database from a FILE-SAVE (or F-S) tape, enter

```
ACCOUNT-RESTORE * (O
```

This updates the complete database, including the System Dictionary.

You can also use the O option to restore a single REALITY account onto a Reality X database. However, you must then use UPDATE-ACCOUNT to update the verbs in the Master Dictionary to ensure Reality X compatibility.

U upgrade option (For Information Only).

> **CAUTION**
>
> The U option should ONLY be used by McDonnell Douglas Support personnel who understand its operation. It is ONLY intended for use during the Reality X upgrade procedure and should NOT be used otherwise. Do not attempt to use this option for normal account restore operations as this may result in an inconsistent and unpredictable database.

ACCOUNT-SAVE

No Multiple Tape Unit Sequencing

Only one valid tape unit identifier may be entered at the prompt:

```
Enter tape units desired, in sequence, separated by
commas
```

Reality X does not support the automatic sequencing of multiple tape units.

Tape Density Prompt

The tape density prompt is now:

```
Tape density (if other than Device Default)
```

In Reality X, the default is configuration-dependent and is defined in the **config** file, unlike REALITY Release 7.0 where the default is 1600 Bpi.

ASSIGN

The functionality of ASSIGN is different in the following respects.

density may only be some of the Release 7.0 values, depending on the system under which Reality X runs.

For Quarter inch tape units, instead of supplying the tape densities e.g. 1600, 3200, 6250 Bpi, you can enter the Quarter Inch Cartridge (QIC) format e.g. 120, 150, 525, respectively. These formats equate to the above densities and are used for the 120, 250 and 320 Mbyte cartridges, respectively.

The default is configuration-dependent and is defined in the **config** file, unlike REALITY Release 7.0 where the default is 1600 Bpi.

unit-list Only one valid tape unit identifier may be entered. Reality X does not support the automatic sequencing of multiple tape units per channel.

For example, if you enter

```
ASSIGN =TAPE 2, 3
```

only drive 2 will be assigned.

On SYSTEM V/88; UNIX systems, before you attach a tape device you must ensure that the tape is loaded, and the unit is switched on-line, otherwise the attachment will fail, displaying the following error message:

```
[4005]  UNABLE TO OPEN THE DEVICE ASSOCIATED WITH
REQUESTED DRIVE.
```

BKOFF and BKON

These commands disable and enable the BREAK key on the invoking port, only. The *n* option used on 7.0 to specify a port is not supported.

This applies to BREAK-KEY-ON and BREAK-KEY-OFF as well.

CHARGES

The following 7.0 reports are not provided by Reality X.

- Number of disk reads,
- Number of process activations,

This is system information which is not accessible to Reality X.

Differences in information reported are as follows:

- The CPU usage count (CPU MS) is accurate to the nearest 20 ms.
- The current system time is accurate to the nearest second.

CREATE-ACCOUNT

When you select the remote (R) option of CREATE-ACCOUNT, Reality X generates the following prompts:

```
1.    ACCOUNT NAME
2.    REMOTE SYSTEM NAME
3.    REMOTE SYSTEM ACCOUNT
4.    PASSWORD
```

The following Release 7.0 prompts are not applicable to Reality X:

```
5.    NETWORK DEVICE
6.    TRANSMIT MODE (DDA or ACI)
7.    NETWORK PATHWAY
8.    DISCONNECT STRING (HEX)
```

DATE-FORMAT

The D (System default setting) option is not supported. Any attempt to invoke the D option will cause Reality X to display the error message.

```
[256] The format of the verb you are using is incorrect
for this release
```

A system-wide default date format is set in the UNIX environment by accessing the config, file located in the database directory, and entering the DateFormat variable. For example, enter

`Date Format=International` (That is, dd/mm/yy)

or

`Date Format=Standard` (That is, mm/dd/yy)

If no format is specified, the system defaults to 'International'

ENABLE-LOGONS

This command enables all ports on a database, not just the current port as on Release 7.0.

The *n* parameter to specify a particular port is not supported.

The command is only available in SYSMAN and can only be used by either the database owner or super-user.

Ports can also be enabled in the UNIX environment using the *unlockdbase* command. Refer to the *Reality X Reference Manual Volume 3: Administration* for details.

F-S and FILE-SAVE

Dummy ABS/Bootstrap

Reality X inserts dummy bootstrap and ABS sections, ensuring compatibility with Release 7.0 when restoring the FILE-SAVE. Bootstrap and ABS form the low level REALITY code.

No Multiple Tape Unit Sequencing

Only one valid tape unit identifier may be entered at the prompt:

```
Enter tape units desired, in sequence, separated by
commas
```

Reality X does not support the automatic sequencing of multiple tape units.

F-S Tape Density Prompt

The tape density prompt is now:

```
Tape density (if other than Device Default)
```

In Reality X, the default is configuration-dependent and is defined in the **config** file, unlike REALITY Release 7.0 where the default is 1600 Bpi.

INHIBIT-LOGONS

This command prevents all users, except the database owner or super-user, from logging on to a database. Using the A option prevents all users, including the database owner from logging on again.

With INHIBIT-LOGON (A) executed, the only way the inhibit condition can be reversed is either by the super-user logging on to the database and using ENABLE-LOGONS, or by the database owner or super-user using the *unlockdbase* command at the UNIX shell prompt.

Logon is prevented by maintaining LOCK.FILE in the top directory of the database. A user must have read permission on this file to be able to logon to the database. INHIBIT-LOGONS sets the read permissions, to owner only or to no one, using the A option.

CAUTION

INHIBIT-LOGONS will not be effective (without the A option), if users are allowed to logon under the database owner's UNIX user-id.

Logons can also be inhibited from the UNIX prompt using the *lockdbase* command. Refer to the *Reality X Reference Manual Volume 3: Administration*.

LISTACC

The number of disk reads is a system statistic, not accessible to Reality X. Hence, DISK READS and TOTAL DISK READS reports are not supported.

LISTDFILES

The LISTDFILES report contains a Filetype (Ftype) field which replaces the Base Frame ID (FBase) field displayed by Release 7.0.

File types are indicated by a letter followed by a number. The number specifies the level, as follows:

1 Master Dictionary

2 File Dictionary

3 Data Section

The letter specifies the file type, as follows:

A a clean log binary data section

B a byte stream file

C a clean log user view data section

D a directory view

LISTFILES

The LISTFILES report contains a Filetype (Ftype) field which replaces the Base Frame ID (Base) field displayed by REALITY Release 7.0. File types are identified by a letter followed by a number. The letter and number identifiers are the same as shown above for LISTDFILES.

LIST-ITEM-LOCKS

The item lock hashing algorithm for Reality X is based on the inode number of the UNIX file, unlike Release 7.0 which is based on the base FID. Because of this item lock numbers change from release to release and database to database.

LIST-SYSTEM-LOCKS

Only spooler locks are listed.

LOGON

The port to be logged on must have a device file permanently assigned. How this is achieved depends on the system platform on which Reality X is running. For example

- On UMAX V systems, device files are normally created dynamically by the terminal server software. Hence, to execute a LOGON from the host, the port must be pre-configured as a Slave port which simulates a hardwired port connection.
- On SYSTEM V/88 systems, the remote port must be one of the hardwired connections to the system.

Appropriate read and write permissions must be given to the port's device file. Refer to *Reality X Reference Manual Volume 3: Administration* for a detailed procedure.

If you enter LOGON with a port number of -1, Reality X allocates the next available 'pseudo' port number to LOGON. A 'pseudo' port has a process number, but does not physically exist on the system.

The -1 extension, is only useful if the logged on process executes a user or account LOGON PROC which then performs one or more specified commands, so long as they do not involve terminal input/output. A process logged on to a -1 pseudo port without such a PROC will log off automatically as soon as it tries to read from a terminal.

M-A-S

No Multiple Tape Unit Sequencing

Only one valid tape unit identifier may be entered at the prompt:

```
Enter tape units desired, in sequence, separated by
commas
```

Reality X does not support the automatic sequencing of multiple tape units.

M-A-S Tape Density Prompt

The tape density prompt is now:

```
Tape density (if other than Device Default)
```

In Reality X, the default is configuration-dependent and is defined in the **config** file, unlike REALITY Release 7.0 where the default is 1600 Bpi.

MESSAGE

A MESSAGE sent to a SLEEPing port is received at the time the MESSAGE is sent. This is unlike REALITY Release 7.0, where the MESSAGE is not received until the port awakens.

OFF

The OFF command logs you off a database and returns you to the point at which you logged on, except under special circumstances when you use the D option. The points from which you can log on, the corresponding use of the **reality** command and the effect of the OFF command are described below.

You can log on from the:

UNIX Shell

To log on directly from the shell prompt you enter the **reality** command with appropriate *database*, *user-id* and *account* parameters, either specified in the UNIX shell command line or by default in the .realityrc file. This takes you directly from the UNIX shell to TCL. Entering OFF at TCL, therefore, returns you directly to the UNIX shell.

	Reality X logon prompt	To logon from the Reality X logon prompt, you enter the **reality** command with the **-U** option. This takes you to the Reality X prompt where you then enter your Reality X user-id, followed by your password to logon to the database. Entering OFF at TCL, therefore returns you to the Reality X logon prompt. This is displayed for a pre-defined period (see SSM Network File Maintenance), before disconnecting. Using OFF with the D (Disconnect) option, however, instead of returning you to the Reality X prompt, returns you directly to the UNIX shell. If you include **exec reality -U** *database* in your **.profile**, then when you log in to UNIX, you go directly to the Reality X logon prompt from where you can log on to the database. In this case entering OFF also returns you to the Reality X logon prompt. However OFF (D disconnects you from UNIX altogether.
	UNIX login prompt	To logon directly from the UNIX login prompt you must include **exec reality** in your **.profile** and default values for *database*, *user-id* and *account*, either in **.profile** or **.realityrc**. You are then logged on directly to TCL. Entering OFF at TCL, therefore, disconnects from the system and returns you to the UNIX login prompt, or possibly the terminal server prompt.
OLD-ACCOUNT-SAVE		The Very Old Save option is not supported. The ABS frame limits prompted for are not meaningful. Press RETURN.
OLD-FILE-SAVE		The Very Old Save option is not supported.
OLD-SAVE		The V (Very Old Save) option is not supported.
PCM		Only Prompt 0 can be selected by the Reality X user to specify the location of a port. The setting up of port parameters is a function of the UNIX system and not the Reality X software. In fact Reality X is unable to access port information. Port characteristics displayed as Options 1 to 9 on the PORTS FILE MAINTENANCE screen are not applicable to Reality X, as their values are set by the UNIX operating system.

PH-ALLOCATE and PH-START

A port allocated to a TIPH must have a device file permanently assigned. How this is achieved depends on the hardware platform on which Reality X is running.

For example, on UMAX systems, device files are created dynamically by terminal server software. Hence, before a port can be allocated to a TIPH it must be pre-configured as a Slave line to simulates a hardwired connection. Other systems have hardwired ports which can be used with minimal re-configuration requirements. Refer to the *Reality X Reference Manual Volume 3: Administration* for details.

If a physical port connection is not required for the TIPH, then, instead of allocating a specified port number to TIPH, you just press RETURN when the PH-START command prompts for the port number, as below:

```
ENTER PORT# FOR PH TASK
```

Reality X then allocates to TIPH the next available 'pseudo' port number, automatically and the process then runs on in the background, but has no terminal access.

PH-STATUS

The following additional status code may appear in the STATUS column on the PH-STATUS report:

S TIPH job failed to open a spool job This indicates that a spooler error has occurred. A more precise diagnosis is not possible.

READ-1900 and READ-2900

The functionality of the U option is modified, as follows

U Can be used to 'unblock' an ICL block tape with multiple logical records in data blocks. It converts each logical record into a separate Reality X item.

SAVE

The A (ABS frames dumped) option is not supported. ABS code is a REALITY feature and is not applicable to Reality X.

SET-PRIV

This command only allows you to set privileges on your current port. It does not support the *n* parameter to specify another port.

SHOW-ITEM-LOCKS

The item-locks report differs from that displayed by Release 7.0 in that the FILEBASE and ITEM-ID columns are not displayed.

SHUTDOWN

This command in REALITY Release 7.0 performs a system function, not applicable to Reality X. In Reality X it logs off all current users from a database. It is only available in SYSMAN.

SLEEP

A MESSAGE sent to a SLEEPing port is received at the time the MESSAGE is sent, unlike REALITY where the MESSAGE is not received until the port awakens.

SP-ALIGN

SP-ALIGN can only be applied to jobs in PTR and TAPE assigned queues. Jobs in SYS assigned queues cannot be aligned.

Unlike REALITY Release 7.0 the A option is assigned to each print job and not to the form queue. This is effected either by `SP-ASSIGN` with the A option, so that the A option is applied to each job entering the queue, or by SP-OPTS which is used to apply the A option to the print job directly. Because of this SP-ALIGN functions differently in Reality X from Release 7.0 in that the (A)LIGN option must be carried out on a job by job basis.

On Release 7.0 you SP-ALIGN the form queue once, first selecting the (A)LIGN option, then when you select the (P)RINT option all print jobs currently in the form queue are printed under the current alignment setting.

In Reality X you align the form using the (A)LIGN option, then select the (P)RINT option which only prints the first ALIGN status job in the form queue. The queue is then despooled until another print job with ALIGN status reaches the top of the queue, at which point the queue is suspended again until you repeat SP-ALIGN.

SP-ASSIGN

Print reports are assigned to a form queue in a similar way to Release 7.0. However, the following options support different functionality:

- A (Align) option
- P (Protected) and U (Unprotected) options
- I (Instant output), N (No Spooling) and C (Choke) options

The A Option

The A (align) option, instead of being applied to the form queue, is applied to each print job entering the form queue. This affects the functionality of SP-ALIGN, described in this chapter.

P and U Options

The P (Protected) option (the default) does not support password verification. It prevents print jobs from being moved, edited, deleted or cleared by all users, except:

- SYSMAN or SYSPROG users.
- Users who have the same user-id as the REALITY user-id under which the print job was created.

See also SP-MOVEQ, SP-EDIT, SP-DELETE and SP-CLEAR

The U (Unprotected) option leaves print jobs unprotected, allowing any user to move, edite, delete or clear them.

Once the P or U option is assigned to a Print job, it cannot be changed

I, N and C Options

The I (instant output), N (no spooling) and C (choke) options which provide for instantaneous and direct printing are not supported for despooling to UNIX system (SYS) printers. However, the I and C options are supported for despooling to Reality X devices.

The N (No Spooling) option is also supported for Reality X devices, but is implemented differently from Release 7.0. Its implementation is similar to the C option. Hence current Release 7.0 user PROCs which use the 'N' option will still run on Reality X.

SP-CLEAR

Password verification as per Release 7.0 is not supported. However, print jobs with the P option assigned are still protected from being cleared by most users. A print job with the P option assigned can only be cleared by

- SYSMAN or SYSPROG users.
- users who have the same user-id as the REALITY user-id under which the print job was created.

SP-COPIES

For SYS assigned form queues this command only affects jobs which have yet to be spooled or are in hold files. Print jobs which have been spooled and passed to the UNIX spooler are unaffected.

For PTR assigned form queues, Release 7.0 functionality is fully supported.

SP-CREATE

To create a form queue assigned to a UNIX system printer, device type SYS is entered with the UNIX destination of the printer. UNIX printer names available are listed by selecting Action Code 11 - LIST SYS Q's.

Before you can create a form queue assigned to a private printer (PTR device with UNIX id), the PTR device must first have been configured as a UNIX system printer. Then, with the SP-CREATE verb, you enter the device type PTR followed by the UNIX destination name or class name of the UNIX system printer.

The maximum number of form queues which can be created is specified in the UNIX file *config* located in the database directory. The default is 64. This can be changed, but once the number has been increased, it cannot be reduced again.

Specifying the Tape label parameter

label specifies the type of label the Spooler writes to tape:

0 for no label;
1 for a 50-byte label;
2 for an SMA label.

This differs from REALITY release 7.0 where you only specify 'Y' or 'N'.

SP-DELETE

Password verification as per Release 7.0 is not supported. However, print jobs with the P option assigned are still protected from being deleted by most users. A print job with the P option assigned can only be deleted by

- SYSMAN or SYSPROG users.
- users who have the same user-id as the REALITY user-id under which the print job was created.

SP-DEVICE

Before changing to a new device, the Reality X despooler process for the specified form queue must be stopped, then started again after the change.

The SYS identifier is used with this command to specify a UNIX system printer. When assigning a SYS device to a form queue, it checks the UNIX identity you enter against a list of valid device names held in the UNIX spooler.

SP-EDIT

Print jobs cannot be edited if they are either:

1. In the process of being created (i.e. OPEN)
2. Passed on to the UNIX spooler queue (indicated on the SP-JOBS screen by a UNIX request id in the SYS# column)

If you try to edit a print job in a SYS form queue which has already been passed to the UNIX spooler and is waiting to be printed, the spooler displays the message.

```
JOB ALREADY QUEUED FOR OUTPUT
```

Password verification as per Release 7.0 is not supported. However, print jobs with the P option are still protected from being edited by most users.

A print job with the P option can only be edited by:

- SYSMAN or SYSPROG users.
- users who have the same user-id as the REALITY user-id under which the print job was created.

Spooler Editing Commands

The SP (Start Print) and SPA (Start Print with Alignment) commands are not supported for jobs on SYS assigned form queues. Printing is always started from the beginning of the print job.

SP-EJECT

This command generates form feeds in the same way as REALITY Release 7.0 spooler. However, if the UNIX interface to the printer device creates a banner message, then a banner page will be output before each set of form feeds.

Both the Reality X background despooler process when driving a private printer (see Chap. 6) and the UNIX spooler which drives system printers send data via the UNIX printer interface program and it is that interface program which generates the banner page.

SP-FQDELETE

If a background despooler process is active on a PTR or TAPE attached form queue, the STOP PRINTER command must be executed to de-activate the despooling before using SP-FQDELETE.

SP-JOBS

The SP-JOBS command displays a PRINT JOBS screen with action codes, similar to those displayed for REALITY Release 7.0. An example of the screen generated by Reality X is shown below.

```
12:32:31  22 MAR 1991              PRINT JOBS                PAGE 1 OF 1 PAGES

JOB SYS# QUEUE NAME   PORT  USERID              CREATED       STATUS SIZE   OP CP

  1 1204 STANDARD       18  SYSMAN           30 JAN 16:38     QUEUED           22
  2      INVOICES        3  ACCOUNTS         19 DEC 12:50     HOLD     12       1
  3      RECEIPTS        9  ACCOUNTS         19 DEC 13:30     HOLD     14       1
  4 1290 LABELS         31  ADMIN            30 JAN 16:50     QUEUED   20      50
  5      INVOICES        7  ACCOUNTS         30 JAN 17:2O     KILLED   13       1
  6      INVOICES       12  ACCOUNTS         30 JAN 17:29     PRINT    15       1









1. MOVE FORM QUEUE 5. DELETE JOB       9. SUSPEND PRINT 13. ALIGN PRINTER
2. MOVE PRINT JOB  6. STOP PRINTING   10. TOP PRIORITY  14. CLEAR QUEUE
3. CHANGE OPTIONS  7. RESUME PRINTING 11. SP-STATUS     15. LIST SYSTEM JOBS
4. CHANGE #COPIES  8. EDIT PRINT JOB  12. KILL PRINTING 99. EXIT

ENTER ACTION CODE / (P#;PT;A acctname;Q quename;S status)?
```

Differences been the Reality X PRINT JOBS screen shown above and that of REALITY Release 7.0 are:

- A SYS# field is provided to contain the request id of print job in the UNIX spooler.
- The PRNTD field is not supported.
- An additional Action Code (15. LIST SYSTEM JOBS) is provided.
- In the STATUS field the condition EDIT is displayed but without a process number.

- The PRINT condition will only be displayed for a print job directed to a Reality X private printer. Print jobs despooled to a SYS type printer will only be shown as QUEUED. In order to find out if they are being printed you need to select Action Code 15 (LIST SYSTEM JOBS) to interrogate the job status of the UNIX spooler queues.

- A USERID field is displayed instead of ACCOUNT.

Differences in the functionality of SP-JOBS action codes between Release 7.0 and Reality X are described in Chapter 6, as well as in this chapter against the corresponding TCL commands.

SP-LOOK Only the current user's spooler assignments are displayed. The 'n' and '*' options are not supported

SP-MOVEQ Print jobs which are OPEN, being edited (EDIT) or being printed (ACTIVE) cannot be moved. Any attempt to do this will return an error message.

Password verification as per Release 7.0 is not supported. However, print jobs with the P option assigned are still protected from being moved by most users. A print job with the P option assigned can only be moved by

- SYSMAN or SYSPROG users.

- users who have the same user-id as the REALITY user-id under which the print job was created.

SP-OPTS Options on a print job in a SYS-assigned form queue cannot be changed, once the job has been closed and passed to the UNIX spooler queue. Hence, this command is primarily supported for

- A print job in a form queue attached to a PTR or TAPE device.

- A hold file in a form queue attached to a SYS printer.

- A print job in a form queue attached to a SYS printer but which has not been yet been passed to UNIX, for example, because printing is suspended.

The S (Suppress Printing) option alone causes the print job to be removed from the form queue.

SP-PRIORITY This command can only be applied to a form queue assigned to a Reality X private device (PTR or TAPE) or which has no output device attached to it

For form queues with UNIX system printers (SYS) attached to them, print jobs are spooled to the UNIX queuing system and therefore cannot be prioritised, since UNIX does not allow print jobs to be rearranged on its queue.

SP-RESUME

For print jobs in SYS assigned form queues, if the output device has been stopped or suspended while a job was being printed, the SP-RESUME will cause the entire print job to be reprinted, unlike Release 7.0 which resumes output at the point where it was stopped.

For print jobs in PTR or TAPE assigned form queues, Release 7.0 facilities are fully supported.

SP-SKIP

When spooling to a form queue which has a SYS printer as its currently assigned device:

- if *number-of-pages* is entered as '1', any leading form-feed character is removed by Reality X. This is the default setting and is normally used for UNIX system printers. The UNIX interface script is left to add the required form-feeds.

  Note, however, that if a print job is moved from a non-SYS type queue to a SYS type queue which has a skip value of '1', the print job will still retain its leading form-feed.

- If *number-of-pages* is entered as 0, leading form-feed characters are retained by Reality X. It is assumed that the UNIX interface script has been modified so that it does not add any form-feeds. This skip value of '0' is used for private printers as their interface scripts are modified to remove form-feeds.

  Note, however that if a print job with skip value set to '1' is moved to another type of queue, for example PTR, the leading form-feeds will be lost.

- *number-of-pages* greater than 1 cannot be assigned to SYS type form queues.

SP-STATUS

The SP-STATUS command displays a QUEUE STATUS screen with action codes, similar to those displayed for Release 7.0. An example of the screen generated by Reality X is shown below.

```
14:42:31  21 MAR 1991             QUEUE STATUS                PAGE 1 OF 1 PAGES

QUEUE NAME      DEV   #              STATUS       ERR   #Q SK XL BLKSZ DENZ  LBL

STANDARD        SYS   slp1           ACTIVE             3  1
DAVEH           SYS   applelaserprin ASSIGNED           0  1
TECHNICAL.PUBLI PTR   2              ASSIGNED           0  2
ARCHIVE         TAPE  1              NOT READY          1  0     1000  1600
LABELS          0     0              NO DEVICE          0  0









1. CREATE QUEUE      4. CHANGE DEVICE     7. DELETE QUEUE     10. STOP PRINTER
2. CHANGE QUEUENAME  5. CHANGE PAGE SKIP  8. CHANGE TRANSL'N  11. LIST SYS Q's
3. LIST FORM TYPES   6. LIST PRINT JOBS   9. START PRINTER    99. EXIT

ENTER ACTION CODE / PAGE NUMBER (P#)?
```

Notice that this screen only shows information about the Reality X queues and their associated devices. It does not show status information, for UNIX spooler queues or UNIX printer devices which are not under Reality X control. To obtain this information you need to select Action Code 11 (LIST SYS Q's).

Other differences in the QUEUE STATUS screen from that displayed by Release 7.0 are:

- The TYP field is not supported
- The device identity field(#) is 14 characters wide to accommodate UNIX device names (SYS #). Device names longer than 14 characters appear truncated.
- If the QUEUE NAME selected is greater than 15 characters in length, it is truncated to 15 characters on the screen.
- LBL specifies the type of label the Spooler writes to tape:

  0 for no label;
  1 for a 50-byte label;
  2 for an SMA label.

- In the STATUS field the following status conditions are supported:

  ACTIVE
  ASSIGNED
  STOPPED
  SUSPENDED
  NO DEVICE
  OFF-LINE
  TAPE N/RDY
  WRITE RING
  NEXT REEL
  PARITY
  ERROR

  The ERROR status is supported but only for private printers.

  The following are not supported.

  DEVICE N/C
  CONTROLLER N/C
  NODE N/C
  NODE N/RDY

The following codes may be displayed in the ERR field.

1 Failed to attach device.

2 Failed to open command pipe.

3 Failed to create named pipe

4 Failed to open named pipe

5 Interface program abort

Differences in the functionality of SP-STATUS action codes between Release 7.0 and Reality X are described in this chapter against the corresponding TCL commands and are also described in Chapter 6.

SP-STOP

This command uses the argument *form-queue* as a parameter but not the *print-job-num*. Printing cannot be stopped at the beginning of a specified print job. This applies to both SYS and PTR (TAPE) devices.

For a form queue assigned to a SYS device, SP-STOP causes printing to stop immediately and does not continue until the end of the current print job as with Release 7.0. The whole of the current print job is then reprinted when SP-RESUME is executed.

For a form queue attached to PTR or TAPE device SP-STOP supports 7.0 functionality, except it does not allow you to specify a job number.

SP-SUSPEND

For print jobs in SYS assigned form queues this command, like SP-STOP, stops printing immediately. Then the whole of the current print job is reprinted when the SP-RESUME command is entered.

For print jobs in PTR and TAPE assigned form queues REALITY Release 7.0 facilities are fully supported.

SP-SWITCH

As for SP-MOVEQ, SP-SWITCH cannot be used on a print job which is being edited. An attempt to do this will return the error message.

```
JOB ALREADY BEING EDITED BY PORT nnn
```

Also, as for SP-MOVEQ, 7.0 type password verification is not supported. But, print jobs are still protected from being moved by most users. A print job can be moved only by

- SYSMAN or SYSPROG users.
- users who have the same user-id as the REALITY user-id under which the print job was created.

SP-TRANSLATE

This command can only be applied to jobs in PTR and TAPE assigned queues. Printer translation cannot be applied to a SYS assigned queue.

The translation table being used cannot change until the despooler process is stopped. SP-TRANSLATE may be applied to an active form queue, but the new table number entered will not become effective until the despooler is stopped and restarted again.

SSM

PORTS File Maintenance Screen

Only Prompt 0 can be selected by the Reality X user to specify the location of a port. The setting up of port parameters is a function of the UNIX system and not the Reality X software. In fact Reality X is unable to access port information.

Port characteristics displayed as Options 1 to 9 on the PORTS FILE MAINTENANCE screen are not applicable to Reality X, as their values are set by the UNIX operating system.

USERS File Maintenance

Options 17,18 and 19 on this screen currently have no significance for Reality X.

SECURITY File Maintenance

Option 9 - Max. Workspace size. The valid range for this is 0 to 4000 frames.

START-PRINTER

To be able to use START-PRINTER on a private printer assigned queue, a user must have access permissions for the UNIX printer device being used.

For a SYS assigned form queue, the despooler process is started automatically when the SYS device is assigned. Hence it is not necessary to use START-PRINTER on a SYS assigned queue, unless you have stopped the despooler and wish to start it again.

STOP-PRINTER

It is not possible for Reality X to determine at any instant whether a form queue is despooling or not. STOP-PRINTER therefore allows the user to kill despooler process and suspends the form queue automatically.

This is different from REALITY Release 7.0 which detects if a process is despooling and returns a form queue busy message. The user then has to suspend the queue before killing the process.

SYSTEM-SETUP

Only ACC and PH-HISTORY files are cleared. CHANNELS and DEVICES files are not supported.

T-ATT

The functionality of T-ATT is different in the following respects.

density may only be some of the Release 7.0 values, depending on the system under which Reality X runs.

For Quarter inch tape units, instead of supplying the tape densities e.g. 1600, 3200, 6250 Bpi, you can enter the Quarter Inch Cartridge (QIC) format e.g. 120, 150, 525, respectively. These formats equate to the above densities and are used for the 120, 250 and 320 Mbyte cartridges, respectively.

The default is configuration-dependent and is defined in the **config** file, unlike REALITY Release 7.0 where the default is 1600 Bpi.

unit-list Only one valid tape unit identifier may be entered. Reality X does not support the automatic sequencing of multiple tape units on a channel.

On SYSTEM V/88 UNIX systems before you attach a tape device you must ensure that the tape is loaded, and the unit is switched on-line, otherwise the attachment will fail, displaying the following error message:

```
[4005]  UNABLE TO OPEN THE DEVICE ASSOCIATEWD WITH
REQUESTED DRIVE.
```

T-DET

The U (Detach unless line being used) option is not supported.

TERM

The default terminal type is 15. This selects the terminal type defined by the UNIX TERM environment variable. The *n* option used to specify a port number is not supported.

TIME Time and date formats are set up using the UNIX **date** command, not SET-DATE and SET-TIME.

TYPEAHEAD-OFF With type-ahead off, the bell is delayed until the next character is read, that is, until the TCL prompt appears again.

WHERE This command is supported by Reality X, but is used to display different information and uses different options from those of the corresponding REALITY command. Details are given below.

Purpose To display status information showing where current reality processes are executing.

Command Class TCL-I verb

Syntax **WHERE** *{m{-n} {(output-options}}*

Syntax Elements

m	is a specified port
m-n	is a range of ports

Options

A	lists account name instead of process id.
S	Displays the minor state for each process.

Report Headings: No Options If no options are specified WHERE displays the following data fields.

Heading	Description
PORT	Number of the port from which the process is executed
PROCESS	The UNIX id of the process
MAJOR STATE	Reports the high level progress of the associated process, indicating any high level service function which is being performed, for example, 'Item Lock' or 'Item Read'. Such functions makes one or more system calls and are therefore subject to being blocked. When not performing such a function, the Major State is set to 'Running'.

Report Headings: S Option

If the S option is specified, WHERE displays the fields already described for the 'no option' case, plus the following heading.

Heading	Description
MINOR STATE	Reports the low level progress of the associated process during the current Major State (high level service function) and indicates its state at each system call which may cause a 'blocking' situation, for example, while waiting for an item lock or performing a disk read. The minor state is set at the start of each system call and cleared on successful completion. It is then reset to 'Running'.
STATUS	Reports the status of the associated port, either as, 'Connected' where a user is logged on. or 'Reserved' where a user is logging on.

Report Headings: A Option

If you specify the A option, WHERE displays the PORT and MAJOR STATE columns as for the 'no options' case, but instead of the PROCESS heading, it displays ACCOUNT-ID field. This contains the account from which the associated process was started.

Display Before the Port Number Entry

An asterisk (*), or the letters 'T', 'D'. or 'S' may appear on the left of a port number entry. These refer to the following:

'*' marks the port that issued the WHERE command

'T' marks a port from which a TIPH process is being run.

'D' marks a port which is running a (D)espooler process.

'S' marks a port which is running a (S)erver process.

WHO

The database name is returned instead of the REALITY system name. No options are supported.

New TCL Commands For Reality X

CLEAR-SP-LOCK

Purpose	To clear the spooler lock on the form queue table
Syntax	**CLEAR-SP-LOCK** *nnn*
Options	*nnn* is the identity of a specified entry lock to be cleared. With no option specified, the shared memory spooler table lock is cleared
Restrictions	SYSMAN account only.
Comments	CLEAR-SP-LOCK reactivates any process waiting for the lock to be cleared.

DIR-VIEW

Purpose — To create a directory view file providing a view of a UNIX directory from within a Reality X database.

Syntax — **DIR-VIEW** *file-name directory*{**(***options*}

Syntax Elements

file-name — is the name of the directory view file you want to create.

directory — is the path-name of the UNIX directory for which you wish to create the directory view file. This can either be absolute or relative.

Options — A number of special options, namely R, B and F are supported for the advanced user. These are detailed later.

Comments — The directory view file is virtually indistinguishable from a ordinary Reality X database file, enabling the referenced UNIX directory to be accessed and manipulated by a database user using the standard set of TCL commands, as well as other processors, such as ENGLISH, DATA/BASIC, PROC etc.

UNIX files within the referenced directory appear as Reality X items in the directory view file and each new line of text in a UNIX text file appears as an attribute line within the associated Reality X item.

More than one directory view file can be created and can co-exist for the same directory, each constituting a synonym file name for the same directory view. Any operation, such as 'deleting an item', in one will affect all synonym directory view files.

The directory view file can be used to transfer text data been the UNIX environment and a Reality X database, and vice versa.

Even if a directory file name does not exist in the UNIX file system, DIR-VIEW will still create a D-pointer in the MD and a directory view file dictionary. However, any attempt to view such a directory will return the error message:

```
'directory' IS NOT A FILE NAME
```

Restrictions

A directory view file contains items for regular UNIX text files within the referenced directory. Non-regular files such as, sub-directories, pipes, devices and so on are not visible as items.

Directory view is primarily aimed at text file manipulation. Any attempt to create a directory view on to a binary file and manipulate binary data may have an undefined effect.

Directory view should not be used to store 'semi binary' items, such as compiled DATA/BASIC programs, ALL gen items, etc.. These and other such files may be corrupted when read into Reality X.

Access to a directory view file is subject to the access permissions of the referenced UNIX directory and files. Trying to access the directory view file of a directory to which you do not have access permissions will return an error message. If you do not have access permissions to particular files within a UNIX directory, DIR-VIEW will not create a directory view items for those files.

Special Options

The following options are advanced options supported by Reality X.

Note: the syntax is different from that of standard TCL. Instead of a left bracket (, a semi-colon is inserted immediately after the directory name (no space), then the option (no space between semicolon and option.)

R Read only. The UNIX directory cannot be modified from Reality X.

B Binary view. All files within the UNIX directory are written to and read as binary items. No NEWLINE/Attribute Mark translations are performed. The binary flag is always set on a read and always assumed on a write.

F Binary view on read. All files within the UNIX directory are read as binary items. The binary flag is always set and no NEWLINE/Attribute Mark translations are performed. However, items are written as ASCII or binary depending the state of the binary flag. Attribute marks are translated to NEWLINEs if the binary flag is cleared.

Example

Create a UNIX directory /user1/accounts containing two sub-directories vat and log, and three files invoice109, invoice110 and invoice111. Then enter

DIR-VIEW ACCOUNTS /user1/accounts

The following system message is returned.

```
[417] FILE 'ACCOUNTS' CREATED.
D/CODE =DY, MODULO = /user1/accounts, SEPAR = 0
```

This creates the directory view file ACCOUNTS for the UNIX directory /user/accounts.

Now use the LIST verb to list items in the directory view file ACCOUNTS. Enter

```
LIST ACCOUNTS
```

The following list is displayed.

```
ACCOUNTS...

invoice109
invoice110
invoice111
```

Note that an item is created in the directory view file ACCOUNTS for each of the three invoice text files in /user1/accounts, but not for the sub-directories, log and vat.

Now enter

```
CT ACCOUNTS invoice109
```

This displays the contents of the UNIX file `invoice109` in Reality X item format.

You can transfer data between the UNIX environment and Reality X database using the TCL command COPY, as follows:

```
COPY BP DBPROG
TO: (ACCOUNTS
```

exports the DATA/BASIC program DBPROG into a file in `/user1/accounts`.

Conversely,

```
COPY ACCOUNTS invoice109
TO: (INVOICES
```

imports the file `invoice109` into database as an item in the file INVOICES.

FIX-SP-ERR0RS

Purpose

To correct spooler problems resulting from either a system crash or Reality X abort.

Syntax **FIX-SP-ERRORS** {*job-number*}

Syntax Elements *job-number* The number of a current print job in the spooler, specifically one with OPEN or EDIT status.

Restrictions SYSMAN account only.

> **CAUTION**
>
> This command must be used with great care. Any attempt to use it while users are creating or editing print jobs will almost certainly lead to print job corruption.

Comments FIX-SP-ERRORS is used to recover incomplete print jobs from the spooler queues which have been left OPEN, or with EDIT status, by a system crash or Reality X abort. It can be used to remove jobs from the spooler or to change their status from OPEN/EDIT to QUEUED, enabling them to be printed.

A particular print job can be specified, otherwise the utility runs for all print jobs currently in the spooler queues.

Messages and Prompts If a print job is complete and queued ready for printing, the utility displays a message of the form:

```
2 appears to be complete
```

If a print job was still being created when the spooler crashed, a message similar to the following is displayed.

```
2 is/was open and being created by port 21
Enter action required: D(elete, P(rint) or <CR>?
```

If a print job was being edited when the spooler crashed, a message similar to the following is displayed.

```
3 is/was being edited by port 21
Enter action required: D(elete, P(rint) or <CR>?
```

In either of these cases, you can enter the following commands:

D to remove the print job from the spooler.

P to change the status of the OPEN or EDIT print job to QUEUED, ready for printing. Note, however, that the contents of an OPEN print job will probably be incomplete, as it will only contain the data spooled up to the time of the failure.

An print job being edited at the time of the crash may also be corrupted

RETURN to leave the status of the print job unchanged.

If a print job is currently being edited at another port which is currently logged on, the software prompts to check that you still want to continue with its recovery/removal. For example,

```
3 is/was being edited by port 21
Port 21 is currently logged on.
Enter 'Y' if you are sure you want to continue?
```

A print job with EDIT status can still be edited by the SYSMAN/SYSPROG user or owner, before being recovered.

NET-LOGON

Purpose

To log on remotely a terminal connected to the database from across a network

Syntax

NET-LOGON *route-file-entry, user-id*{,*user-password*} {*account-name*{,*account-password*}}

Syntax Elements

route-file-name
: is an entry in the /etc/ROUTE-FILE which specifies the route to the terminal.

user-id
: a valid UNIX/Reality X user-id under which the terminal is to be logged on. The UNIX and Reality X user-ids must be the same. The Reality X password verification is ignored

user-password
: is the password for the UNIX user-id, if required.

account-name
: is the name of a valid account on the database. This can be omitted if a default account has been defined. If a name is entered, it overrides the default.

account-password
: is the password for the specified account, if required.

Comments

The port is logged on to the UNIX user-id specified in the command, then to the same Reality X database as the user invoking NET-LOGON. The UNIX user-id is used as the Reality X user-id and the account logged on to is either the one specified in the NET-LOGON command line or, if not specified, the default account associated with the user-id.

The command prompts for the necessary parameters, if you do not specify them with the command.

If the remote terminal is logged on successfully, the following message is displayed

```
LOGON SUCCESSFUL - PORT nn
```

where nn is the port number assigned.

Once logged on, the terminal operates in the same way as a terminal which has been logged on manually.

To log off the terminal you use the LOGOFF command and port number. The network circuit will then be disconnected.

The Reality X process connected to the network port is assigned a PLID of the form:

UNET - Serial - Route File Name

where,

Serial Number	is the serial number of the host system
Route File Name	is the /etc/ROUTE-FILE name used to identify the network.

Note that this is different from the PLID which would have been assigned if the network port logged on itself, instead of being logged on by NET-LOGON. The difference is deliberate and is designed to identify the originator of the network connection rather than its end-point.

START-NET-PTR

Purpose

To start despooling to a remote networked printer.

Syntax

START-NET-PTR *form queue*, *route-file-name*

Syntax Elements

form queue is the name of the form queue containing the print jobs you wish to despool to the remote printer

route-file-name is an entry in the /etc/ROUTE-FILE which specifies the route to the printer.

Prompts

The command prompts for the necessary parameters if you do not specify them with the command.

Stopping Printing

To stop remote despooling you use the STOP-PRINTER command with the form queue name. The network circuit will then be disconnected and spooler process stopped.

Restarting Printing

If a problem occurs such that the link **i**s broken and the printer port is hung, reset the PTR device number to 0, then re-start the spooler process using START-NET-PTR.

Procedure to Set Up Network Printing

Refer to the *Reality X Reference Manual Volume 3: Administration* for details.

Comments

Print jobs in the remote printer queue can be manipulated using normal SP-JOBS menu options and SP-verbs.

Only the START-NET-PTR verb should be used to start remote despooling. The START-PRINTER verb should NOT be used.

Messages

A successful START-NET-PTR displays the following

```
PTR ATTACHED TO PORT no.
```

where *no.* is the despool process number

If the following message is displayed:

```
Invalid System Name
```

check to see if you have entered the **reality** shell command correctly by entering the database name, and not the absolute path name of the database.

SYS

Purpose

To enable you to execute a UNIX command string from within the Reality X environment.

Syntax

SYS {*UNIX command*} or **sys** {*UNIX command*}

Syntax Elements

UNIX command	may consist of a UNIX command string which would normally be entered at the UNIX shell.

Comments

UNIX command is optional. If omitted, Reality X invokes the UNIX shell, displaying the shell prompt. The UNIX shell is maintained until an end-of-file character (CNTL+D) is entered when you are returned to TCL.

Entering *UNIX command* as a parameter of SYS executes the specified UNIX command string as though it were entered at the shell prompt, then returns to Reality X TCL.

SYS may be entered in all lower case or all upper case letters. The *UNIX command* is case sensitive and must be typed as you would type it at the UNIX shell.

Using SYS in the PERFORM statement applies certain restrictions. Refer to Chapter 3.

Creating New Verbs

You can create a new verb to execute a specific UNIX process by copying and renaming the SYS verb definition item and entering the shell command to be executed into attribute 5 of the new command definition item.

CAUTION

If the SYS verb definition changes on any future release, all user verbs created by copying and modifying SYS will require changing when migrating to that release. If this is a problem you should avoid using this facility.

The format of the SYS definition item is:

item id	SYS
001	PG
002	77C7
003	
004	
005	UNIX command string (optional)

An alternative method of running a UNIX command from TCL by a single command without copying the verb definition, is to create a PROC with SYS in it. However, this is obviously much less efficient.

Restriction

Note that the effect of the UNIX command string run by SYS is limited to the duration of the SYS process. Hence, commands such as **cd** or **env** only affect your UNIX environment for the duration of SYS, after which the environment reverts to its previous state . Such commands will, however, be effective during a script or some other sequence of commands run by SYS.

Example 1

```
SYS
```

This invokes the UNIX shell, displaying the shell prompt

$

Example 2

```
SYS ls david
```

This lists all files and directories in the UNIX directory 'david', as follows:

```
directory1
file1
file2
file3
```

Example 3

Now copy the SYS definition item, rename and modify, as follows:

```
     LS

001  PG

002  77C7

003

004

005  ls
```

Now you can enter the following at TCL.

```
LS david
```

and you get the same list as before.

```
directory1
file1
file2
file3
```

Overview

The Reality X spooler supports despooling to four types of device.

System Printer	A UNIX system printer; Device type SYS + the UNIX printer name.
Private Printer	A UNIX system printer allocated for Reality X private use; Device type PTR + the UNIX printer name.
Port	A Reality X port number mapped to a UNIX system port; Device type PTR + the port number.
Tape device	A tape unit connected to the UNIX system; Device type TAPE + unit number.

The latter three devices (Private printer, port and tape) are Reality X devices despooled directly by a Reality X despooler process. The system printer is despooled by the UNIX spooler.

System Printers

A system printer is a device which is configured in the UNIX spooler sub-system (lp) and shared by Reality X with the UNIX system.

In order to despool to a system printer, Reality X passes print jobs to the UNIX spooler. A system printer is identified on the SP-STATUS screen as device type SYS together with its UNIX model name.

Reality X Devices

A Reality X device is despooled by a Reality X despooler process and may be of three types

- Private Printer (PTR)
- Port (PTR)
- Tape device (TAPE)

Reality X runs a despooler process for each Reality X device, exercising direct control over it. This is in contrast to SYS type devices which are controlled by the UNIX spooler. Hence, despooling to a Reality X device ensures private use by Reality X users and a high degree of compatibility with REALITY Release 7.0 PTR and TAPE devices.

Private printers are UNIX system printers which are disabled from receiving UNIX print jobs and controlled by a Reality X despooler process. A private printer is identified on the SP-STATUS screen by device type PTR and the UNIX model name or class name of printer.

A Reality X port maps to a system port connected to a printer, or a terminal with slave printer.

Spooling

Reality X Spooling operates in a similar way to the Release 7.0 spooler for both system and Reality X devices. Print Reports are received from Reality X processors, assignment options checked, job files created and print jobs numbered and assigned to a form queue.

Job numbers are assigned in sequence from '1' up to '3999', then reset to '1' again. This is different from Release 7.0 which re-uses numbers as they become available. Re-starting the database daemon also resets the job number to '1'.

The similarity between Reality X and Release 7.0 spooling maintains a substantial degree of compatibility in the user interface between Reality X and 7.0. It is in the despooling to printers where differences are most evident. These are described below.

Despooling to a System Printer

Reality X cannot despool directly to a system printer which is enabled and under the control of the UNIX LP scheduler. Instead it passes print jobs to the UNIX spooler (LP) which then performs the despooling to the system printer specified by the SYS id.

Despooling to a system printer is executed in two stages. The first stage being the spooling into a SYS form queue and the second stage, despooling via the UNIX spooler to the allocated system printer ('laser1' in Figure 1).

More than one form queue can be assigned to the same system printer with concurrent despooling. On assigning a SYS device to a form queue, the despooler is already started and does not require a START-PRINTER command, unless STOP-PRINTER has previously been executed. Hence print jobs in all SYS assigned form queues are passed to the UNIX spooler and mixed up together with UNIX print jobs. The spooled order of print jobs in a SYS assigned form queue is not maintained by the despooler. To make available a single queue despool, all SYS assigned queues, except one, should be stopped using STOP-PRINTER.

Once a print job is spooled to a SYS form queue and closed, it is passed on immediately to the UNIX spooler provided that the S (suppress printing) option is not assigned. A copy of each print job is maintained in Reality X, so that the print job data and status information remains accessible to the Reality X user until the job is despooled from the UNIX queue.

The print job status information includes a UNIX print request id which is passed back to the job file in Reality X to identify the job in the LP output queue. This information is accessed using the SP-JOBS action code 15 LIST SYSTEM JOBS described in Chapter 4. Once a print job has been despooled by the LP scheduler, Reality X deletes the print job status information from its own files.

Despooling to a Reality X Device

Reality X can despool to a private printer, port and tape device by running a despooler process, either in the background for printers and tape units, or in the foreground for a port connected to a terminal with slave printer. Each despooler process interrogates a form queue and transfers print jobs to its assigned device. Reality X Release 3.1 also enables despooling to a remote networked printer. Three commands are supported to start despooling to a Reality X device.

START-PRINTER which starts a background despooler process to despool to a private printer, tape device or a printer attached to a terminal. The process then runs in the background without interfering with the Reality X foreground process. It continues despooling until it is stopped using STOP-PRINTER.

PORT-DESPOOL which starts a process in the foreground to despool to a current port. Despooling continues until the form queue is empty or the process is terminated using CNTL+BREAK.

START-NET-PTR which starts a background despooler process to despool to a remote networked printer. This command is described in Chapter 5.

Each despooler process can only interrogate one form queue at a time. Any attempt to start despooler processes on more than one form queue with the same output device assigned will result in a fail condition. This means that a Reality X device is only available to users of a single Reality X database at any one time. To use the same device from another database it is necessary to stop the despooler process on the current database and restart it on the second database.

Despooling to Private Printers

The mechanism for despooling a private printer is the same as for other Reality X devices (tape and port). However, before a UNIX system printer can be used privately, it must be disabled from the UNIX spooler, then started up under the control of Reality X. This is done by

- Selecting a pre-configured UNIX system printer.
- Disabling the UNIX printer to prevent despooling of UNIX print jobs.
- Selecting appropriate UNIX access permissions to the UNIX device.
- Creating a form queue and assigning it to the appropriate printer device.
- Placing it under the control of a Reality X despooler process using START-PRINTER.

When a UNIX printer is re-configured as a private printer, print jobs directed to it by UNIX users are queued by the UNIX spooler until the UNIX printer interface is re-enabled.

The procedures for changing a UNIX system printer into a Reality X private printer and restoring it to being a system printer again are detailed in the *Reality X Reference Manual Volume 3: Administration*.

REALITY Release 7.0 Compatibility

The Reality X spooler is based on Release 7.0, therefore many of the TCL commands and procedures described in the Release 7.0 manual *Using the Spooler* are similar for Reality X. However, there are some operational differences from Release 7.0, particularly when using a system printer. This chapter details the differences and should be used together with the Release 7.0 manual, *Using The Spooler*.

Release 7.0 Compatibility for Reality X Devices

Use of the spooler when printing to a Reality X device is largely compatible with Release 7.0. Where small differences exist these are highlighted in this chapter.

Release 7.0 Compatibility for System Printers

When despooling to a system printer, where print jobs are queued and despooled by UNIX, the functionality of TCL spooler commands is substantially different from that of REALITY Release 7.0, as Reality X is unable to control and monitor the despooling processes.

For example, SP-STATUS and SP- JOBS cannot be used to control or monitor the UNIX system printers and lp queues directly. Therefore, the SP-STATUS and SP-JOBS screens only display status information about the Reality X form queues.

Action codes are provided on the SP-STATUS and SP-JOBS screens to interrogate the UNIX spooler for information about the UNIX system queues and devices. They are Action Code 11 - LIST SYS Q's on the SP-STATUS screen and Action Code 15 - LIST SYSTEM JOBS on the SP-JOBS screen.

The impact on TCL functionality of the two stage queuing system for controlling UNIX system printers also extends to a number of the other spooler commands, such as, SP-EJECT, SP-DEVICE, SP-SKIP, and so on. Differences from Release 7.0 are detailed in this chapter.

Print Job Security

One important difference between Reality X and Release 7.0 is in the area of job security in the spooler queues. Release 7.0 type password verification is not supported by the SP-MOVEQ, SP-SWITCH, SP-DELETE, SP-EDIT or SP-CLEAR verbs. Instead restrictions are placed on these verbs so that they cannot be used on a print job when the P option is assigned, unless:

- the command is invoked from the SYSMAN or SYSPROG accounts,
- the user invoking the command has the same REALITY user-id as the user-id under which print job to be manipulated was created.

Refer to the description of SP-ASSIGN for additional information.

Printers

UNIX system printers should comply with the ISO standard 646 which specifies a different character set (UK1) from the UK2 character set supported by printers used by REALITY Release 7.0. Hence upgrading is required. However, despooling a form queue to a Reality X PTR device/private printer does allow the use of a current UK2 compatible printer without compatibility problems, so long as it remains isolated from the UNIX environment. Refer to the Chapter 11 for more details.

General Spooler Procedures

SP-ASSIGN Print reports are assigned to a form queue in a similar way to Release 7.0. However, the following options support different functionality:

- A (Align) option
- P (Protected) and U (Unprotected) options
- I (Instant output), N (No Spooling) and C (Choke) options

The A Option The A (align) option, instead of being applied to the form queue, is applied to each print job entering the form queue. This affects the functionality of SP-ALIGN, described in this chapter.

P and U Options

The P (Protected) option (the default) does not support password verification. It prevents print jobs from being moved, edited, deleted or cleared by all users, except:

- SYSMAN or SYSPROG users.
- Users who have the same user-id as the REALITY user-id under which the print job was created.

See also SP-MOVEQ, SP-EDIT, SP-DELETE and SP-CLEAR

The U (Unprotected) option leaves print jobs unprotected, allowing any user to move, edite, delete or clear them.

Once the P or U option is assigned to a Print job, it cannot be changed

I, N and C Options The I (instant output), N (no spooling) and C (choke) options which provide for instantaneous and direct printing are not supported for despooling to system (SYS) printers. But, the I and C options are supported for despooling to Reality X devices.

The N option is also supported by Reality X, but is implemented differently from Release 7.0. Its implementation is similar to the C option. Hence current Release 7.0 user's PROCs which use the N option will still run on Reality X.

SP-EJECT This command generates form feeds in the same way as Release 7.0. However, if the UNIX interface program to the printer device creates a banner message, then a banner page will be output before each set of form feeds.

Both the Reality X despooler process, when driving a private printer, and the UNIX spooler send data via the UNIX printer interface program and it is that which generates the banner page.

SP-LOOK Only spooler assignments for the current user are displayed. The 'n' and '*' options are not supported

:SP-NEWTAB	Unlike 7.0, the disk space occupied by print jobs is not lost when :NEWTAB is executed.
FIX-SP-ERRORS	This is a new Reality X TCL command used to correct spooler problems resulting from a system crash or Reality X abort. Its syntax, restriction, use etc. are described in Chapter 5.
START-NET-PTR	This is also a new TCL command used to start despooling to a remote networked printer. Its syntax, restriction, use etc. are described in Chapter 5.

SP-STATUS Spooler Procedures

The SP-STATUS command displays a QUEUE STATUS screen with action codes, similar to those displayed for Release 7.0. An example of the screen generated by Reality X is shown below.

```
14:42:31  21 MAR 1991            QUEUE STATUS              PAGE 1 OF 1 PAGES

QUEUE NAME      DEV   #              STATUS       ERR   #Q SK XL BLKSZ DENZ  LBL

STANDARD        SYS   slp1           ACTIVE            3  1
DAVEH           SYS   applelaserprin ASSIGNED          0  1
TECHNICAL.PUBLI PTR   2              ASSIGNED          0  2
ARCHIVE         TAPE  1              NOT READY         1  0     1000  1600
LABELS          0     0              NO DEVICE         0  0









1. CREATE QUEUE      4. CHANGE DEVICE     7. DELETE QUEUE     10. STOP PRINTER
2. CHANGE QUEUENAME  5. CHANGE PAGE SKIP  8. CHANGE TRANSL'N  11. LIST SYS Q's
3. LIST FORM TYPES   6. LIST PRINT JOBS   9. START PRINTER    99. EXIT

ENTER ACTION CODE / PAGE NUMBER (P#)?
```

Notice that this screen only shows information about the Reality X queues and their associated devices. It does not show status information, for UNIX spooler queues or UNIX printer devices which are not under Reality X control. To obtain this information you need to select Action Code 11 (LIST SYS Q's).

Other differences in the QUEUE STATUS screen from that displayed by Release 7.0 are:

- The TYP field is not supported
- The device identity field(#) is 14 characters wide to accommodate UNIX device names (SYS #). Device names longer than 14 characters appear truncated.
- If the QUEUE NAME selected is greater than 15 characters in length, it is truncated to 15 characters on the screen.
- LBL specifies the type of label the Spooler writes to tape:

  0 for no label;
  1 for a 50-byte label;
  2 for an SMA label.

- In the STATUS field the following status conditions are supported:

  ACTIVE
  ASSIGNED
  STOPPED
  SUSPENDED
  NO DEVICE
  OFF-LINE
  TAPE N/RDY
  WRITE RING
  NEXT REEL
  PARITY
  ERROR

  The following are not supported.

  DEVICE N/C
  CONTROLLER N/C
  NODE N/C
  NODE N/RDY

  The ERROR status is supported, but only for private printers.

The following codes may be displayed in the ERR field.

1 Failed to attach device.

2 Failed to open command pipe.

3 Failed to create named pipe

4 Failed to open named pipe

5 Interface program abort

The basic layout and functionality of the SP-STATUS screen and associated Spooler TCL commands is very similar to Release 7.0. However, there are some differences in functionality for a substantial number of the SP-STATUS action codes. These are described below.

Action Code 1 CREATE QUEUE (SP-CREATE)

To create a form queue assigned to a UNIX system printer, device type SYS is entered with the UNIX destination name of the printer. UNIX printer names available are listed by selecting Action Code 11 - LIST SYS Q's.

Before you can create a form queue assigned to a private printer (PTR device with UNIX id), the PTR device must first have been configured as a UNIX system printer. Then, at the DEVICE-TYPE and DEVICE-NUMBER prompts, you enter the device type PTR and the UNIX destination name of the UNIX system printer.

The maximum number of form queues which can be created is specified in the UNIX file **config** located in the database directory. The default is 64. This can be changed, but once the number has been increased, it cannot be reduced again.

Specifying the tape label

label specifies the type of label the Spooler writes to tape:

0 for no label;
1 for a 50-byte label;
2 for an SMA label.

This is different from release 7.0 where you only indicate 'Y' or 'N'.

Action Code 4 CHANGE DEVICE (SP-DEVICE)

Before changing to a new device, the Reality X despooler process for the associated form queue must be stopped using Action Code 10 or the STOP-PRINTER verb, then started again after the device change.

When changing to a SYS device, the specified device id is checked against the list of valid printer names held in the UNIX spooler system and displayed using Action Code 11. The output from the specified form queue is then assigned to the assigned UNIX printer If an invalid id is given the error message NO SUCH NAME is displayed.

Action Code 5 CHANGE PAGE SKIP (SP-SKIP)

When spooling to a form queue which has a SYS printer as its currently assigned device:

- If a skip value (PAGES) of '1' is entered, any leading form-feed character is removed by Reality X. This is the default setting and is normally used for UNIX system printers. The UNIX interface script is left to add the required form-feeds.

  Note: If a print job is moved from a non-SYS type queue to a SYS type queue which has a skip value of '1', the print job will still retain its leading form-feed.

- If a skip value (PAGES) of '1' is entered, leading form-feed characters are retained by Reality X. It is assumed that the UNIX interface script has been modified so that it does not add any form-feeds. This skip value of '0' is used for private printers as their interface scripts are modified to remove form-feeds.

Note: If a print job with skip value set to '1' is moved to another type of queue, for example PTR, the leading form-feeds will be lost.

- A skip value (PAGES) greater than 1 cannot be assigned to a SYS type form queue.

Action Code 6 LIST PRINT JOBS (SP-JOBS)

This action/command displays the SP-JOBS screen with action codes, similar to that displayed for Release 7.0. These are described later in this section.

Action Code 7 DELETE QUEUE (SP-FQDELETE)

If the Reality X despooler process is active on a PTR or TAPE assigned form queue, the process must be stopped before the queue can be deleted.

Action Code 8 CHANGE TRANSLATION (SP-TRANSLATE)

This command can only be applied to jobs in PTR and TAPE assigned queues. Printer translation cannot be applied to a SYS assigned queue.

The translation table being used cannot change until the despooler process is stopped. SP-TRANSLATE may be applied to an active form queue, but the new table number entered will not become effective until the despooler is stopped and restarted again.

Action Code 9 START PRINTER (START-PRINTER)

To be able to use START-PRINTER on a private printer assigned queue, a user must have access permissions for the UNIX printer device being used.

For a SYS assigned form queue, the despooler process is started automatically when the SYS device is assigned. Hence it is not necessary to use START-PRINTER on the SYS assigned queue, unless you have stopped the despooler and wish to start it again.

Action Code 10 STOP PRINTER (STOP-PRINTER)

It is not possible for Reality X to determine at any instant whether a form queue is despooling or not. STOP-PRINTER therefore allows the user to kill despooler process and suspends the form queue automatically.

This is different from REALITY Release 7.0 which detects if a process is despooling and returns a form queue busy message. The user then has to suspend the queue before killing the process.

Action Code 11 LIST SYS Q's

This is a new action code created for the Reality X spooler to monitor the status of the UNIX system spooler queue. It displays a SYSTEM QUEUE STATUS screen similar to the following:

```
10:38:31  03 OCT 1991      SYSTEM QUEUE STATUS               PAGE 1 OF 5 PAGES


scheduler is running
system default destination: slp1
device for slp1: /dev/rt0008
device for slp2: /dev/rt0020
device for laser: /dev/null
slp1 accepting requests since Thurs Sep 4 13:30:11 1991
slp2 accepting requests since Mon Oct 20 16:11:00 1991
laser accepting requests since Fri Oct 20 17:21:16 1991
printer slp1 is printing. enabled since Wed Sep 10 14:44:36.  available
printer slp2 is idle.  enabled since Tues 4 11:34:45 1991.  available

1. CREATE QUEUE      4. CHANGE DEVICE     7. DELETE QUEUE     10. STOP PRINTER
2. CHANGE QUEUENAME  5. CHANGE PAGE SKIP  8. CHANGE TRANSL'N  11. LIST SYS Q's
3. LIST FORM TYPES   6. LIST PRINT JOBS   9. START PRINTER    99. EXIT

ENTER ACTION CODE / PAGE NUMBER (P#)?
```

The screen provides the following information:

- Whether the lp scheduler is running or not
- The name of the default printer
- A list of class names and their associated class members
- A list of printer destinations and the full path names of the associated port/device files. Null indicates that no device is assigned
- A list of printer destinations and whether they are accepting or rejecting print requests. The date on which the accept or reject status was set is also displayed.
- The current status of each printer, that is, whether it is idle or printing and enabled or disabled. Also the reason for it being disabled, if known.

Currently there is no equivalent TCL command.

SP-JOBS Spooler Procedures

The SP-JOBS command displays a PRINT JOBS screen with action codes, similar to those displayed for Release 7.0. An example of the screen generated by Reality X is shown below.

```
12:32:31  22 MAR 1991            PRINT JOBS              PAGE 1 OF 1 PAGES

JOB SYS# QUEUE NAME   PORT  USERID             CREATED       STATUS SIZE   OP CP

  1 1204 STANDARD       18  TAB              30 JAN 16:38    QUEUED          22
  2      INVOICES        3  DAVEH            19 DEC 12:50    HOLD     12      1
  3      RECEIPTS        9  DAVEH            19 DEC 13:30    HOLD     14      1
  4 1290 LABELS         31  RLW              30 JAN 16:50    QUEUED   20     50
  5      INVOICES        7  DAVEH            30 JAN 17:20    KILLED   13      1
  6      INVOICES       12  DAVEH            30 JAN 17:29    PRINT    15      1









1. MOVE FORM QUEUE 5. DELETE JOB       9. SUSPEND PRINT 13. ALIGN PRINTER
2. MOVE PRINT JOB  6. STOP PRINTING   10. TOP PRIORITY  14. CLEAR QUEUE
3. CHANGE OPTIONS  7. RESUME PRINTING 11. SP-STATUS     15. LIST SYSTEM JOBS
4. CHANGE #COPIES  8. EDIT PRINT JOB  12. KILL PRINTING 99. EXIT

ENTER ACTION CODE / (P#;PT;A acctname;U userid;Q quename;S status)?
```

Differences between the Reality X PRINT JOBS screen shown above and that of Release 7.0 are:

- A SYS# field is provided to contain the request id of print job in the UNIX spooler.
- The PRNTD field is not supported.
- An additional Action Code (15. LIST SYSTEM JOBS) is provided.
- The PRINT condition will only be displayed for a print job directed to a Reality X private printer. Print jobs despooled to a SYS type printer will only be shown as QUEUED. In order to find out if they are being printed you need to select Action Code 15 (LIST SYSTEM JOBS) to interrogate the status of jobs in the UNIX spooler queues.
- A USERID field is displayed instead of ACCOUNT.
- In the STATUS field the condition EDIT is displayed but without a process number.

Differences in the functionality of SP-JOBS action codes between Release 7.0 and Reality X are detailed below.

Action Code 1 MOVE FORMQUEUE (SP-MOVEQ)

Print jobs which are OPEN, being edited (EDIT) or being printed (ACTIVE) cannot be moved. Any attempt to do this will return an error message.

Password verification as per Release 7.0 is not supported. However, print jobs with the P option assigned are still protected from being moved by most users. A print job with the P option assigned can only be moved by

- SYSMAN or SYSPROG users.
- users who have the same user-id as the REALITY user-id under which the print job was created.

Action Code 2 MOVE PRINT JOB (SP-SWITCH)

See Action Code 1 above.

Action Code 3 CHANGE OPTIONS (SP-OPTS)

Options on a print job in a SYS type form queue cannot be changed, once the job has been closed and passed to the UNIX spooler queue. Hence, this action code is primarily supported for

- Any print job in a form queue assigned to a Reality X private printer (PTR).
- A hold file in a form queue assigned to a SYS type printer.
- A print job in a form queue assigned to SYS type printer which has not been yet been passed to UNIX, for example, because printing is suspended.

The S (suppress printing) option alone causes a print job to be removed from the form queue.

Action Code 4 CHANGE #COPIES (SP-COPIES)

For SYS assigned form queues this action code only affects jobs which have yet to be spooled. Print jobs which have been spooled and passed to the spooler UNIX are unaffected.

For print jobs in PTR and TAPE assigned form queues Release 7.0 facilities are fully supported.

Action Code 5 DELETE JOB (SP-DELETE)

Password verification as per Release 7.0 is not supported. However, print jobs with the P option assigned are still protected from being deleted by most users. A print job with the P option assigned can only be deleted by

- SYSMAN or SYSPROG users.
- users who have the same user-id as the REALITY user-id under which the print job was created.

Action Code 6 STOP PRINTING (SP-STOP)

This action code/command only uses the form queue name as a parameter and not the print job number. Hence, printing cannot be stopped at the beginning of a specified print job. This applies to both SYS, PTR and TAPE type devices.

For a SYS assigned form queue, SP-STOP causes printing to stop immediately and does not continue until the end of the current print job, as with Release 7.0. The whole of the current print job is then reprinted when the RESUME PRINTING command is entered.

For a PTR or TAPE assigned form queue, SP-STOP supports 7.0 functionality, except for not being able to specify a job number.

Action Code 7 RESUME PRINTING (SP-RESUME)

For print jobs in SYS assigned form queues, if the output device has been stopped or suspended while a job was being printed, the RESUME PRINTING command will cause the entire print job to be reprinted, unlike REALITY Release 7.0 which resumes output at the point where it was stopped.

For print jobs in PTR and TAPE assigned form queues, Release 7.0 facilities are fully supported.

Action Code 8 EDIT PRINT JOB (SP-EDIT)

Print jobs cannot be edited if they are either:

1. In the process of being created (i.e. OPEN)
2. Passed on to the UNIX spooler queue (indicated on the SP-JOBS screen by a UNIX request id in the SYS# column)

If you try to edit a print job in a SYS form queue which has already been passed to the UNIX spooler and is waiting to be printed, the spooler displays the message.

```
JOB ALREADY QUEUED FOR OUTPUT
```

Password verification as per Release 7.0 is not supported. However, print jobs with the P option are still protected from being edited by most users.

A print job with the P option can only be edited by:

- SYSMAN or SYSPROG users.
- users who have the same user-id as the REALITY user-id under which the print job was created.

Spooler Editing Commands

The SP (Start Print) and SPA (Start Print with Alignment) commands are not supported for jobs on SYS assigned form queues. Printing is always started from the beginning of the print job.

Action Code 9 SUSPEND PRINTING (SP-SUSPEND)

For print jobs in SYS assigned form queues this action code, like the STOP PRINTING command (action code 6), stops printing immediately. Then the whole of the current print job is reprinted when the RESUME PRINTING command is entered.

For print jobs in PTR and TAPE assigned form queues Release 7.0 facilities are fully supported.

Action Code 10 TOP PRIORITY (SP-PRIORITY)

This action code/command can only be applied to a form queue assigned to a Reality X private printer (PTR) or which has no output device assigned to it

For SYS assigned form queues, print jobs are spooled to the UNIX queuing system and therefore cannot be prioritised, since UNIX does not allow print jobs to be rearranged on its queue.

Action Code 13 ALIGN PRINTER (SP-ALIGN)

SP-ALIGN can only be applied to jobs in PTR and TAPE assigned queues. Jobs in SYS assigned queues cannot be aligned.

Unlike REALITY Release 7.0 the A option is assigned to each print job and not to the form queue. This is effected either by SP-ASSIGN with the A option, so that the A option is applied to each job entering the queue, or by SP-OPTS which is used to apply the A option to the print job directly. Because of this SP-ALIGN functions differently in Reality X from Release 7.0 in that the (A)LIGN option must be carried out on a job by job basis.

On Release 7.0 you SP-ALIGN the form queue once, first selecting the (A)LIGN option, then when you select the (P)RINT option all print jobs currently in the form queue are printed under the current alignment setting.

In Reality X you align the form using the (A)LIGN option, then select the (P)RINT option which only prints the first ALIGN status job in the form queue. The queue is then despooled until another print job with ALIGN status reaches the top of the queue, at which point the queue is suspended again until you repeat SP-ALIGN.

Action Code 14 CLEAR QUEUE (SP-CLEAR)

Password verification as per Release 7.0 is not supported. However, print jobs with the P option assigned are still protected from being cleared by most users. A print job with the P option assigned can only be cleared by

- SYSMAN or SYSPROG users.
- users who have the same user-id as the REALITY user-id under which the print job was created.

Action Code 15 LIST SYSTEM JOBS

This is a new action code which enables you to display the jobs queued in the UNIX spooler. Currently no equivalent TCL command is supported.

Setting Up and Releasing Reality X Private Printers

The procedures to convert a UNIX system printer into a Reality X private printer and restore it back again to being a system device are described in the *Reality X Reference Manual Volume 3: Administration*.

Reality X Differences from Release 7.0

Release 7.0 functionality for operating magnetic tape units is largely supported by Reality X. Therefore, the chapter 'Operating Your Magnetic Tape Unit' in the Release 7.0 manual *Using the Magnetic Tape System*, can be used for Reality X taking into account the differences detailed in this chapter.

Magnetic tape hardware, however, used with your UNIX system is different from that used with REALITY systems. Hence, information on tape units provided in *Using the Magnetic Tape System* is not applicable to Reality X. Information about tape units is provided in the documentation supplied with your system.

ASSIGN and T-ATT

The functionality of ASSIGN and T-ATT is different in the following respects.

density may only be some of the Release 7.0 values, depending on the system under which Reality X runs.

For Quarter inch tape units, instead of supplying the tape densities e.g. 1600, 3200, 6250 Bpi, you can enter the Quarter Inch Cartridge (QIC) format e.g. 120, 150, 525, respectively. These formats equate to the above densities and are used for the the 120, 250 and 320 Mbyte cartridges, respectively.

The default is configuration-dependent and is defined in the **config** file, unlike REALITY Release 7.0 where the default is 1600 Bpi.

unit-list Only one valid tape unit identifier may be entered. Reality X does not support the automatic sequencing of multiple tape units on a channel.

For example, if you enter

```
ASSIGN =TAPE 2, 3
```

only drive 2 will be assigned.

On SV/88 UNIX systems before you attach a tape device you must ensure that the tape is loaded, and the unit is switched on-line, otherwise the attachment will fail, displaying the following error message:

```
[4005]  UNABLE TO OPEN THE DEVICE ASSOCIATED WITH
REQUESTED DRIVE.
```

Enabling and Disabling Tape Density

The DISABLE-TAPE-DENSITY and ENABLE-TAPE-DENSITY verbs are not supported.

T-DET

The U (Detach unless line being used) option is not supported.

Reality X Differences from Release 7.0

REALITY Release 7.0 functionality is largely supported by the Reality X Terminal Independent Process Handler (TIPH).Terminal Independent Terminal Handler:See TIPH

The TIPH facility may be used as an alternative to the background processing and redirection facility provided by UNIX.

Reality X supports TIPH processes by generating UNIX background processes to execute tasks. As a result there are a few operational differences. There are also operational differences between operating systems under which Reality X runs. These are described below.

PH-ALLOCATE and PH-START

A port allocated to a TIPH must have a UNIX device file permanently assigned to it. How this is achieved depends on the system platform on which Reality X is running.

For example, on UMAX systems, device files are allocated dynamically by terminal server software. Hence, before a port can be allocated to a TIPH it must be pre-configured as a slave line which simulates a hardwired connection. Other systems have hardwired ports which can be used with minimal re-configuration requirements. Refer to *Reality X Reference Manual Volume 3: Administration* for details.

If a physical port connection is not required for the TIPH, then, instead of allocating a specified port number to TIPH, you just press RETURN when the PH-START command prompts for the port number, as below:

```
ENTER PORT# FOR PH TASK
```

Reality X then allocates to TIPH the next available 'pseudo' port number, automatically and the process then runs on in the background, but has no terminal access.

PH-STATUS

The following additional status code may appear in the STATUS column in the PH-STATUS report:

S TIPH job failed to open a spool job This indicates that a spooler error has occurred. A more precise diagnosis is not possible.

PH-SUSPEND and PH-RESUME

These commands are not supported.

Reality X Differences from Release 7.0

Most of the Release 7.0 save and restore facilities are supported. However, there are a few differences, detailed in this chapter.

The Reality X save facilities are particularly useful for backing up a database which has active users. The UNIX save utilities are not suitable for this purpose, as they cannot guarantee the integrity of the file structure.

Day-to-day back-up of a Reality X database may be carried out using the UNIX back-up utilities as part of the overall back-up of the UNIX filestore. These are described in the *UMAX V Administrator's Guide - Part 1*.

F-S and FILE-SAVE

Dummy ABS/Bootstrap

Reality X inserts dummy bootstrap and ABS sections, ensuring compatibility with Release 7.0 when restoring the FILE-SAVE. Bootstrap and ABS form the low level REALITY code.

No Multiple Tape Unit Sequencing

Only one valid tape unit identifier may be entered at the prompt:

```
Enter tape units desired, in sequence, separated by
commas
```

Reality X does not support the automatic sequencing of multiple tape units.

F-S Tape Density Prompt

The prompt is now:

```
Tape density (if other than Device Default)
```

In Reality X, the default is configuration-dependent is defined in the **config** file, unlike REALITY Release 7.0 where the default is 1600 Bpi.

OLD-ACCOUNT-SAVE

Very Old Save option is not supported.

OLD-FILE-SAVE

Very Old Save option is not supported.

OLD-SAVE

The V (Very Old Save) option is not supported.

SAVE

With no ABS code in Reality X, the A (dump ABS frames) option is not supported.

ACCOUNT-SAVE, FILE-SAVE, M-A-S and SAVE

No Multiple Tape Unit Sequencing

Only one valid tape unit identifier may be entered at the prompt:

```
Enter tape units desired, in sequence, separated by
commas
```

Reality X does not support the automatic sequencing of multiple tape units.

F-S Tape Density Prompt

The prompt is now:

```
Tape density (if other than Device Default)
```

In Reality X, the default is configuration-dependent and is defined in the **config** file, unlike REALITY Release 7.0 where the default is 1600 Bpi.

Restore Options

The following 7.0 restore commands/options are not supported by Reality X.

- ABS and Files Restore using the :ABS/FILES verb or the bootload AF option on System Control Menu.
- ABS Restore using the ABSLOAD verb or the bootload A option on System Control Menu.

:FILES

This command is not supported.

ACCOUNT-RESTORE

Two new options are supported by Reality X, as follows:

O overwrites all existing files and items in the account(s) with those on tape of the same name. New file and items on tape are added and existing database files and items not on the tape remain unchanged.

> CAUTION
>
> The O option option should be used with extreme caution. Before use, ensure that you fully understand its effect on your database. Use without understanding may result in the corruption and loss of data on the database.

To restore a complete Reality X database from a FILE-SAVE (or F-S) tape, enter

```
ACCOUNT-RESTORE * (O
```

This updates the complete database, including the System Dictionary.

You can also use the O option to restore a single REALITY account onto a Reality X database. However, you must then use UPDATE-ACCOUNT to update the verbs, PROCs etc in the Master Dictionary to ensure Reality X compatibility.

U upgrade option (For Information Only).

> CAUTION
>
> The U option should ONLY be used by McDonnnell Douglas Support personnel who understand its operation. It is intended for use during the Reality X upgrade procedure ONLY and should NOT be used otherwise. Do not attempt to use this option for normal account restore operations as this may result in an inconsistent and unpredictable database.

VERIFY-SYSTEM

Note that the SYSTEM-OBJECT file is not supported by Reality X and, therefore, SYSTEM-OBJECT verification by VERIFY-SYSTEM is not utilised. VERIFY-SYSTEM is still supported, however, in order to verify system DATA/BASIC programs

Reality X Differences from Release 7.0

Release 7.0 information provided in *Managing Accounts and Files* is largely correct for Reality X. There are, however, a few 7.0 features not supported. These are detailed below.

Account and File Definition Items

To maintain the database file structure within the UNIX filing system, Reality X uses a modified form of a REALITY D-pointer. In particular, attributes 2, 3 and 4 of a D-pointer to an account or file are different, as follows:

002 File location parameters

003 File creation parameters

004 Null

Remote Account Definition Items

An R-pointer in Reality X points to an entry in the UNIX file /etc/ROUTE-FILE which identifies the path to the UNIX output device and the network address of the remote system. This is different from Release 7.0 in which an R-pointer points to an item in ROUTE-FILE.

Prompts for Creating Remote Account

When you select the remote (R) option of CREATE-ACCOUNT, Reality X generates the following prompts

```
1.    ACCOUNT NAME
2.    REMOTE SYSTEM NAME
3.    REMOTE SYSTEM NAME
4.    PASSWORD
```

The following Release 7.0 prompts are not applicable to Reality X

```
5.    NETWORK DEVICE
6.    TRANSMIT MODE (DDA or ACI)
7.    NETWORK PATHWAY
8.    DISCONNECT STRING (HEX)
```

Reality X does not support a DEVICES file.

CHARGES

This command does not display the following information:

- DISK I/O, that is, number of disk reads
- NUMBER OF ACTIVATIONS, that is, number of process activations

This is UNIX system information which is not accessible to Reality X.

Differences in the information reported are as follows:

- The CPU usage count (CPU MS) is accurate to the nearest 20 ms.
- The current system time is accurate to the nearest second.

LISTACC

The number of disk reads is a system statistic which is not accessible to Reality X. Hence, DISK READS and TOTAL DISK READS fields are not supported.

Accounting History Item

The following attributes are different for Reality X:

7. Number of charge units is only accurate to 20 mS.

8. Number of disk reads is not monitored by Reality X.

LISTDFILES

The LISTDFILES display contains a File-type (Ftype) field which replaces the Base Frame ID (FBase) field on Release 7.0. File types are identified by a letter followed by a number. The number specifies the level, as follows:

1 Master Dictionary

2 File Dictionary

3 Data Section

The letter specifies the file type, as follows:

A a clean log binary data section

B a byte stream file

C a clean log user view data section

D a directory view

LISTFILES

The LISTFILES display contains a File-type (Ftype) field which replaces the Base Frame ID (Base) field displayed by Release 7.0. File types are identified by a letter followed by a number. The letter and number identifiers are the same as those displayed by LISTDFILES

SYSTEM-OBJECT File

SYSTEM-OBJECT file does not exist as a file in SYSPROG on Reality X. Reality X object code is held in a number of files within the UNIX file system.

When loading software such as, RealLink, RPL, ALL etc., SYSTEM-OBJECT is created automatically as part of the standard 'INSTALL' function. This can be removed using DELETE-FILE.

DEVICES File

This file is not supported. The **/dev** file in UNIX performs the function.

ATP Account

The ATP (Automated Test Procedure) account, used for REALITY system testing, is not supported. System testing is a function of UNIX.

Directory View

This is a new facility supported by Reality X Release 3.0 which enables UNIX text file to be accessed and manipulated from a Reality X environment. It consists of a single new TCL command DIR-VIEW which is used to create a Reality X file that provides a view of a particular UNIX directory.

Refer to Chapter 5 for a description of the DIR-VIEW command.

Assembler Utilities

Most of the assembler utilities described the Release 7.0 manual *General Utilities and Printing* are supported.

User Exits Not Supported

The exceptions are the user exits, listed below.

- U10DD (Get System Serial Number). On a targetted system, the serial number is returned, otherwise, on untargetted systems, zero is returned.
- U21AC (Translate Using Pre-defined Table) is not supported.
- U947F (Boot Device Unit Number). If entered, U947F returns a zero.

ICL Read/Write 1900 and 2900 Verbs

The functionality of the U option is modified, as follows:

U	Can be used to 'unblock' an ICL block tape with multiple logical records in data blocks. It converts each logical record into a separate Reality X items.

Printing

Printers connected to the UNIX system, under which Reality X runs, should comply with the ISO 646 standard which specifies the use of the UK1 ASCII character set.

Types of Printers Available

Printers currently supplied for REALITY Release 7.0 systems are of two types.

- McDonnell Douglas UK2 character set compatible only
- Switchable UK1 (ISO 646) /UK2 (McDD) character set compatible

Now a third type is available.

- UK1 (ISO 646) character set compatible only

ISO 646 Upgrade Packages

A number of UK2 compatible printers have each been upgraded to support the UK1 ISO standard set.

Upgrade packages are available to users for converting a number of specified McDonnell Douglas UK2 compatible printers to the ISO 646 standard.

Printer upgrades include:

- 11115X 150/300 LPM Line Printers
- 11161X 600 LPM Line Printer
- 11180X/11199X High Volume Line Printers
- 11206-X Laser Printer, 26 ppm

These five model numbers, without the 'X', refer to McDonnell Douglas UK2 compatible printers, detailed in the Release 7.0 *General Utilities and Printing* manual. With the letter 'X' appended they indicate the same printers upgraded to be ISO 646 compatible.

Differences Between UK1 and UK2 Character Sets

The differences between the two character sets (UK1 and UK2) are in the ASCII characters Hex 23 and Hex 24, as follows.

	Hex 23 (CHAR(35))	Hex 24 (CHAR (36))
UK1 (ISO 646)	£	$
UK2 (McDD)	#	£

Recommendation on Upgrading to ISO 646

It is recommended that previous 7.0 users should upgrade, or switch, their existing printers to be ISO 646 compatible, as this is necessary to provide full compatibility with UNIX. Using a McDonnell Douglas UK2 standard printer as a UNIX system device will lead to mismatch problems. £ and $ characters despooled from UNIX will print out as a # and £, respectively.

To ease the upgrade process it is feasible to use a McDonnell Douglas UK2 standard printer as a private Reality X device, controlled directly by Reality X and unavailable to UNIX. Compatibility is not a problem while the printer is isolated from UNIX. However, problems will arise when you try to import or export files to/from a database or if you use the printer as a UNIX system device.

Reality X Differences from Release 7.0

Most of the information provided in the Release 7.0 manual *Configuring and Securing the System* is applicable for configuring and securing a Reality X database. There are, however, a few 7.0 features not supported by Reality X. These are detailed below.

Configuring Parallel Printers

Configuring printer ports is a UNIX administrative function. Execution of SYSTEM-SETUP does not affect port configuration, since the BUILD-DEVICES command is not supported by Reality X, neither are the DEVICES and PORTS files.

BKOFF and BKON

These commands disable and enable the BREAK key on the invoking port, only. The *n* option used on 7.0 to specify a port is not supported.

This applies to BREAK-KEY-ON and BREAK-KEY-OFF as well.

PCM

Only Prompt 0 can be selected by the Reality X user to specify the location of a port. The setting up of port parameters is a function of the UNIX system and not the Reality X software. In fact Reality X is unable to access port information.

Port characteristics displayed as Options 1 to 9 on the PORTS FILE MAINTENANCE screen are not applicable to Reality X, as their values are set by the UNIX operating system.

Setting Terminal/Serial Printer Characteristics

Terminal type 15 specifies a terminal defined by the UNIX environment variable TERM. This is the default.

The *n* option, used with TERM on Release 7.0 to specify a port number, is not supported.

TYPEAHEAD-OFF

The bell, indicating that the input is not accepted, is delayed until the next character read, that is, until the TCL prompt appears again.

SSM Command

PORTS File Maintenance Screen

Only Prompt 0 can be selected by the Reality X user to specify the location of a port. The setting up of port parameters is a function of the UNIX system and not the Reality X software. In fact Reality X is unable to access port information.

Port characteristics displayed as Options 1 to 9 on the PORTS FILE MAINTENANCE screen are not applicable to Reality X, as their values are set by the UNIX operating system.

USERS File Maintenance

Prompts 17,18 and 19 on this screen currently have no significance on Reality X.

SECURITY File Maintenance

Option 9 - Max. Workspace size. The valid range for this is 0 to 4000 frames

Remote LOGON

Remote LOGON by a Reality X user is dealt with differently from Release 7.0. Instead of using SYSTEM, ROUTE-FILE and DEVICES files to process a remote LOGON, Reality X uses the SYSTEM file, an entry in the file /etc/ROUTE-FILE and device information in the /dev file.

The R-pointer in the SYSTEM file points to an entry in the UNIX file /etc/ROUTE-FILE which is of the form:

```
# (Comment lines)
#
REMSYS:D:
        :dev/tp4-nnw0:0 0:
        :02,0203/I/0000b900/0049/FE:
        :ACI:
```

where the path name /dev/tp4-nnw0 is the path to the UNIX device, 0 0 is additional device specific information, the alphanumeric string 02,0203/I/0000b9000049/FE is the network address of the remote system and ACI indicates an asynchronous communication interface.

Remote Account Definition

The Remote Account Definition item defined in the SYSTEM file on a Reality X database is different from that on a Release 7.0 system, as follows:

Item-id	Name of remote system or account
001	R or RL (user-id prompted by remote system)
002	Account name on remote system (null to be connected to remote system and prompted for account)
003	Null
004	Remote system name. Entry in /etc/ROUTE-FILE
005	Null
006	Null
007	Encrypted local password, optional.
008	Null
009	Letter code B, L, R, T or U.

Reality X Differences from Release 7.0

Reality X supports many of the networking facilities that are supported by REALITY Release 7.0, but there are considerable differences in configuration due to the fact that this is partly done at the UNIX level. Configuration for networking is discussed in detail in the *Reality X Reference Manual Volume 3: Administration*. The information given in the *Guide to Networking for REALITY Users* applies to Reality X with the following exceptions:

- GAD (General Asynchronous Driver) is not supported by the current Reality X release.
- The remote system user-id is defined at the UNIX level rather than SSM.
- NFT is not supported, but equivalent functionality is available using Remote File Access.
- *ROUTE-FILE* is a file at the UNIX level that defines the remote systems that can be connected to over the network from this system, and the identity of this system for incoming remote connections: this file is unique to the UNIX system under which each database runs.
- Devices are not defined in the Reality X environment (there is no DEVICES file), but at the UNIX level (in /dev), instead.
- P-LAN can be connected to Series X by a front end processor. P-LAN interface controllers are available.
- *sysadm* utilities (executed, with super-user status, from the UNIX environment) are provided to set up */etc/ROUTE-FILE* and */etc/USERS-FILE* entries as required.
- Remote file access from Reality X to any other system uses the ROSFS server at the remote system. Remote file access from REALITY (Series 18/19) to any other system uses uses the REMFS server at the remote system).

In addition to the facilities described in the *Guide to Networking for REALITY Users*, Reality X (from Release 3.1 onwards) also supports remote logon of a network port and remote despooling to a network-connected printer.

The remainder of this chapter discusses the network capabilities available in more detail.

The SSM Utility

SSM functions similarly on Reality X to REALITY. However, there are differences, some of which are related to network use. Differences unrelated to networks are defined in the Configuring and Securing chapter of this manual.

Network-related differences occur on the USERS FILE MAINTENANCE screen (SSM option 2). Prompts 17, 18 and 19 of this screen currently have no significance on Reality X. User-ids for network connections to other Reality X or REALITY databases are defined, for Reality X-initiated connections, by the UNIX file */etc/USERS-FILE*: see the *Reality X Reference Manual Volume 3: Administration* for details.

Remote Logon

Remote logon from Reality X to Reality X and from REALITY to Reality X (and vice versa) is functionally the same. The SYSTEM item in the Reality X database, however, shows the appropriate ROUTE-FILE entry from the UNIX environment in attribute 4. The 'session manager' is a UNIX process that establishes the connection.remote logon

As on a REALITY system, the SYSTEM item required can be set up via the CREATE-ACCOUNT command, or via the editor.

Setting up of ROUTE-FILE entries via *sysadm* is described in the *Reality X Reference Manual Volume 3: Administration*.

The complete SYSTEM item for remote logon is:

Item-id	Name of remote system or account
001	R or RL (user-id prompted by remote system)
002	Account name on remote system (null to be connected to remote system and prompted for account)
003	Null
004	Remote system name. Entry in /etc/ROUTE-FILE
005	Null
006	Null
007	Encrypted local password, optional.
008	Null
009	Letter code B, L, R, T or U.

Interprocess Communication

IPC is functionally unchanged from the REALITY implementation.

The system specified in the CONNECT statement is an entry in */etc/ROUTE-FILE* entry that defines the remote system to connect to. The UNIX file */etc/ROUTE-FILE* is shared by all of the databases on the same system.

Setting up of */etc/ROUTE-FILE* entries via *sysadm* is described in the *Reality X Reference Manual Volume 3: Administration*.

Remote File Access

RFA is functionally unchanged from the REALITY implementation. Attribute 4 of the SYSTEM item identifying the remote account is an entry in the *ROUTE-FILE* of the UNIX system.

Attribute 7 is not significant for the purposes of remote file access, and can contain a password for local verification before allowing remote logon if required.

The SYSTEM item format for RFA is thus as follows:

Item-id	Name of remote account
001	R
002	Name of account on remote system
003	null
004	Remote system name (entry in *ROUTE-FILE* in UNIX environment)
005	null
006	null
007	any (ignored for RFA purposes)
008	null
009	L
010	10

As for remote logon, this item can be set up via CREATE-ACCOUNT or the editor.

Network Commands

All TCL commands, except the ENABLE command, documented for Release 7.0 in the *Guide to Networking for REALITY Users* are not supported by Reality X.

The ENABLE command is supported to enable optional network software on Reality X.

Network Logon and Printing

Note: These features are supported by Reality X Release 3.1 only.

NET-LOGON and START-NET-PTR

Two new TCL command are supported by Release 3.1 that allow the connection of a remote terminal or printer to a Reality X database, across an X25 or Ethernet network.

They are:

NET-LOGON This allows you to log on a networked terminal remotely.

START-NET-PTR This allows you to start despooling to a remote printer across a network.

These two verbs are detailed in Chapter 5.

The NET-LOGON verb is consistent with the LOGON verb, allocating a Physical Location Identifier (PLID) and Consistent Circuit Identifier (CCI) to the process once the connection is established. Note, however, that the format of the PLID is different. Refer to Chapter 5 for details.

Setting Up

Before these remote logon and printing facilities can be used, ROUTE-FILE entries must be set up in the UNIX environment of the host and the terminal server or X25 pad must be configured appropriately. Procedures to do this are described in the *Reality X Reference Manual Volume 3: Administration*.

Reality X Differences from Release 7.0

The majority of the error messages displayed by Reality X are standard Release 7.0 messages. Only a few new messages have been introduced for Reality X. These are detailed below.

Messages Not Displaying Identifier.

PRINT JOB CANNOT BE EDITED

You used the SP-EDIT command to edit a job which cannot be edited for various undefined reasons. [658]

JOB ALREADY QUEUED FOR OUTPUT

You have used the SP-EDIT command to edit a print job whch has been passed to the despooler process and is no longer available for editing. [685]

GENERAL SPOOLER FAILURE

An undefined fail condition has occurred in the spooler sub-system. [686]

Messages Displaying ERRMSG Item-id

Messages are largely the same as Release 7.0. However, the following have changed.

[201] 'name' IS NOT A FILE NAME

instead of:

[201] Unable to open file

[1012] MINIMUM ENTRY SIZE MUST NOT EXCEED OR BE LESS THAN ZERO

instead of:

[1012] MINIMUM ENTRY SIZE MUST NOT EXCEED OR BE LESS THAN 16

[9110] Illegal table number

instead of:

Collation table out of range 0-159

[4370] MAXIMUM GET/PUT LENGTH EXCEEDED

instead of:

[4370] MAXIMUM GET LENGTH EXCEEDED

Database A collection of data stored in a organised manner, independent of physical layout, which enables the data to be accessed easily by users. On the REALITY system, this describes the collection of all data on the system, organised into accounts and files to form a relational data structure. For Reality X, this describes each collection of data in a UNIX file system which is organised into a REALITY database structure. A number of these Reality X databases can exist in a UNIX filestore.

LP Scheduler A UNIX spooler program which controls the lp job request queue, by removing relevant job requests from the queue, passing them on to appropriate printer interface programs for printing and tracking their progress

Reality X An implementation of the REALITY Application Support Environment on UNIX, providing users with a REALITY user environment which is highly compatible with that of Release 7.0.

Slave line Serial line on an Annex terminal server configured in slave mode by UMAX V.

UMAX V A variant of the UNIX operating system System 5 under which Reality X may run.

UNIX Name given to a family of computer operating systems of which UMAX V is one.

Note: The terms defined above are specific to, or newly introduced for, Reality X or are defined differently from normal REALITY usage.

Many of the terms listed in the Release 7.0 manual *Glossary of Terms* are also applicable to Reality X. Notable exceptions are those relating to the lower levels of the REALITY operating system, such as, ABS, Entry Point, and Monitor, and those specific to the General Asynchronous Driver.

W