digital™

Software Product Description

PRODUCT NAME: RSX–11M–PLUS, Version 4.6 **SPD 14.70.22**

DESCRIPTION

RSX–11M–PLUS is a product of Mentec Inc., and is licensed under Compaq Computer Corporation's Standard Terms and Conditions.

RSX–11M–PLUS is a disk-based, multi-user operating system that provides a multi-programming environment and real-time capabilities using a priority structured, event-driven scheduler. It is a superset of the RSX–11M Operating System designed to maximize performance of large memory and general purpose PDP–11 processors.

Time-shared, Real-time

Time-shared program development and interactive processing, real-time tasks, and batch streams can execute concurrently. The system's software priority levels enable the user to compile or assemble, debug, install and execute tasks, and run batch streams without significantly affecting real-time response.

Priority Levels

The system recognizes 250 software priority levels. The user-specified task priority determines the task's eligibility to execute. A task can be fixed in a partition to ensure immediate execution when activated, or it can reside on a disk while it is dormant making memory available to other tasks. Task checkpointing allows tasks to be displaced from memory to enable higher priority, nonresident tasks to execute.

Memory

Memory sizes from 512K bytes to 4,088K bytes are supported. Memory is logically divided into partitions in which tasks are loaded and executed. The system controls the placement of tasks within a partition and automatic memory compaction minimizes memory fragmentation within a partition.

Multi-User Features

A multi-user program development facility is provided. Multi-user features include LOGIN/LOGOUT with passwords, device and file access protection, a round-robin scheduler (running under the real-time executive), and concurrent execution of equal priority tasks via executive level swapping provide a time-sharing environment. The system keeps passwords in an encrypted form, using a one-way encryption algorithm. Additional password and access control features can be enables by a system manager.

The system keeps passwords in an encrypted form, using a one-way encryption algorithm. Additional password and access control features can be enabled by a system manager.

In addition, accounting information is logged to a disk file. This information includes, among other things, per user connect time, CPU time, and pages printed.

Command Line Interpreters

RSX–11M–PLUS supports the traditional MCR command interface, the easy-to-use Digital Command Language (DCL), and user-written command interpreters.

User-written Tasks

Tasks can be written in the supplied MACRO–11 assembly language or in optionally available languages, such as FORTRAN–77, BASIC-PLUS-2, and PDP–11 C. User libraries and shareable libraries are supported.

Tasks can be written so the system automatically loads a single, re-entrant code section of a multi-user task and an impure section for each invocation of the task.

Mapping and Instruction and Data Space

On Micro/PDP–11/53, Micro/PDP–11/53 PLUS, Micro/PDP–11/73, Micro/PDP–11/83, Micro/PDP–11/93, PDP–11/44, PDP–11/70, PDP–11/84 and PDP–11/94 systems, supervisor mode mapping can be used to map libraries, thus increasing the effective size of a user task.

On these systems, hardware mapping facilities are available to user tasks to separate instructions and data into separate 64K byte address spaces, doubling the address space available to tasks.

Note: Not all of the available languages support the Instruction and Data Space and Supervisor Mode available on these systems. Check the Software Product Description (SPD) for the specific language in question.

Utilities

An extensive set of utilities is provided to facilitate file and system maintenance, error analysis, and program debugging. Two editors are provided, EDT and RSX EDI.

File Structures and Facilities

The file system provides file structures for block structured devices. It also provides automatic space allocation, multi-user file protection, device independence, and logical device assignment.

Files are logically grouped into directories which can be labeled by a name or by a pair of numbers, conventionally denoting a user and a group to which the user belongs.

Two file access facilities are available: File Control Services (FCS) and Record Management Services (RMS–11).

RMS–11
supports three file organizations, Sequential, Relative, and Multi-keyed Index Sequential (ISAM), and provides sequential and direct access modes.

FCS supports sequential and direct access to sequentially and randomly organized files.

The use of the File Control Services increases the task size by approximately 2K to 8K bytes, depending on the number of open files and services desired. The Record Management System (RMS) requires at least 8K bytes per task.

Batch Processor

A powerful, multi-stream BATCH facility is provided with RSX–11M–PLUS indirect command file processing capabilities. The batch commands are in DCL or MCR format, making this capability easy to use. Status is returned to the batch processor as each step is completed, allowing for conditionalized branching. The batch processor collects all print files from a batch stream and spools them along with the log file. The queue manager gives the system manager control over the multiple batch streams and print queues.

Features

- Overlapped disk seek for RA60/70/71/72/80/81/82, RA90/92, RK06/07, RM02/03/05/06/80, and RP04/05/06 disks.
- Request queue optimization which reduces average seek times on disks.
- Disk Data Caching which for many applications significantly reduces actual disk I/O operations, thereby increasing system performance.
- Dynamic dual pathing support for RK06/07, (RP04/05/06,) and RM02/03/05/06/80 disks.
- Support for the RQZX1 SCSI adapter on Micro /PDP–11/53+, Micro/PDP–11/93, and upgraded 11 /73 and 11/83 systems.
- Support for a specific set of Digital SCSI devices (RX33, RZ23L, RZ24L, RZ26L, and RZ29B disks, and TZ30 tape device) using the RQZX1 SCSI adapter.
- Support for virtual devices
- Software addressing of up to 256 terminals.
- Support for Terminal Servers on Ethernet using the Local Area Transport (LAT) protocol. DECnet–11M–PLUS software is needed for this feature.
- Terminal Services Architecture (TSA) - Terminals on an RSX–11M–PLUS system with DECnet can function as remote command terminals on other RSX or OpenVMS systems in the network that also has TSA capability. Likewise, terminals on those remote systems can function as command terminals on the RSX–11M–PLUS system.
- Support for the Digital Multinational Character Set and for user-written translation routines for other character sets.
- Upward compatibility for most nonprivileged tasks with RSX–11M–PLUS, Version 2.0, RSX–11M, Version 4.0, and Micro/RSX, Version 1.0. Task rebuilding is usually not required.

- As of Version 3.0 of RSX–11M–PLUS and Micro/RSX, the Executive has been vectored. Users can vector their privileged tasks which, in most cases, allows the tasks to be run on subsequent versions of RSX–11M–PLUS or Micro/RSX without rebuilding them.
- Ability to connect to, and transfer files to and from, another system over a serial asynchronous communications link. The file transfer and data terminal emulation utilities allow easy file interchange between the RSX–11M–PLUS system and another PDP–11 running a RSX Operating System, or an OpenVMS system running VAX–11 RSX. Communication between any of these systems is established through a terminal line. The file transfer utility uses the protocol DDCMP, which provides error detection and correction to assure data integrity. As MFT transfers files using RMS block I/O, all types of data files can be copied.
- Shadowed Disk Support - Allows one of two disks of the same type to be designated as a shadowed backup of the other disk mounted as a Files–11 volume. All writes to disk are written automatically to both shadow members. Reading and writing are performed, optionally, on a load sharing basis. In the event of a read failure on the primary drive, the system automatically reads the data from the secondary drive.
- Powerfail/Restart - Allows the system to continue executing upon power restoration, restarting all interrupted I/O activities and notifying any active task through a powerfail asynchronous system trap entry point.
- Host for RSX–11S program development and system building.
- Error logging capabilities.

Pregenerated System

A pregenerated RSX–11M–PLUS system for RL02 target disks is provided on the distribution. Most, but not all, RSX–11M–PLUS features and device support (including error logging) are provided on the kit. Mass storage device support includes: RA60/70/71/72/80 /81/82/90/92, RC25, RD31/32/51/52/53/54, RL01/RL02, RX02, RX33, RX50, RZ23L, RZ24L, RZ26L, RZ29B, TK50, TQK25, TS11, TSV05, TU58, TU80, TU81, and TZ30.

The pregenerated system does not require system generation. Sources are provided on the kit to perform system generation, provided the system meets the minimum requirements for a system generation.

For the Micro/PDP–11/53, Micro/PDP–11/53 PLUS, Micro/PDP–11/73, Micro/PDP–11/83, Micro/PDP–11 /93, PDP–11/44, PDP–11/70, PDP–11/84, and PDP–11/94 processors supporting separated Instruction and Data space (I- and D-space), a pregenerated system is provided that utilizes these features. A non-I- and D-space system which does not support Supervisor mode is provided for the Micro/PDP–11 /23, the PDP–11/23-PLUS, and the PDP–11/24. An automated procedure deletes one of the pregenerated systems, if it is not required, in order to recover some disk space.

For the pregenerated system support for Shadow Recording and Console Logging is provided only in the I- and D-space system.

Refer to the *HARDWARE REQUIREMENTS* section under *Pregenerated System for RL02 Disks* for a list of devices supported by the Pregenerated System.

SOURCE CODE INFORMATION

Source code for the RSX–11M–PLUS Executive and most privileged code modules is provided in the binary kit options on 1600 BPI Magtape and TK50 cartridge tape. This source code is included in order to generate the RSX–11M–PLUS system.

A separate source license is required for the RSX–11M–PLUS utilities and nonprivileged modules. A kit for these sources is available on 1600 BPI Magtape, and TK50 Cartridge Tape.

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

HARDWARE RESTRICTIONS

In some cases, there are hardware features of the options in the following *HARDWARE REQUIREMENTS* and *OPTIONAL HARDWARE* sections which are not supported. For example, hardware and software restrictions can limit the number of devices that a system can support, and there may be some combinations of devices that are mutually exclusive.

- If the TK50 or TZ30 is used with utilities other than BRU (the Backup and Restore Utility), degraded performance and/or capacity of the TK50 or TZ30 tape device should be expected.
- ANSI tape processing for information interchange is not supported on the TZ30 cartridge tape drive.
- Due to hardware restrictions, errors may be experienced when the DLVJ1 (formerly DLV11-J) is configured with an RQDX1 or additional DLVJ1 modules.
- RSX–11M–PLUS supports on-line formatting of RX33 diskettes. An RX50 format diskette can be read and written in an RX33 drive, but cannot be reformatted into the higher-density RX33 format.

- Simultaneous formatting of RX33 diskettes on more than one RX33 drive is not supported. Only one RX33 diskette can be formatted at a time.
- RSX–11M–PLUS supports the TU81E as a TU81.
- Support for the RQZX1 adapter is limited to microcode version 2.1 or later.

HARDWARE REQUIREMENTS

All RSX–11M–PLUS systems, whether for system generation, system execution, or the pregenerated system, require the following basic hardware:

Processor

PDP–11/23-PLUS, PDP–11/24, PDP–11/44, PDP–11/70, PDP–11/84, PDP–11/94, Micro/PDP–11/23, Micro/PDP–11/53, Micro/PDP–11/53 PLUS, Micro/PDP–11/73,
Micro/PDP–11/83, Micro/PDP–11/93, or LSI–11/73

Note: The LSI–11/73 (KDJ11-A) processor module is supported ONLY when used in the following two configurations, and with the restrictions noted. Configuration 1 is recommended wherever possible.

Configuration 1 (NOT supported with RQDX1 controller)

- KDJ11-A processor module
- MRV11-D memory module with MXV11-B2 boot ROM set
- DLVJ1 four-line terminal interface

Configuration 2

- KDJ11-A processor module
- MXV11-BF multi-function module with MXV11-B2 boot ROM set

Console Terminal

DL11, DLV11, or compatible interface with an appropriate terminal from the list of supported hardcopy, standard video, or graphics display terminals

Note: If the console terminal is using a DLVJ1 (formerly DLV11-J) interface, console baud rates must not exceed 1200.

Clock

KW11-L, KW11-P, DL11-W or equivalent

Memory

512K bytes, KT24 for PDP–11/24

Further minimum requirements depend on the use of the system. There is also a maximum configuration for the pregenerated RL02-based system. These requirements and constraints are detailed in the following sections.

System Generation

Disk: RA60/70/71/72/80/81/82/90/92, dual RC25, dual RD52, RD53/54, dual RK07, RM02/03/05/06/80, RP04/05/06, RZ23L/24L/26L, RZ29B

Note: A dual RC25 configuration consists of two devices which comprise four units.

Tape: Either a 9-track tape drive from the *OPTIONAL HARDWARE* list, a TK50 cartridge tape drive, or a TZ30 SCSI tape drive is required.

System Generation for RSX–11M–PLUS can also be accomplished on an OpenVMS VAX system with VAX–11 RSX. Refer to the VAX–11 RSX Software Product Description (SPD 26.73.xx) for the required versions.

System Execution

Disk: RA60/70/71/72/80/81/82/90/92, RC25 RD31/32, RD51/52/53/54, RK06/07, RL01/02, RM02/03/05/06/80, RP04/05/06, RZ23L/24L/26L, RZ29B

Note: None of the standard distribution kits will install on an RL01; however, users can tailor a subset system to be installed on the RL01.

SCSI Support

- There is no SCSI device driver. The SCSI disk devices are treated as MSCP disks using DUDRV, and the SCSI tape device is treated as a TMSCP tape drive using MUDRV.
- 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/24L/26L/29B in any combination).

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.

Pregenerated System for RL02 Disks

Minimum disk and tape requirements:

Disk: One RL02

Tape: A tape from the supported maximum configuration list that is compatible with 1600 BPI or TK50 distribution.

Note: The Pregenerated system is a backup of an RL02 disk.

Maximum Configuration for Pregenerated System

Memory:

- 3,840K bytes on UNIBUS processors
- 4,088K bytes on Q–bus processors

Disk:

Four RL01/02 controllers with four units each; one RX11 controller with two RX01 units, or one RX211, or RXV21 controller with two RX02 units, and any four of the following controllers or subsystems:

1. RQDX1, RQDX2, or RQDX3 controller - Each controller may have four units, which may be: RX50 (dual device - counts as two units), RX33, RD31 /32, or RD51/52/53/54. RQDX1 can be used only with RD51/52 and RX50, and supports no more than two RD5x units (plus one RX50 dual floppy drive). RQDX1 requires Version 9 microcode or later to support the RD52. There can be no more than one RQDX1 on a system.

   RQDX2 can be used only with RD51/52/53/54 and RX50.

2. RUX50 controller - Each controller may have four RX50 units (i.e., two dual units).

3. RC25 subsystem, including a UNIBUS or Q–bus controller - The controller supports two drives (four units).

4. UDA50 or KDA50 controller - Each controller may have four units which may be RA60, RA70, RA71, RA72, RA80, RA81, RA82, RA90, or RA92.

5. RQZX1 SCSI Adapter - Provides two ports than can be configured (via a hardware switch on the RQZX1 board itself) as one of the following:

   — 2 disk ports

   Note: Each disk port of the RQZX1 counts as 1 controller

   — 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 drive (i.e., TZ30).

   Each disk port can support up to 4 disks (i.e., RX33, RZ23L/24L/26L/29B in any combination).

   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.

   Note: RSX–11M–PLUS does not support any SCSI devices attached outside of the system box.

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

Terminals and Serial Printers:

Up to 64 lines using DFA01, DHQ11, CXY08, CXA16, CXA16, DL, DLV, DZ, DZV, DZQ, DHV, DHU controllers with a maximum of 16 controllers, DHF11 supported as two CXA16s.

Line Printer:

One LP11 series printer or equivalent

Tape:

Two TU58; one TK50, TU81, TU81E, or TZ30; and one TQK25, TS11, TSV05, or TU80

Laboratory Peripherals:

K-Series devices, LPA11

Communications (QIO Interface):

One DEUNA or DELUA Ethernet Controller

Floating Point Processors:

FP11, FPF11, FPJ11, KEF11-AA

Note: The pregenerated system distribution does not include a system generation capability. However, loadable driver support is included so customers can write their own device drivers. distribution.

OPTIONAL HARDWARE

- Additional memory up to a maximum of 3840K bytes for UNIBUS processors and 4,088K bytes for Q–bus processors
- FP11 Floating Point Processor

- FPF11 Floating Point Processor
- FPJ11 Floating Point Processor
- KEF11-AA Floating Point Processor
- KEF11-BB Commercial Instruction Set

I/O Peripherals

- PR11 paper tape reader and PC11 paper tape reader /punch
- CR11 and CM11-E card reader
- Printers: LA50, LA75, LA100, LA180, LA210, LN01, LN03, LQP02, LQP03, LG01, LG02, LP11 series (LP01/02/04/05/06/07/14/25/26/27), LS11 and LV01

Note: Plotter support for Digital printers is not included in RSX–11M–PLUS, but may be provided in optional software.

9-Track Magnetic Tape Drives

- TE10, TU10, and TU10W 800 BPI tape drives
- TE16, TU16, TU45, and TU77 800/1600 BPI tape drives
- TS11, TSV05, and TU80 1600 BPI tape drives
- TU81 and TU81E 1600/6250 BPI tape drives

Other Magnetic Tape Devices

- TU58 DECtape cartridge tape subsystem

Note: The TU58 should be used only in a stand-alone, lightly loaded environment. If used as a file device in a heavily loaded environment, it can degrade system performance.

- TQK25 8-inch cartridge tape drive
- TK50 cartridge tape drive with UNIBUS or Q–bus controller
- TZ30 SCSI tape drive with RQZX1 adapter

Hard Disk Devices

- ML11 semiconductor disk emulator (with RH70 controller).
- RA60/70/71/72/80/81/82/90/92 disk drives (with UDA50 or KDA50 controller).
- RC25 fixed/removable disk subsystem.
- RD31/32 and RD54 disk drives (with RQDX3 controller).
- RD51/52 disk drives (with RQDX1, RQDX2, or RQDX3 controller). The RQDX1 requires Version 9 microcode or later to support the RD52 disk drive. There can be no more than one RQDX1 on a system.
- RD53 disk drive (with RQDX2 or RQDX3 controller).
- RK05 and RK05F cartridge disk drives (with RK11 controller).
- RK06/07 cartridge disk drives (with appropriate RK controller).
- RL01/02 cartridge disk drives (with appropriate RL controller).
- RM02/03/05/06 disk pack drives (with appropriate RH controller).
- RM80 disk drive (with RH70 controller).
- RP04/05/06 disk pack drives (with appropriate RH controller).
- RS03/04 fixed-head disks (with appropriate RH controller).
- RZ23L, RZ24L, RZ26L, RZ29B SCSI disk drives (with RQZX1 adapter).

Soft Disk Devices

- RX11, RX211, and RXV21 floppy disk systems.
- RX33 dual density floppy disk drive (with RQDX3 controller).
- RX33 dual density floppy disk drive (with RQZX1 adapter).
- RX50 floppy disk subsystem (with RQDX1, RQDX2, RQDX3, or RUX50 controller).

Terminals

- Hardcopy Terminals: LA12, LA34, LA36, LA38, LA120, LT33, and LT35.
- Standard Video Terminals: VT52, VT100/101/102, VT131 (in VT100/102 character mode only) and VT220.
- Graphics Display Terminals: VT55, VT125, VT240 /241, and VT320/330/340, VT400 and VT500 series,(the VT3xx, VT4xx and VT5xx series terminals are supported in VT200-mode only).
- Other Terminal Devices:
  - — DTC01 DECtalk.
  - — The PC100 (Rainbow 100) is supported as a terminal in VT102 mode.
  - — The PC278 (DECmate-II) is supported as a terminal in VT102 mode.
  - — The Professional 300 series personal computers are supported as VT102/VT125s in emulation mode.
  - — RT02 Alphanumeric Display.
  - — RT02-C Alphanumeric Display and Badge Reader.

- Terminal Interfaces - The terminals listed above are supported when connected to DHFA01, DHQ11, CXY08, CXA16, CXA16, and DHF11 (DHF11 supported as two CXA16s). DH11 (with or without DM11-BB), DHU11, DHV11, DL11-A, B, C, D, E or W, DLV11, DLV11-E or F, or DLVJ1 (formerly DLV11-J), DZ11, DZQ11, DZV11, or DZS11 (first terminal must be VT1xx with DZS11).

  Console baud rates must not exceed 1200 with the DLVJ1. Due to hardware restrictions, errors may be experienced when the DLVJ1 (formerly DLV11-J) is configured with an RQDX1 or additional DLVJ1 modules.

Note: A maximum of 256 terminals are supported.

Communications Devices (QIO Interface)

- DEUNA Ethernet controller
- DELUA Ethernet Controller
- DMC11
- DMR11
- DUP11
- PCL11-B

Laboratory/Industrial Control Devices

- LPA11-K Laboratory Peripheral Accelerator
- Laboratory I/O Subsystem configured using the following options:
  - — AA11-K 4-channel 12-bit D/A converter with scope control; 16 per subsystem
  - — AAV11-A, ADV11-A, KWV11-A, and DRV11 real-time options
  - — AD11-K 12-bit A/D converter with 16-channel multiplexer, 16 per subsystem (15 if ADK11-KT is part of same subsystem)
  - — ADK11-KT 12-bit A/D converter with 16-channel multiplexer; one per subsystem
  - — AM11-K 48-channel A/D multiplexer with gain ranging; one per AD11-K or ADK11-KT
  - — DR11-K 16-bit digital I/O option; 16 per subsystem
  - — KW11-K Dual real-time clock with Schmitt triggers; one per subsystem (clock already included in ADK11-KT, no KW11-K is required if one is present)

Support for the IP11 and IPV11 Process Control Subsystems, contained in previous versions of RSX–11M–PLUS, is now available in a separate optional software product for RSX–11M–PLUS.

SOFTWARE REQUIREMENTS

If support for Ethernet terminal servers is required, then DECnet–11M–PLUS (at a minimum of Version 3.0) is needed. This is true even if only the Local Area Transport (LAT) protocol is to be used.

OPTIONAL SOFTWARE

- DATATRIEVE V3.3B
- DECnet–11M–PLUS V4.6
- PDP–11 BASIC-PLUS-2 for RSX–11M and RSX–11M–PLUS V2.7A
- PDP–11 FORTRAN–77/RSX V5.4A
- PDP–11 SORT/MERGE V3.1
- RSX–11M V4.8

GROWTH CONSIDERATIONS

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

INSTALLATION

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

SOURCE MATERIALS OPTIONS

Optional source materials for this software product can be obtained by signing Digital's Software Program Sources License Agreement and then purchasing the source option(s) desired. The agreement entitles the user to use the source materials at one customer facility or location which is specified in the agreement.

Most users do not require source materials. They are used primarily to make modifications to the software product. Source kits provided by Digital do not necessarily contain all source files used by Digital to create binary kits.

Source License and Sources Distribution Option

This option provides you with the machine-readable source code for this software product. It gives you the right to use the source code on any CPU at the facility /location specified in the agreement which has a Single-Use License for the object code.

Sources Update Distribution Option

This option provides you with the revised version of the machine-readable source code for this software product. You must have purchased the Source License and Source Distribution Option to obtain this option.

DISTRIBUTION MEDIA

The distribution Media Codes used are described below. Specify the desired Media Code at the end of the Order Number, e.g., QR500-H5 = binaries on TK50 Tape Cartridge).

5 = TK50 Tape Cartridge
M = 9-track 1600 BPI Magtape
Z = No hardware dependency

ORDERING INFORMATION

License Options:

For Class H[1] Systems:

Single-Use License:QR500-UZ

For Class L[2] Systems:

Single-Use License:QY505-UZ

Migration Option from RT–11, RSX–11D, and IAS: QR510-UZ

Media and Service Options:

Software Media/Documentation: QR500-H*
Software Documentation: QR500-GZ
Software Product Services: QR500-**

Source Options:

Source License and Sources Distribution[3] The RSX–11M–PLUS Utility Sources are provided in the Source License and Source kits: QR520-E*
Source Distribution Update: QR520-N*

SOFTWARE LICENSING

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

SOFTWARE PRODUCT SERVICES

A variety of service options are available. For more information, contact your local Compaq office.

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.

Warranty is provided in the country of purchase. Compaq will provide a service location that 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 this SPD. Compaq will remedy a nonconformance problem in the current unaltered release of the license software by issuing corrected code; or a restriction or a 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 satisfy the 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's warranty will be invalidated and all service calls will be billable at the prevailing per call rates.

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

[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

[3] The Executive and I/O Drivers sources are included on the media and documentation kits.