



*Technical UNIX User Group*

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newsletter of the  
**Technical UNIX<sup>®</sup>**  
**User Group**

**This month ...**

Meet the Executive  
UNIX Standard on Intel PCs  
A Book Review  
A Day in the Life of a System Administrator  
Agenda for November 13th Meeting

**Late Breaking News...**  
**Next Meeting to be held at the**  
**UNIVERSITY of Manitoba**  
**Time to RENEW Your Membership**

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# Thoughts From The Editor

By Susan Zuk

Welcome to a new TUUG year. We have a new slate of executives with some new faces. Gilbert Detillieux has stepped down as President and Eric Carsted has taken his place. Gilbert will take on the role of Past President so we haven't let him get away. Kirk Marat has accepted the position of Meeting Coordinator and has some interesting ideas on his agenda. If you have any ideas for future meeting topics please get in touch with Kirk. His number is listed below. Darren Sampson is our new Membership Secretary, he will be making sure those memberships are renewed and will be organizing a membership drive. Gilles Detillieux is continuing on as our Treasurer. He seems to like handling all our funds. His financial report, for the year ending October 1990 is located in the newsletter. I am continuing on with the Newsletter Editor position. I am very pleased at the number of articles I received from the members this last month. Please continue with the submissions. If you have any UNIX

questions you can submit them and we will try to answer them in the newsletter or at the following meeting.

This month's newsletter features a book review and a story about an experience administrators don't like to have. Book reviews have been requested by a number of members. We will try to include book reviews in other newsletters. Let me know if there is a special book which you could tell the group about.

For those who are interested, the executive members communicate with each other through UUCP. If you would like to become a part of this network let us know so we can provide you with the proper information.

**Please note the meeting location and read on exactly where it is below in the ANNOUNCEMENT box.**

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## Group Information

The Technical Unix User Group meets at 7:30 pm the second Tuesday of every month, except July and August. The newsletter is mailed to all paid up members 1 week prior to the meeting. Membership dues are \$20 annually and are due at the October meeting. Membership dues are accepted by mail and dues for new members will be pro-rated accordingly.

## The Executive

President:	Eric Carsted	1-883-2570
Past President:	Gilbert Detillieux	261-9146
Treasurer:	Gilles Detillieux	261-9146
Secretary:	Vacant	
Newsletter Editor:	Susan Zuk	(W) 788-7312
Membership Sec.:	Darren Sampson	(W) 783-4614
Meeting Coordinator	Kirk Marat	(W) 474-6259
Information:	Gilbert Detillieux	261-9146
	(or) Susan Zuk	(W) 788-7312

Technical UNIX User Group  
P.O. Box 130  
Saint-Boniface, Manitoba  
R2H 3B4

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## **ANNOUNCEMENT...**

### Meeting Location:

The November meeting location will be provided by the University of Manitoba. The meeting will be held in room 351/352 in the Parker Chemistry Building. Parking is free after 6 pm in any U of M lot. DO NOT park in the 24 hour reserved spots. Lots A and K are the closest. A tour of the area will be provided at the end of the meeting.

# Meet the New Executive

## President

Eric Carsted

Eric is currently a free-lance consultant with Custom Micro Consulting. He is presently working at Air Canada.

## Past President

Gilbert Detilieux

Gilbert is a software technician at the University of Manitoba with the Department of Computer Science.

## Treasurer

Gilles Detilieux

Gilles is a programmer/analyst with the Department of Physiology at the University of Manitoba Health Sciences Campus.

## Newsletter Editor

Susan Zuk

Susan is a senior systems support representative with UNISYS.

## Membership Secretary

Darren Sampson

Darren is a programmer with Rescom Ventures Inc.

## Meeting Coordinator

Kirk Marat

Kirk is the Nuclear Magnetic Resonance (NMR) Supervisor with the Department of Chemistry at the University of Manitoba.

## Unix Standard on Intel PCs ?

(extracted from ComputerData Oct/90)

Three of the leading forces in the AT&T unix field - software developer The Santa Cruz Operation, Inc. (SCO) of Santa Cruz, Ca.; Unix developer AT&T's Unix System Laboratories (USL) Inc., based in New York, NY; and microprocessor developer Intel have joined forces in a bid to provide one standardized version of Unix for the Intel 386/i486 market.

All three have agreed to define an extended common binary applications compatibility specification. "We are going to clean up the compatibility issue once and for all," said USL spokesman Dick Muldoon. "The impact here is that the Unix system is getting very serious about addressing the need of the users." He added that the three firms are going to find out where the different operating systems diverged and then go about fixing these problems so there will not be any incompatibility in the future.

As a result, application developers following their specifications will be able to create a single version of their application which will run on all 386/486 based operating systems conforming to that specification, according to AT&T.

"This agreement closes an important loop for end users and

software developers," said USL president Larry Dooling.

"Most applications developed for SCO Xenix already run on AT&T unix System V/386 Release 3.2 and applications we know of will run without modification."

The trio also agreed to jointly define an extension to the Intel Binary Compatibility Specification (iBSC), which was established in 1988. The extension will be called iBSC Edition 2.

This specification, AT&T claims, will support international open system standards for source language compatibility, including X/Open, XPG 3, IEEE Posix 1003.1 as well as Fips 151-1.

"The iBSC Edition 2 and the System V Release 4 Application Binary Interface provide the present and future security that customers need, to invest confidently in open systems," Dooling said.

According to Muldoon, development has begun, and the specification is scheduled for release in early 1991.

# Book Review

By Peter Graham

Department of Computer Science, University of Manitoba

*As they say on the net; "These are my views not those of my boss(es)!" - Too bad, eh?*

Title: UNIX Network Programming  
Author: W. Richard Stevens  
Publisher: Prentice Hall, 1990.  
ISBN: 0-13-949876-1

This book is one of the two best I have seen recently. Despite the fact that it is a text book (has exercises, etc.) "UNIX Network Programming" is a book for users of networked Unix systems not just students. It is packed full of excellent examples and even some useful 'C' code. It is well written, to the point, and clear. Most of all though, it is well organized and presented.

Stevens assumes that the book's reader is reasonably well versed in 'C' programming in the Unix environment, including basic system calls, though no assumption of any prior knowledge about networks is made. This places the book in a very valuable niche between conventional, beginner's textbooks and manuals on specific systems which normally assume a reader who has networking background. This is not a book for beginning C/Unix programmers. It is a book for someone developing a network-related application or for someone interested in learning about networks from a Unix point of view. This text will never replace the "standard" classroom textbooks on networks such as those by Stallings and Tanenbaum. There are no discussions of signal-to-noise ratios at the low-level or presentation services at the high level. Instead what you get is a down-to-earth presentation of all the commonly used network primitives available for use in most Unix systems.

This book quite naturally reflects the division of the Unix world into Berkeley BSD4.x and AT&T SysV.x systems. (My apologies to those of you who may have systems with lesser-used versions of

Unix.) This division is necessary since the programming interfaces provided in the two systems are radically different in at least their syntax. I use BSD-derived systems almost exclusively and therefore I only read those sections of the book which dealt with BSD programming. Based on the quality of those sections, I fully believe that the SysV material will be equally good, but I cannot guarantee this. "Buyer Beware!"

The text is organized into roughly five parts. Chapter 1 contains a nice introduction to networking, Unix networking, and the client-server model of computing. Chapters 2 and 3 are really just a review of Unix processes and inter-process communication on a single machine respectively. These are concise and well written, but might be a bit terse for the uninitiated. Chapter 4 is entitled "A Network Primer" and is exactly that. It contains an overview of all the necessary underlying fundamentals of networking. All of the key issues in developing networked algorithms are presented and explained. Hardware components are also described and relevant terminology is introduced. I wish I would have had this chapter available when I was first learning about computer networks! Chapter 5 continues the networks tutorial by explaining some of the major protocols currently in use today.

After the preliminaries are presented, Stevens moves on to describe the programming interfaces provided by both BSD ("sockets") and SysV ("TLI" - Transport Layer Interface) based systems in chapters 6 and 7 respectively. Each chapter discusses the approaches taken to providing both connection-oriented ("stream") and connectionless ("datagram") services in various environments. Together with the discussion of library services which is given in chapter 8, these chapters provide a thorough but very readable reference source for network programming. The remaining chapters (9 through 18) dis-

cuss common network services and in many cases contain complete code to implement them. In a world of predominantly proprietary system code, this is a refreshing feature. Code for doing remote logins, print spooling, and tape access are included as is an implementation of TFTP (the Trivial File Transfer Protocol).

Among the many benefits of the book which are extolled in the preface are the fact that it "contains many pictures (diagrams) and about 15,000 lines of C source code" and that "The software was tested [on many systems]". These are certainly good reasons to believe that the book is good. So too is the fact that none other than Brian Kernighan patronized the project and proofread the manuscript. I might also add that it "pulled my butt out of the fire" recently. After agreeing to develop a sockets-based parallel systems simulator at the University, I ran into a nasty networking bug. I failed to find the error for a couple of weeks, and even resorted to testing my C++ compiler to see if it was generating bad code. At my wits end, I re-read the section on Unix-domain (all

on one processor) sockets in the book. On the bottom of page 296 I found a footnote describing a would-be "feature" of BSD Unix which was the root of all my problems. This is the first time that I can honestly say that I found a specific solution to a real-world programming problem in a textbook.

I would most certainly recommend "UNIX Network Programming" to anyone in the area. It is a well presented book containing excellent material. I found the text to be well-explained (certainly much easier to follow than the "primer" documents which come with some systems) and in the few places where I had difficulty following the text, an example was provided which made things clear again. Perhaps the only drawback to this book may be its undoubtedly obscene price. A hardcover book of 772 pages is certain to be approaching the \$100 mark.

Hats off though to Richard Stevens for writing this book and to Prentice Hall for publishing it. A few more books in this "quantitative" vein would be a boon to both academics and programmers alike.

## A Day in the Life of a System Administrator

*By Derek Hayes  
FACS Records Centre*

This last monday I walked into my office, and was hit by the usual Monday morning problems, Staff not at work yet, someone parked in my parking stall, coffee was not made, and various other problems. I sat down at my desk, logged into my computer, and what did I find;

```
DEVICE I/O ERROR ERROR # 26  
ADD IN CARD PARITY ERROR  
CRITICAL ERROR SYSTEM HALTED
```

Now wasn't this a fine Monday Morning.

After quickly determining that the device error was the hard disk, I called for my backup system, which

is being used 100 miles away, (Yeah, I know that is a little far to store a backup disk drive, but when I'm not using it, someone else is.) It arrived 4 hours later. In the mean time I removed the defunct drive, and tested it in another computer, with the identical controller, (see I was not sure that it was the drive: I also got an ADD IN CARD ERROR) to determine if the drive was at fault or the controller. Sure enough the drive was at fault. Completely dead, would not be recognized during the P(ower) O(n) S(elf) T(est), and after the system was booted, it could not be found then either. (dir c: yielded the message drive not found).

So there I sat waiting for the backup to arrive, staring at the empty drive cage, trying to decide what steps

to take to get the system restarted. Users riding me as to when they can login, people pestering for their mid-month reports, etc.

Upon the arrival of the backup drive, I quickly removed it from the computer in which it was installed. Had it half re-installed when I said WHOA!, I need to backup the drive first, before I do anything. So out came fastback and about 65 1.2 disks. (luckily the 204 megs were not used up yet.) Created a backup of the entire system, and a separate backup of the data. ( I still have the first entire backup, from when the system was first setup, before any data). This way I have two backups, in case something happens when it is restored, or if the disks end up with errors on them.

I then removed the hard drive and installed it in the main computer. This was now 1:00 pm. I retrieved my boot floppy diskettes and powered up the system. I inserted the boot diskette, and followed the instructions (last time I had seen these was two years ago) and watched all the copy write messages go by. After a short while, the first instruction appeared asking "do you want to install (y/n)". Yes, I responded and 2 hours later I finished installing the UNIX SYSTEM, and was ready to install the backup data. This took 3 hours and when it was finished, I configured the kernel to match the system and rebooted.

Another horror followed, an absolute sector error on sector 388952, **BOOT HALTED**. I went thru the same 5 hour procedure again this time with a complete surface analysis,(another hour), and rebooted the system to find out that the kernel did not match the boot records, **BOOT HALTED**. Again I went thru the 5 hour ordeal, this time every thing worked out ok, the system rebooted with no problem, and I went around to check to see if the data was restored properly. The data was restored, but only ONE of the TWO file systems was restored. What happened to ROOT. It was not updated. (Yes I could reconfigure all the users, and printers into the database, change the default profiles, redo all the menus, etc. with setting up an initial system, but this would take time.

So I went to try to find out where the ROOT file system backup was. I checked the backup tape and it was not on there. WHY? I checked my cron command and it said:

```
00 20 * * 5 /usr/bin/sysadmin backup
%%ALL%c%n%tape%%
```

At 8:00 pm on the FIFTH working day of each week or each month do a backup of ALL filesystems, Complete type, No do not print file names to the screen as they are backed up, and backup to TAPE.

Well this should have backed up everything, but as the tape proves, it did not (research is still being done as to why). I then found an old backup of ROOT from MAY 5, 1990 and restored it. Now I only have to do the few modifications which happened in the last 4-5 months (such as the fact that TUUG changed its modem to 2400 baud, and that I am using a different electronic mail system).

Well to shorten this up, I spent Monday from 8:00am to 10:45 pm and Tuesday from 8:00 to 3:30 before I had the system running so that the users could be happy.

The point of the lengthy story is that you can never be prepared for a disaster, and the only way to test this out is to plan a disaster and follow it thru with a second machine. This way you will see what it is that you must do, and this way make any errors before the real disaster occurs.

Derek Hay  
(very stressed out and now recovering)

Why couldn't the printer die or maybe something simple like a floppy diskette drive!!!

Technical UNIX User Group  
 Year-end Financial Statements  
 October 1989 to September 1990

*Gilles Detillieux, Treasurer*

**Balance Sheet**

	<u>Mar. '90</u>	<u>Sep. '90</u>
<b>Assets:</b>		
bank account	\$ 749.84	\$ 433.63
cash(to be deposited)	<u>24.00</u>	<u>          </u>
	<u>\$ 773.84</u>	<u>\$ 433.63</u>
<b>Liabilities:</b>		
due to Unisys	130.14	
due to member(s)	<u>4.12</u>	<u>          </u>
	134.26	0.00
<b>Equity:</b>		
net income to date	557.96	352.01
retained earnings	<u>81.62</u>	<u>81.62</u>
	639.58	433.63
<b>Total Liabilities + Equity</b>	<u>\$ 773.84</u>	<u>\$433.63</u>

**Income & Expenses**

	<u>Oct. '89-Mar. '90</u>	<u>Oct. '89-Sep. '90</u>
<b>Income:</b>		
membership dues	\$ 744.00	\$ 757.00
back issues payments	<u>12.50</u>	<u>12.50</u>
	\$ 756.50	\$ 769.50
<b>Expenses:</b>		
Christmas party	20.73	20.73
Summer party (BBQ)		46.07
bank charges	6.25	6.25
legal	0.00	0.00
<b>stationery:</b>		
envelopes	37.30	37.30
mailing labels	0.00	0.00
paper	<u>20.19</u>	<u>47.11</u>
	57.49	84.41
<b>postage:</b>	<u>114.07</u>	<u>260.03</u>
Total Expenses	\$ 198.54	\$ 417.49
<b>Net Income:</b>	<u>\$ 557.96</u>	<u>\$ 352.01</u>



Technical UNIX® User Group

**AGENDA**  
**for**  
**Tuesday, November 13th, 1990**  
**7:30pm**  
**University of Manitoba**  
**Parker Chemistry Building**  
**Room 351/352**

- |   |      |
|---|------|
| 1. Round Table  | 7:30 |
| 2. Business Meeting   | 8:00 |
| a) Remarks by<br>President<br>Treasurer<br>Membership Secretary<br>Secretary<br>Newsletter Editor<br>Meeting Co-ordinator |      |
| 3. Break  | 8:30 |
| 4. Presented Topic (C I/O programming functions)  | 8:40 |
| 5. Adjourn  | 9:30 |

If you have any questions on how to find the meeting location call Kirk Marat at 474-6259.