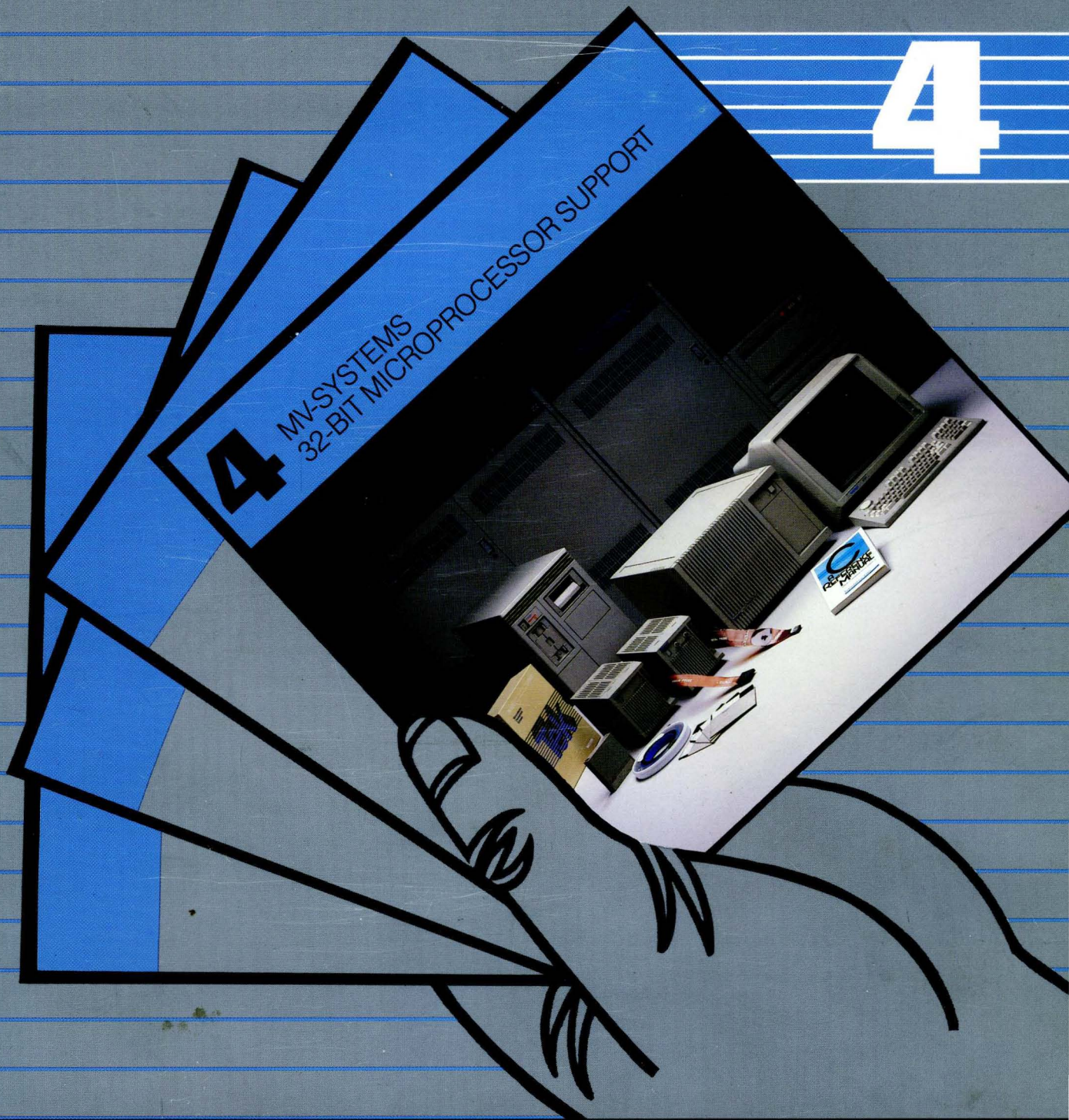


USER GROUP NEWS

4



4 MV-SYSTEMS
32-BIT MICROPROCESSOR SUPPORT

DESIGN
AUTOMATION
GROUP

Tektronix[®]
COMMITTED TO EXCELLENCE

FORWARD

We are reformatting the PRODUCT PERFORMANCE REPORT (PPR) SECTION to include easy to read headers. This new formatting will not only provide more detailed information requested from our customers, but it will also be easier reading for quicker referencing.

REGISTERED TRADEMARKS

The following trademarks are listed throughout this issue of USER GROUP NEWS. For your convenience, we have selected not to list them as footnotes at the bottom of each issue. The trademarks included in this issue are as follows:

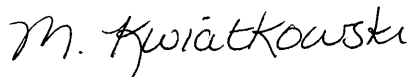
VAX, MicroVAX, VMS & ULTRIX are registered trademarks of Digital Equipment Corporation.

UNIX is a registered trademark of AT&T Bell Laboratories.

IBM/PC is a registered trademark of IBM Corporation.

LANDS is a registered trademark of Tektronix, Inc.

Myrl Kwiatkowski

A handwritten signature in cursive script that reads "M. Kwiatkowski".

Editor

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PRODUCT INFORMATION SECTION

INTRODUCING MV-SYSTEMS

MULTI-V SYSTEMS 32-BIT MICROPROCESSOR SUPPORT

Tektronix becomes the first universal supplier of development systems and language tools to provide a *complete* 32-bit development environment. The new Multi-V Systems provide design teams with a software development environment and software/hardware integration environment for Motorola's 68020 and Intel's 80286 microprocessors. Language support for the 68020 and 80286 include C-LANguage Development System (C-LANDS II), and software executers. Software/hardware integration support includes a 68020 emulator and an 80286 emulator.

SDP's Multi-V Systems are now orderable. The availability is eight weeks after receipt of order (ARO).

The Multi-V Systems were designed specifically for software engineers developing state-of-the-art products. Coupled with SDP's Structured Analysis (SA) Tools and Structured Design (SD) Tools, the Multi-V Systems provide all of the tools needed for the design, development, and verification of complex software programs.

Integral portions of the Multi-V Systems are C-LANDS II and a new tool, the Software Executer. C-LANDS II support includes a C Language Directed Editor (LDE), C compiler, 32-bit macro-assembler, relocating linker, an Integration Control System (ICS), and a sophisticated C Language Debug system. Output from the compiler or assembler is downloaded from the host computer into the Multi-V Systems to be run on the Software Executer which contains the 68020 and 68881 co-processor (or 80286 and 80287 co-processor). The integrated HLL debug system is then used for software verification.

The Multi-V Systems are hosted on VAX family computers from the MicroVAX II to the VAX 8800 running either VMS, Ultrix, or UNIX 4.2bsd. The Multi-V System's 1-9 MB of memory enables large complex software programs to be effectively developed and verified.

Support for large design teams is also facilitated by connecting the Multi-V Systems onto the VAX's local area network (IEEE 802.3 running TCP/IP protocol). Once on the network, the Multi-V Systems tools are available to anyone on the network. RS-232 support at 19.2KB is standard for those not needing LAN support.

The modularity of the Multi-V Systems enables two emulators or Software Executers to reside in the same mainframe. These two tools can be tightly coupled for multi-emulation support or uncoupled to provide two separate environments for two engineers, in essence a multi-user development station.

To increase the productivity of the software engineers, a new windowed user interface (TekView) was developed. The use of windows increases the productivity of an engineer by providing a variety of information on the screen at once.

For the engineer integrating the software and hardware, real-time transparent, and non-stop emulation systems are provided for the 68020 and 80286. The 68020 emulator supports the 16.6 MHz 68020 and 68881 co-processor. The 80286 emulator supports the 10 MHz 80286 and 80287 co-processor.

Contact your local Tektronix representative for more information about the Multi-V Systems.

Marilyn Hanson

SDP Program Marketing Manager

SDP ANNOUNCES SD TOOLS

Structured Design (SD) Tools, an integrated set of graphically oriented software development tools, are now available from Tektronix.

SD Tools completes Tektronix' introductory Computer Aided Software Engineering (CASE) solution -- from concept to operational code.

SD Tools is used to develop the overall architectural design for a software system. This design is based on the specification developed with Structured Analysis (SA) Tools. SD Tools includes tools that help automate the transition from analysis to design and the development of design diagrams.

An SD Tools Data Sheet has been enclosed with this issue of User Group News for your further information.

Rodney Bell

SDP Product Marketing Manager

TEK GAINS SOFTWARE RECOGNITION

From time-to-time the weekly E.E.Times publications conducts special research on different segments of the electronics industry. These 'generic' tests are as objective as possible and they provide interesting data. A recent 1985 product trends study is a good example.

The accompanying letter from publisher Frank Burge, provides some of the specifics. The results are reprinted here for your review on the next four pages. Tektronix scored well in its traditional areas, of course. But, we are especially proud that Tek has made it into the "TOP 10" for important software companies.

March 3, 1986

Mr. Marty Boyesen
Program Manager
Tektronix, Inc.
81700 S. W. Walker Road
Beaverton, OR 97075

SUBJECT: EE TIMES 1985 Product Trends Lift-Out

Dear Marty:

Engineers and technical managers expect certain things from their newspaper. They expect the most important news. They expect our editors to put that news in perspective. Provide insight. And, where appropriate, predict what we think will happen next. And they expect informed opinion. Our editorial mission is to continue to produce a newspaper that lives up to these expectations.

The December 9, 1985 Product Trends issue is an example. If there's anything engineers are interested in, it's the most significant product, technology and business events that are taking place worldwide, as well as which companies are considered to be the most important by the industry. To achieve both of these goals, we asked our editors - the objective monitors of our industry - to choose the five "events" (product introductions, technologies, business events) in their areas of expertise that they believed to be the most significant in 1985. But we didn't stop there. We also asked them to identify what engineers ought to watch for in 1986. Since this is a global business, we especially wanted to include the impressions gathered by our editors in Europe and Japan.

Fearful that we might miss something, we decided to be broad-shouldered enough to pit our readers against our editors. We asked readers to tell us what they thought were the most significant new products in eight product categories - and why. This was done through full-page ads in consecutive issues of EE TIMES for four weeks.

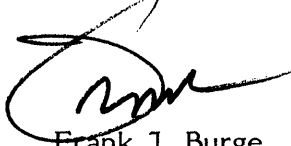
The participating section editors were not allowed to see these responses, so reader responses in no way influenced editor opinions. What was perhaps most interesting about the unaided reader responses (see issue cover for ballet sample) is that even though we asked quite specifically for the most important new product introduction choice, more than one third of the readers opted for a more generic answer. In effect, they voted for analyzers, personal-computer-based workstations and silicon compilers - rather than for specific products, by company and model. On the one hand, this seems to signify an engineering-audience trend toward thinking in terms of solutions, not products. On the other hand, it says that the products that were mentioned really stood out in their minds - and represented solutions.

Mr. Marty Boyesen
March 3, 1986
Page 2

Readers also voted for the companies they thought were most important in the eight categories. And out of curiosity we wondered which they thought were the up-and-coming companies. That they told us.

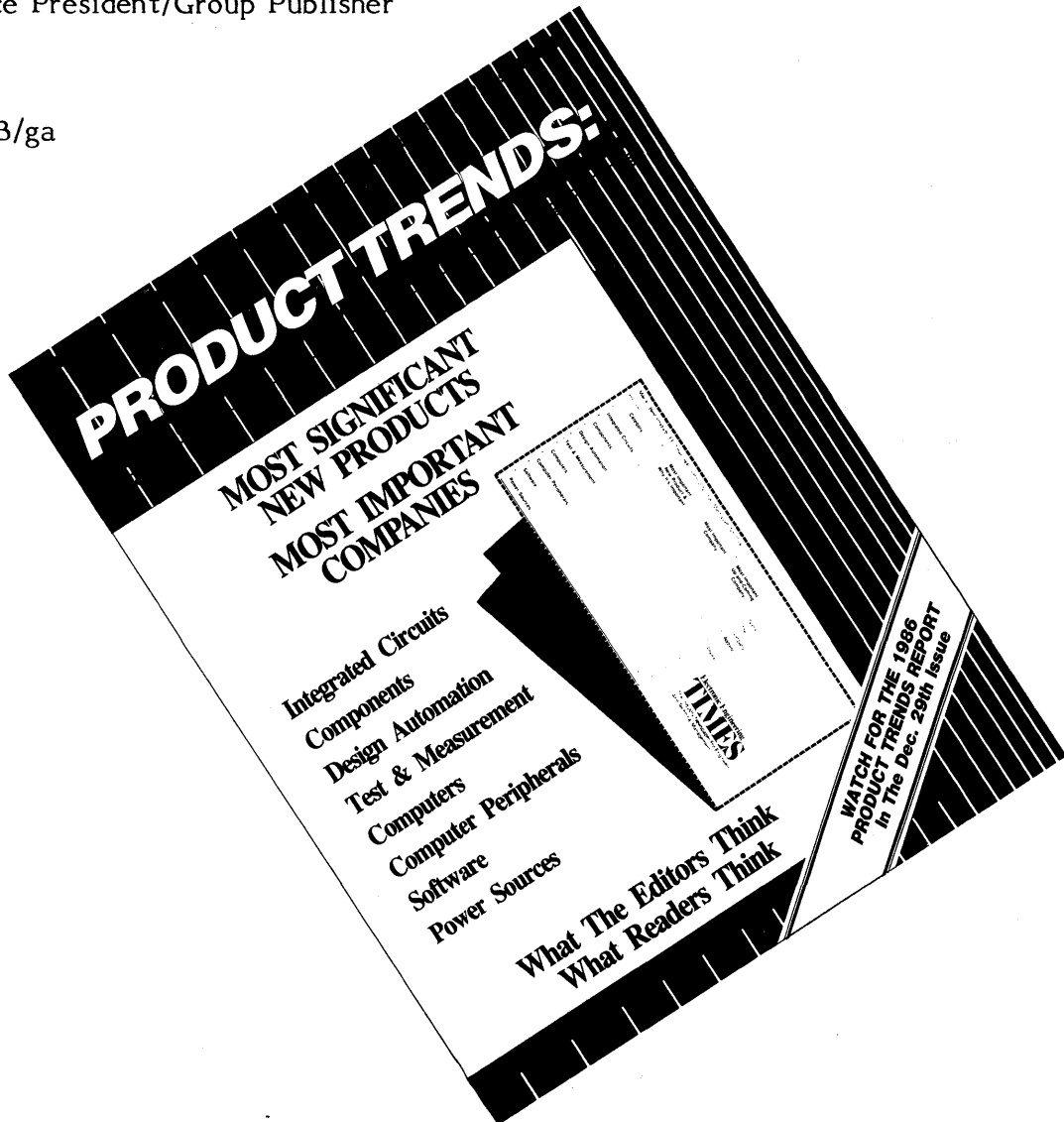
Our hope was that this juxtaposition of editor and reader opinions would provide the engineers and technical managers who read EE TIMES with the insight into what was most significant in 1985 - and what to watch in 1986.

Best regards,



Frank J. Burge
Vice President/Group Publisher

FJB/ga



Readers Vote 1985's BEST COMPANIES

We asked readers to vote for the most important companies in eight product categories. Then we asked who they saw as the rising stars.

<p>DESIGN AUTOMATION Most Important Companies</p> <ol style="list-style-type: none"> 1. DAISY SYSTEMS CORP. 2. Mentor Graphics Corp. 3. GE/Calma Co. 4. IBM 5. Tektronix Inc. 6. FutureNet Corp. 7. Hewlett-Packard Co. 8. Apollo Computer Inc., Sun Microsystems Inc. 9. Computervision Corp. 10. Digital Equipment Corp. 	<p>DESIGN AUTOMATION Up & Coming Companies</p> <ol style="list-style-type: none"> 1. MENTOR GRAPHICS CORP., TEKTRONIX INC. 2. FutureNet Corp., Sun Microsystems Inc. 3. Daisy Systems Corp. 4. Intergraph Corp., Valid Logic Systems Inc. 5. Computervision Corp., Hewlett-Packard Co. 6. Silicon Compilers Inc. 7. GE/Calma Co. 8. Digital Equipment Corp., IBM, McDonnell-Douglas Co. 	<p>INTEGRATED CIRCUITS Most Important Companies</p> <ol style="list-style-type: none"> 1. INTEL CORP. 2. Motorola Corp. 3. Texas Instruments Inc. 4. National Semiconductor Corp. 5. Advanced Micro Devices Inc. 6. Fairchild 7. RCA Corp. 8. Altera Corp., Hitachi Ltd. 9. NEC Corp., Toshiba Corp. 10. Harris Corp., Immos Corp., IBM
<p>COMPUTERS Most Important Companies</p> <ol style="list-style-type: none"> 1. IBM 2. Digital Equipment Corp. 3. Apple Computer Inc. 4. Commodore International Ltd. 5. Intel Corp. 6. Hewlett-Packard Co., Motorola Inc. 7. AT&T, Cray Research Inc. 8. Sun Microsystems Inc. 9. Apollo Computer Inc., Atari Inc., Compaq Development Corp. 	<p>COMPUTERS Up & Coming Companies</p> <ol style="list-style-type: none"> 1. APPLE COMPUTER INC. 2. Compaq Development Corp. 3. Commodore International Ltd. 4. AT&T 5. IBM 6. Sun Microsystems Inc. 7. Hewlett-Packard Co. 8. Atari Inc. 9. Digital Equipment Corp. 10. Apollo Computer Inc. 	<p>INTEGRATED CIRCUITS Up & Coming Companies</p> <ol style="list-style-type: none"> 1. ADVANCED MICRO DEVICES INC. 2. Intel Corp. 3. Altera Corp., Hitachi Ltd., Motorola Inc. 4. Texas Instruments Inc. 5. Immos Corp. 6. Cypress Semiconductor, Maxim Integrated Products 7. LSI Logic Corp., Linear Technology, Signetics Corp. 8. Dallas Semiconductor, NEC Corp. 9. Fairchild, National Semiconductor Corp. 10. AT&T, Harris Corp.
<p>SOFTWARE Most Important Companies</p> <ol style="list-style-type: none"> 1. MICROSOFT CORP. 2. IBM 3. Lotus Development Corp. 4. AT&T 5. Borland International 6. Ashton-Tate, Digital Equipment Corp. 7. Apple Computer Inc. 8. Texas Instruments Inc. 9. Digital Research Inc., Tektronix Inc., Vamp Inc. 	<p>SOFTWARE Up & Coming Companies</p> <ol style="list-style-type: none"> 1. BORLAND INTERNATIONAL 2. Microsoft Corp. 3. Lotus Development Corp. 4. Ashton-Tate 5. AT&T 6. Apple Computer Inc., Digital Research Inc., FutureNet Corp., IBM 7. Teknowledge Inc. 8. Alys Inc., Intel Corp., Satellite Software International 	<p><i>Editor's note: Our original idea was to run the top ten companies in each category, but the results foiled our scheme. So the multiple listings you see in some positions represent ties, and position numbers within categories continue only as far as results were statistically meaningful.</i></p>

COMPUTER PERIPHERALS

Most Important Companies

1. **IBM**
2. Hewlett-Packard Co.
3. Epson Computer
4. Sony Corp.
5. Intel Corp.
6. N.V. Philips
7. Hayes Microcomputer Products Inc.
8. Apple Computer Inc., Control Data Corp., Digital Equipment Corp.
9. Tecmar Inc., Verbatim Corp.

COMPUTER PERIPHERALS

Up & Coming Companies

1. **IBM**
2. Sony Corp.
3. Apple Computer Inc., Hewlett-Packard Co.
4. N.V. Philips
5. AST Research Inc., NEC Corp.
6. Digital Equipment Corp., Epson Computer
7. E.I. DuPont, Tecmar Inc.

COMPONENTS

Most Important Companies

1. **MOTOROLA INC.**
2. Texas Instruments Inc.
3. Sprague Electric Co.
4. Intel Corp.
5. AMP Inc., Hewlett-Packard Co.
6. Siliconix Inc.
7. AVX Corp., General Electric Co., TRW Inc.
8. Hitachi Ltd.
9. Allen-Bradley Co., Amphenol Products, Analog Devices Inc., IBM, RCA Corp.

COMPONENTS

Up & Coming Companies

1. **GENERAL ELECTRIC CO.**
2. Motorola Inc.
3. Texas Instruments Inc.
4. Planar Systems Inc., Rohm Corp., Siliconix Inc.
5. Hitachi Ltd.
6. Allen-Bradley Co., AMP Inc., Harris Corp., Intel Corp., Intech Inc., Murata Erie, NEC Corp., N.V. Philips, RCA Corp., TRW Inc., Unitrode Corp.

TEST & MEASUREMENT

Most Important Companies

1. **HEWLETT-PACKARD CO.**
2. Tektronix Inc.
3. John Fluke Co.
4. Gould Inc.
5. Sencore Inc., Teradyne Inc., Zehntel/Plantronics
6. LTX Corp.
7. N.V. Philips, Summation

TEST & MEASUREMENT

Up & Coming Companies

1. **TEKTRONIX INC.**
2. Hewlett-Packard Co.
3. John Fluke Co.
4. Gould Inc.
5. Nicolet, Northwest Instrument Systems Inc.
6. Megatest Corp.
7. Hitachi Ltd., Zehntel/Plantronics
8. Keithley Instruments Inc., LeCroy Research Systems, Sencore Inc.
9. GenRad Inc., Wintek Corp.

POWER SOURCES

Most Important Companies

1. **Lambda Electronics**
2. Power-One Inc.
3. Kepco Inc.
4. General Electric Co.
5. Hewlett-Packard Co.
6. ACDC Electronics, Computer Products Inc., Power General Corp., Topaz Inc.
7. Acopian Corp., Casio, Motorola Inc., Reliability Inc., Siliconix Inc.

POWER SOURCES

Up & Coming Companies

1. **POWER-ONE INC.**
2. Lambda Electronics
3. ACDC Electronics
4. Computer Products Inc., Xentek Inc.
5. Acopian Corp., Maxim Integrated Products, Power General Corp.
6. Hewlett-Packard Co.
7. General Electric Corp., Kepco Inc., LH Research, TDK Corp., Powertec Inc.
8. Motorola Inc., National Semiconductor Corp., Reliability Inc., Siemens, Theta-J Corp., Unitrode Corp.

ENTERTAINMENT

(Continued from Page 7)

batteries, a snap-on, rechargeable, lead-acid cell provides four hours of portable power.

► **Walker's cellular phone** is a fantastic combination of RF, analog and digital technologies in a 1-pound package. Walker Communication's (New York) phone is, additionally, a triumph of international technology sources and design talent. While it uses some Japanese components, it's primarily made in Europe, which proved, in 1985, that designers in both the United States and Europe have some technological know-how that has eluded the Japanese. Although not the first handheld telephone (Motorola introduced a 2-pound version 18 months ago), Walker's is not only smaller and lighter but has greater range, is priced lower and of-

fers superior features than the competition's.

► **Video-digital, 8-mm VCRs** now lay down analog video signals and digitized audio data at a density that most computer data recorders can only dream of. The first commercial, 8-mm system debuted two years ago, from Matsushita, carrying a Kodak marketing label. These first-generation systems are now selling for a third of their original \$2,000. They combine a 10-year Japanese expertise with micron-tolerance spinning video heads with high-density, metallic-tape formulations. Instead of oxide tape, metal films are vacuum-deposited on Mylar. As consumer production volumes rise and media and tape-deck prices fall, the technology is expected to wind itself into engineering- and digital-data recording.

In 1985, Sony introduced the world's smallest camera/recorder combination system. Along the way, engineers have piggybacked up to six sets of digital stereo sound capability, using spinning record-play-erase heads that allow flying insert edits, possible

only on professional gear a few years ago. Beyond this camcorder use, these second-generation, 2-to-4-pound systems, introduced in 1985, offer the potential for economical storage of graphics, audio, video and data—all under digital control.

Forecast '86

Now that video-signal scrambling has started, it's possible that hundreds of millions of dollars will be pumped into legal decoding devices in 1986. In all, satellite systems are expected to be an over-\$2-billion business in 1986, which includes the sale of another 500,000 dishes. U.S. suppliers, however, are growing worried over a rising consumer preference for name-brand Japanese equipment over U.S. systems.

If launched soon, Sony's TV-set system for smoothing picture quality—by electronically doubling the number of scan lines to produce a phantom TV line between two broadcast lines—may become commonplace, actually forestalling the introduction of high-definition TV broadcasting.

Insiders say a new generation of Sony multifunction CD drives will be propelled by the same compact, laser-head mechanism that's in its D-7 Compact Disk Player. These drives will be capable of playing back digitized stereo music, video still images and computer data—all from a mechanism smaller than present, half-height, floppy-disk drives.

Watch developments in the video and digital 8-mm VCR field. If manufacturers move down the learning curve as fast as they did for VCRs over the past decade, a universal recorder system could offer video graphics, audio and data for under \$200 in a few years.

Martin Boyesen

Marketing Communications Manager

SDP SOFTWARE MANUALS LISTED BY PRODUCT

The following list is a combination of SDP's Software Versions and SDP's Manuals. Our product media is also listed below for your convenience. If you have any questions regarding your software and manuals, please contact your local sales representative.

<u>Option</u>	<u>Support for</u>	<u>Media</u>
1A	8560/61 TNIX	8" D-D Flex
1B	VAX-UNIX	TU58 Cassette
1C	VAX-UNIX	9 Track
1E	VAX-VMS	VAX-VMS
1F	VAX-VMS	9 Track
1H	VAX-UNIX 4.1	TU58 Cassette
1J	VAX-UNIX 4.1	9 Track
1K	MVAX-ULTRIX	5 1/4" S-D Flex
1L	MVAX-UTLRIX	TK50 Cartridge
1M	MVAX-VMS	5 1/4" S-D Flex
1N	MVAX-VMS	TK50 Cartridge
1Y	IBM PC DOS/2.1	5 1/4" D-D flex
1Z	8550 DOS/50	8" D-D Flex

PRODUCT AND MANUALS

MANUAL PART NUMBER

ACEDIT Option 1A (V03.00-00)

- 8560 ACE Users Booklet V3, 4105 Edition 070-4725-00
- 8500 ACE Reference Manual V3; 4105 Edition 070-4726-00

ASMZ8K Option 1A (V02.04-21)

- Z8001/Z8002 Assembler Specifics Users Manual 070-3854-00
- Z8001/Z8002 Assembler Reference Booklet 070-3958-00
- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01

ASMZ80 Option 1A (V03.00-21)

- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- Z80/NSC800 Assembler Specifics User's Manual 070-3949-00
- Z80A Assembler Reference Card 070-3950-00

ASMZ80 Option 1C (V02.00-16)

- Assembler Core User's Manual 070-3856-01
- Z80/NSC800 Assembler Specifics User's Manual 070-3949-00
- Assembler VAX/UNIX Specifics Users Manual (4.2) 070-5627-00
- Z80A Assembler Reference Card 070-3950-00

ASMZ80 Option 1F, 1M, 1N (Y03.00-16)

- Assembler Core User's Manual 070-3856-01
- Z80/NSC800 Assembler Specifics User's Manual 070-3949-00
- Z80A Assembler Reference Card 070-3950-00
- Assembler VAX/VMS Specifics Users Manual 070-4740-01

ASM1750 Option 1A (V02.02-21)

- 1750A Assembler 8560 Specifics User's Manual 061-3026-00
- 1750A Assembler User's Manual 070-5111-00
- 1750A Assembler Reference Booklet IEEE Standard 070-5132-00
- 1750A Assembler Reference Booklet MIL-STD 070-5133-01

ASM1750 Option 1F, 1M, 1N (Y03.00-18)

- 1750A Assembler User's Manual 070-5111-00
- 1750A Assembler VAX/VMS Specifics User's Manual 070-5166-00
- 1750A Assembler Reference Bkt MIL-STD for VAX/VMS 070-5268-00
- 1750A Assembler Ref Bkt IEEE Standard for VAX/VMS 070-5269-00

ASM1802 Option 1A (V01.01-56)

- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- 1802 Assembler Reference Booklet 070-4506-00
- 1802 Assembler Specifics User's Manual 070-4507-00

ASM68K Option 1A (V02.03-21)

- Assembler Core User's Manual 070-3856-01
- 68000 Assembler Specifics Users Manual 070-3855-01
- Assembler 8560 Specifics Users Manual 070-3944-01

ASM68K Option 1C (V02.04-16)

- Assembler Core User's Manual 070-3856-01
- 68000 Assembler Specifics Users Manual 070-3855-01
- Assembler VAX/UNIX Spec Users Manual (4.2) 070-5627-00

ASM68K Option 1F, 1M, 1N (Y03.04-16)

- Assembler Core User's Manual 070-3856-01
- 68000 Assembler Specifics Users Manual 070-3855-01
- Assembler VAX/VMS Specifics Users Manual 070-4740-01

ASM6800 Option 1A (V01.03-18)

- 6000/6801/6802 Assembler Specifics User's Manual 070-3947-00
- 6800/6801/6802 Assembler Reference Card 070-3948-00
- Assembler 8560 Specifics Users Manual 070-3944-01
- Assembler Core User's Manual 070-3856-01

ASM6809 Option 1A (V02.01-21)

- Assembler 8560 Specifics Users Manual 070-3944-01
- Assembler Core User's Manual 070-3856-01
- 6809 Assembler Specifics Users Manual 070-3960-00
- 6809 Assembler Reference Card 070-3961-00

ASM6809 Option 1C (V02.00-16)

- Assembler Core User's Manual 070-3856-01
- 6809 Assembler Specifics Users Manual 070-3960-00
- Assembler VAX/UNIX Spec Users Manual (4.2) 070-5627-00

ASM6809 Option 1F, 1M, 1N (Y03.00-16)

- Assembler Core User's Manual 070-3856-01
- 6809 Assembler Specifics Users Manual 070-3960-00
- Assembler VAX/VMS Specifics Users Manual 070-4740-01

ASM6820 Option 1C, 1K, 1L (V01.10-00)

- Assembler User's Manual for Ultrix/Unix 070-5867-00
- 68020 Tools: 68020 ICS, Linker, Utilities Manual 070-5943-00

ASM78C06 Option 1A (V01.00-16)

- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- 78C05/78C06 Assembler Reference Booklet 070-5246-00
- Assembler 78C06 Specifics User's Manual 070-5146-00

ASM7809 Option 1A (V01.00-16)

- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- Assembler 7807/7809 Specifics User's Manual 070-5147-00
- 7807/7809 Assembler Reference Booklet 070-5242-00

ASM7811 Option 1A (V01.00-16)

- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- Assembler 7810/7811/7816 Specifics User's Manual 070-5148-00
- 8560 7810/7811/7816 Assembler Reference Booklet 070-5245-00

ASM8048 Option 1A (V02.04-08)

- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- 8048/8021/8041A/8022 Assembler Specifics User's 070-3955-00
- 8048/8021/8041A/8022 Assembler Ref Card 070-3956-00

ASM8051 Option 1A (V01.08-56)

- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- 8051 Assembler Reference Card 070-4320-00
- 8051 Assembler Specifics User's Manual 070-4321-00

ASM8085 Option 1A (V02.00-21)

- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- 8080A/8085A Assembler Specifics User's Manual 070-3945-00
- 8080A/8085A Assembler Reference Card 070-3946-00

ASM8085 Option 1C (V02.00-16)

- Assembler Core User's Manual 070-3856-01
- 8080A/8085A Assembler Specifics User's Manual 070-3945-00
- Assembler VAX/UNIX Spec Users Manual (4.2) 070-5627-00

ASM8085 Option 1F, 1M, 1N (V02.00-16)

- Assembler Core User's Manual 070-3856-01
- 8080A/8085A Assembler Specifics User's Manual 070-3945-00
- Assembler VAX/VMS Specifics Users Manual 070-4740-01

ASM8086 Option 1A (V02.09-21)

- 8086/80186 Assembler Specifics Users Manual 070-3853-01
- 8086/8088 Assembler Reference Booklet 070-3957-00
- Assembler 8560 Specifics Users Manual 070-3944-01
- Assembler Core User's Manual 070-3856-01

ASM8086 Option 1C (V02.07-16)

- Assembler Core User's Manual 070-3856-01
- Assembler VAX/UNIX Spec Users Manual (4.2) 070-5627-00
- 8086/80186 Assembler Specifics Users Manual 070-3853-01

ASM8086 Option 1F, 1M, 1N (Y03.07-16)

- 8086/80186 Assembler Specifics Users Manual 070-3853-01
- Assembler Core User's Manual 070-3856-01
- Assembler VAX/VMS Specifics Users Manual 070-4740-01

ASM9900 Option 1A (V02.04-21)

- Assembler 8560 Specifics Users Manual 070-3944-01
- Assembler Core User's Manual 070-3856-01
- 9900/9989 Assembler Reference Card 070-4368-00
- 9900/9989 Assembler Specifics Users Manual 070-4373-00

CCC68K Option 1A (V02.09-00)

- C Compiler 68000/68010 User's Manual for 8560 070-5217-00

CCC68K Option 1C (V02.09-00)

- C Compiler 68000/68010 Usr Manual for VAX/UNIX (4.2) 070-5584-00

CCC68K Option 1F, 1M, 1N (Y03.06-00)

- C Compiler 68000/68010 Users Manual for VAX/VMS 070-4901-00

CCC8086 Option 1C (V01.03-00)

- C Compiler 8086/80186 User's Manual for VAX/UNIX 070-5194-00

CCC8086 Option 1F, 1M, 1N (V01.03-00)

- C Compiler 8086/80186 User's Mnl for VAX/VMS (4.0) 070-5195-00

CDB68K Option 1A (V01.08-00)

- C Debug 68000/68010 User's Manual for 8560 070-5622-00

CDB68K Option 1C (V01.09-00)

- C Debug 68000/68010 User's Manual for VAX/UNIX (4.2) 070-5628-00

CDB68K Option 1F, 1M, 1N (Y03.06-00)

- C Debug 68000/68010 User's Manual for VAX/VMS (3.4) 070-4904-00

CDB8086 Option 1C (V01.06-00)

- C Debug 8086/80186 User's Manual for VAX UNIX 070-5196-00

CDB8086 Option 1F, 1M, 1N (V01.05.00)

- C Debug 8086/80186 User's Manual for VAX/VMS 070-5197-00

CLAN68K Option 1A

- Assembler Core User's Manual 070-3856-01
- 68000 Assembler Specifics Users Manual 070-3855-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- C Compiler 68000/68010 User's Manual for 8560 070-5217-00
- C Debug 68000/68010 User's Manual for 8560 070-5622-00
- C LDE User's Mnl for 8560 and VAX/UNIX (4.2) 070-5629-00

CLAN68K Option 1C

- Assembler Core User's Manual 070-3856-01
- 68000 Assembler Specifics Users Manual 070-3855-01
- Assembler VAX/UNIX Spec Users Manual (4.2) 070-5627-00
- C Compiler 68000/68010 User's Manual for VAX/UNIX (4.2) 070-5584-00
- C Debug 68000/68010 User's Manual for VAX/UNIX (4.2) 070-5628-00
- C LDE User's Mnl for 8560 and UNIX/Unix 070-5629-00

CLAN68K Option 1F, 1M, 1N

- Assembler Core User's Manual 070-3856-01
- 68000 Assembler Specifics Users Manual 070-3855-01
- Assembler VAX/VMS Specifics Users Manual 070-4740-01
- C Compiler 68000/68010 Users Manual for VAX/VMS 070-4901-00
- C Debug 68000/68010 User's Manual for VAX/VMS (3.4) 070-4904-00
- C LDE Users Manual for VAX/VMS 070-5003-00

CLAN86 Option 1C

- Assembler Core User's Manual 070-3856-01
- Assembler VAX/UNIX Spec Users Manual (4.2) 070-5627-00
- 8086/80186 Assembler Specifics Users Manual 070-3853-01
- C Compiler 8086/80186 User's Manual for VAX/UNIX 070-5194-00
- C Debug 8086/80186 User's Manual for VAX UNIX 070-5196-00
- C LDE User's Mnl for 8560 and UNIX/Unix 070-5629-00

CLAN86 Option 1F, 1M, 1N

- 8086/80186 Assembler Specifics Users Manual 070-3853-01
- Assembler Core User's Manual 070-3856-01
- Assembler VAX/VMS Specifics Users Manual 070-4740-01
- C Compiler 8086/80186 User's Mnl for VAX/VMS (4.0) 070-5195-00
- C Debug 8086/80186 User's Manual for VAX/VMS 070-5197-00
- C LDE Users Manual for VAX/VMS 070-5003-00

CLA6820 Option 1C, 1K, 1L (V01.04-00)

- C Compiler User's Manual for Ultrix/Unix 070-5831-00
- C Compiler 68020 Supplement for Ultrix/Unix 070-5833-00
- Assembler User's Manual for Ultrix/Unix 070-5867-00
- 68020 Tools: 68020 ICS, Linker, Utilities Manual 070-5943-00
- C LDE User's Mnl for 8560 and UNIX/Ultrix * 070-5629-00
- MV Portion on this release note 061-3088-01
- (Note: Debug in 85C6820 User's Manual)

CLDEDIT Option 1A (V01.08-00)

- C LDE User's Mnl for 8560 and VAX/UNIX (4.2) 070-5629-00

CLDEDIT Option 1C (V02.02-01)

- C LDE User's Mnl for 8560 and UNIX/Ultrix 070-5629-00

CLDEDIT Option 1F, 1M, 1N (Y03.01-00)

- C LDE Users Manual for VAX/VMS 070-5003-00

COLORKY Option 1C (V03.01-00)

- ColorKey+ User Interface Users Mnl for VAX/UNIX (4.2) 070-5821-00

COLORKY Option 1F, 1M, 1N (Y03.00-01)

- ColorKey+ User Interface Users Manual for VAX/VMS 070-5089-00

DDL Option 1A (V2.0)

- Digital Design Lab System User's Manual 070-4550-01

ICOM40A Option 1C (V02.01-00)

- ICOM40 System User's Manual for VAX/UNIX (4.2) 070-5587-00

ICOM40A Option 1F, 1M, 1N (V04.05-02)

- ICOM40 System Users Manual for VAX/VMS (V2) 070-4742-01
- ICOM40 System User's Manual for VAX/VMS (V4) 070-5758-00

ICOM40A Option 1W

- ICOM40A User's Manual for Apollo/DOMAIN Host 070-5945-00

ICOM40A Option 1Y (V01.03-00)

- ICOM40 System Users Manual for IBM PC 070-5381-00

MDLZ80 Option 1A (V3.0)

- 8560 MDL/u Compiler Users Manual 070-5061-00

MDL8085 Option 1A (V3.0)

- 8560 MDL/u Compiler Users Manual 070-5061-00

PASZ8K Option 1A (V01.09-08)

- Pascal Z8001/Z8002 Compiler Users Manual 070-3876-00
- Pascal Language Reference Manual 070-3880-00

PAS68K Option 1A (V03.06-00)

- Pascal 68000/68010 Compiler Users Manual 070-3875-02
- Pascal Language Reference Manual 070-3880-00

PAS68K Option 1C (V03.02-00)

- Pascal Language Reference Manual 070-3880-00
- Pascal Compiler 68000/68010 User's Mnl for VAX/UNIX (4.2) 070-5621-00

PAS68K Option 1F, 1M, 1N (Y03.02-00)

- Pascal Compiler 68000/68010 User Manual for VAX/VMS 070-4856-01
- Pascal Compiler 68000/68010 Supplement for VAX/VMS (4.0) 061-3137-00
- Pascal Language Reference Manual 070-3880-00

PAS8086 Option 1A (V02.10-01)

- Pascal 8086/80186 Compiler Users Manual 070-3878-01
- Pascal Language Reference Manual 070-3880-00

PAS8086 Option 1C (V02.13-00)

- Pascal Language Reference Manual 070-3880-00
- Pascal Compiler 8086/80186 Users Manual for VAX/UNIX (4.2) 070-5586-00

PAS8086 Option 1F, 1M, 1N (Y03.11-00)

- Pascal Language Reference Manual 070-3880-00
- Pascal Compiler 8086/80186 Users Manual for VAX/VMS 070-5219-00

PDBZ8K Option 1A (V01.05-00)

- Pascal Debug Users Manual 070-4281-00
- Pascal Debug Z8001/Z8002 Reference Card 070-4464-00

PDB68K Option 1A (V03.03-00)

- Pascal Debug 68000/68010 and 8086/80186 User's Manual 070-5623-00
for 8560 and VAX/UNIX (4.2)

PDB68K Option 1C (V02.07-00)

- Pascal Debug 68000/68010 and 8086/80186 User's Manual for 8560 and VAX/UNIX (4.2) 070-5623-00

PDB68K Option 1F, 1M, 1N (Y03.05-00)

- Pascal Debug 68000/68010 User Manual for VAX/VMS 070-4852-00
- Pascal Debug 68000/68010 Reference Bkt for VAX/VMS 070-5091-00

PDB8086 Option 1A (V02.00-05)

- Pascal Debug Users Manual 070-4281-00
- Pascal Debug 8086/8088 Reference Card 070-4283-00
- Pascal Debug 68000/68010 and 8086/80186 User's Manual for 8560 and VAX/UNIX (4.2) 070-5623-00

PDB8086 Option 1C (V02.01-02)

- Pascal Debug 68000/68010 and 8086/80186 User's Manual for 8560 and VAX/UNIX (4.2) 070-5623-00

PDB8086 Option 1F, 1M, 1N (Y01.01-00)

- Pascal Debug 8086/80186 User's Mnl for VAX/VMS (4.0) 070-5682-00

PLANZ8K Option 1A

- Z8001/Z8002 Assembler Specifics Users Manual 070-3854-00
- Z8001/Z8002 Assembler Reference Booklet 070-3958-00
- Assembler Core User's Manual 070-3856-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- Pascal Z8001/Z8002 Compiler Users Manual 070-3876-00
- Pascal Language Reference Manual 070-3880-00
- LDE 4105M Edition Reference Card 070-4727-00
- Pascal LDE Users Manual 4105M Edition 070-4728-00
- Pascal Debug Users Manual 070-4281-00
- Pascal Debug Z8001/Z8002 Reference Card 070-4464-00

PLAN68K Option 1A

- Assembler Core User's Manual 070-3856-01
- 68000 Assembler Specifics Users Manual 070-3855-01
- Assembler 8560 Specifics Users Manual 070-3944-01
- Pascal 68000/68010 Compiler Users Manual 070-3875-02
- Pascal Language Reference Manual 070-3880-00
- Pascal Debug 68000/68010 and 8086/80186 User's Manual for 8560 and VAX/UNIX (4.2) 070-5623-00
- LDE 4105M Edition Reference Card 070-4727-00
- Pascal LDE Users Manual 4105M Edition 070-4728-00

PLAN68K Option 1C

- Assembler Core User's Manual	070-3856-01
- 68000 Assembler Specifics Users Manual	070-3855-01
- Assembler VAX/UNIX Spec Users Manual (4.2)	070-5627-00
- Pascal Language Reference Manual	070-3880-00
- Pascal Compiler 68000/68010 User's Mnl for VAX/UNIX (4.2)	070-5621-00
- Pascal Debug 68000/68010 and 8086/80186 User's Manual for 8560 and VAX/UNIX (4.2)	070-5623-00
- Pascal Language-Directed Editor User's Manual for VAX/UNIX (4.2)	070-5585-00

PLAN68K Option 1F, 1M, 1N

- Assembler Core User's Manual	070-3856-01
- 68000 Assembler Specifics Users Manual	070-3855-01
- Assembler VAX/VMS Specifics Users Manual	070-4740-01
- Pascal Compiler 68000/68010 User Manual for VAX/VMS	070-4856-01
- Pascal Compiler 68000/68010 Supplement for VAX/VMS (4.0)	061-3137-00
- Pascal Language Reference Manual	070-3880-00
- Pascal Debug 68000/68010 User Manual for VAX/VMS	070-4852-00
- Pascal Debug 68000/68010 Reference Bkt for VAX/VMS	070-5091-00
- Pascal LDE Users Manual for VAX/VMS	070-4854-00

PLAN86 Option 1A

- 8086/80186 Assembler Specifics Users Manual	070-3853-01
- 8086/8088 Assembler Reference Booklet	070-3957-00
- Assembler 8560 Specifics Users Manual	070-3944-01
- Assembler Core User's Manual	070-3856-01
- Pascal 8086/80186 Compiler Users Manual	070-3878-01
- Pascal Language Reference Manual	070-3880-00
- Pascal Debug Users Manual	070-4281-00
- 8560 Pascal Debug 8086/8088 Reference Card	070-4283-00
- Pascal Debug 68000/68010 and 8086/80186 User's Manual for 8560 and VAX/UNIX (4.2)	070-5623-00
- LDE 4105M Edition Reference Card	070-4727-00
- Pascal LDE Users Manual 4105M Edition	070-4728-00

PLAN86 Option 1C

- Assembler Core User's Manual	070-3856-01
- Assembler VAX/UNIX Spec Users Manual (4.2)	070-5627-00
- 8086/80186 Assembler Specifics Users Manual	070-3853-01
- Pascal Language Reference Manual	070-3880-00
- Pascal Compiler 8086/80186 Usrs Manual for VAX/UNIX (4.2)	070-5586-00
- Pascal Debug 68000/68010 and 8086/80186 User's Manual for 8560 and VAX/UNIX (4.2)	070-5623-00
- Pascal Language-Directed Editor User's Manual for VAX/UNIX (4.2)	070-5585-00

PLAN86 Option 1F, 1M, 1N

- 8086/80186 Assembler Specifics Users Manual 070-3853-01
- Assembler Core User's Manual 070-3856-01
- Assembler VAX/VMS Host Specifics Users Manual 070-4740-01
- Pascal Language Reference Manual 070-3880-00
- Pascal Compiler 8086/80186 Users Manual for VAX/VMS Host 070-5219-00
- Pascal Debug 8086/80186 User's Mnl for VAX/VMS (4.0) 070-5682-00
- Pascal LDE Users Manual for VAX/VMS 070-4854-00

PLDEDIT Option 1A (V02.04-00)

- LDE 4105M Edition Reference Card 070-4727-00
- Pascal LDE Users Manual 4105M Edition 070-4728-00

PLDEDIT Option 1C (V01.05-00)

- Pascal Language-Directed Editor User's Manual for VAX/UNIX (4.2) 070-5585-00

PLDEDIT Option 1F, 1M, 1N (Y03.00-00)

- Pascal LDE Users Manual for VAX/VMS 070-4854-00

PVRX68K Option 1A (V03.01-02)

- Pascal VRTX Interface Package Technical Reference Notes for 8560 061-3113-00

PVRX68K Option 1C (V03.00-00)

- Pascal/VRTX 68000/68010 Interface Technical Reference Notes for VAX/UNIX 070-5796-00

PVRX68K Option 1F (V03.00-00)

- Pascal/VRTX 68000/68010 Interface Technical Reference Notes for VAX/VMS 070-5797-00

SDTOOLS Option 1A (V01.00-00)

- SD Tools 8560 Specific User's Manual 070-5989-00
- SD Tools Reference Booklet for 8560 070-5905-00

SDTOOLS Option 1C, 1K, 1L (V01.00-00)

- SD Tools VAX/UNIX Specific User's Manual 070-5835-00
- SD Tools Reference Booklet for VAX/UNIX 070-5976-00

SDTOOLS Option 1F, 1M, 1N (V01.00-00)

- SD Tools VAX/VMS Specific User's Manual 070-5912-00
- SD Tools Reference Booklet for VAX/VMS 070-5975-00

STRUCTA Option 1A (V01.04)

- SA Tools Reference Card for 8560 070-5177-00
- SA Tools Users Manual for 8560 and VAX/UNIX 070-5098-00

STRUCTA Option 1C (V01.00)

- SA Tools Users Manual for 8560 and VAX/UNIX 070-5098-00
- SA Tools Reference Booklet for VAX/UNIX 070-5099-00

STRUCTA Option 1F, 1M, 1N (V01.07-00)

- SA Tools Reference Booklet for VAX/VMS 070-5479-00
- SA Tools User's Manual for VAX/VMS 070-5478-01

SZ80 Option 1A (V01.02-00)

- TekMate 8560 Specific User's Manual 070-5729-00
- TekMate Z80 Emulator Specific User's Manual 070-5728-00

TNIX (V2.10)

- System Reference Booklet (V1) 070-3942-00
- System Reference Manual (V1) 070-3941-00
- System Users Manual (V1) 070-3940-00
- System Ref Mnl Supplemental Info (V1.3) 070-3211-00
- System Reference Manual (V2) 070-4729-01
- System Users Manual (V2) 070-4730-00
- System Managers Operation Guide (V2) 070-5050-00

85C286 Option 1C, 1K, 1L (V01.01-00)

- 80286 System User's Manual for Ultrix/Unix 070-5911-00
- 80286 System Reference Manual for Ultrix/Unix 070-5902-00
- MV Support System Installation Manual for Ultrix/Unix 070-5903-00

85C6820 Option 1C, 1K, 1L (V01.01-00)

- 68020 System User's Manual for Ultrix/Unix 070-5910-00
- 68020 System Reference Manual for Ultrix/Unix 070-5913-00
- MV Support System Installation Manual for Ultrix/Unix 070-5903-00

Myrl Kwiatkowski

SDP Marketing

APPLICATIONS SECTION

VMS SA TOOLS

NOTE: This article is not a duplication. Part of this article in User Group News Vol 4 Iss 3 was omitted and we have chosen to reprint the complete article to avoid additional confusion. Please see *The FDL editor* section for the differences from the original article.

* * * * *

If you have a laser printer that understands Tek graphics, the following procedure will help you get hard copy data from your SA Data Flow Diagrams (DFD).

```
SA/SHOW/TERM=4014/OUTPUT=DFD.4014 0.DFD
CONVERT/PAD/FDL=DFD.FDL DFD.4014 OUT.4014
```

The saved DFD output file must be converted from variable length record to fixed length record format and the terminal settings must be changed to eliminate VMS altering the output to the terminal.

The DFD.FDL file must first be created using the FDL editor (or another text editor). The minimum contents of the FDL file are shown here:

```
RECORD
BLOCK_SPAN          yes
CARRIAGE_CONTROL    none
FORMAT              fixed
SIZE                512
```

The terminal settings are changed with the commands:

```
SET TERM/NOWRAP
SET TERM/FORM
```

This method could also be used to convert the output from the SA/SHOW command for input to a laser printer.

The SA/SHOW command option to redirect output to a file was intended to save copies of the DD for printing since the DD is normally in a non-text file format. The output file from the SA/SHOW command is a variable length record file with an assumed CR/LF at the end of each record.

The DFD graphics image is a continuous byte stream intended for the terminal. There is no notion of records. Interspersing CR/LF will cause the display to be garbled when sent to the terminal from the

redirected output file.

Rainer Wieland

Senior Software Engineer

SA/SD AUTHOR FIELD

UNIX and VMS users need to define the logical name USER in the 'author' field of DFD and SC. After you login, interactively edit LOGIN.COM and insert DEFINE USER JOHN DOE.

UNIX users need to set the environmental variable USER to:

```
USER = "JOHN DOE"
```

VMS users need to set the environmental variable USER to:

```
DEFINE USER "JOHN DOE"
```

This has been documented in the SA Tools User Manual for both UNIX and VAX.

Rodney Bell

Marketing Product Manager

SA TOOLS - VT240

Here is a setup SDP engineers use when using SA Tools with the VT240 terminal:

- in vt100 mode (ColorKey+)
- baud 9600
- 8-bit, no parity
- XOFF @ 1024

Rodney Bell

Marketing Program Manager

DIFF.LST FILE FOR TNIX VERSION OF CLDE

This is the ascii file diff.lst for C Language Directed Editor on TNIX, CLDEDIT1A, V01.08-00

This file lists the differences between this version and the previous version.

PPR's 5028, 5035 and 5135 were fixed in this release.

Implementation:

The following files are new:

`$TEKPATH/tek/bin/kpp`

The -q switch was added for suppression of unwanted error messages. This allowed the redirection of standard error to be discontinued. Now significant errors which are encountered during the build of a configuration will not be lost as before.

`$TEKPATH/tek/bin/setksh`

no changes, included because build was included

`$TEKPATH/tek/ksh/lib/build`

The -q switch was added to calls to kpp instead of redirecting standard error to /dev/null.

`$TEKPATH/tek/ksh/lib/kshoptions`

Changed to enable kshoptions to look for the existance of PLDE in /usr/bin/lde or \$TEKPATH/tek/pas/lde

`$TEKPATH/tek/ksh/lib/getlde`

Removed use of grep (which has different switch options between TNIX and UNIX). ppr's 5028 and 5035 defined LDELIB=/usr/lib/lde for TNIX PLDE

`$TEKPATH/tek/ksh/scripts/include/edit`

Added the ability to handle CLDE in the TNIX version of this script.

`$TEKPATH/tek/ksh/scripts/asscmpl`

No changes, included because main was included

`$TEKPATH/tek/ksh/scripts/main`

No changes, included because edit was included

`$TEKPATH/tek/lib/termcap`

Picked up latest version

`/tmp/INSTALL`

This is a completely new file. Keyshell Version Numbers are tested before installing any ColorKey files.

`diff.lst`

Difference between this version and the previous version are enumerated.

Byron Lunz

Customer Marketing Manager

SOLUTION SOFTWARE SECTION

OEM AND DISTRIBUTED PRODUCT UPDATE

SDP is featuring several new products through its OEM and Distributed Product program. These range from compilers and assemblers on the VAX, MicroVAX, and IBM PC, to ICOM40 on the Apollo, to real-time operating systems and associated items, to software execution units, to communications utilities on the 856X. Although most of these products are available now, you should contact your local SE to confirm availability dates.

PRODUCTS ORDERABLE THROUGH SDP

New VAX, MicroVAX, and IBM PC-hosted compilers and assemblers; ICOM40 on the Apollo; a real-time operating system for the 1750A; and 1750A software execution units are now or soon-to-be orderable through SDP.

High-level language products on VAX-VMS, MicroVAX-VMS, and IBM PC include C and Pascal compilers targeted to 8085 and Z80, a PL/M compiler targeted to the 8086, and assemblers for the 6800, 6809, Z80, 8051, and 8080/8085. In addition, there are assemblers for the 8086/286, 68000/08/10, and Z8002 on IBM PC.

These products, from Microtec Research of Santa Clara, CA, join other Microtec products distributed by SDP, including the following IBM-hosted software: C and Pascal compilers for 8080/8085, a PL/M compiler for the 8086, and assemblers for a wide range of 8- and 16-bit chips. In general, the Z80-targeted products support the NSC800 and the 64180 (Z80 subset); the 8086-targeted products support the 80186 and 8088/80188; and the 6800-targeted products support the 6301 and 68HC11. The compilers and assemblers generally include linking loaders and object module librarians. Symbolic debug is provided for Tekhex II or binary format.

To facilitate IBM-PC-to-8540 communication, SDP manufactures and markets ICOM40/PC. (Note that the 8540F01 option makes ICOM40 unnecessary.)

For developers using the Apollo as a host, there's ICOM40/Apollo, which alleviates the need to write special utilities to communicate between the Apollo and Tektronix' 8540A Microprocessor Support System. ICOM40/Apollo simplifies these communications for you, by making 8540A commands available for interpretation by the Apollo operating system. ICOM40/Apollo has the functionality of ICOM40/VAX, with the exception that it does not support COM mode. ICOM40/Apollo allows you to enter, at the Apollo terminal, 8540A commands to perform software/hardware integration and debugging. These commands are sent from the Apollo to the 8540A where they are executed; their results are then sent back to the Apollo. Depending on the manner in which you invoke ICOM40A, the 8540A command results may be further processed by the Apollo operating system.

SDP is marketing ICOM40/Apollo through an agreement with Intermetrics, of Boston, MA. The product requires a standard configuration hook-up between the Apollo and 8540, with an RS232 cable. It is compatible with Apollo Version 9 (DOMAIN/IX).

Real-Time Operating Systems and associated items include Hunter & Ready's VRTX/1750A and VMX/1750A, along with VRTX (68000)/C, an interface between VRTX/68000 and the C programming language. VRTX/1750A and VMX/1750A allow multi-tasking in embedded 1750A systems, by adding 30 high-level commands to the instruction sets of the architecture. These commands provide task management, intertask communication and synchronization, memory allocation, real-time clock control, and interrupt servicing. VRTX/1750A is the standard kernel; VMX/1750A is the extended memory version. VMX/1750A is designed for mapped 1750A computers; it explicitly supports extended memory addressing and protection features of the 1750A architecture.

VRTX/C is a library of routines designed to simplify the interface between real-time applications written in C, and the high-level source code. These routines can be invoked as high-level language functions or procedures. A routine exists for each VRTX system call.

These products join Hunter & Ready's VRTX/68000. For debugging purposes, VRTX/68000 can be stored on the 856X or VAX (VMS or UNIX) during software development. It is accompanied by its own optional debugger, TRACER/68000, distributed by SDP. Also, there is an SDP-manufactured product, PVRX/68000, that serves as an interface between SDP's Pascal/68000 and VRTX/68000.

The MIKROS 86M1750 is the expanded memory version of the 85M1750 Software Execution unit. The 86M1750 is a MIL-STD-1750A Notice 1 compliant processor with a built in interface to the 1750A-1 Emulation system. It connects directly to the 1750A-1 Emulator and can be used to load, execute, and debug 1750A software before it is transferred to a target environment.

In addition to the mandatory requirements of the standard, the 86M1750 includes 1 Mw of physical memory and the following options: full expanded addressing, interval timers A and B, up to 16 Kw of start-up ROM, and 16-bits of discrete I/O.

PRODUCTS ON REFERRAL THROUGH SDP

For products that allow communications and file transfer between UNIX and non-UNIX machines, SDP is now referring customers to Holos Corporation of Georgia. The products, *CW/Call Whomever* and *Crosstalk* support networking between UNIX machines and any device with asynchronous ASCII transmission capability, thereby eliminating the need for networking hardware. They support the Tektronix 856X, among other host machines, and allow both local and long distance networking.

For example, with these products a user can transfer files from a VAX/VMS system to an 856X/TNIX system, or from an 856X/TNIX system to an IBM PC running MS DOS or PC DOS. Besides their versatility, the products feature support for the transfer of both ASCII and binary files, a transparent conversational mode, the ability to operate in the background, and on-line help. In addition, they are fully programmable and include error detection, recovery, and verification capabilities. Other host machines supported include Altos, Perkin Elmer, Convergent, Gould, Sperry Univac, AT&T, and RCA.

For more information on *CW/Call Whomever* and *Crosstalk*, call Paul Vaughan, Holos Corporation of Georgia at (404) 496-1358.

Martha Roos

SDP Marketing

PRODUCT PERFORMANCE SECTION

SDP PRODUCT PERFORMANCE REPORTS

The Product Performance Reports (PPR's) which appear on the following pages have been submitted or edited since the last issue of User Group News. We have grouped PPR's into product categories for easier reading.

A PPR number appears at the beginning of each submitted PPR. SDP Software Subscription Service (SSS) customers submitting PPR's will receive preferential treatment. Please reference this number in any correspondence with us or with your local Applications Engineer. We will keep you informed on the progress toward solutions via future reports in this section. We will also try to provide "work-arounds" whenever possible.

Users who are subscribers to the SDP Software Subscription Service will receive all official releases of their products automatically. It is the user's responsibility to keep their end-user address up-to-date to insure proper delivery. Non-SSS subscribers in need of product updates should contact their local Tektronix' sales representative.

You will find a list of currently-shipping SDP software products with their manuals published in the PRODUCT INFORMATION SECTION of this issue.

Byron Lunz

Customer Marketing Manager

PLANDS PRODUCT PERFORMANCE REPORTS

In the PLANDS Product Performance Reports a graphic format is used to explain PPR status. For easy referencing, the explanations of the codes and an example is shown below:

	UNIX	VMX	TNIX
68000	Fv03.07-00	Fy03.07-00	Fv03.07-00
8086	?	?	?

Key:

Cn fixed in Current release version #n and higher
Fn will be fixed in Future release #n and higher
T Testing underway, still investigating
I Incomplete information, get more from originator
M Manual issue
u User error, not a problem
w Work-around available, won't fix
n not a bug
? Never reported or discovered here

Myrl Kwiatkowski

SDP Marketing

C-LANDS 68000 REPORTS

PPR # 6059

CONFIGURATION:

CCC68K V02.09-00 on TNIX 2.1b VAX/UNIX 4.2bsd CCC68K Y03.06-00 on VAX/VMS 4.2

DESCRIPTION:

The following program, when compiled generates internal errors as noted:

TNIX : cg error 930

UNIX : cg error 928

VMS : register dump

Changing the struct from 's_calib' to 's_calib1' makes the problem go away. Also, there is no error with the CCC8086 1C compiler.

```
-----  
struct s_calib {  
    short x;  
    short y;  
};  
struct s_calib co_dc[2] = {  
    {2, 4},  
    {6, 8}  
};  
main() {}  
-----
```

ANALYSIS/RESPONSE:

The condition was verified on 68K V2 and was corrected in 68K V3.

PPR # 6045

CONFIGURATION:

CCC68K V02.09-00 TNIX 2.1b UNIX 4.2 CCC68K Y03.06-00 VMS 4.2

DESCRIPTION:

The following program causes the compiler to crash with
cg: 930 internal error

```
-----  
typedef char byte;  
typedef byte tbuf[4];  
  
static tbuf buff = { 'h', 'i', ' ', ' ' };  
  
main() {  
    char l;  
  
    for (l = 0; l < 4; ++l) {  
        printf("%c", buff[l]);  
    }  
}
```

Changing the second typedef to "typedef char tbuf[4];" makes the problem go away.

ANALYSIS/RESPONSE:

This was verified on 68K V2 and fixed on 68K V3.

PPR # 6016

CONFIGURATION:

8562, TNIX 2.1, C-LANDS Opt. 1A CCC68K Version 2.09-00

DESCRIPTION:

It is reported that you must specify at least one source or object file on a tcc command line that contains a -L switch. The description of the -L switch gives no indication that you must have at least one file other than the linker command file name on the line. The only indication is in the generic command line description which says "tcc [switches] file ...".

ANALYSIS/RESPONSE:

This was verified on 68K V2 and fixed on C.68K V3.

PPR # 5185

CONFIGURATION:

8562 TNIX 2.1a, C-LANDS Opt 1A

DESCRIPTION:

The user reports that compiling the following short block of code will cause the error - cg: 930(E) Internal Error. :

```
typedef char byte;  
typedef short word;  
  
void testfunct(setting)  
byte setting;  
{  
enum enum_type
```

```

    {
      x1, x2, x4, x8, x16, x32, x64, , x128
    };
static byte arraytest [8]={128, 64, 32, 16, 8, 4, 2, 1};
}

```

Two workarounds:

```

1> declare static unsigned byte arraytest ...
2> remove the number of elements specifier - static byte arraytest[]=...

```

ANALYSIS/RESPONSE:

This was verified on 68K V2 (UNIX and TNIX and VMS) and fixed on C 68K V3.

PPR # 5189

CONFIGURATION:

CCC68K V02.09-00 CCC68K Y03.06-00 VAX/UNIX 4.2bsd VAX/VMS 4.2

DESCRIPTION:

The following source generates an illegal assembly instruction, 'lsr.l #12,d2'. The problem is that the immediate value of lsr must be 0-7 (3 bits).

```

-----
main() {
  unsigned i;
  i = i / 4096;
}
-----

```

The obvious workaround is to use 'i = i >> 12;'. Another, less desirable workaround is to use 'i = i / (j = 4096);'.

ANALYSIS/RESPONSE:

This was verified on V2 UNIX/VMS/TNIX and fixed on V3 C 68K.

PPR # 5182

CONFIGURATION:

CCC68K V02.09-00 VAX/UNIX 4.2bsd

DESCRIPTION:

In the following program the quantity "(unsigned int)0x80000000" is being treated as a signed value, and an asr.l instruction is generated.

```

-----
main() {
  unsigned int a, b;
  int i = 2;

  a = ((unsigned int)0x80000000) >> i;
}
-----

```

The workaround is to put the quantity into a temp variable and then cast it.

ANALYSIS/RESPONSE:

Fixed in V3 of the 68K C Compiler.

PPR # 6013

CONFIGURATION:

CCC68K Y03.06-00 VAX/VMS 4.1a CCC68K V02.09-00 TNIX 2.1b

DESCRIPTION:

The register declaration in a function parameter list is ignored.

ANALYSIS/RESPONSE:

This has been fixed on C 68K V3.

PPR # 5127

CONFIGURATION:

CCC68K 1F Y03.06-00 VAX/VMS V4.X

DESCRIPTION:

When the following program is compiled, the condition gets evaluated wrong. In particular, the variable gets sign-extended from a byte to a long value, and then compared against the constant.

```
main() {
    unsigned char abc[1];

    abc[0] = 130;
    if (abc[0] == 130)
        ;
}
```

There is no problem if abc is not an array.

ANALYSIS/RESPONSE:

This is a problem in all V2 68K C Compilers (UNIX, TNIX, and VMS). A workaround us to use a variable as a temporary holder of the array element value:

```
unsigned char temp = abc[0]; if (temp == 130)
```

PPR # 6023

CONFIGURATION:

CCC68K Y03.06-00 VAX/VMS 4.2

DESCRIPTION:

The code generated for the two example "if" statements should be nearly identical. However, examining the ASM code shows that for the first "if", registers d1 and d3 appear to not get saved.

By replacing the "typedef" line with the appropriate "#define" line, all works well. This workarocand may not work for complicated typedef's.

```
typedef double LONGWORD;
main() {
    long x, y;

    if ((LONGWORD) x <= (LONGWORD) y) ;

    if ((double) x <= (double) y) ;
}
```

ANALYSIS/RESPONSE:

This was verified on 68K V2 (UNIX and VMS and TNIX) and fixed in 68K V3.

PPR # 5181

CONFIGURATION:

CCC68K V02.09-00 VAX/UNIX 4.2bsd

DESCRIPTION:

If an include file references another include file, the second include file will not be found if it has an absolute path name. If the second file is in the same directory and the file name is used, it is found correctly.

The workaround is to link secondary include files to the current directory.

ANALYSIS/RESPONSE:

This situation occurs on all C-LANDS compilers. It has been fixed on C 68K V3 (8086 V2 and 68020 V2 will be fixed). Also, the user's manual will include a better explanation of the #include directive.

C-LANDS 8086 REPORTS

PPR # 6063

CONFIGURATION:

CCC8086 ICS V01.04-00 VAX/VMS 4.2

DESCRIPTION:

ICS does not explicitly turn interrupts on. That is, there is no "STI" instruction or setting of the appropriate status register flag, even when INTERRUPT_CONFIGURATION is not "NONE".

The user must use the ASM() keyword in their C source to do this.

ANALYSIS/RESPONSE:

The ICS defect will be fixed in the next version on CCC8086.

PPR # 5172

CONFIGURATION:

CCC8086 V01.03-00 VAX/VMS 4.X

DESCRIPTION:

The following C source compiles fine with CCC68K, but gives the message of 'redefinition of identifier sfunc()' with CCC8086:

```
main() {
    static long a;
    long sfunc();
    a = sfunc();
}
static long sfunc() {
    return(1);
}
```

This second version compiles and runs OK:

```
static long sfunc(); main() {
    static long a;
    a = sfunc(); } static long sfunc() {
```



```
return(1); }
```

This third version should work, but the compiler assigns one label to the function for the call, and a different one for the entry point:

```
main() {
    static long a;
    static long sfunc();
    a = sfunc();
}
static long sfunc() {
    return(1);
}
```

The third version is a correct C source, but the compiler is handling it incorrectly.

ANALYSIS/RESPONSE:

The first program is incorrect, and the compiler gives an error. The second program is correct; all references to "sfunc" refer to the same function.

The third version is a correct C program; but is not doing what the user "expects". A function declaration that is static and has local scope has very little meaning since there is no way to define a body to that function within that scope. The "sfunc" that the user is referencing while in "main" is different than the "sfunc" defined at the end of the file.

Different implementations of C compilers may handle this differently since neither K&R or the Proposed ANSI C standard deal with this case directly.

The user should code this type of case in the same way the second example is done.

PPR # 5183

CONFIGURATION:

CCC8086 1F ICS PAS8086 1F ICS VAX/VMS 4.2

DESCRIPTION:

Invoking ICS for either CCC8086 or PAS8086 results in a VMS stack dump and the error message 'opcode reserved by digital'. This occurs at one site and also on our VMS system. This did not occur when we were running VMS 4.1. Re-installing the product makes no difference, and bypassing the ICS driver results in a similar error.

ANALYSIS/RESPONSE:

The ICS driver and its executable image were both installed as sharable. This symptom will happen whenever two products with the same names are installed as sharable images- so this was not just limited to ICS.

A simple workaround would be to install only one of the ICS's

ANALYSIS/RESPONSE:

This will be fixed in the next release of ALL the VMS products - VMS4.2 or later.

PLANDS 68000 REPORTS

PPR # 6060

CONFIGURATION:

PASCAL Floating Point libraries on all hosts

DESCRIPTION:

If you are using Tek floating point libraries interrupts can cause 68000 odd address exceptions. This is a problem if the interrupt routine is written in PASCAL or if the routine is written in assembly language and the ENTRY_E and EXIT_E convenience macros are used.

ANALYSIS/RESPONSE:

Although the problem has workarounds, we will be releasing a fix.

	UNIX	VMS	TNIX
68000	Fv03.07-00	Fy03.07-00	Fv03.07-00
8086	Fv02.14-00	Fy02.14-00	Fv02.14-00

PPR # 6009

CONFIGURATION:

PAS68K Y03.02-00 on VAX/VMS 4.2 PAS68K V03.06-00 on TNIX 2.1b

DESCRIPTION:

The following program will cause the compiler to hang on Pphase 3. The problem is caused by the close values of the cases. If you replace the last case with 3319978 the program compiles.

PROGRAM gecav (output);

VAR switch, index : integer ;

BEGIN

```

    index := 3319970 ;
    CASE index OF
        3319969 : switch := 1 ;
        3319970 : switch := 2 ;
        3319971 : switch := 3 ;
        3319972 : switch := 4 ;
    END ;
    writeln ('Switch = ', switch) ;
END.
```

ANALYSIS/RESPONSE:

Type conflict in code generator not detecting the problem.

	UNIX	VMS	TNIX
68000	Fv03.07-00	Fy03.07-00	Fy03.06-02
8086	Fv02.14-00	Fy02.14-00	Fv02.14-00

PPR # 5153

CONFIGURATION:

PAS68K 1A V02.08-01 TNIX 2.1b

DESCRIPTION:

The submitted file, when compiled, generates a LAS block with a bad checksum. This makes it invalid input to link, lstr and libgen - it's basically trash. There is no error if the -d switch is not specified upon invocation.

ANALYSIS/RESPONSE:

This has a solution:

	UNIX	VMS	TNIX
68000	Fv03.07-00	Fy03.07-00	Fv03.06-00
8086	?	?	?

PPR # 6011

CONFIGURATION:

PAS68K V03.06-00 TNIX 2.1b on 11/73

DESCRIPTION:

The following program produces the message :

line 6 CGEN: 899(c) compiler internal error

```

program files(input, output, fred);
var i : integer;
    fred : file of char;
begin
    rewrite(fred);
    for i := 1 to 10 do write(fred, 'hello');
end.
    
```

We believe the PASCAL is OK. If you change the file to a text file it then compiles.

ANALYSIS/RESPONSE:

While a character string of any size may be output to a TEXT file, a file of CHARACTERS requires that each output request be of a single character. The error resulted because of the mismatch in source and destination data structures.

	UNIX	VMS	TNIX
68000	u	u	u
8086	u	u	u

PPR # 6065

CONFIGURATION:

PAS68K V03.02-00 UNIX 4.2bsd VMS 4.2

DESCRIPTION:

The submitted program causes a memory fault on UNIX, and a stack dump on VMS. The problem seems to be the missing ');' at the end of a const definition.

ANALYSIS/RESPONSE:

This was also discovered in the 8086 products. It will be fixed in all future releases. The misplaced closing comment character "caused" the ')' to be hidden.

	UNIX	VMS	TNIX
68000	Fv03.07-00	Fy03.07-00	Fv03.07-00
8086	Fv02.14-00	Fy02.14-00	Fv02.14-00

PPR # 6030

CONFIGURATION:

PAS68K Y03.02-00 VMS PAS68K V03.02-00 UNIX VAX/VMS 4.2 VAX/UNIX 4.2bsd

DESCRIPTION:

The compiler treats long cases in case statements incorrectly, and crashes with compiler internal error if too many cases (?) are used.

ANALYSIS/RESPONSE:

This happened when a case jump exceeded 32K.

	UNIX	VMS	TNIX
68000	Fv03.07-00	Fy03.07-00	Fv03.07-00
8086	T	T	T

PPR # 5049

CONFIGURATION:

PAS68K V02.03-00, VMS 3.7

DESCRIPTION:

There seems to be a defect in the RTS.LIB library, SMALLDYNQQ module and DISPOSEQQ entry. If a program is built with DEBUG on, a fatal error is encountered if you try to dispose a block of memory which differs from the last block allocated. The 8540 reports an attempt to access non-allocated memory.

ANALYSIS/RESPONSE:

Addresses in new and dispose code were using all 32-bits of addresses when only lower 24 bits should have been used. Fixed universally.

	UNIX	VMS	TNIX
68000	Cv03-02.00	Cy03.02-00	Cv03.06-00
8086	?	?	?

PPR # 6069

CONFIGURATION:

PAS68K Y03.02-00 VAX/VMS 4.2 ISCP Y03.02-01 VAX/VMS 4.2

DESCRIPTION:

When using ISCP to create a new .is file, if 'PRIVILEGE_STATE USER' is specified and then 'FLOATING_POINT_SUPPORT PASCAL_RTS' is specified also, a VMS stack dump results. There is no problem if you are editing an existing .is file.

ANALYSIS/RESPONSE:

The situation has a simple work-around: Interrupts are disabled in USER mode, don't specify Floating_Point RTS in this case. However, we will repair this in future releases due to the nature of the failure.

PPR # 6031

CONFIGURATION:

PVRX68K V03.00-00 VAX/VMS 4.2 VAX/UNIX 4.2

DESCRIPTION:

Two declarations have been omitted from int32.ext (and int16.ext). They are:

```

    procedure SC_Qinquiry (QueueID      : shortint;
                          var message  : message_type;
                          var count    : shortint;
                          var status_code : shortint);          EXTERN;

    function UI_Enter; shortint;                                EXTERN;
    
```

Note that for int16.ext, "shortint" should change to "integer".

ANALYSIS/RESPONSE:

Although a workaround exists, we will fix this on the next release.

	UNIX	VMS	TNIX
68000	Fv03.02-00	Fv03.02-00	Fv03.02-00

PPR # 6029

CONFIGURATION:

PAS68K Y03.02-00 VAX/VMS 4.2

DESCRIPTION:

If {\$pseudo_ASM+} is turned on in the middle of a statement and then compiled with -I, an internal error 6 will result.

The workaround is to not turn {\$pseudo_ASM+} on in the middle of a statement.

ANALYSIS/RESPONSE:

This behavior will remain. It needs to be documented in the "compiler directives" section of the manual: the directive may not be turned on in the middle of a statement.

PLANDS 8086 REPORTS

PPR # 6064

CONFIGURATION:

PAS8086 V02.10-00 TNIX 2.1b PAS8086 V02.13-00 VAX/UNIX 4.2bsd

DESCRIPTION:

Examining the code produced by the following program indicates that the value "byte_thing^.byte_3" is being put into array1[2] (correctly), and array1[3] and array1[4] (incorrectly).

```

-----
{$nilck-}
program error_3;
type
  byte = 0..255;
  word = 0..65535;
  recl = record
    byte_1 : byte;
    word_2 : word;
    byte_3 : byte;
    byte_4 : byte;
    byte_5 : byte;
  end;
  recl_ptr = ^recl;
var
  byte_thing [origin 16#0900] : recl_ptr;
  array1 : array [1..4] of byte;
begin
  array1[1] := 1;
  array1[2] := byte_thing^.byte_3;
  array1[3] := byte_thing^.byte_4; { value from line above gets copied }
  array1[4] := byte_thing^.byte_5; { value from line above gets copied }
end.
-----

```

ANALYSIS/RESPONSE:

This is a problem in ALL compilers and will be fixed in the next releases.

	UNIX	VMS	TNIX
68000	Fv03.07-00	Fy03.07-00	Fv03.07-00
8086	Fv02.14-00	Fy02.14-00	Fv02.14-00

PPR # 5089

CONFIGURATION:

PAS8086 1A V02.10-00

DESCRIPTION:

The following PASCAL program executes incorrectly. After storing the value 25 into memory, it retrieves a value less than 10.

```

-----
PROGRAM mytest (input, output);

VAR mydata      : RECORD

```

```

indata : RECORD
  data_report : RECORD
    field6 : RECORD
      part1 : 0..31;
      part2 : 0..32767;
    END;
  END;
END;
END;
END;

BEGIN
  mydata.indata.data_report.field6.part1 := 25;
  IF (mydata.indata.data_report.field6.part1 < 10) THEN
    WRITELN('part1 less than 10')
  ELSE
    WRITELN('part1 greater than 10');
  END.

```

ANALYSIS/RESPONSE:

This is now okay on UNIX and will be fixed on next releases of TNIX & VMS.

	UNIX	VMS	TNIX
68000	?	?	?
8086	Cv02.13-00	Fy02.14-00	Fv02.14-00

PPR # 6021

CONFIGURATION:

TNIX 2.1 PAS8086 V02.10-00

DESCRIPTION:

The following program generates runtime error 16#0F (subrange violation):

```

-----
module printst_20;

type
  string20 = packed array[1..20] of char;
  byte = 0..255;

procedure printchar(ch : byte); extern;

procedure printst_20(string : string20); public;

var
  n : 0..99;

begin
  n := 1;
  while (n <= 20) and (string[n] <> '@') do
    begin
      printchar(ord(string[n]));
    end;
  end;

```

```

    n := n + 1;
end;
end;

end.

```

 If the procedure is changed as below, no runtime errors occur:

```

procedure printst_20(string : string20); public;

var
    n : 0..99;

begin
    for n := 1 to 20 do
        begin
            if string[n] = '@' then
                goto 1;
            printchar(ord(string[n]));
        end;
    1:end;
end;

```

ANALYSIS/RESPONSE:

Due to PROPER order of evaluation in PASCAL. Unlike C, PASCAL evaluates all parts of the conditional predicate. In this case, checking the index of an array index calculation followed by the operation itself all within the context of a single expression WILL fail if the index is out of bounds.

	UNIX	VMS	TNIX
68000	u	u	u
8086	u	u	u

PPR # 5190

CONFIGURATION:

PAS8086 1A V02.10-01 PAS8086 1C V02.13-00 PAS68K

TNIX 2.1b VAX/UNIX 4.2bsd DESCRIPTION:

When the following program is compiled, an internal error 844 is generated. If either addend from the previous line is removed, no error is generated. Also, using a temporary variable to hold the 0 for assignment doesn't work.

```

-----
module hrc_module;

type word      = 0..65535;
    multiptr   = (p1, p2, p3, p4);

procedure build_raster_file;

var raster_offset, location : word;

```



```

raster_base : record
  case multiplr of
    p2: (wrd : word);
    p3: (ptw : ^word);
  end;

begin
  raster_base.wrd := location + raster_offset;
  raster_base.ptw^ := 0; {bombo}
end;

end.

```

ANALYSIS/RESPONSE:

This will be fixed on the next release.

	UNIX	VMS	TNIX
68000	Fv03.07-00	Fy03.07-00	Fv03.07-00
8086	Fv02.14-00	Fy02.14-00	Fv02.14-00

PPR # 6022

CONFIGURATION:

PAS8086 V02.10-00 PAS68K V03.06-00 TNIX 2.1c

DESCRIPTION:

When compiling the following program, a warning message "expression guaranteed out of range" is given for the line "i := not i;". During run-time, a subrange violation occurs. The code generated by the compiler virtually assures getting this run-time message.

If the line is changed to "i := (not i) and 16#0ff;", no compiler warnings are produced, and the program runs as expected. No checking as to the range of the value is done. Since i is declared to be 0..255, the "and 16#0ff" should be redundant.

```

-----
program test(output);
type byte = 0..255;
var i, j : byte;
begin
  for j := 0 to 255 do
  begin
    i := j;
    write('i = ', i:4);
    i := not i;      { warning occurs here }
    writeln(' not i = ', i:4);
  end;
end.
-----

```

ANALYSIS/RESPONSE:

This is correct behavior. It is a warning of an attempt to store the 'long' results of the NOT operation into a 'short' variable.

PPR # 6028

CONFIGURATION:

PDB8086 V02.00-05 TNIX 2.1c

DESCRIPTION:

If the microprocessor variable is set to 80186, which is valid for PAS8086 and ICS, PDB8086 gives the error "pdb: unknown uP type 80186".

Work Around

The workaround is to set uP to 8086 before running pdb.

PLANDS Z8000 REPORTS

PPR # 4016

CONFIGURATION:

PASZ8K V01.10-06 (8560)

DESCRIPTION:

Some case statements fail to compile correctly. The compiler uses a decb instruction to subtract the lower bound, but it uses the condition code.

ANALYSIS/RESPONSE:

This problem now fixed in V01.11-04 and higher.

PPR # 3004

CONFIGURATION:

PASZ8K V1.09-08

DESCRIPTION:

If the PASCAL program results in an emitted sequence of instruction with more than 255 bytes, the compiler generates error message 966 (compiler interval error) unless there is intervening markers, branches or....

ANALYSIS/RESPONSE:

This was fixed in V01.10-06 or later.

PPR # 6008

CONFIGURATION:

PASZ8K V01.10-06 TNIX 2.1b on 11/73

DESCRIPTION:

Variant fields in records can cause the compiler to malfunction. With various versions of the files (hh.ps & rs.ps) the following errors have occurred:

```
bus error - core dumped
pas : memory limitation exceeded
*** Internal execution error No. 19
the compiler hanging
```

All these errors happen in Phase 3. They only occur if the -s flag is used and even then you can apparently compile the files by disabling run-time checking. File hh.ps will compile if change 'decimal : boolean' to just 'boolean'. However this isn't much use as boolean is a type, not a variable.

ANALYSIS/RESPONSE:

This was fixed on V01.12-00 and higher.

PPR # 6076

CONFIGURATION:

PASZ8K V1.09-08 PDBZ8K V1.05-00 8562 TNIX Version 2.1b 8540 Z8002 Emulator

DESCRIPTION:

PDB returns "object of unknown type" when one checks the type of certain identifiers.

It appears that the first reference to an identifier that is of the type pointer to a record is handled correctly. However, subsequent references to that identifier result in objects of unknown type in PDB.

ANALYSIS/RESPONSE:

This has been verified and fixed on V01.07-00 and higher.

PPR # 5160

CONFIGURATION:

8560 TNIX 2.1a PASZ8K V1.09-10 PDBZ8K V1.05-00

DESCRIPTION:

If you are in PDB and using a program that uses OUTPUT then after the eighth time you reset and go you will get a

***fatal file I/O error no. 23A in external output file:

CONO

pascal run-time error.

ANALYSIS/RESPONSE:

This is fixed in base software in PAS68K.

	UNIX	VMS	TNIX
68000	Fv03.07-00	Fy03.07-00	Cv03.06-00
8086	T	T	T

PPR # 5159

CONFIGURATION:

8560 with TNIX 2.1a PASZ8K V1.09-10 PDBZ8K V1.05-00

DESCRIPTION:

Software breakpoints do not work in PDB if you specify EMULATOR_ADDRESS_SPACE CONTIGUOUS in your is file. If you specify SEPERATE instead of CONTIGUOUS then they work fine.

ANALYSIS/RESPONSE:

We added code to check address space (separate vs. contiguous). PDB now knows what kind of lookup to perform based on this information. This has been fixed on V01.07-00 and higher.

STRUCTA REPORTS

PPR # 6032**CONFIGURATION:**

STRUCTA Opt 1F V1.02 COLORKY Opt 1F V3.00-01 VAX 785 VMS 4.X 410X terminal

DESCRIPTION:

After using ksh to execute the commands:

```
$ DOCUMENT := "SA.DD" $ fs SA/SHOW 'DOCUMENT'
```

the file sa.dd is displayed on the terminal. But when the KSH keys are repainted, they overwrite the last data dictionary entry displayed on the screen. The screen should be scrolled up a line before the keys are repainted.

ANALYSIS/RESPONSE:

This is a problem with the "fs" command from ColorKey+. The SA user needs to add some blank lines to the end of the data dictionary.

PPR # 6033**CONFIGURATION:**

STRUCTA Opt 1F V1.02 VAX 785 VMS 4.X Digital VT240 terminal

DESCRIPTION:

The way the command area is used for the DFD editor as currently implemented on the VT240 make the editor confusing and hard to use. After several commands are issued and the command area is filled, new dialog lines are written over existing command area lines without first clearing the line. The previous lines can not be erased or scrolled like on a Tek terminal, but the old command line should be completely erased, not only overwritten by the new line.

ANALYSIS/RESPONSE:

This is being fixed in SA Tools V01.07.

PPR # 6034**CONFIGURATION:**

STRUCTA Opt 1F V1.02

VAX 785 --> ethernet --> VAX 8600 --> VT240 VMS V4.1

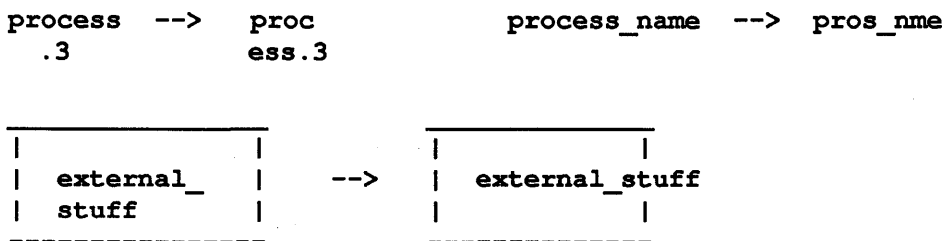
VAX 8600 --> ethernet --> VT240 VMS V4.2

VT240 setup: 9600 baud, xoff at 1024, 8-bit no parity, VT100 or VT200 mode.

DESCRIPTION:

The DFD editor intermittently shows the following problems with the VT240, usually repeating several times within an edit session, but not necessarily on every edit session:

1. Keyboard commands are not interpreted correctly. During one edit the R command behaved as an O, O as S, S as D, and D as S.
2. The names of processes, externals, files, and the dfd title would occasionally misprint on the terminal, such as:



3. After an origin was recorded, the crosshairs were placed at some point and R was pressed to drop a routepoint. The crosshairs jumped to a random point on the screen and left the route point there.
4. The editor occasionally hung up and the process had to be killed from another terminal.

ANALYSIS/RESPONSE:

#1 and #3 may be the same problem. The only work around is to type very, very slowly, always ensuring that no keys are typed before the cross hairs are visible.

#2 is usually due to using the "set host" command. If the terminal settings "no wrap and form" are set before using the "set host" command, this problem should disappear.

#4 is probably the same as PPR #6073.

All the above conditions will be fixed in SA Tools V01.07.

PPR # 6078

CONFIGURATION:

STRUCTA Opt 1F V1.02 VAX VMS V4.2 SATOOLS with TEK410X terminals

DESCRIPTION:

When using the SA Tools under VAX VMS, if the user sets the terminal "code edit" the terminal also sets KEYEXPAND to NO. When a "CODE TEK" or "CODE ANSI" are issued, "KEYEXPAND NO" remains. This results in the function keys, which are defined by SA/EDIT, to be disabled. This causes "Command Garbled" messages to be issued by the SA editor.

The solution is to add to the SACAP file initialization string (:IS), the sequence "EKW1". The EKW1 sequence will set KEYEXPAND YES, allowing the function keys to function properly.

ANALYSIS/RESPONSE:

The solution stated above is the correct work-around, add to the SACAP file initialization string (:IS), the sequence "EKW1" to set KEYEXPAND YES, allowing the programmed function keys to be transmitted.

PPR # 6073

CONFIGURATION:

STRUCTA Opt 1F V1.02, VAX 11/750 with DZ11 and DMF32 I/O Processor, VMS 4.2, VT240 terminal with firmware level 2.1.

Terminal is connected to DZ11 I/O processor on the VAX.

DESCRIPTION:

The problem is that the system hangs, and the user must restart SA.

A way to make system hang is to initiate a redraw. While that is going on, try to type any character on the terminal (in this case a CR). System will then hang.

ANALYSIS/RESPONSE:

The workaround is to lower the baud rate. This is being fixed in SA Tools V01.07.

PPR # 5003**CONFIGURATION:**

TNIX V2.1a STRUCTA V1.04

DESCRIPTION:

When using edita to create data flow diagrams, if the user name is less than or equal to 3 characters, and the dfd title is an even number of characters, the dfd display is missing the users name and the title is followed by the date. It appears that garbled commands have been sent to the terminal. (410X)

ANALYSIS/RESPONSE:

The workaround is to make the login name longer than 3 characters.

PPR # 5051**CONFIGURATION:**

STRUCTA V01.04 TNIX V2.1

DESCRIPTION:

When requesting an overview the user will see an error message "ms* is not a valid file name for listpnn" if no ms files have been created yet.

ANALYSIS/RESPONSE:

The problem has been verified, and occurs only when there are no ms files in the directory. Thus, the shell passes the characters "ms*" to the listpnn command, for which it really is not a valid file name. This is not a severe problem, and no solution is planned for now.

8560/TNIX REPORTS

PPR # 5176**CONFIGURATION:**

TNIX V2.1b CCC68K, ASM68K

DESCRIPTION:

The ehex -m command is used to create Motorola S records for the target computer. Ehex works properly until the load module exceeds a certain size. At that point, the last line of the S record file is not created properly. Because of the above, the module cannot be downloaded.

ANALYSIS/RESPONSE:

The problem was related to S records that relate to 24-bit addresses. The problem was that the last S record did not put out the correct address -- it skipped the first byte of the address due to a defect in the section of the code that outputs the termination block. This has been fixed.

PPR # 6055**CONFIGURATION:**

COLORKY+ on 8561 8560 8562 TNIX, All Versions

DESCRIPTION:

User ports on 856X seem to randomly "hang".

The ColorKey+ script-building program called "setksh" builds a ColorKey+ environment based on the user's answers to questions about his configuration of chips, tools, emulator/8540s, etc.

If the user replies that he will be using an 8550 IU (Integration Unit), setksh inserts a command of the form "stty IU >/dev/ttyx" into the file by .profile every time the user logs in. In versions of TNIX prior to 2.1b, this command was inserted in EVERY ColorKey+ setup, for BOTH 8540 and 8550 IU's. Even if TNIX has been upgraded to 2.1b or later, these ColorKey+ scripts built under earlier versions can cause problems.

This command is required if the IU is an 8550, because the 8550 must communicate with the 8560 via RS232. This command is optional for the 8540 IU because IU communication protocol is implied when a port on the 8560 is jumpered for HSI.

A problem can occur if the hardware configuration is subsequently changed but all users do not rebuild their ColorKey+ configuration scripts.

If the IU is moved to a different port on the 8560, but the scripts containing the stty command are unchanged, a situation can occur where an "stty IU" command is being sent to a port which does not have an IU connected. This can occur very simply when a user logs in; his old .setIU file is executed and the invalid "stty IU >/dev/ttyx" command immediately puts port x into HSI protocol. If another user happens to be using port x at that time, he will assume port x has just "hung".

The damage can be undone by simply executing the command "stty -IU >/dev/ttyx".

ANALYSIS/RESPONSE:

The setksh provided with TNIX 2.1b or later will not insert these "stty IU" commands unless the IU is an 8550. However, if ColorKey+ scripts built by earlier versions of setksh are not rebuilt, the problem still can occur on any version of TNIX.

To check a given system, execute the command "grep stty /usr/*/setIU". If incorrect IU locations are found, the user needs to rebuild his ColorKey+ configuration.

OTHER REPORTS

PPR # 5144

CONFIGURATION:

VAX/VMS 4.2 COLORKY, ASMZ80, ICOM40, getkvn

DESCRIPTION:

When one of the above programs is invoked, the messages
'can't assign sys\$output', and /<prog>:not enough core'

are given, and the program dies. If the same program is run under VMS 4.1, there is no problem.

ANALYSIS/RESPONSE:

Every instance of this has been attributed to old software (linked for VMS 3.X) being run on a 4.2 system. The user can determine if this is the case by the following method:

1. set def to the directory where the .exe file exists
2. type 'anal/image file.exe'
3. about 40 lines into the output is a line called 'link date and time'
4. if this date is before 6/85, the image was linked for VMS 3.x

Installing the latest version of the software will eliminate the problem. Note that if the product was installed as a shared or known command, this must be redone also.

PPR # 5193

CONFIGURATION:

COLORKY V1.03-00 VAX/ULTRIX V1.1

DESCRIPTION:

The termcap provided with the ULTRIX (4.2bsd) version of ColorKey+ will cause VI to core dump and give segmentation errors with a 4105.

ANALYSIS/RESPONSE:

Yes, the termcap which is part of COLORKY does cause standard DEC vi to core dump. (It's a limitation in vi which was fixed on our inhouse systems, but most customers have standard DEC vi.) Our solution is an ECO to COLORKY 1C. A new termcap has been developed and will be released in V03.01-01.

PPR # 6014

CONFIGURATION:

VAX/VMS 4.2 w/Decnet ICOM40A V04.05-02

DESCRIPTION:

When running on a Decnet connection in 2-line configuration, any messages coming back from the 8540 results in an error. Only the first line of the message gets printed. If the output is redirected to a file, no error is produced. The error is:

error 12 : i/o error or access violation on write.

ANALYSIS/RESPONSE:

When the 8540 requests ICOM40A to write n characters, that request is given to VMS. When VMS is done, it returns the number of characters written to be n-1, thus causing the error. This may be a problem in VMS.

A modified ICOM40A was built which ignores the number of characters written return status. This appears to get around the problem. Further investigation will be required as to the source of the problem before this mod will be incorporated into the next official ICOM40A release.

PPR # 6062

CONFIGURATION:

tlink Y03.03-00 on VAX/VMS 4.2

DESCRIPTION:

Linking using files from many subdirectories and long file names gives:

```
internal linker error in routine 27 or
internal linker error in routine 26.
```

The errors can go away if the link order is re-arranged or the file names are shortened.

ANALYSIS/RESPONSE:

The error means that an object file that was readable during pass 1 is unreadable during pass 2. Use the above workaround.

PPR # 6040

CONFIGURATION:

PLDEDIT 1F Y03.00-00 VAX/VMS 4.2

DESCRIPTION:

If LDE is used on a file which has "execute" permission, the updated file created by LDE will not have "execute" permission.

When invoking LDE, you cannot use wildcards in the filespec.

ANALYSIS/RESPONSE:

This is a current limitation in our operating system interface. We recognized this and have plans to add the ability for system calls to preserve protection codes when overwriting a file. The VMS V4 software will provide this in all programs not just LDE.

EDIT, the VMS editor, does not permit wildcards within file specifications. Moreover, our editor permits only one file name in its command line. However, since new routines dealing with wildcard expansion will be available and since we appreciate the desirability of abbreviation capabilities, the new V4 LDEs will accept wild-card specifications.

PPR # 5195**CONFIGURATION:**

TNIX 2.1b link V02.11-00

DESCRIPTION:

The following linker flags give errors when used:

-L class=classname base memname -L class=classname base address

If 'range' is used instead of 'base', no error occurs.

ANALYSIS/RESPONSE:

Once any memory has been defined with the -m command, the linker can not do a locate to an absolute address.

The workaround is to define another memory (using the -m command) and locate the second class using that memory name instead of the absolute address.

PPR # 5143**CONFIGURATION:**

ASMZ80 Y03.00-16 VAX VMS 4.X

DESCRIPTION:

If listing is turned off and then a repeat/endr block is encountered, there is no way to restore the listing. This seems to be a problem in all base 16 VMS assemblers, and base 19 UNIX assemblers. TNIX assemblers do not have this problem.

The workaround is to not turn listing off during repeat directives.

ANALYSIS/RESPONSE:

To store a repeat, the assembler turned printing off. It was not restoring the value of the print flag correctly.

This has been fixed on all base versions.

PPR # 5194**CONFIGURATION:**

8562 TNIX V2.1b ASM1750 Linker V02.10-00

DESCRIPTION:

When the LIST DBG directive is included in one particular module the linker generates a link:105 (F) Checksum error *** Error code 5. All 68 other modules have the LIST DBG directive included. If LIST DBG is removed from the module the linker works properly.

ANALYSIS/RESPONSE:

The defect is in the assembler. The assembler incorrectly calculates the number of bytes that it is putting into the object file when it is writing a debug record. This causes the assembler to write a 0 length record into the object file. The linker work improperly on this record. This defect occurs on all systems (TNIX, VAX UNIX, VAX VMS).

This will be fixed on all assembler base versions.

PRODUCT PERFORMANCE REPORT

PRODUCT NOMENCLATURE AND SERIAL NUMBER: Enter the product description and/or order name and serial number, i.e., "ACEDIT OPT. 1A, B010101"

SYSTEM CONFIGURATION AND VERSION NUMBERS: Include version numbers for all involved products and operating system.

IS THIS SOFTWARE COVERED BY SOFTWARE SUBSCRIPTION SERVICE?

DESCRIPTION: Include source, results obtained, and results expected, **on disk or tape**. Please submit the minimum source code required to demonstrate the problem. Complete documentation will enable us to duplicate the problem.

REPORTED BY:

Customer Name _____ Date _____

Company Name _____ Title _____

Company Address _____

Internal Address/Dept. _____

City _____ State _____ Zip Code _____

Area Code _____ Tel. No. _____ Ext. _____

Send this form along with the tape or disc as described above, to your local Tektronix SDP representative. Your local representative will verify that this report is not already contained in our database and will then forward it to SDP Engineering for resolution.

MIL-STD 1750A SECTION

1750A EMULATOR, PROBE INTERFACE ADAPTER PIN OUT

The intent of this article is to provide a concise listing of the 1750A Prototype Control Probes (8300P47) Interface connector's pin out. In the following tables the interface connector pin out will be presented in two separate formats.

- First the pin out will be displayed in signal groupings that correspond to the groupings found in the 1750A Emulator Users and Installation Manual (061-3012-00). In the first signal groupings a three column format is used. The first column contains the signal description, including the color code used with the flying lead sets (8300P47 Opt. 3A and 3B). The second column contains the Probe Interface Adapter pin number. This type of connector is often referred to as a DIN connector, this is the reason for labeling the column DIN PIN#. The last column is included to allow prototype signal descriptions to be entered. Copies of these tables can aid in documenting the connection to a prototype.
- The last two tables provide a cross reference for the pin number to signal description.

The EURO-CARD Connector (8300P47 Opt. 3C) is a 96 pin female to female connector. This Probe Interface Adapter connects directly to the 1750A Prototype Control Probe. A 96 pin male connector can then be used to provide a connection to a prototype. The Tektronix part number for the 96 pin male connector is 131-3151-00. A AMP 532505-1 or equivalent connector can be used.

Address (A1-A7)		
1750A Emulator SIGNAL (color)	DIN PIN#	User Connection
A1 (Brown)	B25	
A2 (Red)	C26	
A3 (Orange)	C24	
A4 (Yellow)	A26	
A5 (Green)	A25	
A6 (Blue)	C25	
A7 (Violet)	B26	
GND	A24	

Address (A8-A15)		
1750A Emulator SIGNAL (color)	DIN PIN#	User Connection
A8 (Gray)	C27	
A9 (White)	B27	
A10 (Black)	B28	
A11 (Brown)	A28	
A12 (Red)	C29	
A13 (Orange)	C28	
A14 (Yellow)	B29	
A15 (Green)	A29	
GND	A27	

Address (A16-A23)		
1750A Emulator SIGNAL (color)	DIN PIN#	User Connection
A16 (Blue)	B30	
A17 (Violet)	C30	
A18 (Gray)	C32	
A19 (White)	C31	
A20 (Black)	A32	
A21 (Brown)	B31	
A22 (Red)	A31	
A23 (Orange)	B32	
GND	A30	

Additional grounds A23, B23, C23

Data (D0-D7)		
1750A Emulator SIGNAL (color)	DIN PIN#	User Connection
D0 (Black)	A19	
D1 (Brown)	A18	
D2 (Red)	C17	
D3 (Orange)	B17	
D4 (Yellow)	C18	
D5 (Green)	C19	
D6 (Blue)	B19	
D7 (Violet)	B18	
GND	A17	

Data (D8-D15)		
1750A Emulator SIGNAL (color)	DIN PIN#	User Connection
D8 (Gray)	A21	
D9 (White)	B20	
D10 (Black)	C22	
D11 (Brown)	B22	
D12 (Red)	A22	
D13 (Orange)	C21	
D14 (Yellow)	B21	
D15 (Green)	C20	
GND	A20	

Additional Grounds A16, B16, C16

Control		
1750A Emulator SIGNAL (color)	DIN PIN#	User Connection
FETCH (Black)	A7	
M/IO (Brown)	B6	
R/W (Red)	A5	
WR (Orange)	C5	
ADDR STROBE (Yellow)	B4 *	
READY (Green)	A3 *	
MEM-INH(L) (Blue)	C3 *	
DATA ENABLE (Violet)	B2 *	
WAIT(L) (Gray) **	A1 *	
GND	A4	

Additional Grounds A6, B7

* Twisted Pairs with ground wires.

(B3 and B2, B5 and B4, A2 and A3, C4 and C3, C2 and A1)

** Note: the WAIT(L) control line may not be implemented on the first version of the 1750A Prototype Control Probe.

Arbitration Control		
1750A Emulator SIGNAL (color)	DIN PIN#	User Connection
USER-NMI-OUT (Black)	A11 *	
USER-NMI-IN (Brown)	C11 *	
USER-NMI-ACK (Red)	B10	
USER-HALT (Orange)	A9	
USER-HALT-ACK (Yellow)	C9	
FORCE-RESET (Green)	B8	
DRIVE (Blue)	C7 *	
WRITE PROT (Violet)	B1	
GND	B11	

Additional Grounds B9, A8, C8

* Twisted Pairs with ground wires

(A10 and A11, C10 and C11, C6 and C7)

User Bus (0-6)		
1750A Emulator SIGNAL (color)	DIN PIN#	User Connection
USER BUS 0 (Black)	A15	
USER BUS 1 (Brown)	B15	
USER BUS 2 (Red)	C15	
USER BUS 3 (Orange)	B14	
USER BUS 4 (Yellow)	A13	
USER BUS 5 (Green)	C13	
USER CONSEC (Blue)	B12	
Ground (Black)	A14	

Additional Grounds C14, B13, A12, C12

1750A Emulator Din Pin Out			
	A	B	C
1	WAIT(L)	WRT PROT	No Connect
2	GND	DATA ENABLE	GND
3	READY	GND	MEM-INH(L)
4	GND	ADDR STROBE	GND
5	R/W	GND	WR
6	GND	M/IO	GND
7	FETCH	GND	DRIVE
8	GND	FORCE-RESET	GND
9	USER-HALT	GND	USR-HALT-ACK
10	GND	USER-NMI-ACK	GND
11	USER-NMI-OUT	GND	USER-NMI-IN
12	GND	USER CONSEC	GND
13	USER-BUS 4	GND	USER-BUS 5
14	GND	USER-BUS 3	GND
15	USER-BUS 0	USER-BUS 1	USER-BUS 2
16	GND	GND	GND
17	GND	D3	D2
18	D1	D7	D4

1750A Emulator Din Pin Out			
	A	B	C
19	D0	D6	D5
20	GND	D9	D15
21	D8	D14	D13
22	D12	D11	D10
23	GND	GND	GND
24	GND	No Connect	A3
25	A5	A1	A6
26	A4	A7	A2
27	GND	A9	A8
28	A11	A10	A13
29	A15	A14	A12
30	GND	A16	A17
31	A22	A21	A19
32	A20	A23	A18

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