

CERN

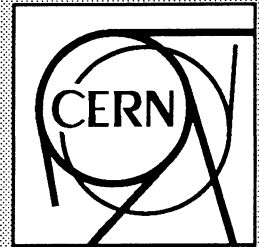
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CN



COMPUTER NEWSLETTER

OCTOBER – DECEMBER 1991

No. 204

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for your
subscription
renewal

Editorial

The CERN Computer NewsLetter is produced by the CN division. It is distributed inside CERN to all registered users of the central computer systems, and to any person requesting a subscription. **However, this may change - see 1.1, "Should we stop printing the CNL paper version?" on page 2.**

As of the year 1992 we will work with fixed deadlines for the contributions for the CNL. Please see the table below. The closing date for the next CERN Computer NewsLetter is **Sunday, 2nd February 1992**. The machine readable version will be available about two weeks after the deadline. For the paper version to arrive at your desk you may have to wait for four more weeks.

Articles, already in machine readable form, preferably in SGML, should be sent by electronic mail to the account **CNL@CERNVM**. Any potential author (not only members of CN division!) will get, by simple request to the same address, a "skeleton" article indicating in a simple way the SGML part.

Again we did not receive a single VoxPop (apart from a very specific comment on a program) either by e-mail, or on paper, despite the last page of CNL 203 making it extremely easy to write to us. As a consequence the paths for VoxPop input will be closed again. The lack of VoxPops may also indicated a serious lack of interest in the CNL as such. Together with the increased cost of printing and mailing the paper copies to about 5000 addresses this may be a good reason to drastically reduce the number of CNLs which are printed and mailed via paper-mail. Please read the first article of this newsletter.

Bernd Pollermann

Dates of the deadline for contributions to the CNL in 1992:

Issue number	Final date
205	2 February 1992
206	5 April 1992
207	7 June 1992
208	6 September 1992
209	1 November 1992

If You need Help

Service	Name	Address	Telephone	E-mail Address
USER CONSULTANCY OFFICE (UCO)				
Opening hours 0900-1230 and 1400-1730		513/R-052	4952	UCO@CERNVM
COMMUNICATIONS				
Operational problems	Alasdair Ross	513/R-034	4927	NETOPS@VXCERN
Communications and network consulting: contact your Divisional Representative for data communications (see below) or the UCO.				
CENTRAL COMPUTER OPERATIONS (24 HOURS)				
		513/R-066	5011	OPERATOR@CERNVM
All aspects	J.-C. Juvet	513/R-037	4935,13+5544	JUVE@CERNVM
IBM-SIEMENS	David Underhill	513/R-035	4920	DJUCT@CERNVM
Central VAXes	Tim Whibley	513/R-033	4849	TIM@VXCERN
Networks & Remote Printers	Remy Bouvry	513/R-004	4929,13+5548	BOV@CERNVM
	Robert Ceccato	513/R-004	4929	CRE@CERNVM
CRAY	V.Dore	513/R-030	4976,13+3830	DORE@CERNVM
CERN PROGRAM LIBRARY				
Help with library programs	Miguel Marquina	513/1-005	4912	CERNLIB@CERNVM
Distribution of library material	Gudrun Benassi	513/1-014	4951	CERNLIB@CERNVM
PATCHY/HYDRA programs	Gudrun Benassi	513/1-014	4951	CERNLIB@CERNVM
TEXT PROCESSING				
Help with SGML, TeX, MS Word (appointment only)			5087	TPHELP@CERNVM
OTHER SERVICES				
User Support (for UCO see above)	Harry Renshall	513/1-009	2377	HRRCR@CERNVM
Operating Systems	Sverre Jarp	31/1-025	4944	SVERRE@CERNVM
INDEX problems	Answering Service		2299	
INDEX Installation	Leopold Sohet	513/S-018	2386,13+5538	SOHET@CERNVM
Tape operations	R.P.Minchin	513/R-009	13+5559	RPMCT@CERNVM
Tape purchase	Mario Vergari	513/R-009	13+5602	VNV@CERNVM
Documentation office	Jean Zueras	513/1-022	2371	JRZCN@CERNVM
Computer Science Library, mornings only	Jutta Megies	513/1-024	2379	MEGCM@CERNVM
Oracle	William Moorhead	31/3-008	2995,13+5580	WGM@CERNVM
Experimental Tape Allocation	Hansjorg Klein	13/3-024	2124,2060	HKL@CERNVM
Computer Security	David Lord	13/3-024	3967	PFKDN@CERNVM
Apollo Workstations Hardware Support	K.S.Olofsson	513/R-009	8+7114,13+5564	SOREN@CERNAPO
Apollo Software Support	Rainer Többecke	31/1-024	4911,13+5563	APOLLOSP@CERNAPO
HP-UX Software	Rainer Többecke	31/1-024	4911,13+5563	HPSP@CERNAPO
DECstation, VAX/ULTRIX support	Alan Lovell	31/1-024	4911,13+5605	ULTRIX@DXCERN
Sun Software support	Ignacio Reguero	31/1-027	4409	SUNSP@CERNVAX
Central Computer registration and accounting: See Group or Divisional Administrator or UCO				

ONLINE COMPUTING: See the CERN Mini and Micro Computer Newsletter.

COMPUTING FOR ENGINEERING: See the CERN Computing Support for Engineering Newsletter.

COMPUTER TIME ALLOCATION GROUP (COCOTIME): Secretary: A.E.Ball/ECP 3849 AEB@CERNVM

Div.	Representative	Div.	Representative	Div.	Representative	Div.	Representative
AG	V.Frigo	AS	M.Draper	AT	J.Schinz	CN	A.Koppanyi
DG	V.Frigo	ECP	A.Grant	FI	S.Lauper	MT	S.Foffano
PE	D.Duret	PPE	H.Klein	PS	J.Riche	SL	A.Hilaire
ST	G.Martin	TH	U.Wolff	TIS	G.R.Stevenson		

DIVISIONAL REPRESENTATIVES FOR DATA COMMUNICATIONS AND TERMINALS

Div.	Representative	Div.	Representative	Div.	Representative	Div.	Representative
AG	V.Frigo	AS	M.Draper	AT	L.Walckiers	DG	V.Frigo
ECP	E.Pagiola	FI	S.Lauper	MT	C.Andrews	PPE	E.Pagiola
PE	D.Duret	PS	G.Shering	SL	B.Sagnell	ST	P.Ciriani
TH	U.Wolff	TIS	B.Moy				

1. General News

1.1 *Should we stop printing the CNL paper version?*

Publishing a new Computer NewsLetter involves creating a machine readable version which is accessible from almost everywhere in the world, printing 5000 paper copies and mailing them to 5000 addresses via (CERN) internal or normal mail. Is this justified? We do not know. All we know is that:

- the number of paper copies sent has no significance as they are free of charge,
- the printing of the CNL has become considerably more expensive and
- we received no VoxPops, as already mentioned in the editorial.

It may be reasonable to stop printing and mailing the paper copies.

As a first step we aim at reducing the number of printed copies by revising our mailing list. If this number turns out to be sufficiently small, we then may consider stopping the printing altogether and produce only the machine based version, and then in a different style. If we are freed from the task of making a paper copy we could spend more effort on the machine-readable version and produce the CNL in the form of a HyperText document, accessible via W3 (see 2, "World-Wide Web: On-line information for everyone" on page 5). This would allow you to browse very quickly through the "first level" of the CNL and then, if you are interested, follow "links" to a more detailed level as well as to other information which is not part of the CNL, but highly relevant to a particular article.

If you think that you really need a paper copy, rather than reading the articles on your terminal and printing one or two on your own printer, please do the following:

- if you want the paper copy to be sent to you at CERN, send an email to CNL@CERNVM with
PAPER CNL first-name family-name / division
as the subject. Only the text of the subject will be taken into account. The body of the mail will be ignored.
- If you want the paper copy to be sent to an address outside CERN, send an email to CNL@CERNVM.CERN.CH with
PAPER CNL OUTSIDE CERN
as the subject. In this case the body mail must contain your postal address.
- If you cannot use email, write to us at the
Computer Documentation office
Building 513/1-22
CERN
CH-1211 GENEVE 23

Only those users who have sent us their address via the procedure described above before the 31st of March 1992 will receive a paper copy of future CNLs.

Bernd Pollermann

1.2 *Fortran 90 compiler available*

As promised in the last CNL, more news is now available on the NAG Fortran 90 compiler. Over the past few months a beta-test and evaluation of this new product has been carried out, and a detailed report has been published as CN/91/11 (available from jrzn@cervn.cern.ch). Basically, the Apollo version has been tested and evaluated using the bulk of KERNLIB and GENLIB and their test programs. The result is that all this Library code is now up and running under f90, executing at speeds which are typically 33% slower than under the native compiler. For testing and evaluation purposes this is quite acceptable, and on the basis of the evaluation CERN has purchased a site-wide licence from NAG. The intention is to make f90 gradually available on most unix and then VMS platforms, and news items will be issued to keep individual user communities informed. For the moment, anyone wishing to use it on an Apollo or Sun connected to the central servers should type

man f90

in order to get the documentation. Further advice, as well as any Library code required for a particular test can be obtained from me (metcalf@cervn.cern.ch). We expect to make this Library code centrally available shortly. The

compiler itself may be legally installed on any Apollo or Sun server on the CERN site; other sites wishing to install the compiler must make separate arrangements directly with NAG.

It must be emphasised that f90 is made available on an experimental basis, and there is no implied commitment with regard to any longer-term service.

Michael Metcalf/CN

1.3 High Energy Physics Unix Interest Group Formed

HEPiX is an international group of cooperating institutions all of which are experiencing an explosion in the use of Unix for High Energy Physics (HEP) work. The focus of this group is to share experiences, influence vendors and standards bodies and to investigate solutions to those problems which impede the use of Unix for mainstream work at the member institutions. The initial areas of investigation include topics which are not fully addressed by current Unix offerings and are critical to the HEP computing environment. Such topics include:

- Batch
- Tape support
- Software management & distribution
- Portability of the physicist environment

The group held its first meeting at Fermilab on September 23-25th, 1991. There were about 40 participants from ANL, BNL, CERN, DESY, Fermilab, HEPnet, INFN, KEK, LAMPF, LBL, NIKHEF, SCRI, SLAC, SSCL, SURA/CEBAF, TRIUMF and Yale. Future meetings will be held at roughly half-yearly intervals.

HEPiX decided that continuing communication would be achieved via an integrated system comprised of the HEPiX mailer, Netnews discussion groups, and the HEPiX archive on the hepnet.hep.net network information center. Access to this system is as follows:

E-Mail Interface

If you prefer to participate in the HEPiX discussion via electronic mail, send a mail message to hepix-request@hepnet.hep.net (Internet), hepix-request@hepnet (BITNET), or hepnet::hepix-request (ES-DECnet). The first line of your message should be SUBSCRIBE. To cancel your subscription send a message with the first line SIGNOFF. The subject line and any body lines but the first are ignored.

When you subscribe via e-mail, you will get all messages in the discussion group mailed to the address you requested. To contribute to the discussion, mail your article to hepix@hepnet.hep.net (Internet), hepix@hepnet (BITNET), or hepnet::hepix (ES-DECnet). All e-mail subscribers will get a copy of your article in their mailbox, and the article will be posted to netnews.

Netnews Interface

If you prefer to participate in the HEPiX discussion via netnews, use the newsgroup hepnet.hepix. Articles you post will be automatically e-mailed to those who subscribe to the discussion via e-mail. If your site does not have the hepnet hierarchy on its news server, have your news administrator contact David Martin (dem@fnal.fnal.gov) with the name of your news server and the name of the machines that provide its major feeds.

Archives

All discussion articles will be archived on hepnet.hep.net. They can be retrieved via ftp, DECnet COPY, or e-mail request. To use the archives via ftp: ftp to hepnet.hep.net and log in as anonymous. Give your e-mail address as the password. After you are logged in cd to the hepix directory. Use ls to list the files and get or mget to retrieve them. To use the archives via VMS commands over DECnet, list the files with DIR HEPNET::[.HEPIX] and retrieve the files with COPY. A retrieval system that will allow users to list and request specific archives via e-mail is being tested and will be announced when complete.

For more information:

If you are from a site represented at HEPiX please contact your site representative. At CERN questions or comments should be addressed to: Judy Richards, JUDY@CERNVM, tel 4983 or Alan Silverman, ALAN@VXCERN, tel 4955.

Judy Richards

1.4 APA6670 Service comes to an END

The APA6670 print facility in the computer centre has provided a very valuable, high-quality print service since its installation in 1980, quality which was difficult to reproduce on other printers until recently.

The service however relies on the availability of an unsupported device called the "SHERPA" box to make it All Points Addressable, an expensive print engine to maintain, and a very old version of CMS (version 4 when this CNL talks of version 7). Additionally there is now an abundance of high quality printers accessible from almost all systems.

The rundown of the service started last Christmas when it was moved out of the "self service" area and into the machine room of the computer centre. The great majority of users have already moved away from the service and there remains only a very small band of faithful followers.

It is therefore planned to complete the "rundown" this Christmas when the printer will be disconnected during the end-of-year shutdown.

D.J.Underhill

1.5 Christmas shutdown of the computer centre

This year, CERN closes officially on Friday, December 20th at 17.30 and re-opens on Monday, January 6th at 8.30 in the morning. We normally carry out as much as possible of the maintenance work on the computer centre infrastructure (electrical supplies, air conditioning, etc) during this period. There will be no power available in building 513 during most of the shutdown period when outside contractors and computer centre staff are scheduled to work. Consequently, the computer centre schedule for the two week period between December 20th, 1991 and January 6th, 1992 is as follows:

- All computer centre services to the user community (CERNVM, SIEMENS, CRAY, both central VAX CLUSTERS, CERNVAX, the CERN ADP services, HOPE, SHIFT and all central workstation services) will be stopped on Friday, December 20th at 12.00.
- The following communications services will be kept up and running during the whole two week period:
 - All leased lines including TELEPAC / X29 access
 - X25 access
 - All EARN services
 - EASIGate (access to NFSNET and european EASInet sites)
 - Transit traffic via TCP / IP
 - Transit traffic via DECNET
- Special arrangements have been made with AS / MI to enable them to continue their applications development during the shutdown.
- All the systems will be restarted during the week-end of January 4th and 5th 1992, and all computer services will be fully available on Monday, January 6th at 8.30 in the morning.

Please note that CERN-wide work on the electrical supplies during the shutdown may sometimes cause problems to remote communications equipment that is not on a protected supply.

Please contact the undersigned if this schedule seriously inconveniences you, or if you would like more precise information: Tel: 4935 or 13-5544 / E-mail: JUVET@CERNVM)

Jean-Claude Juvet / Consultancy and Operations

2. World-Wide Web: On-line information for everyone

A world of information is now available online from any computer platform. Information sources at CERN and across the world span subjects from poetry to biochemistry and supercomputing. We summarise the information currently sourced at CERN, and we introduce the WorldWideWeb (W3) program which allows you to browse and search all the data in a simple and consistent manner.

Details of all the information, and of how to acquire and install the W3 software on your own machine, are available by typing

```
telnet info.cern.ch
```

2.1 What information is available from CERN

CERN public information accessible today is:

- information which helps you to contact somebody
 - phone numbers of persons (phonebook)
 - phone numbers of services (yellow pages)
 - electronic mail addresses
- information which keeps you up-to-date
 - various public news groups
 - the CNL
- information specific to a system
 - VM/CMS help files (IBM and CERN)
 - VMS help data
 - help files from the DESY lab in Hamburg
- system-independent information
 - CERN Program Library "short writeups"
 - detailed on-line documentation on W3
 - a guide to other online information not directly linked to W3

2.2 How to access information

The distribution of information

Information, both public and non-public is usually stored on one platform (the machine, the format and the application program that controls the information). The platform has peculiarities which make it different from other platforms. However, most machines are connected by networks, and most systems have (terminal) emulators through which they give access of some level to other platforms. Therefore there are three ways to access information:

- go to the platform the data is on, log into it, use the application specific for these data,
- connect to the platform, from another platform, and use it from there, or
- use a platform-independent application.

In the third case, you can navigate through the information without having to know details depending on a platform. In the following section we will show you how to invoke the platform-independent application : W3. To date, only W3 can give you platform-independent access.

Using W3

All the information described in this article is available by typing (on cernvm, vxern, vxeng, cernvax and many other unix and VMS platforms) the command:

```
www
```

If you work on a machine which does not have this software, then you can get your system manager to install it according to the instructions available online. In the meantime type telnet info.cern.ch or just telnet info if you are at CERN.

When you invoke W3, you obtain a first piece of information called the "Home" page, which gives you a summary of the available information sources, at CERN and elsewhere.

It currently looks like this:

```

CERN Information

CERN INFORMATION - SELECT BY NUMBER

Help[1]          On this program, or the World-Wide Web project[2].
Phone book[3]    People, phone numbers, accounts and email addresses.
                  See also the analytical Yellow Pages[4], or the same
                  index in French: Pages Jaunes[5].
"XFIND" index[6] Index of computer centre documentation, newsletters,
                  news, help files, etc...
News[7]          A complete list of all public CERN news groups, such
                  as news from the CERN User's Office[8], CERN
                  computer center news[9], student news[10]. Private
                  groups[11] also exist.
FROM OTHER SITES
  See online data by subject[12], pointers to other forms of online data[13],
  and the following specific databases:
<ref.number>, <RETURN> for more, Quit, or Help:

```

Following links

When you now type one of the numbers displayed in square brackets, the corresponding information is automatically retrieved and displayed. Technically speaking, you have just followed a *link* to another piece of information, which may in turn contain other references. For instance, typing 2 from the above home page leads to:

```

The World Wide Web project

WORLD WIDE WEB

The WorldWideWeb (W3) is a wide-area hypermedia[1] information system aiming
to give universal access to a large universe of documents.

GENERAL PROJECT INFORMATION
See also an executive summary[2] of the project, Mailing lists[3] you can
join, Policy[4] .

Project Status[5] A list of project components and their current
                  state. (e.g. Line Mode[6], NeXTStep[7], Daemon[8])
People[9]         A list of people involved in the project.
History[10]       A summary of the history of the project.

TECHNICAL DETAILS

How to provide data[11]
                  How can I make my own data available on the web?

<ref.number>, Back, <RETURN> for more, Quit, or Help:

```

This process of finding information by following links is called *navigating*. To find the data you need, you don't have to know precisely in advance where it is located, nor which system provides access to it.

Index searches

W3 can also perform index searches. It would be preposterous to provide each entry in the phone book on a single text page, since you would have to scroll through the phone list from the beginning for every lookup. It is better to let the user provide additional information in the form of keywords. In the first example, typing 3 gets you into the phone book as follows:

```

                                CERN telephone directory
                PHONE BOOK

This is an index of people and phone numbers at CERN. Provide a surname
and/or given name, or phone number as a keyword.

See also: what to do if the data is incorrect [1], The ('Yellow pages'[2])
for an index of functions rather than names.

[End]

K <keywords>, <ref.number>, Back, Quit, or Help:

```

You are now prompted for a name or number, and then W3 will create a hypertext node corresponding to these. For instance, if you type "Bloggs" followed by return, the response might be:

```

                                Bloggs at CERN

BLOGGS, Jane [1]   2627                PPE RE 111  3-012
BLOGGS, Joe [2]   4321                ECP PT 212  R-007

[End]

<ref.number>, Back, Quit, or Help:

```

Note that the answer also contains references [1] and [2] which are links to more information about the various people called Bloggs at CERN. Typing 2 will lead to Joe Bloggs' e-mail address and accounts information.

Thus W3 permits navigation in many different information sources without having to log on to the specific platform and without having to know the user interface of the application: the process is entirely uniform, based only on typing the selected number (or clicking the mouse in graphical implementations of W3), or the typing of keywords.

The browser described here is the simplest user interface to the World-Wide Web, which was designed to run on any dumb terminal. A hypertext browser/editor is available under NeXTStep. More powerful user interfaces are under development, including Macintosh, X-Windows, VM full-screen and emacs.

Please send any comments, suggestions or queries to www-bug@info.cern.ch.

T.Berners-Lee, R. Cailliau, J-F. Groff, B. Pollermann

3. VM news

3.1 CMS 7 installed as the production version on CERNVM

Version 7 of CMS was installed as the production version on CERNVM at 07.30 on Wednesday November 27 1991. This means that virtual machines using IPL CMS, CMS370 or CMSXA will all start the CMS 7 system instead of CMS 5.6. This system has been available for testing for several months via IPL NEWCMS and it has been running successfully on the Siemens 7890 machine (CERNVMB) for some weeks.

The old CMS 5.6 v.5 production CMS will remain accessible for a while via IPL OLDCMS in order to provide an easy comparison in case of problems.

Please report any problems which are clearly related to the system change to the User Consultancy Office (UCO@CERNVM), DAVID@CERNVM or ASMC3@CERNVM.

The new facilities initially available in CMS 7 are:

- Both REXX and XEDIT are updated so that they can use storage above the 16MB line in XA-mode machines. As a result XEDIT can be used with larger files and REXX execs can handle more data.
- The Callable Services Library, CSL, provides a common interface for high level languages - REXX and Fortran, for example - to routines previously only usable by assembler language programs. Examples of the services provided are file system routines and access to REXX variables.

Some overall performance improvement is expected to result from the way in which CMS 7 does disk I/O.

Although we do not plan a general introduction of the Shared File System (SFS) at this time, there are some possibilities for specific applications such as maxidisks when sufficient disk space is available.

David Asbury (david@cernvm)

3.2 Removal of NEWS facility execs from the P-disk

As announced via NEWS, the NEWS and the GIVENEWS exec files will be removed from the P-disk by the end of the year 1991.

The large majority of users has already switched over to XNEWS, the new news facility which was introduced at the beginning of 1991. Groups who are still using NEWS are advised to switch over to XNEWS. Groups who do not want to do this will have to make private copies of all execs connected with NEWS.

Moving from NEWS to XNEWS involves also removing all those service machines which do nothing else but serve a single news group. Removing these servers is possible because XNEWS works with a central server. **If you are in charge of a service machine which acts as a news server, please do the following:**

- Check whether the machine which was used so far for news submission performs other tasks.
- If it is a pure news server: delete the account and inform BERND@CERNVM
- If it is performing other tasks: remove all execs and disks which were used for news submission. If you have any questions ask BERND@CERNVM

Some features of XNEWS

Documentation about various aspects of XNEWS is found via the command XFIND XNEWS. However, it may be useful to point out a few features of XNEWS:

- It is possible to set defaults on the system, group and individual level.
- News groups can be public, private or super-private (encrypted).
- Each news group must have an **administrator**. This administrator can then decide to restrict submission of news items or leave it open.

- Incorrect news items can be deleted or modified, before they have expired.
- News items can be submitted via email, i.e. from almost any system.
- News items can be distributed automatically in various formats to other systems.
- The usage of XNEWS groups is monitored. The administrator can obtain statistics of this usage.

A full description of news facilities at CERN

In the next edition of the CNL (February 1992) we will publish an article describing

- The general policy concerning news at CERN.
- The recommended news facilities for different platforms.
- Installation at other HEP-sites, as well as.
- The possibilities. of communication between the diffent sites/platforms in the HEP community.

Give comments NOW

If you have any comments concerning our news facilities as they are now or any suggestions for future developments, please send these comments or suggestions to BERND@CERNVM. **By sending your suggestions now you can still influence the developments in the area of news facilities.**

Bernd Polleermann

4. Unix News

4.1 CERNVAX Upgrade

As announced in the last Computer Newsletter, the CERNVAX (PRIAM) machine is being upgraded to a new powerful RISC-based processor. The new machine was delivered in early November and following successful hardware installation, work is now underway to install the software.

Since the move to the new machine involves a change from a VAX-based machine to a RISC-based machine, all the software has to be regenerated and reinstalled. The operating system is being upgraded from Ultrix 3.1 to Ultrix 4.2 and all Digital and other products are being upgraded to the latest release. Since this work has to be done in parallel with keeping the current CERNVAX service running, it will take some time to complete the transfer of all services. The first service to be made generally available on the new machine, early in the new year, will be the Usenet News service. People reading news on their workstations using a remote news reader will be requested to connect to the new machine called DXCERN rather than CERNVAX (details will published via news).

Subsequently, as a reasonable number of basic utilities become available, we will invite a few individual users to help us test out the system and hope to be able to make it generally available in March/April.

Since all users will have to convert their private applications to run on the new system there will be some months of overlap before CERNVAX is switched off. For most applications the conversion will simply consist of a recompilation and generating a new executable module. (This assumes of course that you have the source code available!) On the other hand, if you already have your application running on a DECstation you will simply need to copy it across since the new machine is binary compatible with the DECstations that people have in their offices.

As userids are moved to the new machine we will take the opportunity to change users group ids (numeric gid) to conform with the group ids registered in the central user database. Although we hope to minimize the impact of this change, a few problems are likely to be discovered but we believe that these will be compensated for by the long-term advantage of having uniform group ids in use on all the central machines on site.

Judy Richards

4.2 UNIX Workstation Support

Service Update

As regular readers of CNL will know, over the course of this year we have gradually expanded CN's services for UNIX workstations. Since the start of 1991 we have added support for ULTRIX-based stations, for SUN workstations and most recently for the new HP Series 700 (the so-called "Snakes" series) which run HP-UX. In line with the increased workload which this implies, we have been fortunate in being able to enlarge our support team and we will publish in a future CNL a new allocation of support for the different families of workstation. In the meantime, this article will describe a new method for contacting members of the support team by electronic mail as well as some recently-produced documentation.

Contacting Workstation Support by Electronic Mail

Up to now, apart from Apollo Domain support, we have only been able to assign one person to each workstation family and so users have been encouraged to send mail to the electronic mail account of the appropriate contact. From the new year, this will no longer be the case. Each workstation family will have a first-line software contact and a backup. Therefore, we have established generic electronic mail addresses, one for each workstation family. From now on, we strongly encourage workstation users to contact software support via the appropriate generic mail address rather than by mail to the personal account of the corresponding support person. In this way, we should be able to provide a better service, irrespective of holidays, absences and so on.

In addition, we have been able to arrange basic hardware support for certain workstation families. This hardware support is not meant to replace the normal maintenance support offered by the manufacturer but rather to assist workstation users in areas concerning, for example, the connection of third-party equipment, in the initial installation of a new workstation, and so on.

Note that users in ECP, PPE and TH Divisions and visitors should check with the ECP CUCI (CERN User Computer Infrastructure) team (e-mail address CUCI@VXCERN) for questions regarding hardware on their workstations. Users of workstations and associated third-party equipment in on-line systems may contact the Online Hardware Support section in the PI group of ECP Division led by Chris Parkman (Tel. 3963, 13+5512, E-mail pmn@cernvm); further details on this service will be published shortly. However, the services listed below are open to all users in CERN, regardless of where they obtained their configurations.

- Apollo Workstations
 - Apollo Domain Software Support - Rainer Tobbicke; E-mail - apollosp@cernapo
 - Apollo Workstation Hardware Support - Soren Olofsson, Mario Vergari
- HP Series 700 (HP-UX) Workstations
 - HP-UX Software Support - Rainer Tobbicke; E-mail - hpsp@cernapo
 - HP Series 700 Hardware Support - Soren Olofsson, Mario Vergari
- SUN Workstations
 - SunOS Software Support - Ignacio Reguero; E-mail - sunsp@cernvax
 - SUN Workstation Hardware Support - Soren Olofsson, Mario Vergari
- ULTRIX-based Workstations
 - ULTRIX Software Support - Alan Lovell; E-mail - ultrixsp@dxcern

Some of the above people have CERN beeps; consult the HELP section of this newsletter or use the PHONE utility on your favourite computer (PHONEBOOK on VAX/VMS).

Documentation

Over the past few months, we have been gradually putting together the first issues of installation guides for some of the above systems. The input for these guides consists largely of our experiences in installing systems for users. Therefore, these guides may not be the only way to install a given system; they may not even be the best way. They are certainly not complete; in fact, it is our intention to keep adding to them or changing them to reflect our experiences and to follow changes in the products themselves. For that reason, we will NOT print large quantities for stock. Instead, we will provide instructions for users to access the latest copy and print it himself/herself. The next stage will be to offer online access.

- HP-UX CERN Installation Guide

```
ftp hp-osf1
userid - anonymous; password - your userid
get hpux.ps
... then print this file on any postscript printer.
```

- Guide To Installing ULTRIX

```
ftp hp-osf1
userid - anonymous; password - your userid
get ultrix.ps
... then print this file on any postscript printer.
```

- HP/Apollo Owners Guide

This is not an installation guide but rather a guide aimed at users wishing to acquire an Apollo or HP workstation. It describes the various contracts of relevance, whom to contact when the station arrives and so on. It can be accessed via the commands ---

```
ftp hp-osf1
userid - anonymous; password - your userid
get hpowner.ps
... then print this file on any postscript printer.
```

We remind you these guides are the first issues only and that we are aware that they are incomplete. We would be very happy to receive any feedback, especially requests for topics which you believe should be added. Updates and revisions will be publicised via the usual news schemes (see next section).

UNIX Workstation News

In order to publicise news in the area of UNIX workstation support, we have established a number of news groups. These include cern.apollo, cern.hp, cern.sun and cern.ultrix; on CERNVM and VXCERN they are called simply apollo, hp, etc. You can subscribe to these on CERNVM, (XNEWS), on VXCERN (NEWS) or on UNIX systems via your preferred news reader. We use these to publish news of new software, major bugs, meetings, etc.

Alan Silverman

4.3 User File Backup Service for HP Series 700 Workstations

As owners of these new systems will know, the current version of the system software, HP-UX version 8.0.5, does not support Exabyte devices because the appropriate software driver is broken. Although there is no public commitment from the vendor, we have reason to believe that this will be repaired in a future release of the software. In the meantime, many users are unsure of the best method to backup their discs. We can suggest three solutions:

1. We have information from a US company, R Squared, that they have implemented an Exabyte interface, software and hardware, for the Series 700. No one at CERN has yet installed this but anyone interested in it should contact Alan Silverman who can supply the coordinates of the company.
2. Another option is to purchase a DAT unit, from HP or a third-party, and use that instead of Exabytes.
3. The third method is to use the standard HP product, OMNIBACK, to backup files across the network to an HP/Apollo running OMNIBACK and equipped with an Exabyte. We have tested this setup and it seems to work successfully. Given the current uncertain state, we are prepared to offer a limited service to Series 700 users to backup their user files (only).

Anyone wishing to take up this offer will need to purchase a client OMNIBACK licence from HP; this will cost around 235 SFr and we will arrange a bulk order of these. Once installed, we will arrange to perform incremental backups on your user files. We will monitor the traffic which this produces and we may be forced to adapt the frequency depending on overall throughput. File recovery will be possible (we have checked) but it is not a service which will be available to quickly recover files deleted by accident; it is intended as a temporary service to protect against disc faults and it is offered on a best-efforts only and only until HP or some third-party can provide a reliable alternative. Users with their own Apollo/Omniback configuration can of course use these, and we are available to help with advice on setup.

Any Series 700 owner interested in this OMNIBACK solution is invited to contact Alan Silverman.

For file backup on other families of workstation there are a bewildering range of options and we are currently examining a few of them with the aim of being able to propose some solutions. These will be reported on in a future issue of this newsletter.

Alan Silverman

4.4 Computer-based Self-teaching Unix courses for SUN

We have just received a version for SUN workstations of the CTI self-paced computer courses on Unix and C. These courses range from an Introduction to UNIX to UNIX System Administration; there is also a course in C programming. The original courses are in English and we have versions in French. There are User Guides available, also in English and French, although they are not strictly necessary to follow the courses. Full details of the package including how to install it on your SUN workstation (SPARC stations only) are given in a note in the cern.sun news scheme (see article elsewhere in this newsletter on the various UNIX news schemes).

Ignacio Reguero

4.5 Printing from your workstation via the central server

This document addresses owners of Unix workstations which support the BSD lpd/lpr print protocol. The BSD print utilities allow printing on printers attached to other machines using the *lpr* command.

At CERN this facility can be used to print on (currently) some 200 printers, mostly Apple LaserWriters which are currently defined on and served by a central print server. It has been tested on Apollo, Ultrix, HP/UX, IBM AIX (RS6000 and PC/RT), SUN, NeXT and MS DOS PCs. Others may be possible, in fact major non-Unix clients are the central VM and VMS services.

A list of supported printers can be obtained by issuing the command `XFIND LWPRINT` on CERNVM or VMS.

The central print server is called *springer*, IP address 128.141.6.58. Each potential client has to be specifically authorised on the print server: send mail to `jlvt@cernvm` or `rtb@cernapo` specifying the TCP/IP host name of the station to be authorised.

BSD-like systems

On BSD-like systems like Ultrix, Apollo, and SUN a spool directory has to be set up and the printer described in `/etc/printcap`. On the Apollo this applies only to the central server. For a printer called, say *513-pub*; the necessary steps would be

Create a spool directory (you must probably be *root* to do this):

```
mkdir /usr/spool/lpd/513-pub
chown daemon /usr/spool/lpd/513-pub
chgrp daemon /usr/spool/lpd/513-pub
```

Create the entry in `/etc/printcap`:

```
513-pub|513-PUB:\
    :lp=:rm=springer:rp=513-pub:\
    :sd=/usr/spool/lpd/513-pub:
```

The indented entries start with a TAB character. The \ at the end of the the line must not be followed by blank characters.

On the NeXT, it is preferable to use the *netinfo manager* to set up every printer (although the same principle applies). For Ultrix systems, use the *lprsetup* command.

IBM AIX

On the RS6000 the *smitt* utility is used to create the necessary entries in the `/usr/lpd/qconfig` file. The utility prompts for the remote machine (*springer*) and the remote printer name. Currently, a bug in the utility prevents from using printer names longer than 7 characters. Since many printers have 8 character or even longer names, the `/usr/lpd/qconfig` file must be corrected by hand after having been created with *smitt*.

There is no *smitt* on the IBM/RT. The `/etc/qconfig` file has to be set up by hand and remote printing specified via the *rembak* directive.

HP/UX

The HP/UX is System V based. There is no `/etc/printcap`, instead everything is configured with administrator commands. The preferred method is with the *SAM* system, which would be invoked by logging in as *root* and typing `sam`.

Unfortunately, most printer names at CERN contain a '-' (hyphen) which the HP-UX and *SAM* do not support. Worse even: a bug in *SAM* (as of HP-UX 8.05) prevents you from using a remote printer ID containing a hyphen even if the hyphen has been stripped off your local queue name.

For this reason all printers on 'springer' have been given alias names, in which hyphens '-' have been replaced by underscores '_', e.g. `513-pub` can also be referenced as `513_pub`.

Additionally, it is possible to define the printer using the hard way (described in the the *System Administration Tasks* manual). Again the example is *513-pub*, to allow for the HP-UX restriction concerning the printer name the hyphen has been replaced by an underscore on the local system:

```
/usr/lib/lpshut
/usr/lib/lpadmin -p513_pub -orp513-pub -mrmmodel -v/dev/null -ocmrcmodel \
                -osmrsmodel -ormspringer -ob3
/usr/lib/accept 513_pub
enable 513_pub
/usr/lib/lpsched
```

Other systems

Systems like IRIX (on the Silicon Graphics) which are not BSD based may still support BSD printing. Refer to the appropriate documentation or call a specialist.

MS DOS PCs

MS DOS PCs with FTP Software, Inc.'s PC/TCP product or the CMU PCIP (also from IBM) can use the LPR command with the following difficulties:

A PC cannot receive electronic mail directly. Should error messages from the LaserWriter (e.g. PostScript errors) occur, the system will attempt to *print* them on the printer (which may be unsuccessful should the error message mean that the printer is broken...), instead of sending them via mail.

For practical reasons most PCs are not yet added to the central nameserver tables. Since an entry in the nameserver data base is required for printing, contact your PC support person for help, or e-mail a request to TCPIP@VXCERN.

Please don't confuse the PC's TCP/IP host name with it's TCP/IP address, with it's Ethernet address, with your VM userid, with the printer you want to print on, *etc.*

Make sure your TCP/IP software distribution contained the LPR command.

Printing is only supported using the LPR command, not from within an application. A *Windows* user would typically reroute the printer output to a file and use the LPR command to print that file.

The print server and print names are specified in `ipcust.sys` and environment variables or with the LPR command using the `-S<servername><printername>` options.

XPRINT

Like the VM and VMS systems, an *XPRINT* utility has been created at CERN whose purpose is to serve as a unique interface to all accessible printers. Whereas *lpr* is limited to printers locally attached or remotely accessible via the LPR protocol, *XPRINT* can print on printers accessible via other methods, e.g. on the Xerox 4050 or on IBM 3812 printers.

When printing with *XPRINT* on a printer defined in the `/etc/printcap` file, *XPRINT* will invoke the standard *lpr* command. When this is not the case, *XPRINT* will assume the worst case and submit a batch job to VM to print the file. This normally involves an FTP to `cernvax`, a DECnet transfer through the Interlink interface which will hand it over to the IBM, and a batch job queued in a special queue on VM.

In the case that the desired printer is an AppleTalk-connected LaserWriter which had only been "forgotten" to be defined in `/etc/printcap`, the IBM will then invoke the *lpr* command. This means that it is not absolutely necessary to define all possible printers in `/etc/printcap`, but the print time can easily be lengthened from a couple of seconds to over 10 minutes, and consumed resources increase dramatically if printers are not defined carefully.

Rainer Többicke

5. Communications

5.1 PC mail products

CN Division, with the help of AS Division, is entering the final stages in the selection of a suitable candidate product to bring mail facilities directly to PC users. This article explains where we are today.

The technical selection has been somewhat delicate due to the interworking requirements of any proposed product with the HEP community at large and with the existing mail infrastructure at CERN. Two candidates have been selected out of a short list of eight products. We are currently, in collaboration with AS/MI/PC, installing and "stress testing" both of these products. We expect to make a final recommendation in the new year.

Both of the selected products rely heavily on Novell, the preference for the primary candidate is related to the guaranteed interworking with the Macintosh community and the proven interworking with other mail communities.

For non-Novell users we have to consider providing a centrally supported Novell server for Mail and to move non-Novell PC users to this service. The resources required for this are still to be discussed, however, it is clear that all of the above solutions will require one or more "PC Mail" domain managers.

We would expect the cost of these products to be borne by the end user.

J.N. Gamble

5.2 CERN-wide networking of Macs and associated systems

Currently at CERN we have a network structure which allows a limited number of MacIntoshes and associated equipment (e.g. Novell, Vax or other systems offering AppleShare servers, LaserWriter spooling systems etc.) to connect directly onto Ethernet. These systems run either AppleTalk Phase 1 or Phase 2 protocols and are seen in zone name Ethernet or Ethernet2 respectively. Both Phase 1 and 2 are limited to 254 physical Ethernet connections.

The growth of such connections mean that we have to change our Phase 2 network to allow many more connections. Because of the way that Apple networking protocols operate, this has to be done all at once on the whole of the CERN site, since all of the AppleTalk routers on the site, including all of the FastPath boxes which connect LocalTalk networks to Ethernet, must be changed so as to all agree on the specifications of the Phase 2 network.

The new Phase 2 network will be permitted to have a limited number of zone names, rather than the single name (Ethernet2) currently in use. It will have as default name Ethernet, i.e. the same name as the current Phase 1 network, since this will allow a smooth transition for all systems running on Ethernet Phase 1. It may also have some other names representing some logical grouping, provided that these names are created during the Christmas changeover: requests for such names should be made as soon as possible. The name Ethernet2, however, will completely disappear - it was only ever meant to be a temporary name until this transition could take place.

We think that it should be possible still to have connectivity between equipment currently running Phase 1 protocols and the new Phase 2 systems. However, this is not certain (since an extended Phase 2 network permitting thousands of connections cannot be made to look like one limited to 254 connections), in particular since CERN is such a complex site with all sorts of systems running various versions of AppleTalk-compatible software. In order to have any chance of it working we must upgrade any systems which are currently running as Phase 1 routers, whether on Ethernet or any of the LocalTalk networks, to Phase 2 (or eliminate them!).

What should you do if you think you may be concerned by this change? Persons simply having a Macintosh directly connected to Ethernet should verify whether the EtherTalk driver in the system folder of the Mac is version 1.2 (i.e. Phase 1) or 2.0 (i.e. Phase 2). If it is version 1.2 **do not change it for version 2.0** since we cannot accept any extra Macs in Phase 2 until next year. Do, however, find a copy of EtherTalk version 2.0 and keep it in a separate folder ready to replace the version 1.2 when convenient next year.

Other persons, including those responsible for non-MacIntosh AppleShare servers, routers of any kind or any systems offering Apple LaserWriter printers directly on Ethernet, should contact their normal support channels for more detailed advice. If this is not sufficient contact: Christophe Batteur/ECP, Federico Saldana/ECP, Paul Smith/AS or myself.

Mike Gerard / CN-CS

6. Text-Processing and Documentation

6.1 *The Particle Entity Naming Scheme revisited.*

In the last Computer Newsletter CNL203, a Particle Entity Naming (PEN) Scheme was proposed. It has attracted a lot of interest and some minor errors were pointed out and have been corrected. A new version of the article and associated files are now available on the fileserver asis01. They are `pennames.sty`, containing the definitions for the particle names with TeX, `pennames.entities`, the SGML entity definitions and `pennames.ps`, the PostScript source of the article. The latter file can be printed on any PostScript printer. All these files can be obtained via anonymous ftp as follows (commands to be typed by the user are underlined>):

```
ftp asis01.cern.ch
Trying 128.141.8.104...
Connected to asis01.cern.ch.
220 asis01 FTP server (SunOS 4.1) ready.
Name (asis01:username): anonymous
Password: username.node
ftp> cd tex
ftp> get pennames.sty
ftp> get pennames.entities
ftp> get pennames.ps
ftp> quit
```

Michel Goossens, CN/AS

6.2 *The latest versions of TeX and LaTeX*

After several months of beta-testing at CERN and elsewhere, a new version of LaTeX 2.09, developed by Frank Mittelbach and Rainer Schöpf (FRG), will be introduced soon on all computer platforms at CERN. This version includes full support for the New Font Selection Scheme (NFSS) and provides hooks for a truly international version. In particular, the NFSS provides a much cleaner and user-friendly font selection interface and makes it easy to use native PostScript fonts with the `dvips` driver on VMS and Unix platforms (at present there exists no port of that driver to VM/CMS). Also non-English versions of the standard LaTeX styles will be easy to generate. A special style option will allow those interested (French, Germans, Poles,...) to use the 256-character DC fonts, which include separate code points for characters with diacritics. Moreover with the NFSS and the `amstex` style option the functionality and augmented symbol set of the American Mathematical Society LaTeX extensions become available to all users of the new system.

Sometime at the beginning of next year I also want to move to the latest version of TeX (3.14) and Metafont (2.7) on all computer platforms at CERN. On Unix workstations this change has already taken place to allow us to share format (`fnt`) files between various machine architectures. This alleviates the maintenance effort required for keeping the TeX macro packages 'in step' on all Unix systems (style files, `tfm` and `pk` font files were already sharable). As the `fnt` files will have to be regenerated, this change will be announced well in advance on VMS and VM/CMS, so that users can produce up-to-date copies of their private formats.

Michel Goossens, CN/AS

7. Application Software

7.1 First CERNLIB Users Meeting at CERN

At the initiative of the CERN Program Library Office, a Computer Forum was held at CERN on November 6th with the aim of having a first contact with the user community. The Forum was split in two distinct parts: one was the discussion on proposals to improve the current service, and the second devoted to a progress report on the implementation of several parts of the Library under Fortran 90 (see 1.2, "Fortran 90 compiler available" on page 2).

The presentation started by a summary of the current manpower and commitments situation, as well as its improvement in 1992 with the joining of two more members of the team, G.Folger (staff) and B.Damgaard (scientific associate).

There were several points where the audience seemed to agree, and which will be taken into consideration for the coming releases:

- the release will not be associated to the publication of the Computer Newsletter, although the CNL will still be used to document the upgrade; the currently available news mechanism will be used instead to point out the main features of concern to users and the precise moment of the release;
- the release should be made simultaneously on all platforms (at present about 10), even if it takes longer to get them all ready;
- the source code placed into the PROduction area shall not change. Bug fixes should be maintained via correction files (typically PATCHY CRAdles) and applied to the PROduction version. New developments should stay in the NEW area for testing purposes by the users till the next release.

The progress on the production of updated documentation was well received (notably the documentation for GEANT, HBOOK, HIGZ, KUIP and the RZ package are expected by the end of the year, while a revision of the CERN Program Library manual is scheduled for next spring). The possibility to have online access to this documentation on workstations (through PostScript or DVI browsers) was also mentioned and will be done in the context of the W3 project (see 2, "World-Wide Web: On-line information for everyone" on page 5).

The proposal to use NFS to reinforce source-consistency across different systems was also accepted, as long as this does not hinder access to them. In parallel it was mentioned the possibility to devote CPU servers from each specific UNIX platform to the generation and hosting of the CERN Program Library files for servicing the local workstations.

The overall result of the discussion was positive and showed the interest of the user community in following up and contributing to the progress of the service we are providing, specially in such a variety of platforms as the ones currently available at CERN. We expect to hold user meetings with some periodicity, in order to improve the communication channels and receive direct feedback.

One of the points which was left out of the discussion because of lack of time, and perhaps one of the most important, is the search for ways to improve such communication. We feel that sometimes is necessary to hear opinions before actually taking decisions on the development paths. We have started developing an electronic voting facility, which will be available on all platforms and will allow us to present simple questions to the users on given subjects. The results of such polls might allow the staff in the Computer Center to feel the pulse of public opinion on areas which directly affect them.

There are several other points to be considered: the transition to an electronic Newsletter, where users are encouraged to selectively read the CNL material, reinforcement of transmission of information through local and remote newsgroups, etc.

We will keep you informed on the developments of this subject in forthcoming issues.

M.Marquina /CERN-CN

7.2 New numbering scheme of CERNLIB releases

One of the points of discussion in the CERNLIB Users Meeting was the proposal to separate the actual release from the publication of the CERN Computer Newsletter. Also, the fact that in the last one and a half years we have skipped some of the CNLs without a corresponding release of the Library, brings us to the conclusion that the expectation to have one software upgrade per CNL is not realistic.

The version stamping, associated till now to the CNL issue number, becomes therefore confusing. As of next year we will start the stamping of the CERNLIB software upgrades with the year and the upgrade level, in the format vyyc:

```
v92a      First release on 1992
v92b      2nd  release on 1992
...
```

This will allow us to immediately identify the date of a given release received by the users. UNIX platforms at CERN will show up the installed version level in the directory name /cern/vyyc. The actual PRO-NEW-OLD implementation will be resolved through symbolic links to the proper release, as up to now.

M.Marquina /CERN-CN

7.3 Change of format of CERN Program Library source files

Following the announcement made in CNL 203 about the transition from PATCHY binary to CARD PAM files, we are finally making the move, taking into account the following points:

- PATCHY itself is NOT affected. It continues behaving as expected for both binary and CARD PAM files.
- the proposal on the format change is obviously affecting ONLY CERNLIB. It does not force you to perform a similar operation with your own source files; it just requires slight changes in those CRADles making use of the CERNLIB source files.

We have compiled for your information several tips concerning the transition of CERNLIB to CAR format. We hope you may find them useful if you intend to do the same.

By moving to CARD PAM files:

- we will share the sources across systems via NFS;
- we will be able to move transparently (with some exceptions which require still the CETA format) the sources through standard ftp.

This will greatly increase the reliability and the consistency of the sources when moving across different systems. The complete pam-set is available in:

/asis/share/cern/pro/src/car	on the asis system (for Unix platforms)
/cern/pro/src/car	on VM/CMS (it is a minidisk nickname)
CERN:[PRO.SRC.CAR]	on Vax/VMs

File extensions

We would like to have the same file extensions on all platforms (.CAR, .CET, .CRA) to be able to use PATCHY on NFS-mounted sources. Therefore, we have made a minor change to PATCHY and all its interfaces on VM, consisting essentially of changing the default extension from CARDS to CAR. For backwards compatibility reasons, the PATCHY MODULEs will check first if a file with filetype CARDS is available (in which case it will be taken). Otherwise a file with filetype CAR will be searched. The final choice will be reported in the PATCHY output.

Examples

PATCHY will attach PAM files on all systems as follows

+PAM,11,T=A.paw	will attach the binary file paw.pam
+PAM,11,T=C,A.paw	" CARD file paw.car
+PAM,11,T=C,A.paw.cards	CARD file paw.cards

The file naming applies to all systems except VM/CMS (where the dot separating filename and extension should be removed, and the default extensions will be first CARDS and secondly CAR)

Additional remarks

NFS between ASCII machines is perfectly good. NFS between an EBCDIC machine and ASCII one is fine as long as you do not have in your sources non-standard characters (for instance the TAB). Fortran or C source code is fine; assembly language or scripts (for example makefiles) may not be - in all the Program Library files only one is affected. Please notice that such sources may **not** be moved transparently through ftp between EBCDIC and ASCII machines. A CETA file needs to be built and exported.

The RETURN mechanism does not work properly when using CAR files:

Example with binary PAMs

```
+PAM,11,R=GCDES,T=H,A.geant
+PAM,12,    T=C,A.gcorr
+PAM,11,T=R.
```

Example with CAR PAMs

```
+PAM,11,R=GCDES,T=H,C,A.geant
+PAM,12,    T=C,A.gcorr
+PAM,11,T=C,R.
```

In this specific example, it was enough NOT to hold the source file to have it working, because the operation was meant to read at the beginning only the CDEs:

```
+PAM,11,R=GCDES,T=C,A.geant
+PAM,12,    T=C,A.gcorr
+PAM,11,T=C,R.
```

You should check when extracting sources in this way that you are not affected by the usage of CAR files. In case you are, you might either keep the binary PAM file, or perhaps add a DUMMY PATCH after the one you want to RETURN (the HOLD operation on CAR files skips one PATCH too many)

M.Marquina /CERN-CN

7.4 Reorganization of the CERNLIB file tree

The coming maintenance of the CERN Program Library source files in PATCHY CARD format has triggered as well a reorganization of the directory tree. The main reasons are:

- The fact that CAR files and the corresponding PATCHY instructions to handle them (the CRAdles) should be bundled and distributed together. Corrections and the set of appropriate flags are as important as the original sources in order to achieve a successful source extraction.
- PATCHY, CMZ and the extracted FORTRAN, C or assembly files should be considered different images of the same entity: the program sources.

For this reason we have reorganized the directories taking the following steps:

1. creation of the source directory with the following structure:

Description	UNIX	Vax/VMS	VM/CMS
Source tree	\$CERN_ROOT/src	CERN_ROOT:[SRC]	-
CAR+CRA	src/car	[.SRC.CAR]	/cern/ver/src/car
CMZ	src/cmz	[.SRC.CMZ]	/cern/ver/src/cmz
C, Fortran... extraction	src/cfs	[.SRC.CFS]	-
auxiliaries	-	[.SRC.COM]	/cern/ver/src/com

For details on VM, see the article "New access to CERN Program Library on VM" elsewhere in this issue.

2. In the case of Vax/VMS, the directory [SRC] existed already, and has been renamed to [SRC.CFS]. The directories [CRA] and [PAM] disappear, being merged into [SRC.CAR].

M.Marquina /CERN-CN

7.5 New access to CERN Program Library on VM

In addition to the traditional symbolic pointers set to link and access the CERN Program Library minidisks on VM (via the GIME command), we have introduced a parallel set which imitates the UNIX syntax and may be helpful for across-system consistency; the way to use any of these nicknames is by typing:

```
GIME nickname
```

The table below summarizes both sets and the corresponding minidisk contents:

VM minidisk	VM nickname	UNIX nickname	Contents
CERNLIB 3x0	verCRA	-	CRAdles+source extraction auxiliaries
CERNLIB 3x1	verPAMS	-	binary PAM files
CERNLIB 3x2	verTEXT	/cern/ver/obj	compiled code (TEXT files)
CERNLIB 3x3	verLIBS	/cern/ver/lib	ready-made TXTLIBs+MODULEs
CERNLIB 3x4	verCMZ	/cern/ver/src/cmz	CMZ source files
CERNLIB 3x0	-	/cern/ver/src/com	source extraction auxiliaries
CERNLIB 3x1	-	/cern/ver/src/car	CAR+CRA files

where *ver* is the version level of the Library being used, i.e., *pro*, *new* or *old* (and with *cern* being equivalent to *pro* in the VM case; for instance CERNPAMS=PROPAMS). *x*=0,1,2 for *old*, *pro* and *new* respectively.

Due to the file reorganization, we have not assigned a UNIX equivalent to the first two VM entries; we are setting instead two pointers reflecting the coming contents of these minidisks.

M.Marquina /CERN-CN

7.6 Optimization level OPT(3) on the VM version of CERNLIB

The next release of the CERN Program Library on VM/CMS will be made with a higher optimization level, OPT(3). In a joint study funded by IBM, and aimed to study performance improvement of CERNLIB on VM/CMS and IBM RISC 6000 machines, it has been found that level 3, already the default in many other VM sites, does help slightly in generating more performant code, while not affecting to the numerical results compared to the current default, OPT(2).

The only exception for which we keep the code compiled at level 2 is in cases like the following:

```
DIMENSION C(10)
CONST=0.
B=5.
DO 5 N=1,10
  IF(CONST.NE.0) C(I)=B/CONST
  PRINT *,C(I)
5 CONTINUE
STOP
END
```

In DO-loops where a division by a constant is made, the OPT(3) code evaluates the inverse of the constant (1/CONST) outside, saves it on a register and then performs the product inside the DO-loop. Unfortunately the compiler does not verify internally if CONST is not zero; so a zero value will provoke a "DIVISION BY ZERO" error at run-time (once at the beginning of the loop); we find this not acceptable for those users protecting their code adequately, and therefore will use OPT(2) in those cases. Please notice that the program will give still the same numerical results regardless of the optimization level.

If, however, you suspect problems coming from this upgrade which directly relate to CERNLIB software (and not to your own), please contact the CERN Program Library Office (CERNLIB@CERNVM).

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7.7 Z314 CFORTRAN: Interfacing C and FORTRAN

CFORTRAN provides tools to help create an easy-to-use and machine independent interface between C and FORTRAN routines and global data.

FORTRAN routines and global data can now be used as easily from C as they can from FORTRAN. Similarly FORTRAN programmers can now use C routines and global data just as easily as FORTRAN routines and data. In short, even without a deep understanding of the 'foreign' language, programmers can trivially call routines and use data from the 'foreign' language.

The interface which gives programmers the above freedoms is easily created. The source code for the 'foreign' routines and data is not required; a description of the global data and of the routines' arguments and return values is sufficient. The interface can be created with little or no knowledge of any machine/OS/compiler/linker subtleties.

The description of the routines and data is given to C preprocessor directives, defined in cfortran.h, which generate the code needed for the interface. Note that there are no special preprocessors or other programs involved in creating the interface.

The complete CFORTRAN package consists of four files: cfortran.doc (this introduction), the engine in cfortran.h, examples in cfortest.c and cfortex.for. The single cfortran.h file currently supports the following machines/OS:

VAX VMS, DECstation, Silicon Graphics, IBM RS/6000, Sun, CRAY, Apollo, VAX Ultrix vcc with f2c.

Please refer to the corresponding short writeup for a complete description of the interface. The code will be available with the next release of the CERN Program Library.

B.Burow/University of Toronto

7.8 Obsolete subprograms

The following packages are declared obsolete and scheduled for eventual deletion:

Code	Package	Library	Last revision	Obsoleted in	Notes
F120	DIRCOS	GENLIB	1969	CNL 204	Obsolete
K402	WEOR	KERNLIB	1984	CNL 204	Obsolete, CDC only
K510	RETRNF	KERNLIB	1980	CNL 204	Obsolete, CDC only
K511	DETACH	KERNLIB	1981	CNL 204	Obsolete, CDC only
L420	PATHIS	PGMLIB	1985	CNL 204	Obsolete
M219	CVT360	KERNLIB	1978	CNL 204	Obsolete, CDC only
M224	SETFMT	KERNLIB	1971	CNL 204	Obsolete
M250	FLOARG	KERNLIB	1984	CNL 204	Obsolete
M251	UFLINT	KERNLIB	1984	CNL 204	Obsolete
M415	UHOLLR	KERNLIB	1976	CNL 204	Obsolete
M416	UBLOW1	KERNLIB	1984	CNL 204	Obsolete, IBM and CDC only
M425	LXBITS	KERNLIB	1984	CNL 204	Obsolete, CDC only
M430	FTO360	KERNLIB	1984	CNL 204	Obsolete, CDC only
M435	CHMOVE	GENLIB	1978	CNL 204	Obsolete
M440	FIO999	KERNLIB	1980	CNL 204	Obsolete, IBM FORTRAN 4 only
M504	GETSST	GENLIB	1986	CNL 204	Obsolete, use M432 CHPACK
M505	LOCHAR	GENLIB	1980	CNL 204	Obsolete, use M432 CHPACK
M506	IUMODE	KERNLIB	1989	CNL 204	Obsolete
M507	LENOCC	KERNLIB	1984	CNL 204	Obsolete
N106	TRACEQR	KERNLIB	1978	CNL 204	Obsolete, CDC only
N202	DUMRZL	KERNLIB	1978	CNL 204	Obsolete, CDC only
X602	PRIPAR	GENLIB	1986	CNL 204	Obsolete
Z029	NOARG	KERNLIB	1984	CNL 204	Obsolete
Z033	LINEPG	KERNLIB	1983	CNL 204	Obsolete, CERN IBM only
Z038	REPINIT	KERNLIB	1984	CNL 204	Obsolete, CDC only
Z039	REPFL	KERNLIB	1984	CNL 204	Obsolete, CDC only
Z200	XBAS	KERNLIB	1984	CNL 204	Obsolete, CDC FORTRAN 4 only
Z202	IXFPZL	KERNLIB	1976	CNL 204	Obsolete, CDC only
Z260	EQUBUF	KERNLIB	1980	CNL 204	Obsolete, CDC only
Z261	KFILE	KERNLIB	1984	CNL 204	Obsolete, CDC only

CERN Program Library Office /CN-AS

8. Writeups on CERNVM and elsewhere

The command XFIND gives you access to on-line documentation called WRITEUPS on CERNVM, VXCERN and CERNVAX. To find a WRITEUP you could use XFIND as follows:

- XFIND writeupname
- XFIND WRITEUP writeupname
- XFIND WRITEUP keyword1 keyword2 ...

Depending on the platform you may use pf keys (on CERNVM) or reference numbers (VXCERN, CERNVAX) to view the WRITEUP. Access on other platforms is provided via W3 (see 2, "World-Wide Web: On-line information for everyone" on page 5).

Accessing the text of the WRITEUP is not always possible, but you will be informed where to obtain a paper copy from. **These cases are unfortunate, but not all authors consider it worth spending some more effort to produce a machine-readable version in addition to the paper version. If you would like to comment on this problem please write an email to bernd@cernvm.**

WRITEUP modifications during the last three months (type XFIND WRITEUP MODS to get this list):

Writeups updated regularly:

(weekly)	PREPRINT	Most recent preprints and reports
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Added:

91.09.30	BOURNINT	Intermediate Bourne Shell Programming
91.09.17	CSPACK	Client-server Computing package

Modified

91.11.04	ACB	Terminal Access from home using the ACB service
91.09.17	FATMEN	A distributed file and tape management system

Taken out:

none