Can / Am EMTP News

Voice of the Canadian/American EMTP User Group

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Note : The present file is a modern translation of the original Lotus Manuscript disk file that used no fonts other than bold. The original printing did not have 2 columns, and the preceding header was not part of the disk file.

Salford DOS Extender Supports EMTP Well on 80386

Success of the Salford EMTP for 80386-based computers was announced as a late-breaking news bulletin in the preceding issue (see page 2, middle column). Now, full details are available. Any EMTP-interested reader with an 80386-based computer is advised to study in detail the 11-page paper by Messrs. Kizilcay and Riedel entitled "ATP Success using Salford DOS extender on 80386." This was published in the December, 1989, issue of EMTP News (see pages 50-61), although a copy also is available for the asking from ATP developers in Portland.

Distribution of the Salford EMTP to the general public began on January 21st when ten accumulated orders finally were filled. Included were two universities (Florida and Minnesota) that plan to use the Salford EMTP for short courses (during march and July, respectively). As of February 10th, the total number of Salford EMTP sites within the USA and Canada has risen to 17.

Each 80386-based computer that is to support the Salford EMTP must be equipped with the Salford DOS extender. Using the standard, single-page order and registration form of the user group (see attached page), the price for one computer is $55.

One Mbyte of RAM is adequate for the simulation of enormous BENCHMARK DC-1 without paging in the time-step loop. This is the surprising recent discovery by ATP developers in Portland, who will document their findings in the March issue of EMTP News. It is believed that what researchers in Hannover called 1 Mbyte was in fact 90000 hexadecimal, which is only about 584 Kbytes. Provided the computer being used poses no conflict for the use of RAM between 90000 hex and 1 Mbyte, the conclusion is very good news, indeed. Supported by a computer with just 1 Mbyte of RAM, the Salford EMTP can simulate very large networks without paging inside the time-step loop.

The 16-MHz 80386-SX microprocessor is believed to be ideal for those who want to save money while still preserving all flexibility of the Salford EMTP. The "SX" is believed to be cost-effective when compared with regular ("DX") 80386 microprocessors of the same speed. Benchmarks showing this should be published in the March, 1990, issue of EMTP News.

Existing 80286-based computers can be retrofitted inexpensively to use a 16-MHz 80386-SX microprocessor. ATP developers in Portland will be documenting such an experiment in the March issue of EMTP News.

SPY (interactive EMTP observation and control) has been added to the Salford EMTP, although windows are not yet being used. Screen graphics are free, with EGA,

VGA, and Super VGA (600 by 800 pixels) all supported without any added cost. This is better than for the MS-DOS EMTP, note (since the MS-DOS version requires GEOGRAF for bit-mapped SPY "PLOT" graphics). Free Salford graphics also have been connected to batch-mode EMTP plotting ("CALCOMP PLOT"), too.

The Salford EMTP is distributed much as the MS-DOS EMTP is. At any time, a current version can be ordered for $10 (check payable to "Tsu-huei Liu"). Only high-density (1.2-Mbyte), 5.25-inch floppy disks are being used for distribution, however (no low-density service as still is being provided for MS-DOS versions).

Shadow RAM might possibly conflict with the Salford EMTP, so users who have such an enhancement to their computer should disable it if execution never reaches the opening prompt ("EMTP Begins."). It is not yet known which computers will have trouble, although ATP developers in Portland have had personal experience with one -- a 25-MHz clone that was assembled by a local computer store. Prior to the elimination of shadow RAM, the computer would hang following a coprocessor error in RFUNL1.

PCPLOT is the interactive plotting program of Mustafa Kizilcay. The important news for Salford EMTP users is that PCPLOT has been extended to be compatible with either FORMATTED or conventional (old) UNFORMATTED ".PL4" files of the Salford EMTP. There are other improvements as well, as detailed in a separate story.

Unix remains viable for the support of EMTP following the success of the Salford FORTRAN compiler, but its appeal has been drastically narrowed. No longer is Unix recommended for the support of EMTP on 80386-based computers of the casual user. Unix requires more hardware (4 Mbytes or more of RAM and a much bigger disk), more expensive software (not only Unix itself, but also a DOS emulator, usually), and more user training (Unix is not as simple to use as MS-DOS). The Salford EMTP now is recommended unless the user is prepared to exploit Unix fully as computer expert David Szymanski does. Connected to the right EMTP software, Unix will provide important extensions that could be critical for serious users. Included are dynamic memory allocation (the sizing of EMTP tables at execution time), networked graphics using the X Window System, support for remote terminals (Unix is a multi-user operating system), bidirectional communication using just a single telephone connection (Unix SLIP), and multitasking SPY (explained elsewhere in this issue). The Salford EMTP is very good, simple, and reliable, but it does not yet provide the sophisticated features just listed.

Florida EMTP Short Course Already Is Filled

Prof. Dennis Carroll of the University of Florida in Gainesville once again is planning an EMTP short course using a mixture of 80286-based and 80386-based personal computers that run MS-DOS. Improvements to his successful offering of last April are several. First, there is the earlier date (March 19-23), which has two advantages: Not only is sunny Florida more attractive while the ground remains frozen in the northern USA and Canada, but also, this scheduling eliminates sharing of the computer laboratory with regular university students during evening hours. A second improvement is an extra half day (Monday morning) for those who want a more detailed introduction to computers (the use of MS-DOS, PCWRITE, etc.). The course is to begin at 08:00 AM rather than at noon on Monday. A third improvement is the addition of instruction about control system modeling (both TACS and MODELS) by its author, Laurent Dube. A fourth improvement will be use of the Salford EMTP on all 16 of the 80386-based computers of the laboratory, most of which have recently been accelerated by the addition of coprocessors. Dr. Meyer of the user group and Mr. Tom Grebe, now with Electrotek Concepts, will participate again this year. In addition to Mr. Dube, new faculty will include Dr. Antonio Ardito, an expert from the large network studies operation of CESI (located in Milan, Italy), who has agreed to share his experience in switching surge studies during two half days of lecturing.

Enrollment already had reached its planned maximum of 20, and additional applications are being declined. This was the situation on February 6th when Prof. Carroll was interviewed. However, it seems that some thought is being given to a possible repeat offering during late October, should there be adequate overflow. For more information, contact Prof. Carroll at telephone number (904) 392-0918.

Minnesota EMTP Short Course : July 12 - 14 and 19 - 21

July of 1990 will see a new, shorter EMTP short course. This one will be offered by the University of Minnesota in Minneapolis, both before and after the 1990 IEEE PES Summer Meeting (which is to be held in Minneapolis). The two-day course, which will rely mostly on MS-DOS computers for laboratory experimentation, is scheduled for Thursday noon through Saturday noon, both before and after the week of the IEEE meeting (the double presentation conditioned on sufficient enrollment). Prof. Ned Mohan, the course organizer, indicates that instruction is to be general, offering a broad, introductory-level overview of EMTP capability with emphasis on the ATP

version for MS-DOS personal computers. Dr. Meyer has agreed to participate in Minneapolis much as he already has at EMTP courses in Florida and California. Location and timing were specially chosen to accommodate registrants of the IEEE meeting, which ends Thursday morning, July 19th. The resulting travel or layover on Saturday allows cheaper airline tickets, of course. The EMTP short course will be held on the engineering campus of the university, which is about a mile and a half from the IEEE meeting downtown. A city bus provides easy connections. The registration fee for the course has been set at $575. For technical questions, telephone Prof. Mohan at (612) 625-3362 (a recorder will not answer before the 4th ring, should Prof. Mohan be out of his office). For non-technical questions, see the names, telephone numbers, and address on attached advertising.

Mustafa Kizilcay Improves Free PCPLOT (Again)

Mustafa Kizilcay of the University of Hannover in West Germany recently supplied the user group with a new version of his popular interactive plotting program PCPLOT. Both MS-DOS and Salford EMTP distribution now include this revised product, which is improved in several ways. Following paragraphs summarize the more important ones that are obvious to ATP developers in Portland. Look for a more complete description in the March issue of EMTP News.

Most noticeable to all users is the unification of all files. No longer is the separate directory \TGFONT needed. Also, a single program version named PCPLOT.EXE now supports all graphical standards (CGA, EGA, VGA, Hercules), which seem to be sensed automatically by the program.

".PL4" disk files to be plotted now can be any one of four possible types : 1) MS-DOS UNFORMATTED; 2) FORMATTED ; 3) C-like ; and 4) Salford UNFORMATTED. The program automatically senses the type, and correctly connects it without user intelligence, which saves considerable aggravation. Mr. Kizilcay also has supplied his logic in Lahey FORTRAN, so that "TPPLOT" and "WINDOWPLT" can be comparably extended (coming soon).

Coprocessor emulation is another new feature. Recall that this was first used last April at the Florida EMTP short course. Now, it is a part of the regular program (no separate version is required for those lacking a math coprocessor).

Data input (reading from the ".PL4" file) is faster using C-like or FORMATTED files. Previously, the program read just one byte at a time. Now, whole numbers (4 bytes each) are read.

Szymanski's Unix EMTP Development Continues

"Unix ATP: Multitasking SPY, 33-MHz, X Window System Graphics" is the title of a 4-page article by computer expert David Szymanski in the December issue of EMTP News. SPY has been restructured again so that the user will be able to run it in two or more windows simultaneously. This is explained by the following paragraph (number two of the article):

Consider how multiple, simultaneous executions of SPY might be used. First, simulation (all of the rest of EMTP except for SPY) would be occurring in one window. SPY usage that is driven or demanded by this EMTP execution (rather than the user's independent, creative intelligence) will use the same window, thereby producing interleaved output. An example would be the SPY correction of a diverged Newton iteration of nonlinear, compensation-based elements at some particular time step. A second window might have SPY locked in the "ROLLV" (rolling vector) mode of continuous plotting, producing output like a strip-chart recorder. In fact, there could be more than one such ROLL-ing plot window, if a single one would be too crowded or otherwise inappropriate for all such desired graphics. A third window might be used for selective plotting (SPY "PLOT" works a lot like the separate interactive plotting program "TPPLOT"), or harmonic analysis (the "FOURIER" subcommand of the "PLOT" command, which ends in a bar chart showing the strengths of harmonic components). A fourth window could be continuously monitoring certain cells of memory for changes (the ROLL-ing "EXAMINE" command). A fifth window might be driving or controlling EMTP execution continuously from a SPY command file using the "@" command. To understand this, think of the "@3" or "@5" demonstrations of Apollo SPY usage, which illustrate parametric studies under the control of SPY. Finally, a sixth window could be reserved for other, random SPY dialogue.

64 Power Electronics Data Cases from Minnesota

Prof. Ned Mohan's book ("Power Electronics: Converters, Applications, and Design," published by John Wiley) is of special interest for EMTP users because of its associated set of 64 illustrative data cases. Whereas the text can be purchased separately, instructors are encouraged to purchase the computer problems and associated documentation, too. Prototype advertising that was received on November 3rd reads as follows: "Each exercise consists of a converter system description, its EMTP simulation, and problems for investigation. A detailed laboratory manual describing all the exercises

accompanies the diskette with the input data files. The instructor can copy the input data files and the manual for distribution to students. (Note: The package comes with a site license for the instructor.)" The site license, sold by the University of Minnesota, is priced at $295 plus shipping and handling ($3 within the USA, $15 if international).

1990 EMTP News : Subscription Is Inconvenient and Costly

Subscription to EMTP News has become both more complicated and also more expensive, unfortunately. The December issue carried this bad news on a separate page of bright-yellow paper. First the inconvenience: "Please enclose a 2300 BEF cheque ..." The average North American reader might not even recognize the "BEF," which is a request for Belgian francs. While these are hard currency, and can be obtained in any city, a trip to a commercial bank might be required. Previously, subscribers could write a check in U.S. dollars. Concerning cost, on February 7th the exchange rate is 34.77 BF/$, so the cost is $66.15. From this side of the Atlantic, it is hard to be satisfied by the situation. Would any company be willing to reprint and distribute copies free for all Can/Am members?

Texas Fusion Researchers Use ATP to Model Power Supplies

Fusion power research requires the design of power supplies and the study of how associated transients affect the plasma of the Tokamak. ATP works well for this, according to a paper that was presented at the November meeting of the APS (American Physical Society), which was held in the Los Angeles area of California. The title is: "Simulation of the TEXT upgrade plasma stability using an exact power supply." The authors are Messrs. S. J. Wang, E. R. Solano, and P. H. Edmonds of the Fusion Research Center of the University of Texas at Austin (Austin, Texas 78712; USA). Dr. Phillip H. Edmonds sounds like a native of Great Britain, speaking "English English." Mr. Shu-jin Wang, who did all of the EMTP modeling, will be returning to his native China at the end of February, and he hopes to continue the use of ATP there. The Chinese EMTP User Group should be able to satisfy his needs. This illustrates the importance of both ATP portability and the international network of user groups that distribute the program.

Miscellaneous Smaller Items

Table dumping/restoring of "STATISTICS" and "SYSTEMATIC" data cases can now be done on several virtual computers (e.g., VAX/VMS, 80386 Unix, 80386 Salford) using either disk or virtual memory. More precisely, as a result of recent UTPF restructuring, the choice has been deferred until linkage-editing time.

File compression now is done using PKZIP rather than the earlier PKARC (both from PKWARE, Inc.). It has been found that an average of an extra 20% of disk space can be saved this way.

"CABLE CONSTANTS" has been modified to punch branch cards for constant-parameter, distributed transmission line modeling. This was requested by Mr. Gary Thomann of PTI, who has become a valued ATP user with interesting observations. The wide data format ($VINTAGE, 1) is used, with complex [Ti]. Such work merely extends to "CABLE CONSTANTS" what has been available in "LINE CONSTANTS" for years. Card formats (the "BRANCH" request) are the same.

"More about OS/2 for the support of EMTP" is the title of a 2.5-page article in the December issue of EMTP News. Skepticism continues to dominate the perspective from Portland. If any reader has hard, EMTP-related evidence to the contrary, he is invited to share it with ATP developers. Nothing from EPRI thus far has inspired confidence, and release of the DCG/EPRI EMTP version for OS/2 might be delayed additional months (during December, the EPRI project manager mentioned April as a projected date).

"Unix version of ATP tests Motorola 88000, SCO, SUN SPARC" is the title of a 4-page article in the December issue of EMTP News. SCO stands for Santa Cruz Operation, which is an alternate supplier for AT&T's standard Unix (System V, Release 3). The Data General Aviion workstation is based on the 17-MIPS Motorola 88000 RISC (Reduced Instruction Set Computer) microprocessor, and SPARC is the name of Sun Microsystems' architecture for RISC workstations. As reported in the December issue of EMTP news, ATP has been proven to be compatible with all of these alternatives.

Intergraph sells Unix workstations that are based on its own RISC microprocessors, which bear the trade name Clipper. A batch-mode ATP version now runs on this computer, as should be reported in the next (March, 1990) issue of EMTP News.

Order Forms for Salford DOS Extender and EMTP News

The final sheet of this newsletter contains two order forms for EMTP-related products that have been discussed previously. Photocopy will readily produce the single-sided forms that should be used for ordering, of course.