



Software Product Description

PRODUCT NAME: RT-11, Version 5.7
(Single-User Operating System)

SPD 12.01.41

DESCRIPTION

RT-11 is a software product of Mentec, Inc. and is licensed under Compaq Computer Corporation's Standard Terms and Conditions.

RT-11 is a single-user, real-time operating system designed to operate on the PDP-11 series of processors. Small, fast, and efficient, it has been used as the base for many applications in a variety of business, commercial and scientific environments. Capable of both real-time and data processing, RT-11 also offers a full range of system utilities to facilitate interactive program development. The RT-11 Operating System can support Supervisor mode and separated I and D space job environments.

The straightforward design of RT-11 contributes to its inherent ease-of-use and efficient utilization of system resources. The operating system itself requires minimal system overhead, optimizing the available user space for storing programs and data.

The RT-11 Operating System offers the following multiple and single job environments:

Foreground/Background Monitor (FB) — This monitor provides a non-extended-memory environment for a background job and up to seven foreground jobs.

Single Background Job Monitor (SB) — A conditionalized subset of the Foreground/Background (FB) Monitor. This monitor enables a single job to execute in non-extended-memory.

RT11XM Monitor (XM) — When an Extended-Memory multi-job environment is required, selecting the appropriate conditionals will provide the desired RT11XM monitor. This monitor provides an extended-memory envi-

ronment for a background job and up to seven foreground jobs.

RT11XB Monitor (XB) — Combining the Single-Background and Extended-Memory conditionals produces an RT11XB monitor. This monitor provides an extended-memory environment where a single, background job may reside. This proves especially appropriate in an environment where large jobs can utilize the full capabilities offered by both the hardware and the RT-11 Operating System.

RT11ZM Monitors (ZM) — Combining the Extended-Memory and Supervisor mode conditionals produces an RT11ZM monitor. This monitor provides an extended-memory environment that supports Supervisor mode and separated I-D space for a background job and up to seven foreground jobs.

RT11ZB Monitor (ZB) — Combining the Single-Background, Extended-Memory and Supervisor mode conditionals produces an RT11ZB monitor. This monitor provides an extended-memory environment where a single background job that supports Supervisor mode and separated I-D space may reside.

Features

Bad Block Replacement (BBR) — BBR tracks the occurrence of bad blocks on the RC25 and the RA series disk drives, assuring data integrity. This is a system generation option for the DU handler.

Command Line Editing — The Single Line editor (SL) allows the user to edit the current command line prior to terminating the line. Several previously typed lines may also be recalled for editing.

Configuration Independence — Provides device-independent I/O programming. For example, at run-time the user can send output either directly to a printer or write it to a disk file for later printing, without internal changes to the program.

Contiguous File Structure — Contiguous file structure for random access devices requires minimum file access overhead and provides for fast, reliable data access.

Customer Installation — An Automatic Installation (AI) procedure is provided, which installs RT-11 by conducting an interactive dialog with the user at the console terminal. RT-11 can be installed without the assistance of a software specialist.

Error Logging — The error logger keeps statistics on successful and unsuccessful transfers for random access devices and tapes on TMSCP controllers. System generation must be performed for error logging support.

Extended Device Unit Support — Allows certain device handlers to service up to 64 device units simultaneously. This is a system generation option for the DU and LD handlers.

Execution of Commands from Files — Indirect Command Files are files containing commands that are executed sequentially. The commands are given to the monitor directly.

The Indirect Control File Processor (IND) — IND interprets the contents of an Indirect Control File. IND interprets special directives that control the passing of RT-11 commands to the monitor.

Flexible Real-Time I/O — Satisfies a wide variety of input/output requirements by providing the following three modes of I/O operation:

- Synchronous I/O, where user program processing is suspended until the completion of an I/O event.
- Asynchronous I/O, where an I/O process is started and user program processing continues. At some user-defined point, the user can either test to see if the I/O is complete or wait until it is complete. If the program waits for I/O completion, processing is then suspended until the I/O event is completed.
- Event driven I/O, where an I/O process is started and user program processing continues until the I/O event completes. Processing is then interrupted to service the completed I/O event.

Flexible User Commands — RT-11 provides three supported command processors. They include:

- Digital Command Language (DCL)
- Concise Command Language (CCL)

• User Command Linkage (UCL)

Also provided is an interface for a user-written processor (UCF). The UCF facility permits a user to process commands before they are passed to DCL, CCL and UCL.

Some examples of DCL commands are COPY, DELETE, EDIT, HELP, PRINT, RENAME, RUN, SET, SHOW, and TYPE. Some CCL commands are KED and PIP. UCF and UCL allow users to define their own commands.

Global Regions — Provides the user of the XM monitor with:

- A simple way to share memory among several concurrent jobs.
- The ability to define a region in extended memory that is not freed when the defining job exits. This provides shared memory among several non-concurrent jobs.
- Treatment of the I/O Page as a global region, allowing non-privileged programs to map to the I/O page.
- Treatment of the Low 56K bytes as a Global Region allowing non-privileged programs to map to low memory.

Logical Disk Subsetting — The Logical Disk (LD) Subsetting facility lets the user define logical disks which are subsets of a physical disk. Operations can then be performed as though each logical disk was a physical disk. This feature provides additional directory space, logical grouping of files, and enhances device and file operation. As a system generation option, up to 32 logical disks can be accessed simultaneously.

Low System Overhead — RT-11's modular structure enables some monitor components to be swapped in as needed. However, if the program's memory requirements allow it, the complete monitor stays resident in memory to improve system responsiveness.

Multi-terminal Support — RT-11 optionally supports from one to sixteen terminals in addition to the console terminal. These terminals can be addressed by specially written programs. System generation must be performed to enable RT-11 Multi-terminal Support.

Peripheral Handlers — The modularity and simple structure of the I/O system allows users with unique devices to interface them easily, by writing a device handler and storing it as a file on the system device.

When a new peripheral handler is added to an RT-11 system, properly coded programs can immediately use the device without additional coding.

Symbolic Debugger — A symbolic debugging package which lets the user debug MACRO-11 programs is provided. The symbolic debugger can:

- Control program execution
- Display the contents of memory locations and registers in numeric or symbolic form
- Change the contents of memory locations and registers
- Define symbolic names for memory addresses and values
- Under mapped monitors accesses kernel, user, Supervisor modes, and I and D spaces

System Libraries — Provides system services to assembly and high level (PDP-11 C and FORTRAN) languages. The services are provided using MACROs to assembly language programs and using callable subroutines for high level languages. Routines are provided to support direct file I/O, asynchronous FORTRAN subroutines, FORTRAN interrupt routines, and use of multi-terminal support.

System Generation — RT-11 is shipped in a ready-to-use form. Only users who require special features or a highly optimized system tailored for a particular application must perform system generation.

Although technically possible, performing a system generation using only diskettes is not recommended due to the amount of media swapping and the time required.

Terminal Hooks (THOOKS) — The Terminal Hooks data structure allows a handler or utility to find pieces of the resident monitor that pertain to the terminal support code. It is pointed to by fixed offset \$THKPT.

Multiple Jobs — The FB, XM and ZM monitors can support up to six foreground jobs in addition to the main foreground job. These additional foreground jobs are called system jobs. This capability is available in the distributed versions of the XM and ZM monitors and are optionally available in the FB monitor, using the system generation procedure.

Seven RT-11 Utilities — SPOOL, VTCOM, KEX, QUEUE, INDEX, INDEXX and ERROR LOGGER can be run as foreground or system jobs.

Virtual Memory Handler — VM can support memory above 64K bytes as if it were a random access file structured device. This provides the user with system and data disks in memory that are bootable.

Write Protect — Users can employ a software “disk-write-protect” feature using a SET command to specific device handlers.

RQZX1 SCSI adapter support — Support for this adapter on Micro/PDP-11/53+, Micro/PDP-11/93, and upgraded 11/73 and 11/83 systems. Also, support for a specific set of Digital SCSI devices (RZ23L, RZ24, RZ24L and RZ26L hard disks, RX33 diskette and TZ30 tape device) using the RQZX1 SCSI adapter.

Time of Year (TOY) clock support for the KDJ11-E processors used in Micro/PDP -11/93 and PDP-11/94 systems.

System Utilities

Backup Utility — BUP provides a quick way to save a volume or file on a set of backup media. If a file or volume is larger than one volume of the media where it is to be stored, it is stored on several volumes. BUP also allows users to initialize backup volumes, get directory information about a set of backup volumes, RESTORE a volume or file from a set of backup volumes to its original form, and RESTORE a selected file from a backup volume to its original form. It can be used for some operations on logical disk files without requiring that they be mounted.

This very fast, multi-volume backup/restore facility supports the streaming capabilities of Compaq's TK25, TSV05, TSU05, TK50, TU80, and TU81+ tape drives.

Binary Comparison — BINCOM is a binary file comparison program that helps locate changes made in binary files. BINCOM can also compare entire volumes.

Debugging and Patching Tools — RT-11 provides the following utilities to aid users in diagnosing and correcting programming errors.

DBG-11	Symbolic Debugging Package that aids in interactively debugging MACRO-11 programs, (SD*.SYS, DBGSYM).
ODT	On-line Debugging Technique utility, for the unmapped monitors, that aids in interactive program debugging.
VDT	Virtual Debugging Technique utility, for the mapped monitors, aids in the interactive debugging of extended memory programs and Multi-terminal applications.
SIPP	Save Image Patch Program can be used to patch files or volumes. For overlaid programs, additional support is provided if the program were linked under RT-11 Version 4.0 and, if the program does not contain separated I and D space.
PAT	Object module patch program that performs modifications to files in object format.
SLP	Source file patch program that provides an easy way to make changes in source files.

Device Utility Program — DUP performs general utility function support for mass storage devices such as scanning for bad blocks and consolidating free space on a disk.

Directory — DIR is used to list the file directory for file-structured devices. DIR allows the directory listing to be sorted by file name, file type, date, size, or position.

Editors — KED (for all monitors) and KEX (for the mapped monitors) are screen editors that create and modify ASCII text files. The keypad keys on the keyboard are used allowing the user to position the cursor anywhere in the text file.

EDIT is a text editor that creates and modifies ASCII text files. Both character and line-oriented commands are included with provisions for command interaction, editing macros, and file manipulation.

File Dump — DUMP allows the contents of a file to be printed in various formats.

File Transfer — FILEX translates RT-11 files to and from other formats.

Librarian — LIBR creates and maintains object libraries of object modules and MACRO libraries of macro definitions. The linker uses object libraries, as specified by the user, to resolve undefined external symbols. The assembler uses MACRO libraries as specified by the user, to resolve macro calls.

Linker — LINK converts relocatable object modules produced by the assembler or optional compilers into a run-time format. The linker can optionally produce a map showing the location the modules will occupy in memory. Services performed by LINK include converting relative addresses to absolute addresses, resolving external references among object modules, creating overlays and initializing all parameters required by the monitor to run a program. The linker can create overlays meant to be loaded into extended memory at run-time and be executed directly from that memory. The linker can create separated I and D space jobs.

MACRO-11

— Provides macro assembly language programming under RT-11. It has the facilities for using macro libraries, conditional assembly directives, and pseudo operators. MACRO-11 offers the convenience of global symbols for linking object modules and extensive error diagnostics. MACRO-11 produces a listing of the program, object modules, and optionally a cross reference listing of all symbols used.

Media Formatting — FORMAT allows the user to:

- Format and verify RK05/06/07, RX02, and RX33

- Verify RA80/81, RA60, RC25, RD31/32, RD51/52/53/54, RL01/02, RX01, and RX50

FORMAT provides disk verification by writing patterns and reading them on each logical block of the volume.

On-line Help — HELP allows a user to access information about keyboard commands. This information can be modified to meet the user's needs.

On-line Master Index — INDEX (for all monitors) and INDEXX (for the mapped monitors) allow the user interactive access to most of the index entries in the RT-11 documentation set.

Peripherals Interchange Program — PIP allows the transfer of files, ASCII, object, or binary, between any peripherals supported by RT-11.

Queue Package — QUEUE is a utility that sends files to any supported RT-11 device; it is particularly useful for queuing large files for subsequent printing while allowing other system actions to occur.

Resource — RESORC examines the currently running RT-11 system and displays information about the status of the monitor and the system configuration.

Set Up Program — SETUP allows the user to set operation modes for the VT100, VT200, VT300, and VT400 terminal family, and the LA50 and LA100, LA200 serial printer family.

SETUP uses simple English language commands and is especially useful for setting video characteristics by including SETUP commands in startup command files or IND control files.

Source Comparison — SRCCOM is an ASCII file comparison program that locates changes made in source files.

Transparent Spooler — SPOOL is a utility designed to provide simultaneous output to a printer, or any other non-file structured serial device supported by RT-11, concurrent with other system actions. SPOOL can be operated without requiring the user to directly command and control spooler actions. System operation remains consistent in both the spooled and nonspooled environments.

Virtual Terminal Communications — VTCOM allows the user to communicate with a host system as if the stand-alone RT-11 system was a terminal. The user has available the resources of the host system, such as electronic mail and programming languages, yet can still use the resources of the stand-alone RT-11 system. VTCOM will transfer ASCII files between the host and the stand-alone RT-11 system.

TRANSF, the transfer utility, in connection with VTCOM transfers, with error correction, files of any format between a host on which the utility is installed and an RT-11 system. Provided are TRANSF.EXE for file transfers between RT-11 systems and VMS systems, TRANSF.TSK for file transfers between RT-11 systems and RSX systems and TRANSF.SAV for file transfer between RT-11 based systems and other RT-11 based systems.

RT² Run-Time System

RT² is a license to operate a subset of RT-11 software on PDP-11 or Micro/PDP-11 hardware. The current version of RT-11 is required for developing application software which operates on an RT² system. RT² software provides an execute-only environment for applications developed on an RT-11 system. It is the user's responsibility to transport the RT² software and the user-developed software from the RT-11 system to the target RT² system.

RT² licenses the use of the following modules:

- All modules with the extension .SYS from the standard distribution kit EXCEPT the following modules from the Symbolic Debugging Package (SDS.SYS, SDSx.SYS, SDH.SYS, and SDHx.SYS).
- BATCH.SAV Batch Utility Program
- BUP.SAV Backup/Restore Utility Program
- DIR.SAV Directory Listing Program
- DUP.SAV Device Utility Program
- FORMAT.SAV Format Utility Program
- HELP.SAV Help Utility Program
- IND.SAV Indirect Control File Processor
- INDEX.SAV On-line Master Index Utility Program
- INDEXX.SAV On-line Master Index Utility Program for mapped Monitors
- KED.SAV Keypad Editor for VT100, VT200, VT300, VT400 terminal family
- KEX.SAV Keypad Editor for mapped monitors
- PIP.SAV Peripheral Interchange Program
- QUEMAN.SAV Interface between user and Queue Package
- QUEUE.REL Queuing Program
- RESORC.SAV System Resource Display Program
- SETUP.SAV Device Control Program
- SPOOL.REL Transparent Spooling Program
- TRANSF.SAV Host Communication Program
- UCL.SAV User Command Linkage Program

- VBGEXE.SAV Virtual Background Execution Program
- VTCOM.SAV and VTCOM.REL Virtual Terminal Communications Programs

SOURCE CODE INFORMATION

Some source code modules are provided with the binary, single-use license options for monitors¹, most handlers¹, unsupported demonstration programs, utilities, and control files, and are available on all machine-readable distribution media for this product.

This source code is supplied in order to provide maximum flexibility in configuring the system.

This source code is provided on an "AS IS" basis without warranty of any kind, either express or implied.

- ¹ Uncommented sources are included on the Binary kit only as a way of providing a SYSGEN capability. Future distribution of sources is not implied by their current distribution.

HARDWARE REQUIREMENTS

The typical RT-11 system includes the following:

PDP-11 processor with sufficient memory and a console terminal.

One of the following mass storage configurations:

- RX50 and RD52/53/54, or RX33 and RD31/32. Distribution is on RX50 diskettes
- RX33 and RZ23L/RZ24L
- TK50 and RD52/53/54, or TK50 and RD32, or TZ30 and RZ23L, or TZ30 and RZ24L
- Dual RL02 disks
- Dual RX02 diskettes
- MEMORY — To provide for a system of a monitor and the basic system utilities there needs to be at least 32K bytes of memory for SB, at least 48K bytes of memory for FB, and more than 76K bytes of memory for mapped monitors. Options selected through system generation can increase memory requirements.
- CONSOLE TERMINAL — LA12, LA34, LA38, LA100, LA120, VT100, VT101, VT102, VT105, VT125, VT131, and VT200 and VT300 families (7-bit) mode only. RT-11 does not support the block mode transmission feature of the VT131.
- CLOCK — 50/60 hertz clock.
- EIS and KT11 Memory Management Unit for mapped monitors — VM.SYS on unmapped monitors.

- **SYSTEM DEVICE** — Every RT-11 system must have a random-access mass storage device. RT-11 is limited to accessing 268M bytes for EACH handler. As a system generation option, the MSCP device handler DU can access up to 2147M bytes.
- **SYSTEM BACKUP DEVICE** — Every RT-11 system must have a system backup device other than the system device.
- **SOFTWARE DISTRIBUTION DEVICE** — Either the system device or the system backup device must be a distribution medium (see the *ORDERING INFORMATION* section for list of distribution media).

SCSI Support:

- There is no SCSI device handler. The SCSI disk devices are treated as MSCP disks using DU, and the SCSI tape device is treated as a TMSCP tape using MU.
- **RQZX1 SCSI adapter** — Provides two ports that can be configured (via a hardware switch on the RQZX1 board itself) as one of the following:
 - 2 disk ports
 - 2 tape ports
 - 1 disk and 1 tape port

Each port has its own CSR and is considered to be a separate controller.

Each tape port can support a maximum of one SCSI tape device (i.e. TZ30).

Each disk port can support up to 4 disks (i.e. RX33, RZ23L, RZ24L).

Since the RQZX1 supports RX33 floppy disks, these disks must be counted in this maximum number of four. For example, one RX33 floppy attached to the RQZX1 disk port will allow up to three additional SCSI disks to be attached to that port.

The maximum number of RQZX1 adapters supported per system is one.

RT-11 does not support any SCSI devices attached outside of the system box.

Systems Supported:

UNIBUS* — PDP-11/84, PDP-11/94

PDP-11 — PDP-11/53, PDP-11/73, PDP-11/83,
Q-bus** PDP-11/93

RT-11

V5.7 is also supported on older model PDP-11s. For example, the PDP-11/23, and PDP-11/44.

- * Memory above 248K bytes cannot be used for DMA buffers on UNIBUS systems unless UMR support is active.
- ** On Q-bus machines, there is a memory restriction of 64K bytes when using the RK05.
- *** For PDP-11/23+ with more than 512K bytes of memory, the RX02 is not a valid system device.

OPTIONAL HARDWARE

Boards

- MSV (Q-bus) and MS (UNIBUS) memory boards
- Floating Point Options
- KK11-A Cache Memory for PDP-11/34
- MXV11-A or MXV11-B Multi-function Memory Board
- KW11-P or KVV11-A or KVV11-C Programmable Real-Time Clock
- KXT11-AA or KXT11-AB FALCON or FALCON-PLUS Single Board Computer
- KDF11-A 11/23 CPU Board
- KDF11-B 11/23+ CPU Board
- KDJ11-A LSI 11/73 CPU Board

I/O Peripherals

- One LPV11, LPV16, LP11, LP25, LP26, or LS11 Line Printer
- One LA34, LA38, LA50, turbo LA75, LA100, LA120, LA180, LA210, LA324, LA2100, LN03, LG01, LG02, or LJ250 Serial Line Printer

Magnetic Tape Devices

- Maximum of four TQK25 Cartridge Tape Systems.²
- Maximum of four TQK50 and TUK50 Cartridge Tape Systems.
- Maximum of four TSV05/TSU05 Magnetic Tape Drives. Each TSV05/TSU05 requires a separate controller.²
- Maximum of four TU80 Magnetic Tape Drives. Each TU80 requires a separate controller.
- Maximum of four TU81+ Magnetic Tape Drives. Each TU81+ requires a separate controller.⁴
- Maximum of four TU16/TE16 and TU45 Magnetic Tape Drives.³
- Maximum of four TU10/TE10 and TS03 Magnetic Tape Drives.³

- Maximum of four TS11 (1600 BPI) Magnetic Tape Drives.³
- Maximum of one TZ30 SCSI tape drive per port of an RQZX1 adapter.

² 64K bytes of memory required to stream drive.

³ 32K bytes of memory required.

⁴ System generation is required for support of more than one TMSCP controller.

Disk Devices

Compaq strongly recommends the use of Bad Block Replacement (BBR) in the DU handler when using the RC25 and the RA series drives. Not using BBR with these disks will probably result in bad blocks appearing during use and possible unnecessary loss of data.

Note: Inclusion of BBR in the DU handler is a system generation option. System generation is required to include BBR in SB/FB DU handler.

- Maximum of two UDA50/KDA50 Disk Adapters supporting the RA60, RA80/81, and RA90/92 disk drives with up to 64 logical units of 65,536 blocks each (2147M bytes is accessible). Without performing a system generation, only 8 logical units (268M bytes) are accessible.⁵
- One RQDX1 controller with a maximum of two RD51/52 fixed Winchester disk drives and a maximum of two RX50 5 1/4-inch dual diskette drives (each drive counts as two units). Any drive combination cannot exceed four units total.
- Maximum of two RQDX2/3 controllers with a maximum of four RD31/32/51/52/53/54 fixed 5 1/4-inch Winchester disk drives, a maximum of two RX50 5 1/4-inch dual diskette drives (each drive counts as two units) and a maximum of two RX33 5 1/4-inch diskette drives per controller. Any drive combination cannot exceed four units total per controller.^{5,6}

Note: One RQDX1 controller and one RQDX2/3 controller combination is also possible with the RQDX1 as the last device on the bus.⁵

- Maximum of two RUX50 controllers with a maximum of two RX50 5 1/4-inch dual diskette drive (each drive counts as two units) per controller.⁵
- Maximum of two RQC25 or RUC25 controllers for the RC25 fixed/removable disk subsystems (each subsystem counts as two units).⁵
- One RK11 or RKV11 (16-bit controller for Q-bus limits memory access to 64K bytes) disk cartridge controller with a maximum of eight units. RK05J drive counts as one unit, the RK05F drive counts as two units.

- One RK611 or RK711 disk cartridge controller with a maximum of eight RK06 and RK07 drives. (32K bytes of memory required).
- One RL11 or RLV11 (18-bit Q-bus controller that limits memory access to 248K bytes) or RLV12 (22-bit Q-bus controller) disk cartridge controller with a maximum of four RL01 and RL02 drives. More than two drives requires system generation.
- Maximum of two RX11 or RXV11 floppy disk systems with dual RX01 drives.
- Maximum of two RX211 or RXV21 (18-bit Q-bus controller that limits memory access to 256K bytes) floppy disk systems with dual RX02 drives.

⁵ A maximum of four MSCP controllers are supported. System generation is required for support of more than one MSCP controller.

⁶ The RD31/32/54 and RX33 only work with the RQDX3 controller.

Terminals

LA12, LA34, LA38, turbo LA75, LA100, LA120, LA324, LA2100, VT100, VT101, VT102, VT105, VT125, VT131, VT200 and VT300 family (7-bit mode only) terminals.

The maximum supported input data rate for any given terminal is 300 baud. The maximum supported aggregate total input data rate for a system is 4800 baud. Higher rates are normally possible, depending on the processor type and system loading. The output baud rate can be set to any speed.

Terminal Interfaces ⁷

- Supports serial line interfaces found on CPU boards
- Maximum of eight lines
 - CXY08-AA,AF
 - DHQ11-M
 - DHV11-M
 - DL11-A,B,C,D,E,W
 - DLV11-E,F and DLVE1-M
 - DLV11-J, DLVJ1-M (each counts as four lines)
 - MXV11-AA,AC,BF (each counts as two lines)
- Maximum of sixteen lines (maximum of eight lines on LSI-11, PDP-11/03)
 - DHU11-M
 - CXA16-AA,AF
 - CXB16-AA,AF
 - DHF11-AA *
 - CXF32-M *
 - DZ11-A,B,C,D,E,F (each counts as eight lines)
 - DZV11 (each counts as four lines)
 - DZQ11 (each counts as four lines)

* RT-11 will only support 16 lines.

Communications Interfaces ⁷

- DL11 or DLV11-E single-line interface.
- Maximum of two DZ11 asynchronous 8-line multiplexer.
- One DEQNA, DELQA, DEUNA or DELUA Ethernet interface. Handlers are supported by the mapped Monitors only.

⁷ RT-11 does not support leased lines.

PREREQUISITE SOFTWARE

None

GROWTH CONSIDERATIONS

The minimum hardware/software requirements for any future version of this product may be different from the requirements for the current version.

INSTALLATION

Only experienced customers should attempt installation of this product. Compaq recommends that all other customers purchase Compaq's Installation Services. These services provide for installation of the software product by an experienced Compaq Software Specialist.

MEDIA DISTRIBUTION

The Distribution Media Codes are described below. Specify the desired Media Code at the end of the Order Number (e.g. QJ013-H3 = binaries on RX50 Floppy Diskette).

3 = RX50 Floppy Diskette *

5 = TK50 Tape Cartridge *

M = 1600 BPI Magtape

Z = No hardware dependency

* Automated Installation Media

Note: RX50 diskettes can be read on RX50 and RX33 drives.

ORDERING INFORMATION

License Options:

For Class H ¹ Systems:

Single-Use License: QJ013-UZ

Update License: QJ013-HZ

For Class L ² Systems:

Single-Use License: QY013-UZ

Update License: QJ013-HZ

Single-Use License for RT ² (Quantity = 10):

(QJV13-DZ)

Media and Service Options:

Software Media/Documentation: QJ013-H*

Software Documentation: QJ013-GZ

Software Product Services: QJ013-**

Source Options:

Source License and Sources Distribution: QJ013-EM

* Denotes variant fields. For additional information on available licenses, services, and media, refer to the appropriate price book.

Note: The availability of these software product options and services may vary by country. Customers should contact their local Compaq office for information on availability.

SOFTWARE LICENSING

This software is only furnished under a license. For more information about Compaq's licensing terms and policies, contact your local Compaq office.

¹ High-end systems, all UNIBUS models and systems

² Low-end systems; all Q-bus models and systems including KD11, KDF11, KDJ11 CPU modules; DCT11, DCF11, DCJ11 microprocessor chips

SOFTWARE WARRANTY

This software is provided by Compaq with a 90 day conformance warranty in accordance with the Compaq warranty terms applicable to the license purchase.

The warranty period is 90 days. It begins when the software is installed or thirty days after delivery to the end user, whichever occurs first and expires 90 days later.

Warranty is provided in the country of purchase. Compaq will provide a service location which will accept reporting (in a format prescribed by Compaq) of a nonconformance problem caused when using the licensed software under normal conditions as defined by the SPD. Compaq will remedy a nonconformance problem in the current unaltered release of the licensed software by issuing correction information such as: correction documentation, corrected code, or notice of availability of corrected code; or restriction or bypass. The customer will be responsible for the preparation and submission of the problem report to the service location.

WARRANTY EXCLUSION

Compaq does not warrant that the software licensed to customer shall be error free, that the software shall operate with any hardware or software other than specified in this SPD, that the software shall satisfy customer's own specific requirements, or that copies of the software other than those provided or authorized by Compaq shall conform to this SPD.

Compaq makes no warranties with respect to the fitness and operability of modifications not made by Compaq.

If the software fails to function for reasons stated above, the customer warranty will be invalidated and all service calls will be billable at the prevailing per call rates.

The above information is valid at the time of release. Please contact your local Compaq office for the most up-to-date information.

TM RT-11, DELUA, DEQNA, DEUNA, LA, LA50, LPV16, PDP-11, Q-bus, RC25, RQDX1, RQDX2, RQDX3, RUC25, RT, RL, RX, TK, TMSCP, and UNIBUS, are trademarks of Compaq Computer Corporation. Compaq and the Compaq logo are registered in the U.S. Patent and Trademark Office.

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