digital
Software Product Description

DESCRIPTION:

RTS/8 is the Real-Time Operating System for the PDP-8 family (excluding the PDP-8/S) and for the PDP-12. It allows up to 63 tasks to run concurrently while competing for resources on a fixed priority basis. RTS/8, once generated under OS/8, can be entirely memory resident or have non-memory resident tasks.

RTS/8 is an event driven multitasking, multiprogramming real-time operating system which in large configurations can become a development system with OS/8 as well. The RTS/8 Executive module (task) is entirely memory resident. The size of the executive typically ranges from 640 to 1K words of memory, depending upon the number of tasks. Other features of RTS/8 include the following:

- Maximum of 63 foreground tasks and one background (the OS/8 module) task.
- Fixed priority of task.
- Tasks can be scheduled by themselves, by another task, or by the operator.
- Tasks can be scheduled for execution immediately, at a fixed interval from the time requested or at a specific time of day.
- Tasks can be swapped into memory when required.
- Tasks can be written onto mass storage prior to being swapped out.
- The RTS/8 executive provides facilities for tasks to communicate with other tasks.

The following modules (tasks) are provided by DIGITAL in a format which, when tailored by the user, constitutes a specialized RTS/8 system.

RTS/8 Executive (monitor)
- Controls task execution
- Schedules events (if a clock is available on the system)
- Sends messages to system tasks
- Suspends task execution

Swap Module
This module actually swaps tasks into or out of memory. SWAP determines whether a task is already in memory, or whether it must be first written onto mass storage before another task may reside in its partition (area of memory), or whether a new task can be swapped into memory without regard to what was in the partition previously.

Monitor Console Routine (MCR) Module
The Monitor Console Routine provides the operator/programmer with functions to control, inspect, debug, suspend, schedule and print the status of tasks within the system.

Mass Storage Modules
This group of drivers accepts the same request message format to read or write blocks on the following storage devices:
- RX8-Floppy Disk
- RK8-E-Cartridge Disk
- RK08-Cartridge Disk
- DF32/RF08-Fixed Head Disk
- TC08-DECtape
- LINCtape

OS/8 Files Module
This module provides the user the ability to look-up, create and delete files in OS/8 directories from a foreground task. This module, when used in conjunction with one or more of the previously mentioned mass storage modules, allows the programmer the capability to read or write OS/8 files onto the previously mentioned storage device.

OS/8 Background Module
The combination of the previously mentioned device drivers and the OS/8 Background Module allows the execution of any of the OS/8 operating system utilities (i.e., PAL8, BASIC — excluding Industrial BASIC — EDITOR, TECO, BATCH) to run under the RTS/8 executive. OS/8 is run in the top two or more memory fields under control of the KM8-E, (standard on PDP-8/E,F,M, with 8K or more core memory) or time shared PDP-8 (KT8-I or KT08) hardware option. One of these options are required for OS/8 Background execution. In addition, a background terminal must be dedicated to the OS/8 system execution.

Clock Module
It accepts requests (in the form of RTS/8 messages) to perform actions after a specified time has elapsed.

Console Terminal Module
Non-Console Terminal Module
These drivers handle a single terminal in either line or character mode. Input in line mode is terminated by a carriage return or an ALTMODE character, and may be edited with a RUBOUT or CRTL/U character. In character mode, input is not echoed and is terminated by overflow of a specified character count.

Line Printer Module
The RTS/8 line printer supports an LE-8, LS8-F or LV-8 Line Printer. Its structure is identical to line mode in the terminal module.

Cassette Module
The RTS/8 cassette driver is used with the TA8-E/TU60 DECcassette drives to allow the user to read or write data on cassette.

Cassette File Module
This module allows the user to look-up, enter and delete files from a DECcassette. When used with the cassette driver, the user can read or write standard CAPS-8 format data files on DECcassettes.

Power Fail/Auto-Restart Module
This driver provides the mechanism by which the system can recover from a power failure. If a power low condition occurs, the processor state is saved and the processor is halted. When power is restored, the processor state is restored and control is transferred to the power fail drive.

Universal Digital Controller (UDC-8)/Industrial Controller Subsystem (ICS-8)
This driver gives the user the capability of controlling all the various types of UDC/ICS modules. The driver performs two types of actions: immediate and deferred. Immediate actions include reading and sending Digital values to appropriate UDC/ICS modules. Deferred actions may be linked to specified events within the UDC/ICS (i.e., counters overflowing, switches being thrown).

KL8A Support Module
This module allows the use of the one or more KL8A serial 4-line handlers under RTS/8 control.

NULL8A Module
This module is a special null job for the PDP-8A which uses the LED lights to count in decimal at a rate of approximately one increment per second.

Exit Module
This module, if present, is run before an RTS/8 exit to OS/8 is completed.

MINIMUM HARDWARE REQUIRED:

Minimum RTS/8 configuration for a run-time system is as follows:
- Without OS/8 or OS/12 background support:
  1. Any PDP-8 family processor (except a PDP-8/S) or a PDP-12 with at least 4K words of memory
  2. Console Terminal

- With OS/8 or OS/12 background support:
  1. Any PDP-8 family processor (except a PDP-8/S) or a PDP-12 with at least 12K words of memory
  2. Two (2) Terminals
  3. RX8, TC08, DF/RF, or RK, or LINCtape (PDP-12)

- With OS/8 or OS/12 background support running BATCH:
  1. Same as above, but with 16K words of memory

Minimum RTS/8 development configuration is OS/8 or OS/12 operating system configuration (which requires a PDP-8 or PDP-12 with 8K words of mass storage and a OS/8 supported terminal)

OPTIONAL HARDWARE SUPPORTED:

Additional memory (up to 32K words system total)
DK8-EA, DK8-EC, DK8-EP Clocks
LA30-PA, VT05 Terminals (up to 2400 baud with KL8-JA)
VT50, VT52 Video Terminal (teletype level support)
LT33, LT35 Teletypewriters
TC08 DECtape only
DF32, RF08, RK08, RK8-E Disk or RX8 Floppy Disk
DP8-E powerfail/auto-restart
TA8-E Cassette
UDC-8/ICS-8 Industrial Control Subsytems
LE-8, LS8-F, LV-8 Line Printer
LINCtape
LA30, LA36 Serial DECwriters KL8A 4 Channel Interface

RTS8, Version 2B does not support the FPP8/A, FPP8/E, or FPP12 nor does it support use of these devices by the OS/8 or OS/12 monitors running in background.

PREREQUISITE SOFTWARE:

OS/8 or OS/12, Version 3 or later.

OPTIONAL SOFTWARE SUPPORTED:

None

TRAINING CREDITS:

None.

SUPPORT CATEGORY:

B — Software Support will be provided as listed in the Software Support Categories Addendum to this SPD.

UPDATE POLICY:

Software Updates, if any, released by DIGITAL during the one (1) year period following installation, will be provided to the customer without additional charge. After the first year, updates, if any, will be made available according to then prevailing DIGITAL policies.

ORDERING INFORMATION:

This software is furnished under a license for use on a single CPU and can be copied and modified (with inclusion of DIGITAL's copyright notice) only for use on such CPU, except as may otherwise be provided in writing by DIGITAL.

Source and/or listing options are only available after the purchase of at least one supported license and after a source license agreement is in effect.

The following key (A, B, C, N, Y) represents the distribution media for the product and must be specified at the end of the "Q" number, i.e., QF020-XC = sources on DECtape.

A = Linc Tape
B = Paper Tape
C = DECtape
N = Cassette
Y = Floppy Disk

Source/Listing Options

QF020 -X— Single-use license, sources, listings, documentation, Support Services (media: B, C, N, Y)

QK020 -X— Single-use license, sources, listings, documentation, Support Services (media: A)

QF021 -X— Single-use license, sources, listings, documentation, includes OS/8 Version 3C binaries, Support Services (media: B, C, N, Y)

QK021 -X— Single-use license, sources, listings, documentation, includes OS/8 Version 3C binaries, Support Services (media: A)

Update Options

Users of RTS-8 whose specified Support Category warranty has expired, may order under license the following software update at the then current charge for such update. The update is distributed in source form on the appropriate medium and includes no installation or other services unless specifically stated otherwise.

QF020 -N— RTS/8 Update Kit, updates Version 2 to Version 2B (media: B, C, N, Y)

QK020 -N— RTS/8 Update Kit, updates Version 2 to Version 2B (media: A)

QF021 -N— RTS/8 Update Kit (with OS/8) (media: B, C, N, Y)

QK021 -N— RTS/8 Update Kit (with OS/8) (media: A)

Users of RTS/8, Version 2 whose specified Support Category warranty has not expired may order under license the following software update for the then current media charge. The update is distributed in source form on the appropriate medium and includes no installation or other services unless specifically stated otherwise.

QF020 -V— RTS/8 Update Kit, updates Version 2 to Version 2B (media: B, C, N, Y)

QK020 -V— RTS/(Update Kit, updates Version 2 to Version 2B (media: A)

ADDITIONAL SERVICES:

None

D4.20.5