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This document contains additional information about  
DATATRIEVE-11 Version 2.0.

**DATATRIEVE-11 V2.0**  
**Release Notes**

Order No. AA-D110C-TC

<b>OPERATING SYSTEMS AND VERSIONS:</b>	RSX-11M	V3.2
	RSTS/E	V7.0
	IAS	V3.0
	RSX-11M-PLUS	V1.0
	VMS	V2.0

<b>SOFTWARE VERSION:</b>	V2.0
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## 1.0 General Notes

DATATRIEVE-11 Version 2.0 is a major extension to DATATRIEVE Version 1. Improvements, largely based by user feedback, have been made to many areas including ease of use, data integrity, raw functionality, and data subsystems supported.

The software requirements for DATATRIEVE-11 Version 2.0 include RMS-11K Version 1.8. The following versions of the various operating systems are required:

- RSX-11M V3.2
- RSTS/E V7.0 (with monitor RSX emulation)
- IAS V3.0 (with "T" kit installed)
- RSX-11M-Plus V1.0
- VMS V2.0

The DATATRIEVE installation procedure will verify that the proper version of RMS-11K is installed.

### 1.1 New Features

DATATRIEVE-11 Version 2.0 is particularly rich in new features. A partial listing follows.

1. A major new subsystem, the Application Design Tool (ADT), has been added. ADT allows less experienced users to set up simple DATATRIEVE applications. Through a simple dialog, ADT generates a DATATRIEVE command file containing the record, domain, and file definitions.
2. Support for data hierarchies. Use of hierarchies allows manipulation of complex data containing lists. A hierarchy may be defined as a single file with a repeating group or multiple domains automatically cross linked. Extensions related to hierarchies include the inner print list and the ANY Boolean expression, which allows DATATRIEVE to search a list for the existence of a particular record.
3. Support for the COBOL OCCURS clause. Use of the OCCURS clause permits definition of records containing a repeating group (list). The list may be of fixed or variable length.
4. Support for views. A new type of domain has been added to describe artificial views of one or more elementary (i.e. non-view) domains. Views can be used to restrict the set of fields accessible, to apply an automatic selection criterion to a file, or to cross link a number of elementary domains to form an apparent hierarchy. Once defined, a view is indistinguishable from an RMS domain to the user.
5. A DATE data type has been added to DATATRIEVE. This allows easy inclusion of dates in DATATRIEVE records, direct comparison of dates, and computation of elapsed days. Dates may be formatted for printing in virtually any form. Similarly, DATATRIEVE accepts the entry of dates in virtually any form. The DATATRIEVE date format is compatible with the VMS date standard.

6. **Table support.** Tables are generally used to translate encoded values into something that can be printed, but they can have other uses. DATATRIEVE tables are stored in the data dictionary and can be edited by the DATATRIEVE editor. Table lookups are performed by the VIA value expression; table searches (for table membership) are specified with the Boolean IN expression.
7. **Automatic value validation.** A Boolean validation expression may be included as part of a field description in a record definition. If specified on a field, the validation expression is automatically executed every time the field is modified to insure that only legal values are stored in a data base. If a validation error is detected, the user is re-prompted for a new value if possible, or the DATATRIEVE statement is aborted.
8. **Re-prompting.** If a validation error, conversion error, or truncation error is detected during an assignment, STORE, or MODIFY, DATATRIEVE automatically re-prompts the user for a new value. This vastly improves DATATRIEVE's usefulness as a data entry tool.
9. **COMPUTED BY fields.** A field in a record definition may be defined as a COMPUTED BY field by specifying a value expression to be computed for its value. A COMPUTED BY field takes no space in the actual RMS record, and is computed on reference. A COMPUTED BY field may be used in conjunction with a table to provide completely automatic table lookup.
10. **Dictionary EXTRACT command.** A new command, EXTRACT, has been provided to copy domain definitions, record definitions, procedures, and tables from the DATATRIEVE data dictionary to an external file. The file produced by EXTRACT is in a form such that it can be used as a command file.
11. **SHOW FIELDS.** A new SHOW option, SHOW FIELDS, has been added to print field names and data types for all fields in ready domains.
12. **A DEFINE DICTIONARY command** has been added to create a private dictionary.
13. **A new SUM statement** has been added. The SUM statement allows very simple computation of totals and sub-totals on collections.
14. **Both global and local variables** are supported. Variables may be DECLARED at DATATRIEVE command level or within BEGIN-END blocks. The former are considered global variables and the later local variables. Global variables are preserved from DATATRIEVE statement to statement.
15. **A second form of concatenation** (expressed as !!) is provided to guarantee that no blanks are included between the two components.
16. **A new report writer formatter** has been implemented. The new formatter is better at column alignment, and is much better at wrapping report lines.

17. The DATATRIEVE divide algorithm has been improved to guarantee the same precision internally as is required for the result (taken from the context of the divide operation). As a consequence, it is no longer necessary to multiply sub-expressions by 1.0, 1.000, etc., to get a significant result.
18. The access control for record, procedure, and table definitions in the data dictionary has been enhanced. In DATATRIEVE V2, R (read) access is required to SHOW or EXTRACT a record, procedure, or table definition. In order to access an object, the privilege E (execute) is required. This permits a user to execute but not see a procedure or table.
19. DATATRIEVE-11 Version 2.0 recovers from RMS bucket locked errors under most circumstances. When DATATRIEVE encounters a locked bucket, it goes into a wait loop until the bucket is unlocked or about 15 seconds elapse.
20. A new edit-string character has been included called the Text edit character (T format). T format allows a field containing a group of text to be printed with regard to space or tab separators between words. Although it does not right justify, it allows a reasonable way to print otherwise hard to print text.
21. An edit-string character to allow insertion of a hyphen (-) while printing an alphanumeric field (defined with PIC X) has been added.
22. A SHOW SPACE command has been added to show the use of the central storage pool and help you avoid the "out of space" problem.
23. The last entry of a password table may no longer be deleted. If the last entry that has C (control) access has been deleted, you may access the password table from a [1,n] account.

## 1.2 Restrictions Removed

A number of the arbitrary restrictions of DATATRIEVE Version 1.1 have been lifted. This is not to say that DATATRIEVE Version 2 does not have limitations, but just that most numerical restrictions have been eliminated. When the central storage pool is exhausted, it is exhausted. The restrictions removed are:

1. Collections are no longer restricted to 5,000 records.
2. The maximum number of TOTALs in the report writer is no longer 16.
3. The maximum number of fields in a group item is much greater than 123 (but still not infinite!).
4. Multiplication and division are supported up to 18 full decimal digits.
5. Scale factors are now supported on floating point numbers (COMP-1 and COMP-2).

### 1.3 Incompatibilities

When a change to the DATATRIEVE language is required, both the new and old ways of doing an operation will be supported whenever possible for one full release (one year minimum). After a full release, the old way may not be supported.

The known incompatibilities between Version 1.1 and Version 2.0 are:

1. Reports are terminated in Version 1.1 by the statement "REPORT END". The proper way to terminate a report specification in Version 2 is "END-REPORT". Both will be supported for the life of DATATRIEVE-11 Version 2.
2. The report options NO-DATE and NO-NUMBER should be given as "NO DATE" and "NO NUMBER". Both forms will be supported for the life of Version 2.
3. DATATRIEVE Version 1 contained a bug which allocated a three word binary data type for a COMP field between 10 and 14 digits long. The correct length for this range is 4 words. As a consequence, DATATRIEVE Version 2.0 cannot read files it created which contain COMPs of the above range (this does NOT apply to COMP-1, COMP-2, COMP-3, COMP-5, or COMP-6). These files must be restructured by DATATRIEVE Version 1.1 to fields of decimal length 15 or greater. (Note: COBOL can not read these files either.)
4. The report formatter for Version 2 is different from the one used for Version 1.
5. The size of the maximum input string from the terminal has been reduced from 255 to 132 characters. This means that the number of continuation lines permitted may decrease, since continuation lines are considered as part of one input string.
6. The word BYE that was printed on the terminal at the end of a DATATRIEVE session has been deleted.
7. The number of records found by the FIND statement is not printed if the find statement is embedded in a procedure. If the FIND statement is entered directly, is contained in a command file, or is the last statement in a procedure, the count is printed.
8. The precedence of statistical functions has changed. Consider, for example, the value expression:

```
TOTAL SALARY + COMMISSION
```

In Version 1 of DATATRIEVE, this was parsed as:

```
TOTAL (SALARY + COMMISSION)
```

which was usually okay. This, unfortunately, caused the expression

```
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```

which was usually okay. This, unfortunately, caused the expression

```
TOTAL SALARY + TOTAL COMMISSION
```

to be parsed:

```
TOTAL (SALARY + (TOTAL COMMISSION))
```

which would have been wrong had DATATRIEVE executed it (resulting in the familiar ARVLCF: Expected value block message).

In Version 2 of DATATRIEVE, the statistical function is the high precedence operator; to take the total, average, max, or min of an expression it is necessary to put the expression in parentheses. Continuing with our example, the correct form of the expression is:

```
TOTAL (SALARY + COMMISSION)
```

9. Since floating point numbers now have scaling, any COMP-1 or COMP-2 field which had a PIC clause containing a decimal position will now be believed (before it was ignored). It will be necessary to fix the PICTURE and your data will be treated as it was in Version 1.1.
10. One of the persistent problems of DATATRIEVE has been the frequency with which the infamous central storage pool is exhausted. DATATRIEVE Version 2 may or may not be better than 1.1 in this respect depending on exact application and operating system. It is difficult to compare the relative sizes of the work space available to DATATRIEVE Version 2 and earlier versions. The changes that affect pool space are:
  1. The code portion of DATATRIEVE Version 2.0 is about five K bytes larger than Version 1.1 with a corresponding reduction in pool space.
  2. The maximum task size on RSTS/E has been increased to about 62K bytes, making 7K bytes additional pool space available.
  3. The amount of RMS buffer space required for indexed files has been drastically reduced for Version 2. As a result from one half to 2K bytes of additional space per indexed file become available for other usage.
  4. All internal DATATRIEVE blocks (the heaviest user of pool space after RMS buffers) are at least two bytes longer.

In summation, RSTS/E and VMS users have more space; RSX and IAS users may have more or less.

#### 1.4 Restrictions and Limitations

The following restrictions and limitations apply to DATATRIEVE-11 Version 2.0:

1. On VMS the following sequence will cause DATATRIEVE to abort with a severe error:

```
$MCR
MCR> DTR
DTR> ^Z
MCR> DTR
```

2. The DATATRIEVE Editor does not prohibit the deletion of the last entry in a table. If a table is edited and has no code and description pairs, any subsequent reference will result in the error message:

```
(LX)LXFRTV: retrieval segment not found
```

3. At least one space must be specified following the edit-string of a USING clause in a print-list. If a space is not specified and the character following the comma is a valid edit-string character (such as a T in TOTAL), the statement will not be executed and the "Expected x encountered y" message will be printed.

## 2.0 Installation Notes

### 2.1 DATATRIEVE Customization

There are a number of DATATRIEVE options which may be set at installation time. Many of these are now for Version 2.0. All are changed by editing the file QD.MAC before execution of the DATATRIEVE installation command or build file. The options are:

1. The name and location of the DATATRIEVE message file. The default name is LB:[1,2]QUERY.MSG; for RSTS/E, the default name is LB:QUERY.MSG. If some other device or account is to be used, the name should be changed. The message file name is referenced both by QDICT, which creates the message file at installation time, and DATATRIEVE itself.
2. The name and location of the DATATRIEVE data dictionary. The default name is LB:[1,2]QUERY.DIC; for RSTS/E, the default name is LB:QUERY.DIC. If, for some reason, it is important to move the dictionary to some other device or account, the file name can be changed.
3. Whether or not DATATRIEVE is to give a warning message when a shorter than expected RMS record is read.
4. Whether line printer spooling is to be enabled (RSX-11M only).
5. The action to be taken for divide by zero. The two options available are: Give a warning message and return -1, and quietly return the value 0.
6. The guide mode terminal type. This is only necessary for RSX-11M with the old terminal handler, and only with VT100s transmitting at a baud rate greater than 1200. In short, this option should never be necessary.
7. The default protection for dictionary objects. Version 1.1 generated a protection element giving all privileges to the creator of a dictionary object only. In Version 2.0, there are three choices: All privileges can be given to the creator's group (default), all privileges to just the creator (compatible with Version 1), and all privileges to the entire world.
8. Whether or not the Application Design Tool (ADT) is to be enabled or disabled.
9. The default setting for columns-page. In Version 2.0, the default is set to 80. In Version 1.1, the default was 132.

Specific instructions for each option are contained in QD.MAC itself.

### 2.2 Installation Clean-Up

The installation procedure does not automatically delete files from the installation account (except VMS) even though they may no longer be needed or

rarely needed. There are two groups of files: those only needed for installation, and those required for future patching, but not needed for day to day use of DATATRIEVE.

To help you clean up the installation account, command files are included to delete these now unnecessary files. Each group may be deleted independently of the other, or you may choose not to delete them at all.

These command files are not included for VMS since the normal VMS installation process deletes all files from the installation account. Specific details for the other operating systems follow.

**2.2.1 RSX-11M and RSX-11M-PLUS Operating Systems** — After a successful installation of DATATRIEVE, you may delete those files only necessary for installation by typing:

```
> @DELRX1
```

The following files will be deleted:

```
MSG.SEQ
DTR.TST
QE11M.TKB
QD11M.TKB
QC11M.TKB
QD.MAC
DTR11M.CMD
```

The files that are unnecessary for normal execution of DATATRIEVE, but are necessary for patching, may be deleted by typing:

```
> @DELRX2
```

The following files will be deleted:

```
DTR.ODL
DTRLIB.OLB
RELEASE.RNO
DTR11M.TKB
DTR11M.ODL
RMSRSX.ODL
```

**2.2.2 RSTS/E Operating System** — After a successful installation of DATATRIEVE, you may delete those files only necessary for installation by typing:

```
RUN $PIP
* @DELR1.CMD
```

The following files will be deleted:

MSG.SEQ  
DTR.TST  
QD.MAC  
DTRSTS.CTL  
QDTSTS.TKB  
QERSTS.TKB  
QCRSTS.TKB

The files that are unnecessary for normal execution of DATATRIEVE, but are necessary for patching may be deleted by typing:

```
RUN $PIP.SAV  
* @DELRS2.CMD
```

The following files will be deleted:

DTR.ODL  
DTRLIB.OLB  
RELEASE.RNO  
DTRSTS.TKB  
DTRSTS.ODL  
RMSRST.ODL

**2.2.3 IAS Operating System** — After a successful installation of DATATRIEVE, you may delete those files only necessary for installation by typing:

```
PDS> @DELIA1.CMD
```

The following files will be deleted:

MSG.SEQ  
DTR.TST  
QD.MAC  
DTRIAS.CMD  
QDIAS.LNK  
QCIAS.LNK  
QEIAS.LNK  
QEIAS.ODL  
QCIAS.ODL  
QDIAS.ODL

The files that are unnecessary for normal execution of DATATRIEVE, but are necessary for patching may be deleted by typing:

```
PDS> @DELIA2.CMD
```

The following files will be deleted:

DTR.ODL  
DTRLIB.OLB  
RELEASE.RNO  
DTRIAS.LNK  
DTRIAS.ODL  
RMSRSX.ODL

### 3.0 Documentation Omissions and Changes

The following items were omitted from the documentation or have been changed since the documentation was completed.

1. The relational operator CONTAINING may be abbreviated as CONT.
2. The User's Guide states that tables must be released explicitly by a RELEASE statement. This has been modified; if a global FINISH is specified (that is one which has no domains named), all tables currently loaded in the DATATRIEVE workspace will be released. If a specific domain is named to be FINISHED, no tables will be released and any tables associated with that domain must be explicitly released if you no longer need them.
3. Section 2.3 of the Installation Guide (IAS Installation Procedures) incorrectly specifies that files will be located in UIC [11,130], [111,130] and [311,130]. The UIC in all cases should be [SELF].
4. Section 3.3 of the Installation Guide (RSX Installation Procedures) incorrectly specifies that files will be located in UIC [1,24] and [1,34]. The UIC in both cases is [SELF].
5. In Section 3.2 of the Installation Guide (RSX Installation Procedures) add after step: 1a. Ensure that a directory exists for the symbol <LIBUIC> that is used by indirect command files.
6. Section 5.2.4 of the Installation Guide (VMS Installation Procedures) is incomplete. If you edit QD.MAC, additional questions will be asked regarding the name and location of the dictionary and message file.

## 4.0 Known Problems

The following bugs have been identified and will be fixed with patches published in the Software Dispatch:

1. A floating point field (COMP-1 or COMP-2) with a value of 0 prints as -0.
2. The text format (EDIT-STRING T) will sometimes print an extra line after the text field is printed.

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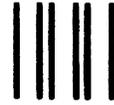
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Street \_\_\_\_\_

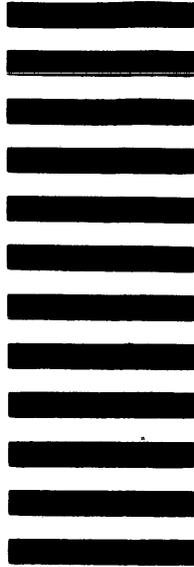
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