TSX-Plus 6.0—New features

The following are some of the new features to be included in TSX-Plus version 6.0, which is currently in field-test. The low-memory portion of TSX-Plus has been reorganized to reduce the amount of space used by the system and the amount required for tables for each job. The restriction of 30 jobs has been removed and a minimal system may be able to support as many as 45 jobs.

A major revision has been made to the job privilege structure. The previous system (operator privilege or no privilege) has been replaced by a set of 27 privileges which may be individually enabled or disabled.

There will be no inherent limit on the number of shared files that may be simultaneously in use.

Virtual and detached jobs will now inherit some information from the parent line, such as: privileges, priorities, assignments, logical mounts, and access restrictions.

PRO/TSX-Plus will include support for the quad serial line multiplexer.

There will be support for named PLAS regions.

Cobol-Plus Version 6.0—New features

Cobol-Plus version 6.0 features a major enhancement to the support of ISAM files. With version 6.0 it is possible to enable automatic file size extension for ISAM files.

_.ne ISAM utility has been updated to fully support the new ISAM structure. The "/U" switch will cause an old ISAM file to be updated/converted, in place, to the new ISAM structure.

The format of some of ISAM's displays has been improved. Some items are displayed in octal, some in decimal, and some in both, depending on context.

Because of changes in the internal structure of ISAM files, existing applications will need to be recompiled in order to use ISAM files of the new structure.

The structural modifications for the new ISAM are due primarily to the requirements of the automatic file extension function. File extension is accomplished essentially in the same way as the ISAM utility uses the "/E" switch.

There are now two versions of the compiler: one for smaller memory systems which requires as little as 36kb to run, and one for larger memory systems which compiles up to 1.8 times as fast.

There is a new option switch "/F" for the compiler. If specified, data items whose usage type is computational are instead assigned display usage.

The ACCEPT id FROM TIME statement now returns with the maximum accuracy possible with your system clock.

A new version of RTSORT (2.0) includes the ability to obtain the job context from a job requesting a sort when RTSORT is running in message mode under TSX-Plus version 6.0. The optional switch, "/GETCXT", allows RTSORT to correctly interpret logical device assignments and logical subset disk mounts (LD's) for the job requesting the sort, thus removing the necessity to use physical device names or include assignments and mounts in the RTSORT detached job start-up command file.

DECNET

Several users have contacted S&H in recent months concerning whether DECNET is supported under TSX-Plus. Currently, there is no known product which runs under TSX-Plus providing DECNET compatibility to other environments running a DECNET environment (such as VAX/VMS systems). We are currently evaluating the market and feature requirements for such a product. If such a product is of interest to you, write us (Attn: Technical Support) and provide information in the following areas:

What are your requirements for a DECNET product? File transfer? Remote terminal access? Program-to-program communication? End node? Full routing? ETHERNET support?

2. Which computers do you wish to network (specify machine types and operating systems)? Non-DEC computers (specify)?

3. Do you currently have a DECNET product? For PDP-11 (specify operating system)? For VAX-11? Others (specify)?

4. When do you require the product? 6 months? 1 year?

5. What is the maximum amount you would be willing to pay for a DECNET/TSX product?

Device Handler Information

DP handler

TSX-Plus version 5.0 and earlier, distributed standard DEC RT-11 device handlers built using only the following conditionals:

    MMG$T = 1 ;enable memory management
    TIM$IT = 1 ;enable time-out support
    ERL$G = 0 ;disable error logging

As a result, the DP handler's default support was for a RP02 device. In TSX-Plus version 5.1, the distributed handlers were built using the RT-11 conditional file SYCND.MAC, modified to alter the above conditionals. As a result, the SYCND.MAC file enabled RP03 support in the DP handler rather than RP02.

DU handler

The DU handler shipped with TSX-Plus version 5.1C is a very early version of the DU device handler. Several problems were identified and corrected in later RT-11 versions of this handler. Should you require any of these corrections, boot an RT-11 XM system and configure the handler. Then COPY DUX.SYS to DU.TSX.

IB handler

Several problems occur when attempting to use the DEC GPIB software under TSX-Plus. The abort entry code in the IB handler does not correctly isolate the job number for comparision purposes and as a result, unusual actions occur when IOABT is 1 (enable abort entry) and other jobs are active. Temporarily disable abort entry processing by SET IO NOABORT (or IOABT set to zero).

The IB subroutine "IBSRQ" is implemented in the DEC IB handler as a subroutine call from the handler directly to the user code region. Since TSX-Plus does not load any user job in the same map region as the operating system, the call will execute part of the operating system usually resulting in a fatal system error or halt. Therefore, the "IBSRQ" call is currently unsupported in TSX-Plus.

MS handler

The MS handler distributed with version 5.1C of TSX-Plus contains corrections to the abort entry code within the handler. It is now recommended that all magtape handlers be operated in an environment with abort entry processing enabled (IOABT set to 1 or SET IO ABORT). The enabling of abort processing will prevent errors such as device offline or device in use following cancellation of a job which was using the tape device.

XC and XL handler

TSX-Plus versions earlier than 5.1C used bit 13 in the extension configuration word (RMON fixed offset 370) to identify extended QBUS configurations which contained more than 256 K bytes of memory. Originally this bit was unused by RT-11 but later became allocated to signal when RT-11 was executing on a Professional. Thus, TSX-Plus versions which set this bit required assignment of XC (rather than XL) when using VTCOM. TSX-Plus version 5.1C preserves the RT-11 meaning of this bit, resulting in the necessity of a RT-11 compatible device assignment (XL) when operating VTCOM on extended QBUS machines.

Non-DEC handlers

Some non-DEC handlers (such as the FW handler used by Scientific Micro Systems) used bit 13 in the extension configuration word (RMON fixed offset 370) to trigger 22-bit DMA transfers (see XC and XL handler note). Device handlers implemented to rely on this bit will require modification in order to operate properly under TSX-Plus version 5.1C.

Processor "Features"

After several calls from different sites, we have noticed additional patterns relating to the LSI-11/73 processor in addition to those "features" we mentioned in a previous bulletin. Some foreign peripherals seem to be mildly to seriously incompatible with the 11/73 processor. The peripheral vendors may or may not claim that a given device has been "qualified" for use with the LSI-11/73. They may also stipulate that their board works with the 11/73B, but not necessarily with the 11/73A. If you aren't sure which processor you have, the 11/73A is a dual height board (5 inches wide) and the 11/73B is a quad height board (10 inches wide). The symptoms which may arise with incompatible boards range from unexplainable system halts (with or without an error message) to I/O errors such as "SAV file I/O error", "KRE KMON read error", "SIE Swap file I/O error". These almost always indicate some sort of hardware problem; sometimes a memory or disk controller error, sometimes a bus grant problem, sometimes an inadequate DC power supply. When the incompatibility is device specific, the symptoms may be as simple as device I/O errors or as severe as causing the whole system to appear to "hang".

One problem we have heard with increasing frequency is erratic, unexplainable occurrences of the error "MON-F-Trap to 4". These may occur sporadically within well tested, thoroughly debugged programs. So far, two users have identified and remedied the problem. In one case, a particular program failed sporadically on an 11/73A, but never on a 11/73B with otherwise similar hardware; the direct test of replacing the 11/73A board with an 11/73B board was not tried. In the second case, a similar failure was noted on an 11/73B board, but was cured by substitution of a second 11/73B board; it was then noted that an LED was lit on the second 11/73 processor which had not been lit on the first board. We presume this is some sort of self-test success indicator.

Apparently (certainly?) RT-11 is not as sensitive to certain types of processor errors as is TSX-Plus. It is likely that much heav-

ier bus load conditions occur when using TSX-Plus due to its multi-user/multi-tasking nature. Because of this, it may be difficult to recreate the error conditions under RT-11 or using diagnostic utilities. While successful operation under RT-11 and diagnostics are prerequisites for satisfactory operation with TSX-Plus, they are not necessarily sufficient to disprove hardware incompatibilities or failure. Although we cannot always deal with every vendor, we do try to serve as a clearinghouse for information when several TSX-Plus customers are having

similar problems, and we try to first eliminate the operating system software as the source of the problem. If you have such problems, or particularly if you know of a solution to some hardware incompatibility that may save others from a lot of grief, we encourage you to WRITE to us with a complete yet concise description of the problem, your hardware configuration, your software configuration, and other factors which exacerbate the problem (such as system load).

Modem control—OFFTIM and TIMOUT parameters

The increasing use of remote terminals and modems with TSX-Plus has elicited quite a few questions about how TSX-Plus handles phone lines. The following discussion is excerpted from a new section to be added to the revised TSX-Plus manuals which will accompany version 6.0. There are too many "New and Improved" types of modems being offered every day to be able to handle each and every protocol. The following discussion describes the dial-in protocol supported by TSX-Plus; most modems can be configured to conform to it.

If TSX-Plus is to handle a line as a modem, then it must be identified as a phone line either by the $PHONE option to the FLAGS macro in TSGEN or with the SET TT PHONE command during execution. If TSX-Plus is to handle the modem, then the line must also be connected to an interface card which supports modem control (most multiplexers do, a DLV11J does not), the modem must be configured to a "standard" auto-answer configuration, and the modem, cable and interface card must support the following signals:

Pin	Signal name
2	Transmitted data
3	Received data
7	Signal ground
8	Carrier detect
20	Data terminal ready
22	Ring indicator

The normal sequence of events for a dial-in phone line is:

1. The phone rings (possibly several times)
2. TSX-Plus detects the ring signal, raises the data terminal ready line, and starts the OFFTIM timer
3. When DTR is raised, the modem should answer the phone and establish a connection with the remote modem, raising the carrier detect signal when successful
4. When carrier detect is present, TSX-Plus starts the TIMOUT timer
5. A carriage return is typed at the remote terminal
6. TSX-Plus transmits the greeting message, performs line initialization, executes the start-up command file(s) (should include running LOGON), and cancels the OFFTIM timer

7. Normal time-sharing session operations
   .
   .
   .
8. The remote terminal logs off
9. TSX-Plus starts the OFFTIM timer
10. The remote modem hangs up
11. The local modem drops carrier detect
12. TSX-Plus starts the TIMOUT timer
13. When either the OFFTIM or TIMOUT timer elapses, TSX-Plus lowers DTR
14. The local modem hangs up the phone

In this normal sequence of events, any time the carrier detect signal is lost, TSX-Plus starts the TIMOUT timer. If the carrier detect signal is re-established, then TSX-Plus cancels the TIMOUT timer. If the carrier detect signal remains lost for the period specified by TIMOUT, then TSX-Plus logs off the line and lowers DTR which should cause the modem to hang up the phone. This takes care of the case in which the operator of the remote terminal hangs up the phone without logging off. The converse case, in which the operator of the remote terminal logs off but does not hang up the phone, is handled by the OFFTIM timer. If the line remains logged off, but connected (carrier detect signal present) longer than the period specified by OFFTIM, then the system lowers DTR and the modem should hang up the phone. The OFFTIM value also deals with the case in which someone dials in and is unable to successfully log in within the specified period. Some trial and error adjustment is usually necessary for the TIMOUT and OFFTIM values to account for the timing variability of the particular interface card, modem and phone system at each installation.

Even if a line has been declared to TSX-Plus as a phone line, when it first logs on (first carriage return received on an inactive line), the system will treat it as a true phone line only if the carrier detect signal is asserted; if not, then TSX-Plus treats it as a local line and does not perform any of the modem control functions described above. This is usually the case for an "intelligent" modem, which answers the phone for itself without regard to the DTR signal, and does not assert carrier detect to the system or is connected through an interface which does not support modem control.

A reminder from the Technical Support Department:

When calling S&H for technical assistance with one of our products, you will need to know your license number and the exact version number (e.g. TSX-Plus version 5.1B—NOT "the latest version" or "version 5"). A concise description of your problem will help the operator properly route your call, but keep in mind that the operator is not a technical specialist. If your support is provided by a distributor, then you must contact that distributor for assistance. If the distributor cannot solve the problem, the distributor will then call us. If your support is provided directly by S&H, then your primary support contacts are: Steve, Ruth and Alan.

If you are experiencing an error while using TSX-Plus, you should also have the following information at hand:

1) A printed copy of the TSGEN listing file (TSGEN.LST) and the link map file (TSX.MAP) which corresponds to the system currently in use and in which the problem occurred.

2) A printed copy of the information produced when you do a SHOW ALL. Either do this on a printing terminal, or make a terminal log file, using the following commands:

    SET LOG FILE=LP:
    SHOW ALL
    SET LOG CLOSE

3) Be seated at a terminal connected to your TSX-Plus system, preferably the console terminal.

4) For problems involving system errors you must have: the complete error message, all information presented with the error message, and a summary of system activity at the time. The more information you provide, the more likely we are to identify the problem. If the error has occurred more than once it is important to know the complete error information produced each time.

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