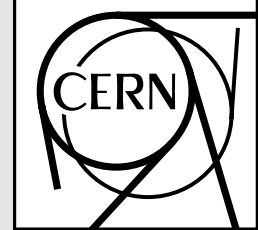


# CERN COMPUTER NEWSLETTER



CERN - IT Division  
CH-1211 Geneve 23  
SWITZERLAND

January – April 2000

CERN-CNLS-2000-001  
Vol. XXXIV, issue no 1

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# Editorial Information

## Editorial Board

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*The opinions expressed in this newsletter are those of the contributors and are not necessarily those of the CERN Management. The Editors reserve the right to edit or omit articles, or hold-over copy due to lack of space.*

## General Information

**The CNL Web home page is at URL:** <http://cern.ch/ref/cnl>

The policy is to have approximatively 4 CNL editions per year (Spring, before and after the Summer, and before Christmas shutdown).

Foreseen deadlines for 2000 are (exceptionally there are only three editions planned this year):

Issue number	Deadline
Summer edition	Friday 28th of July 2000.
Christmas edition	Friday 17th of November 2000.

## Information for contributors

The CNL is processed using XML technology and templates. Article marked up in HTML are preferred, but plain text is also acceptable. A Web form to be used for article submission (contributions) is provided in the CNL "Help&Info" page, or directly at the URL <http://cern.ch/ref/cnl/submit>.

## Distribution

- An electronic mail is sent to the "CNL Announcement Distribution List" (<http://cern.ch/ref/cnl/help/announcement>) as soon as a new issue of the CNL is available on the Web.
- A paper version is sent to the users who have subscribed to the "CNL Paper Version Registration" list: <http://cern.ch/ref/cnl/help/register>.

All *subscriptions to our distribution lists* can be made through the CNL "Help&Info" page, at URL <http://cern.ch/ref/cnl/help>. Note that you can also cancel your subscription in either case by filling in the appropriate form.

The compressed *PostScript file* containing the complete printable version of this CNL is available via the Web from the *anonymous ftp* site <ftp://asisftp.cern.ch/cnl/2000-001/main.ps.gz>. It is possible that to optimize typesetting the printable version differs slightly from the master HTML version. In any case the HTML version on the Web must be taken as the reference.

## If you need Help

### FRONT LINE Services

	Phone	Location	E-mail Address
<b>Computing Help Desk</b>	78888	513/R-052	Helpdesk@cern.ch
Opening hours: 8:30–17:30 (Monday–Friday) Satellite Helpdesk@B40 (entrance): Mondays, Wednesdays and Fridays 10:00-12:00			
<b>Administrative Applications (EDH, BHT, etc.)</b>	79933	5/R-021	Ais.Support@cern.ch
Opening hours: 8.30–12:30 and 13:30–17:30			
<b>Central Computer Operators (24/24 hours on call)</b>	75011	513/R-049	Computer.Operations@cern.ch
<b>General Network Operational Problems</b>	74927		Network.Support@cern.ch

### Contacts at CERN

The “Computing Help Desk” is the proposed central point for help on all computer-related issues. Following is a non-exhaustive list of individual people responsible or assigned to a given service. If you do not find a pointer to the service you need, then contact the “Computing Help Desk” for submitting your request. For all the services listed below please use the generic electronic mail address whenever possible. These mailboxes will be read even when the usual specialist is absent. It is helpful to use relevant keywords in the subject field of your message. Contact specialists directly only for very urgent cases or for very general consultations.

Note that in the *Web version* of this page the “Service Definition” can be a *link* to the Welcome page of this service: we invite you to read carefully all the information given in that page before submitting a question/problem.

### USER SUPPORT

Service Definition	Name	E-mail Address
User Relations and Service Manager	M. Marquina	user.relations@cern.ch
Help Desk Manager	R. Woolnough	user.relations@cern.ch
User Registration	M.C. Perler	user.registration@cern.ch
Accounting Service	A. Koppanyi	user.registration@cern.ch
Computing BookShop	J. Megies	bookshop@cern.ch

### CENTRAL COMPUTERS

#### Public Services (PLUS & interactive services and CSF/PCSF Simulation farms)

See the complete and up-to-date list of contacts at URL:

<http://http://wwwinfo.cern.ch/pdp/is/main/experiments.html#PUBSERV>

SHIFT (Reconstruction & Analysis Clusters)	T. Smith	tim.smith@cern.ch
CORE Operations	M. Vergari	mario.vergari@cern.ch
Work Group Servers	T. Smith	tim.smith@cern.ch

#### Support for Experiments

See the complete and up-to-date list of contacts at URL :

<http://http://wwwinfo.cern.ch/pdp/is/main/experiments.html>

Distributed File Services (incl. AFS)		afs.support@cern.ch
NAP and Parallel Applications	E. Mcintosh	eric.mcintosh@cern.ch
Central VMS Services		vxcern.support@cern.ch
Tape Allocations and Vault Space	R. Minchin	richard.minchin@cern.ch
Stager, tapes and TMS support		tape.support@cern.ch
Central Data Recording (CDR)		cdr.support@cern.ch
CASTOR HSM software		castor-support@listbox.cern.ch
HPSS Services		Hpss.Support@cern.ch
Oracle Databases	N. Segura	oracle.support@cern.ch
CERN-wide Print Service	J.L. Vosdey	printer.support@cern.ch

## DESKTOP COMPUTING

<b>Service Definition</b>	<b>Name</b>	<b>E-mail Address</b>
NICE (Networked PCs)	F. Hemmer	nice.support@cern.ch
PC Desktop (Repairs and sales)	C. Ball	pc.admin@cern.ch
MACintosh Support	F. Ovet	mac.support@cern.ch
MACintosh Sales	W. Hug	waltraud.hug@cern.ch
X Terminals Support		xterminal.support@cern.ch
ASIS Support		asis.support@cern.ch

### Operating System Support

<b>Service Definition</b>	<b>E-mail Address</b>
HP 700 s/w:	hp.support@cern.ch
SUN s/w:	sun.support@cern.ch
Solaris s/w:	solaris.support@cern.ch
RS/6000 s/w:	aix.support@cern.ch
Digital Unix s/w:	dunix.support@cern.ch
Linux:	linux.support@cern.ch

## SCIENTIFIC APPLICATIONS & SOFTWARE ENGINEERING

<b>Service Definition</b>	<b>Name</b>	<b>E-mail Address</b>
PaRC Service (Engineering Cluster)		parc.support@cern.ch
CERN Program Library	L. Besson	heplib.support@cern.ch
PAW Support	O. Couet	paw.support@cern.ch
LHC++ and GEANT		heplib.support@cern.ch
Objectivity DB Service		objectivity.support@cern.ch
Software Development Tools		sdt.support@cern.ch
Adobe FrameMaker		docsys.support@cern.ch

## COMPUTING FOR ENGINEERING

All comments, problem reports, and suggestions can be reported via the "Feedback" Web form accessible from the "IT-CE Home page" (<http://wwwinfo.cern.ch/ce>, link "Feedback" on the left).

## COMMUNICATIONS AND NETWORKS

A complete and up-to-date list of contacts is at the "Communications Systems Group" Home page at the URL: <http://network.cern.ch>

## INTERNET APPLICATIONS

<b>Service Definition</b>	<b>Name</b>	<b>E-mail Address</b>
Mail support		mail.support@cern.ch
Web Services		www.support@cern.ch

## COMPUTER SECURITY

Computer Security Information		computer.security@cern.ch
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### Other Newsletters

*Computing for Engineers* (<http://wwwinfo.cern.ch/ce/newsletter/newsletter.html>)

Editor: L.Pregernig [ludwig.pregernig@cern.ch](mailto:ludwig.pregernig@cern.ch)

## Some Useful Web Pages

TvScreen (Systems Status)	<a href="http://tvscreen.cern.ch">http://tvscreen.cern.ch</a>
Network Connection Request Form	<a href="http://network.cern.ch/register">http://network.cern.ch/register</a>
Remote/Mobile Computing	<a href="http://network.cern.ch/mobile">http://network.cern.ch/mobile</a>
User-Oriented Catalogue	<a href="http://cern.ch/consult">http://cern.ch/consult</a>
User-Oriented Service Directory (*)	<a href="http://cern.ch/services">http://cern.ch/services</a>
User Support Reference Cards	<a href="http://cern.ch/consult/writeups/S/RefCatList.html">http://cern.ch/consult/writeups/S/RefCatList.html</a>
FrameMaker Support	<a href="http://cern.ch/frameaker">http://cern.ch/frameaker</a>
Text Processing related documentation	<a href="http://wwwinfo.cern.ch/asdoc/textproc.html">http://wwwinfo.cern.ch/asdoc/textproc.html</a>
IT Home Page	<a href="http://wwwinfo.cern.ch/">http://wwwinfo.cern.ch/</a>
User Support	<a href="http://wwwinfo.cern.ch/support">http://wwwinfo.cern.ch/support</a>
NICE Home Page	<a href="http://nicewww.cern.ch/">http://nicewww.cern.ch/</a>
PC Support Service Page	<a href="http://pcwww.cern.ch/">http://pcwww.cern.ch/</a>
PC Farms Homepage	<a href="http://wwwinfo.cern.ch/pdp/pc/">http://wwwinfo.cern.ch/pdp/pc/</a>
UNIX Workstation and X Terminals Support	<a href="http://wwwinfo.cern.ch/pdp/ose/support.html">http://wwwinfo.cern.ch/pdp/ose/support.html</a>
CASTOR Query Report	<a href="http://http://wwwinfo.cern.ch/htbin/pdp/castor_report.pl">http://http://wwwinfo.cern.ch/htbin/pdp/castor_report.pl</a>
Software Development Tools	<a href="http://cern.ch/sdt">http://cern.ch/sdt</a>
Computing Support for Engineering	<a href="http://wwwinfo.cern.ch/ce">http://wwwinfo.cern.ch/ce</a>
Joint Controls Project (LHC Experiments)	<a href="http://itcowww.cern.ch/ITC0/jcop/">http://itcowww.cern.ch/ITC0/jcop/</a>
Web Services	<a href="http://cern.ch/WebServices">http://cern.ch/WebServices</a>

(\*) Useful service entry points at this page include the Computing Helpdesk, User Registration, Computing Bookshop, Mail, Netscape, Listbox, etc.

## Seminars and Presentations

Designation	Usual Location	Organizer(s)	Tel.	E-mail Address
Computing Colloquia	Auditorium / bldg 500	S. Jarp, IT	74944	<a href="mailto:sverre.jarp@cern.ch">sverre.jarp@cern.ch</a>
Computing Seminars	IT Auditorium 31/3-005	G. Folger, IT	79778	<a href="mailto:computing.seminar@cern.ch">computing.seminar@cern.ch</a>
Technical Presentations	IT Auditorium 31/3-005	S. Cannon, IT	75036	<a href="mailto:stanley.cannon@cern.ch">stanley.cannon@cern.ch</a>
Informatics Tutorials	IT Auditorium 31/3-005	M. Marquina, R. Ramos, IT		<a href="mailto:it-training.service@cern.ch">it-training.service@cern.ch</a>

## Computer Resources Allocation and Divisional Contacts

### Computer Resources Allocation Committee (COCOTIME):

Chairman: H. Hoffmann/DG 60/5-006 75458 [Hans.Falk.Hoffmann@cern.ch](mailto:Hans.Falk.Hoffmann@cern.ch)

Secretary: H. Meinhard/EP 1/1-028 76031 [Helge.Meinhard@cern.ch](mailto:Helge.Meinhard@cern.ch)

### Divisional Representatives for Computing

For questions about new registration and resource allocation please ask the contact person for your division.

Div. Repres.	Div. Repres.	Div. Repres.	Div. Repres.	Div. Repres.
AS	AT P. Heymans	IT A. Koppanyi	ETT M. Draper	FI C. Saitta
EST Ch. Delamare	HR M. Buttner	EP A. Bjorkebo	PS J. Riche	SL M. Bornand
ST E. Sanchez-Corral	TH E. Gianolio	TIS G.R. Stevenson		

### NICE Divisional Representatives

See the URL <http://nicewww.cern.ch/homepage/nicerepr.htm>

### Divisional Representatives for Networking

For questions about new installations, testing, local coordination, etc., please ask the contact person for your division (or, if you are an experimental physicist, the networking contact person within your experimental group).

The complete and up-to-date list of contacts is given in the "Communications Systems Group" Home page, at the URL: <http://network.cern.ch>.

# Editorial

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*.This site in under construction!*

*You are probably familiar with statements of this type. They are used to signal ongoing work, and a wish (and hope) that in the end all will look nicer and more appealing. And, of course, that the results have been worth the wait.*

*This is the challenge we have put in front of us this year, taking as an excuse perhaps this general "renovation" feeling that we have started a new millennium; not completely true though, Stanley Kubrick knew better.*

*We can affirm with undisguised pride that the CERN Computer Newsletter has become a sort of historical institution by itself. Born in February 1966 and with almost 240 issues on its shoulders, it has witnessed all the different stages of Computing at CERN. It might be quite interesting to look backwards and review, through the different issues, how computing has been evolving and has been used by our user community. At the start of the "real" new millennium, we will undertake such historical exercise on the occasion of the CNL's 35th anniversary.*

*Meanwhile we have started to address a facelift of the CNL. Some changes may be considered rather cosmetic or just a matter of taste; but overall we aim to make more attractive this comprehensive review of what is going on at CERN in the computing area. A few of the ideas now in seed state are:*

- give more weight to the "educational" part of the issues;*
- stimulate user feedback on computing services and have it expressed in this forum (a possible return of the "veteran" VOX POPULI section; but this of course can only happen if we receive feedback);*
- using pictures to illustrate certain articles.*

*We are of course willing to take on board all your suggestions. If you send them to us (at [CNL.Editor@cern.ch](mailto:CNL.Editor@cern.ch)) we will certainly take them into account in future issues.*

*Last, as we started. We indeed hope that after this revamping phase, your wait is worth the end product we deliver to you.*

*Miguel Marquina,  
on behalf of the CNL Editorial Board*

# 1. Physics Computing

*Functional description of all the Central Public Services, specifically oriented to use by the Research sector, either for interactive (central and CPU intensive) or batch processing.*

## 1.1 ALICE Data Challenge 2000

*Charles Curran, IT/PDP*

### Abstract

*ALICE, in collaboration with IT, will attempt to simulate their data processing chain from the DAQ equipment to the central tape libraries, running at about 100 MBytes/s for a period of a week. Both CERN's CASTOR software and HPSS will be tested. This is an important step towards their final aim of reliable data recording at about 1000 MBytes/s, which they will need during LHC heavy ion runs.*

Some time ago the ALICE collaboration decided to start a project in collaboration with IT to try to use a commercial HSM as a means of storing experimental data at rates approaching those that they will require when LHC starts up. While most LHC experiments demand only a "modest" data rate of about 100 MBytes/s, ALICE will require to sustain a rate of about 1000 MBytes/s during heavy ion runs. At that time, the "commercial" candidate was the High Performance Storage System, HPSS, which was (and still is) an IBM-led consortium. You can see more about HPSS at URL <http://wwwinfo.cern.ch/pdp/hpss>. HPSS is a very large system, initially limited to IBM hardware, but being extended to COMPAQ (DEC) hosts and Redwood tape drives in a joint project between COMPAQ and CERN, and now also being ported to Sun platforms. The aim of HPSS is to be scalable, up to the size needed for LHC experiments, and to make maximum use of the speed of devices integrated into it. This is, as you might imagine, very important, if the cost of the data handling systems is to be acceptable within CERN's budget.

The initial aim of the project was to sustain about 100 MBytes/s for a period of at least a week, using the entire chain from ALICE's DAQ system down to the central robotic tape library. A first attempt was made last year to store data into HPSS at up to 40 MBytes/s. This soon revealed that we had insufficient disk to sustain such a transfer rate (normally, data sent to HPSS is first written to HPSS-owned disk, and subsequently migrated from disk to tape). It also revealed unexpected hardware problems (since resolved) in the IBM hosts when attempting to sustain a high data rate to tape for several days. Difficulties were also seen with the COMPAQ Alpha 4100 SMP hosts, where performance was lower than expected. These problems have also been corrected. Nevertheless, a fairly respectable 25 MBytes/s was sustained when the tape writing step was suppressed. This year's tests are expected to improve greatly on this rate.

Since the start of this project, a development of the existing CERN stager software has begun: CASTOR. You can see more about CASTOR at the URL <http://wwwinfo.cern.ch/pdp/castor>.

[cern.ch/pdp/castor](http://wwwinfo.cern.ch/pdp/castor). CASTOR will provide some of the facilities of HPSS, but is a smaller system and can be more readily adapted to CERN's requirements. It is also designed to extract the maximum performance from attached devices, and to scale to the requirements of LHC. Its development has gone ahead very fast, and it has performed very well in extensive pre-production tests. Therefore, it will also be tried out in the ALICE Data Challenge.

The tests started on March 23rd using HPSS, and this first phase ended on Thursday 6th April. The HPSS test took some time to arrange, as tape and disk "movers" needed to be configured into a DCE cell, and the cartridges to be used needed to be imported into HPSS. Unfortunately, all the borrowed Redwood tape drives (16) had to come from the 24 normally available units in the Computer Room silo library, which inevitably impacted the normal user service, as the only possible hosts were COMPAQ 4100 systems installed next to this library. It was hoped to reach about 100 Mbytes/s for a 1 week period. This part of the Data Challenge ended on Thursday 6th April. Although the total data transferred into HPSS was indeed much less than was hoped for, due to unexpected software, hardware and network problems, the second phase using CASTOR should benefit from the workarounds and solutions found so far.

With CASTOR, the Data Challenge again hoped to reach about 100 MBytes/s for a 1 week period. If this attempt goes well, we may try for a short period to go above 100 MBytes/s. The CASTOR test (just like the HPSS test) will use equipment normally in "public" use; in this case 11 Redwood tape units and several hundred Redwood cartridges which will be rewritten as required. These Redwood units in this case can come from both the Computer Room and the Tape Vault silo libraries, and the normal user service will not be affected as much as in the case of the HPSS test. We will be again be using borrowed PC, disks, and about 1000 as yet unused Redwood cartridges. We are most grateful to those who have lent these resources, without which these tests would not be possible.

All the tests will end before the start of CERN's accelerators for 2000. Despite our efforts to reduce the impact of these tests on "normal use" as far as possible, users will see longer waits for data access due to the temporary reduction in unit numbers available to them.

We hope that you will not experience too much inconvenience during these tests, but we feel that they are really necessary, as such sustained data rates have already shown unsuspected problems and more may be expected to show

themselves in the second half of the test. The knowledge gained will help us to plan the systems that will be required when LHC starts on as realistic a foundation as possible.

Another article at a later date will describe the results of this Data Challenge. If all goes well, further tests will be carried out. It is hoped that the data rate achieved might be doubled every year, thus rapidly approaching the final target of about

1000 MBytes/s. This will definitely require more equipment than we have available now, or different equipment!

**About the author(s):** *Charles works in the IT/PDP group. He is responsible for their efforts to automate and keep up-to-date CERN's central tape systems, and get them ready to support LHC's challenging data rates.*

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## 2. Desktop Computing

*It includes CERN desktop environment centrally provided on UNIX and PCs (NICE95 and NICE-NT), desktop software strategy, etc.*

### 2.1 Central Computing Helpdesk - Outlines and Strategy

*Nicole Crémel, Miguel Marquina and Roger Woolnough, IT/User Support*

#### Abstract

*Today the model of computing assistance is no longer the one of few years ago. Members of our user community may be confused by the subtle but unavoidable changes which make a Helpdesk and User Support in general remain efficient.*

*This article outlines a brief history and the present day working strategy of the Central Computing Helpdesk. It seems that many members of the user community have a misconception of the Helpdesk model used at CERN today, and the present article should clarify any doubts on the working environment of the Desk.*

#### Helpdesk assistance in perspective

The idea of *User-Support* in computing (first-level assistance) has been at CERN since the computers were first introduced. The service has been named by a range of well known acronyms such as the *PEO (Program Enquiry Office)*, the *UCO (User Consultancy Office)*, etc.

The original conception of the Helpdesk was that of a first level support entry point, where a skilled computing “generalist” (CERN staff) was available on shift to answer technical questions and ready to troubleshoot/debug difficult programming problems. This conception worked well in the days of mainframes, a contained number of operating systems (CDC/NOS-BE, IBM/MVS, IBM/VM and VAX/VMS) and Fortran as a unique programming language.

The rundown of CERNVM in June 1996 was a milestone. A new computing paradigm (that of Distributed Computing) was already taking over. The scientific user community, receiving till then a well focused computing support and service (one computer, one operating system, one single point of failure) migrated to distributed UNIX clusters in order to cope with the ever-increasing expectations for further computing capacity. The computing environment became understandably more complex; so did the support to users.

Today “casual” CERN computing users pose questions and are confronted with difficulties in using mail clients, Web browsers and other “productivity” applications; on PCs, Macintosh as well as the central Unix clusters. Add to that the “experienced” user who uses many programming languages, C, C++, Fortran, Java, etc., and a wide range of platforms (HP, Sun, IBM, Linux, Windows 95 and NT, etc.).

You may call it a *support nightmare*.

#### Paradigms also apply to Helpdesking

The contrast between the relative simplicity of the basic support model in the 80's and now is worth mentioning. First and foremost we have many more questions on many more topics. In addition the probability for *any* operational hardware failure likely affect a fraction of the user community is by nature higher. As are the expectations users have of computer stability to confront the current computational challenges. With this complex and also constantly changing environment a new type of helpdesk model has to exist.

First of all it has become increasingly important to reception all demands for intervention rather than concentrating in solving user problems one by one. The perception otherwise is of a support centre which “*is never available when it is really needed*”. The calls are dispatched asynchronously to the area where it is most efficient to treat the problem.

Second, CERN has been analyzing areas which could be out-sourced in a situation of shrinking resources. Operational activities are more suitable to be run via service contracts, where the quality of a rota system no longer relies as much on the particular skills of each individual, but rather on the integration of the members in a solid team.

In 1998 CERN decided on an out-sourced Computing Helpdesk and as of January 1999 a consortium of WM-data and DCS has been running the Computing Helpdesk in building 513 (see the next article on “*Service Handbook for the Desktop Support Contract*”).

#### One desk, one number, one e-mail

Already in October 1998 a new (easy-to-remember) phone number (78888) was introduced, in order to facilitate requests for interventions.

In January this year the desk has been moved to join up with the Operations staff in an effort to help communications in cases of hardware failure and optimise the space available. The move was prompted initially by the fact that the two staff were rather isolated and relied on information from others regarding hardware and software problems. Being next to the operators gives the Helpdesk staff a chance to interact and help each other trouble-shoot problems via user feedback. Another major factor for the move was to have one unique window for the user-interface, hence clarifying the entry point for all user problems in the Computer Center (building 513).

The helpdesk now works on a tiered system. Two persons

staff the desk during prime shift (8:30 to 17:30, Monday to Friday). *Outside these hours calls are routed to the computer operator who will try to answer questions on a best effort basis or pass these questions on to the helpdesk proper.* The members of staff on duty receive requests via phone and e-mails as well as visits to the desk in building 513; they have a large knowledge database at their disposal as well as many tools to help with their work and try to answer as many questions as they can immediately.

Should the staff on duty not be able to reply to the question, or that it requires the assistance of a person directly on the machine, the problem is "escalated" to another level. This support level might be another member of the out-sourced group for "local support" or it might go to a second level of support within IT. Bearing this in mind, remember that when you report a problem to the helpdesk it is imperative to *give them as much information as possible* relevant to the problem, as it is not necessarily the person to whom you report the problem who will supply the answer. If your problem is escalated you will receive an informative message within 2 business hours. This message should contain a reference number (a so-called trouble "ticket"); you should note this number and quote it on all subsequent requests for information about your request.

Remember also that the Helpdesk "hosts" support lines to filter simple problems; hence even though your problem might be sent to Mail.Support@cern.ch it will pass through the Helpdesk anyhow, such that straightforward problems are answered immediately. With this in mind the goal is to reduce these "support" lines to a minimum such that they disappear and all problems are then routed centrally to and from the Helpdesk.

Another recent innovation at the helpdesk is the use of a problem report tracking system. The commercial system chosen by the Laboratory is the *Remedy Action Request* system and is used widely in IT and other divisions to track problems and provides statistical information. In the near future all mail received by the helpdesk will be automatically

channelled into this system so that no mail should ever be lost.

## Where and how do you get help today?

The "Central Computing Helpdesk" operates during weekdays from 8.30-17.30 and users may call the central number **78888**.

Or they may prefer to send electronic mail to Helpdesk@cern.ch

We invite users to retain this information wherever this might be relevant (e.g., near desktop computers) as it had been announced (with a pre-printed note) in a recent *Weekly Bulletin*.

For your information, the Helpdesk also receptions at present the following support lines: Mail.Support@cern.ch, Nice.Support@cern.ch, WWW.Support@cern.ch (or Web.Support@cern.ch), Netscape.Support@cern.ch, EDMS.Support@cern.ch, CDD.Support@cern.ch, and more will soon be added.

We encourage all users to take advantage of the Central Computing Helpdesk, but also of the public knowledge database managed by the *User Support* group in IT, that is available at the URL <http://cern.ch/consult/xfind>, and where you might even find the answer to your question before sending it! Note that a small fraction of this knowledge database (from the *Question & Answer* segment) is already displayed in all CNL issues, in the regular section *Questions and Answers from the Computing Helpdesk*. The complete list of *Question & Answer* is available at the URL <http://cern.ch/consult/qas> with a full text search based on keyword(s) input. There are regularly reviewed and user feedback on specific "qas" is welcome (because it is not precise enough, maybe incorrect or even out-of-date).

**About the author(s):** *Miguel Marquina is the Head of the User Support and Training unit in IT. Nicole Crémel and Roger Woolnough are working in this unit and are the CERN responsible for the supervision of operations of the Computing Helpdesk.*

## 2.2 Service Handbook for the Desktop Support Contract with IT Division

*Mattias Larsson, WM-data*

The Desktop Support Contract has been running since January 1999 to offer help to the users at CERN with problems that occur with their desktop computers. The contract is run conjointly by the Swedish company *WM-data* and the Swiss company *DCS*.

The contract is comprised of the *Computing Helpdesk*, *General Service* for all parts of CERN and also *Local Service* for divisions and groups that want faster response times and additional help with their specific computer environment.

In order to describe what services are being offered, and also to give a better understanding of the structure of the contract, a *Service Handbook* has been created. The intended audience for the *Service Handbook* is everyone that is using the contract, i.e. users, managers and also the service staff inside the

contract. In the handbook you will find what help you can get from the contract, how to get in touch with the contract, and also what response times you can expect. Since the computer environment at CERN is an ever-changing entity, the *Service Handbook* will be continuously updated with new services and new supported areas.

The first edition of the *Service Handbook* is available on the Web now and can be found at the URL: <http://cern.ch/desktop.support/handbook.html>

Please return any comments directly to the author.

**About the author(s):** *Mattias Larsson works for the Swedish company WM-data, who won the outsourcing contract for Desktop Support in 1998. Mattias is the WM-data contract manager at CERN.*

## 2.3 Backing up Data on your Unix Desktop Machine

*Judy Richards, IT/DI*

If you have a Unix desktop machine (e.g., Linux PC) you certainly want to make sure that your valuable data is backed-up. This point has been brought up at FOCUS in recent months and it was agreed that for data that should be backed up:

- small files should be stored in your AFS home directory;
- medium sized files could be stored in AFS workspaces or project space. See the URL:  
<http://cern.ch/consult/service/afs/afsdoc/afs.workspace.html>;

- large files should be copied into HSM. See the URL:  
[http://cern.ch/consult/cnl/236/unix\\_storage.html](http://cern.ch/consult/cnl/236/unix_storage.html).

For reasons of scalability it is not possible to use a general purpose backup product like ADSM to backup private desktop systems. Its use must be limited to servers or other specialized systems.

**About the author(s):** *Judy has been long-time responsible for the ADSM service. Recently she has been appointed IT's Divisional Planning Officer.*

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## 2.4 Linux Red Hat 6.1 now Certified

*Lionel Cons, IT/PDP*

I am pleased to announce that the CERN customised version of *Red Hat 6.1* (CRH 6.1) is now certified. The usual CERN UNIX environment (AFS, SUE, ASIS, compilers, CERN-LIB, LHC++, LSF, etc.) has been heavily tested in the past months and works very well with only very few exceptions.

The advantages of this version compared to the previously certified one (5.1) are multiple:

- kernel 2.2 with many enhancements: SMP, NFS, etc.;
- official AFS from *Transarc*;
- better hardware support: network cards, laptops, etc.;
- better graphical installer (*Anaconda*).

From now on, `linuxsoft:/redhat/pro` will point to this version while `linuxsoft:/redhat/old` will point to the

CERN *Red Hat 5.1* version. Thus, feel free to upgrade to CRH 6.1 since this is now *the* recommended version of Linux at CERN.

If you want more information, please go to certification pages at the URL:

<http://wwwinfo.cern.ch/pdp/12k/redhat6-certif/>  
or to the CERN Linux pages at the URL:

<http://cern.ch/consult/service/linux>.

As usual, problems and feedback should be sent to `Linux.Support@cern.ch`.

**About the author(s):** *Lionel Cons is responsible for the L2K project in IT division.*

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## 2.5 Operating System Certification - Present List

*Philippe Defert, IT/PDP*

### Abstract

*This article provides a regular reference list of operating systems certified and supported by the UNIX Support Team.*

As stated in CNL 224, here is the list of various versions of UNIX which we certify as working correctly with the CERN-recommended libraries, tools and utilities as of March, 2000:

- Linux Red Hat 6.1 - certified and recommended
- Linux Red Hat 5.1 - certified, frozen from May 2000
- Solaris 2.6 - certified and recommended
- HP-UX 10.20 ACE - certified and recommended
- Digital UNIX 4.0.d - certified and recommended
- AIX/6000 4.3.2 - certified and recommended

For those interested in the certification process, it is described in the Web page at the URL:

<http://wwwinfo.cern.ch/pdp/ose/certified/>.

The certification of *Solaris 7* will begin soon and *DEC UNIX 4.0f* is going to be considered for certification in the next weeks.

The latest news on the certification procedure is always published in the newsgroups associated with each UNIX flavour (for example `cern.linux`, etc.) and summarised in the Web page listed above and in each subsequent CNL.

**About the author(s):** *Philippe Defert is the UNIX support manager.*

## 2.6 Range of UNIX platforms served by ASIS

*Philippe Defert, IT/PDP*

### Abstract

*This article is a regular reference point for the platforms served by the ASIS server and their current level of support.*

The status with the ASIS Application Software repository is presently as follows:

### Supported platforms:

- i386\_redhat51: Linux Red Hat 5.1
- i386\_redhat61: Linux Red Hat 6.1
- sun4x\_56: SUN Solaris 2.6
- hp\_ux102: HP-UX 10.20
- alpha\_dux40: DEC OSF 4.0d
- rs\_aix43: IBM AIX 4.3.2

### Unsupported platforms:

- sgi\_64: SGI Irix 6.4 (active)
- sun4c\_411: SUNOS 4.1.3 (frozen since 1997)
- hp700\_ux90: HP-UX 9.05 (frozen since 1997)
- alpha\_osf32: DEC OSF 3.2c (frozen since 1997)
- rs\_aix41: IBM AIX 4.1.5 (frozen since 1998)

- rs\_aix42: IBM AIX 4.2.x (frozen since 1999)
- sun4x\_55: SUN Solaris 2.5.1 (frozen since 1999)
- i386\_linux2: Linux Red Hat 4.1 (frozen since 1999)
- i386\_redhat60: Linux Red Hat 6.0 (frozen in February 2000)

A platform is declared “*frozen*” when all applications are kept in the repository but no new package or version of a package is ever introduced in the repository for this architecture.

A platform is declared “*partial*” when only some part of the applications is generated for this particular Operating System. Getting access to ASIS applications is to be done with the appropriate tools which will give you some application of this particular platform and the rest from the closest O.S., called the “*fail-over*”.

Around May 2000, the platform i386\_redhat51 will be frozen and we hope to have a new active but partial architecture, sun4x\_57 for *Solaris 7*.

**About the author(s):** *Philippe Defert is the service manager of the ASIS software server.*

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## 3. Internet Services and Network

*Everything related to Internet in a large sense: i.e., network issues and performances, all technical Web issues, electronic mail, Internet news, home access to CERN facilities, video conferencing and multi-media, network security, etc.*

### 3.1 Improvement of CERN Connectivity to the Global Internet

*Olivier Martin, IT/CS*

Another major milestone has been achieved in April 2000 with the re-deployment of our dedicated transatlantic line from C&W/Chicago to KPNQwest/Chicago, whilst simultaneously increasing the capacity from 20Mbps to 45Mbps. CERN will connect from its *Point of Presence* to the *Intercontinental Internet Exchange Point* in Chicago, sponsored by the *US National Science Foundation* and known as *STARTAP (Science Technology and Research Transit Access Point)*. This will give us direct access to a number of US, Canadian and Asia-Pacific networks such as *ESnet*, *vBNS*, *Internet2/Abilene*, *Canarie* as well as to commercial ISPs willing to establish direct peerings with CERN.

Our transatlantic connectivity is organized through a consortium led by CERN, with IN2P3, the *World Health Organiza-*

*tion (WHO)*, North-american and Canadian HEP communities through *Caltech Institute* and *Carleton University*.

Thanks to exceptional circumstances causing the price/bandwidth ratio to drop very significantly again, following a call for tender made during the last quarter of 1999, the above upgrade will be achieved at approximately constant budget levels. The result is that we now start to have adequate capacity for all normal CERN requirements, in particular for exporting sizeable amounts of physics data all over the world, in a coordinated and controlled manner. Further improvements are expected during the course of the year.

**About the author(s):** *Olivier Martin is responsible for External Networks in the Communication Services group.*

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### 3.2 Rationalisation of Support for Network Protocols

*Mike Gerard, IT/CS*

#### **Abstract**

*An advance warning on the eventual suppression of certain network protocols and allied equipment. Intended to warn against any new use of them, as well as phase out any existing use. Don't say we didn't warn you!*

CERN's network infrastructure currently supports many different protocols, some of which are nearly obsolete and others supporting obsolete equipment. It is, however, the stated intention to eliminate progressively as many as possible of those protocols which are unnecessary or used by an increasingly small number of systems. The ultimate goal is only to support IP protocols.

*AppleTalk* protocols will continue to be supported until all *Macintosh* computers can switch to IP protocols. However, the support of *AppleTalk* protocols on the *LocalTalk* network segments, which requires in turn support for *Shiva FastPath AppleTalk-Ethernet* routers, will cease at some time during 2001. Note that any *Macintosh*, or *LaserWriter*, which only has a *LocalTalk* interface, can actually be connected onto normal Ethernet via an adapter box. Such *Macintoshes* and

*LaserWriters* are certainly so old that a replacement system might be beneficial.

The new Gigabit network backbone now being deployed does not support *AppleTalk* directly. Therefore *AppleTalk* connectivity across the site will be limited to the speed of the current infrastructure, namely 10 megabits/second.

Another network protocol, already starting to be phased out, is the *LAT* protocol. This is used by terminal servers, to which are connected simple asynchronous terminals, and which permits the terminals to access *LAT* server systems. However, the recommended protocol for terminal servers is now *IP Telnet*. Although there is not yet a fixed date for stopping *LAT* it is *highly recommended not to introduce any new LAT-based* terminal servers, nor to develop any new application based on *LAT*.

**About the author(s):** *Mike Gerard is the Deputy Group Leader of CS Group and acts as our "guardian angel" (or trouble-shooter) for proper and efficient use of network resources.*

### 3.3 Connecting Computing Equipment onto the CERN Network

*Mike Gerard, IT/CS*

#### **Abstract**

*How to connect, disconnect, move, remove or simply register any equipment on the CERN general computer network. Or even just to check what you "own": some surprises are almost guaranteed!*

All owners/users of computing equipment connected onto the CERN computer network are asked to ensure that the information recorded in the Network Database concerning their computing equipment and its connection to the network is correct. In this way any subsequent change, in particular a move of equipment from one place to another place, can be done with a minimum of problems.

The method for verification, as well as for requesting a physical move of equipment from one place to another, is all via a *Web Request form* (<http://network.cern.ch/register>). This form contains considerable on-line help for the various items of information needed. Note, however, that it is only accessible from inside CERN.

When this form is used to make any kind of request then there will be an immediate confirmation message. However, only in the case of very simple updates to non-critical elements will there be an instantaneous update of the data base. In all other cases the request will have to be checked manually by Network Operations people: this will normally be done in less than half a (working) day.

Many requests imply a physical intervention, such as a move of a network connection from one place to another, or a request for an entirely new connection on a network outlet. After verification by Network Operations the intervention is done by personnel of a Service Contract company. This will

normally be the same day for requests made during the morning (afternoon requests are not guaranteed to be done before the following working morning).

The situation for portable computers can be somewhat different, unless the portable is only ever used at one place in CERN and is the only computer connected there: in this case the portable computer is essentially fixed. For other cases it is recommended that the portable computer be used on network outlets of type "portable". These outlets always have a fixed IP number allocated to them, but can also be used with dynamic addresses allocated by DHCP. Thus, any portable computer set for DHCP can be connected onto any portable outlet anywhere in CERN.

Portable outlets have to be requested by a direct request (e-mail, phone or visit) to Network Operations (e-mail [Network.Support@cern.ch](mailto:Network.Support@cern.ch), tel. 74927). When the outlet is commissioned there will be an accompanying information sheet giving its designated IP address: this should normally be displayed as near as possible to the outlet.

Portable computers using these outlets must also be registered: this can be done via the above mentioned Web Request form. This registration will *not* allocate any IP address to the portable computer. It is particularly important that a portable registration includes the hardware adapter address, since this is the only way to track the owner in case of problems. Any portable outlet on which an unidentifiable computer is creating serious network-related problems risks being blocked to protect all other CERN users.

In complicated cases, or when an attempt to use the Web Request form is unsatisfactory or unclear, advice may be obtained by calling Network Operations.

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# 4. Scientific Applications and Software Engineering

*This includes descriptions of: scientific applications and libraries from CERNLIB and LHC++, mainly used by the Physicists; engineering applications like the ones on PaRC or those associated to online controls; software development environment.*

## 4.1 Garfield Version 7.02

*Rob Veenhof, CERN (EP) and GSI (Darmstadt, Germany)*

### Abstract

*The main feature of Garfield version 7.02 is that it has an interface with the Magboltz 2 program. This should greatly improve the accuracy of calculations in which a magnetic field and diffusion are key factors.*

Garfield version 7 comes with a new gas section based on an interface with Magboltz 2 (see next article).

### CELL section:

Maxwell generated field maps with rotational symmetry around an axis, such as r-phi maps, can now be read.

### MAGNETIC-FIELD section:

The format of the COMPONENTS statement has been extended to allow for non-constant, parametrised or tabulated magnetic fields.

### OPTIMISATION section:

The FORCES command plots, on request, a diagram which shows whether a wire is in stable or labile equilibrium.

The CHANGE-VOLTAGES command now also works for planes and for the tube.

### FIELD section:

No changes.

### GAS section:

Garfield version 7 by default obtains electron transport data from Magboltz 2. An interface with the earlier version, Magboltz 1, has been kept. These 2 programs solve the same transport equations, but use different methods. Magboltz 2 is more stable numerically, and is reported to reach much higher accuracy especially for diffusion and deflection in a magnetic field.

Garfield tries to take maximum advantage of Magboltz 2 by copying the full diffusion matrix, with correlation coefficients, and in a magnetic field, all 3 components of the drift velocity.

As a consequence of the increased amount of gas data extracted from Magboltz, compact format gas datasets generated with Garfield version 6 can not be read with version 7.

### DRIFT section:

In collaboration with Peter Cwetanski and Ulrich Moosbrugger, considerable progress has been made in the understanding of avalanche statistics on small scales. This has on the one hand resulted in the PROJECTED-PATH integration parameter, which to a large extent eliminates the dependence of the avalanche size on the Monte Carlo step size. On the other hand, a new procedure RND\_MULTIPLICATION has been written which simulates the avalanche fluctuation over a fixed path, taking attachment and multiplication into account.

### SIGNAL section:

Multiple weighting field maps computed by finite element programs are now accepted. This should simplify the computation of response functions of cathodes segmented in strips and pads.

### Graphics:

A limited amount of user control of the layout of Cartesian plots is provided through the LAYOUT graphics command.

Environment variables are now expanded in metafile names.

### Histograms, Matrices, Formulae and Calls:

As usual, many procedures have been added. Of particular importance are a the RND\_MULTIPLICATION mentioned before, and random number generators according to functions and histograms (RND\_FUNCTION and RND\_HISTOGRAM). The function random number generator is based on the FUNLUX (<http://wwwinfo.cern.ch/asdoc/shortwrupsdir/v152/top.html>) routine from the CERN program library.

Garbage collect for matrix assignments in loops has been improved.

### Datasets and input / output:

No changes.

### Compilation, batch:

No changes.

## Documentation:

Currently, the most accurate information can be found in the help pages (<http://consult.cern.ch/writeup/garfield/help>) and the description of the command

line (<http://consult.cern.ch/writeup/garfield/command/command.html>).

**About the author(s):** *Rob Veenhof is a physicist currently working on the design of the read-out chambers of the Alice and Harp TPCs.*

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## 4.2 Magboltz 2

*Stephen Biagi, Department of Physics, University of Liverpool*

The program Magboltz has been updated and improved considerably by using the Monte Carlo integration technique. The details of the solution technique are described and referenced in *Nucl. Instr. and Meth. A421 (1999) 234-240*.

The Monte Carlo technique allows the solution of the transport equations to be independent of the series expansions in *Legendre Polynomials* or *Spherical Harmonics* required by analytic solutions of the *Boltzmann* equations. The technique lends itself easily to use by non-experts since the only inputs now required are the electric and magnetic fields, the angle between the fields, the temperature and pressure and the fractional composition of the gases. The program now has the option of calculating its own electron energy integration range: this option is enabled if the energy integration range is set to 0.0.

Intermediate output at six equally spaced integration intervals allows the accuracy of the solution to be monitored. An accuracy of better than 1% for the drift velocity and 2% on the diffusion coefficients can usually be guaranteed for a number of collisions given by the setting the input parameter `NMAX = 10`. It is possible however in very weakly quenched noble gas mixtures with less than 5% molecular quencher that the solution will require a higher value of `NMAX`.

In pure noble gases at low electric fields below the ionisation region where only elastic collisions occur it is recommended that Magboltz 1 is used. The analytic solution Magboltz 1 in the elastic limit is an exact solution and the computation time is reduced in this case.

Experience with the new program shows that the accuracy with magnetic fields is much improved. This is primarily because the solution is more accurate than the *Legendre* expansion technique and is equivalent to the *Spherical Harmonics* expansion solution of *Ness and Robson* (see e.g. *Phys. Rev. 47 E (1993) 327*). A typical accuracy equal to measurement accuracy of about 1° can now be obtained for very large *Lorentz* angles (see first reference).

The program is available as a Fortran listing and includes some comments and instructions in the listing. The external requirements are only an efficient `real*8` random number generator. The `RNDM2` generator from the CERN library is used in the program. The typical execution time on an DEC Alpha is about 10 seconds for a better than 1% calculation accuracy. There is an extensive list of about 30 gases covered by the program and mixtures of up to any four of them can be simulated.

The author can be contacted at `sfb@hep.ph.liv.ac.uk` for further information.

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## 4.3 News from the Software Development Tools Service

*Eric Poinsignon, IT/API*

### Abstract

*Description, content and news from the service.*

In SDT service (`Sdt.Support@cern.ch`) we actively help software projects in CERN experiments to identify, evaluate, purchase and use industrial software development tools. Network floating licences are used as much as possible, so that the tools can be run remotely. We can also, if you have an AFS account, give you access to our Solaris server in case the binary for your platform is not available. You can find the complete information on what we have and how to use it at the URL: <http://sdt.cern.ch/>

### News of the year

Since the beginning of the year, the SDT service is part of the new API group in IT (<http://wwwinfo.cern.ch/api/>).

All SDT tools have been tested last year to be Y2K compliant. Tools not compliant have been excluded from the list, e.g., *Modsim* (Intranet Solution).

### Latest news

*Adobe* is now providing a beta version of *FrameMaker* for Linux which has been installed on our server (<http://sdt.cern.ch/FrameMaker/ProcLinux.html>). As Linux



is taking more and more interest at CERN, we will provide the best effort for this platform.

*Sniff* version 3.2 has been installed.

### Complete list of our tools

For the latest information watch our News page which is updated as things happen:

<http://sdt.cern.ch/SoftNew.html>

#### *Analysis and Design*

- *Rose* (<http://sdt.cern.ch/Rose/>): OMT/Booch/UML analysis and design tool with C++/Java/Ada code generation.
- *StP* (<http://sdt.cern.ch/Stp/>): OMT/Booch/UML analysis and design with C++ code generation.

#### *Graphical User Interface Builder*

- *X-Designer* (<http://sdt.cern.ch/XDesigner/>): interactive X-platform GUI builder with OSF/Motif toolkit widgets, C, JAVA and Windows code generation.

#### *Quality, Metrics and Testing*

- *Logiscope Tool Kit* (<http://sdt.cern.ch/Logiscope/>): source code analyser and test coverage for C/C++/Fortran.
- *Look!* (<http://sdt.cern.ch/Look/>): C++ dynamic visualization system.

- *Insure++* (<http://sdt.cern.ch/Insure/>): comprehensive tool for error detection in C/C++ programs.

#### *Programming and Debugging*

- *SNiFF+* (<http://sdt.cern.ch/Sniff/>): integrated development environment for C, C++, Java, Fortran and CORBA IDL.

#### *Documentation*

- *FrameMaker* (<http://sdt.cern.ch/FrameMaker/>): complete and integrated publishing tool.
- *IXgen* (<http://sdt.cern.ch/IXgen/>): indexing and marker management tools for *FrameMaker*.
- *SoDA* (<http://sdt.cern.ch/Soda/>): Software Documentation Automation.
- *VisualThought* (<http://sdt.cern.ch/VisualThought/>): multipurpose drawing, diagramming and flowcharting tool.
- *SDLT* (<http://framemaker.cern.ch/sdlt>) (API product): Software Documentation Layout Templates, for *FrameMaker*.
- *User Guide Templates* (<http://framemaker.cern.ch/GuideTemplates/>) (API product): for *FrameMaker*.

**About the author(s):** *Eric Poinignon is the manager of the SDT Service.*

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# 5. Desktop Publishing

Everything related to "Text Processing": HTML issues, LaTeX, Word, Framemaker, etc.

## 5.1 XML-related Developments

Michel Goossens, IT/API

### Abstract

*Extensible Markup Language (XML) tools are becoming important in various areas of electronic data handling, in particular for document production, database queries, electronic data exchange, etc. At CERN XML is being used maintaining documents (like this CNL) and for the representation of data in event visualisation, while other areas are being actively investigated (Oracle, EDMS). This article introduces a few new tools for parsing and transforming XML data or documents.*

Several new tools related to XML have become available lately. I have installed a few that are Java-based at CERN. I plan to add new interesting XML-related applications as they are developed. Please send your suggestions for adding such packages to the author.

Below you find the packages that have been added recently. For each of them there is a brief description. More information is available in the documentation. Please note that the version numbers of the packages can vary if a more recent one is installed. Hence you may have to look into the directory of the package name, e.g., into `/usr/local/doc/JAVA/xerces` for Xerces, etc.

### Xerces

Free source validating XML parser distributed by the Apache Project. Documentation for the current version (presently 1.0.3, check for the latest version) is in `/usr/local/doc/JAVA/xerces/1.0.3/html`, the API is defined in `/afs/.cern.ch/asis/src/JAVA/xerces-1.0.3/apiDocs/index.html`.

The possible command parameters are discovered by just typing the `xerces` command. Examples of using `xerces` are

```
xerces -saxcount -v invfr.xml
invfr.xml: 2003 ms
(14 elems, 0 attrs, 18 spaces, 384 chars)
xerces -saxcount invfr.xml
invfr.xml: 1693 ms
(14 elems, 0 attrs, 18 spaces, 384 chars)
```

The first version with the `-v` switch verifies the file and counts the elements, while the version without that switch merely checks the file for well-formedness.

### Xalan

Free source XSL parser distributed by the Apache Project. Documentation for the current version (presently 1.0.0,

check for the latest version if needed) is in `/usr/local/doc/JAVA/xalan/1.0.0/overview.html`, the API is defined in `/usr/local/doc/JAVA/xalan/1.0.0/apidocs/index.html`.

A transformation of an XML file by an XSL stylesheet is obtained as follows:

```
xalan invfr.xml invlat1fr.xsl a.tex

===== Parsing file:invlat1fr.xsl =====
Parse of file:invlat1fr.xsl took 3406 milliseconds
===== Parsing invfr.xml =====
Parse of invfr.xml took 439 milliseconds
=====
Transforming...
transform took 494 milliseconds
XSLProcessor: done
```

### Saxonxsl

Michael Kay's XSL parser. Documentation for the current version (presently 5.2, check for the latest version if needed) is in `/usr/local/doc/JAVA/saxon/5.2/index.html`, the API definitions can be reached from that page.

A transformation of an XML file by an XSL stylesheet is obtained as follows:

```
saxonxsl -t invfr.xml invlat1fr.xsl > a.tex
SAXON from Michael Kay of ICL
Version 5.2
Elapsed time: 2235 milliseconds
```

### Oraxsl

Oracle's XSL parser (`oraxml` is the corresponding XML parser). A Readme file of the current version (presently 2.0.2.7, check for the latest version if needed) is at `/usr/local/doc/JAVA/oraxmlxsl/2.0.2.7/html/readme.html`, examples are in the directory `/usr/local/doc/JAVA/oraxmlxsl/2.0.2.7/sample/`, while the API definitions are at `/usr/local/doc/JAVA/oraxmlxsl/2.0.2.7/html/API_users_guide.html`.

A transformation of an XML file by an XSL stylesheet is obtained as follows:

```
oraxsl -v invfr.xml invlat1fr.xsl a.tex
1 XML document will be transformed
  using XSLT stylesheet specified in
  invlat1fr.xsl with 1 thread
Parsing file invlat1fr.xsl
```

Parsing file invfr.xml  
Transforming XML document specified in invfr.xml

## Fop

Open source XSL formatting object to PDF convertor developed by the Apache Project. Documentation for the current version (presently 0.12.1, check for the latest version if needed) is available in the directory `/usr/local/doc/JAVA/fop/0.12.1/`, but most of the time you will just type a command like the following to obtain a PDF file from an XML file using an XSL stylesheet that transform your XML element into XSL FO objects.

```
fop inv.xml invfo1.xsl a.pdf
FOP 0.12.1
using SAX parser
    org.apache.xerces.parsers.SAXParser
using renderer
    org.apache.fop.render.pdf.PDFRenderer
using element mapping
    org.apache.fop.fo.StandardElementMapping
using element mapping
    org.apache.fop.svg.SVGElementMapping
building formatting object tree
```

```
setting up fonts
formatting FOs into areas
    [1]
rendering areas to PDF
writing out PDF
```

The PDF file `a.pdf` can be viewed with `acroread` and printed if needed.

## DocBook

The latest DocBook SGML DTD and associated DSSSL stylesheets, and the corresponding XML DTD version with its associated XSL stylesheets are made available in `/usr/local/share` below the directories `docbooksgml`, `docbookdsssl`, `docbookxml`, and `docbookxsl`, respectively.

A series of four lectures on XML in the framework of the Academic Training Program is planned for Monday 22nd to Thursday 25th of May.

**About the author(s):** *Michel Goossens (well known by many users) is the CERN authority on  $\LaTeX$ , XML and Electronic Document Publishing techniques in general. He has written several books on the subject.*



# 6. The Learning Zone

All kinds of “educational” computing issues, not necessarily directly CERN-related, such as computing news from the Press and tutorials on various subjects.

## 6.1 X11 Desktop Environments (KDE and GNOME) - Part II

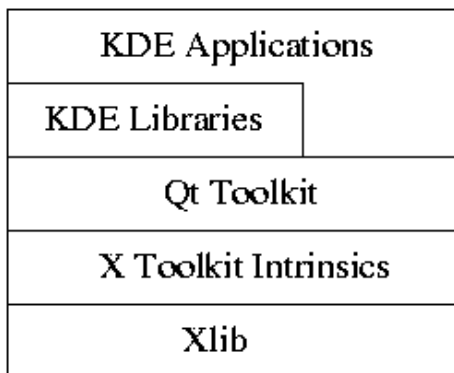
Victor Robles and German Cancio Melia, IT/PDP

### Abstract

This is the second part in a series of three articles dedicated to the KDE and GNOME desktop environments. In the first part (<http://cern.ch/consult/cnl/237/kde-gnome.html>), we explained what a desktop environment is and what its main components are (like the panel, control center, file manager etc). In this article, we will analyze the desktops from a more technical point of view, looking in more detail at the internal architecture, usage of protocols, etc.

### Basic KDE architecture

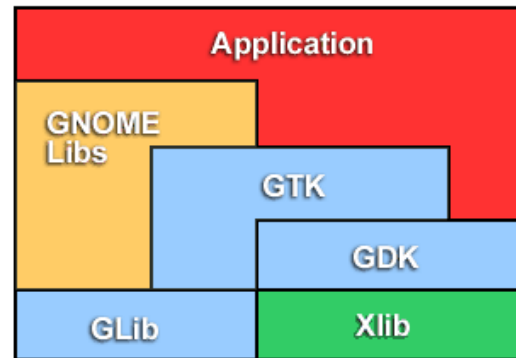
In the picture we can see the basic architecture of KDE. The first two layers *Xlib* and *X Toolkit Intrinsics* are two low level programming APIs included in *X Windows*. Using these libraries we do not have dialog elements (*widgets*), so the user interface of the X applications are not homogeneous between them. But, in other operating systems like Windows and MacOS, the applications have a homogeneous user interface. Thus we need to include another higher level graphic library, the *Toolkit* (in case of KDE the *Qt*), which give us the widgets and, in general, an homogeneous and uniform aspect for all the applications that use it. The KDE libraries, *KDElibs*, are built on the top of Qt though they can still make use of the X’s APIs when they need to make lower level operations. In the top layer we have the KDE applications which are built using the KDE and Qt libraries.



### GNOME

The GNOME architecture is a bit different from KDE’s. The GNOME libraries are the highest level. GTK+ with its two parts, *GTK* and *GDK*, comes next. The GTK level provides

an object model for C and a UI toolkit with the basic widgets to provide the generic basis for a GUI. GTK depends on GDK, which is a low-level wrapper around *Xlib*, the library directly talking to the X server. Everything (except for *Xlib*) depends on *Glib*, which is a very useful C library with many utility and portability functions as well as a range of easy to use containers for C.



### Why use KDE and GNOME libraries?

Why not just program directly with a GUI toolkit such as GTK+, *Motif*, or *Qt*, without any other libraries? By using the KDE and GNOME libraries, you can save a lot of time, because a lot of code is already written, and a lot of widgets are already predefined. These widgets will also be consistent in both look and feel across all applications using the KDE and GNOME libraries. And code sharing among applications reduces your memory requirements, because the code will be part of the shared library rather than loaded into memory for each application. But KDE’s and GNOME’s greatest advantage is that the library lets you focus on the real functionality of your application; you don’t have to spend your time writing and debugging the user interface.

### Qt and GTK+

GNOME and KDE are both based, as already said, on a graphical toolkit which provides the basic set for graphical operations. The toolkit used by KDE is Qt 1.42. KDE 2.0 will be based on Qt 2.0.

Some characteristics of Qt:

- Qt has a modular design and a strong focus on reusable software components.
- Ported to most Unix flavours, but also for Windows.
- Use of OpenGL supported.

- Very good On-Line documentation.
- An important number of applications are available, many of them part of the KDE project.

The weak points are:

- Qt 1.42 did come with a Open Source license; this changes for Qt 2.0 (QPL license).
- Only three languages are supported (C++, Python and Perl).
- Themes are not available under Qt.
- Currently, there's no support for the XDND *Drag&Drop* protocol.

The GNOME project decided to use GTK+ as their graphical toolkit. GTK+ was initially developed for the GIMP tool (a PhotoShop-like application).

Positive characteristics of GTK+ are:

- Support for 16 different languages, including C/C++, Pascal, Perl, Python.
- Support for themes.
- GPL License.
- Support for both the *Motif* and XDND *Drag and Drop* protocols.
- Use of OpenGL together with GTK+ is supported.
- Also, many applications are available which use this toolkit.

The weak points are:

- Insufficient documentation.
- Bad portability to Microsoft Windows.

## Information exchange

Applications have to provide means for communicating with other peer applications. A simple example could be the use of copy and paste of text segments, whereas there are other more complex operations such as inserting an image created with a paint program into a spreadsheet.

There are several communication mechanisms available under X11. The most important are:

- The *ICCCM* mechanisms (*Inter-Client Communication Conventions Manual*).
- *Drag and Drop* protocols.
- *Session Management* protocols.

## ICCCM Mechanisms

*ICCCM* is a standards collection where the following information interchange mechanisms are defined: *Primary Selection*, *Secondary Selection*, *Clipboard Selection* and *Cut-Buffers*. X-based applications can communicate within each other using *Selections* which allow to select and copy text regions from one application to another. The primary selection is used e.g. when selecting a text region with the left mouse button under Netscape. The secondary selection can be used independently of the primary selection; *emacs* uses the secondary selection for erasing text without changing the cursor position. The *Clipboard Selection* gets activated when cutting or copying text into a special buffer (the clipboard), the contents of this buffer can be transferred afterwards to another application. The *xclipboard* application allows you to check its contents. Whereas the selection mechanisms establish a link between a source and a target application, the *Cut-Buffers* are based on a common area provided by the X server. This way, a X client may introduce information into a cut buffer which can be retrieved later on by any other X client. X allows use up to eight cut buffers. With the *xcutsel* tool, the contents of a primary selection can be copied into a cut buffer or vice versa.

Both KDE and GNOME do support those protocols and mechanisms as they're defined at the X layer.

## Drag and Drop Protocols

The *ICCCM* mechanisms only allow to exchange plain text regions. For any other objects (i.e. images or rich text sections), several *Drag and Drop* (DND) protocols have been defined which allow you to select and then transfer those objects within applications. The basic requirements for all DND protocols are:

- Provide visual feedback to the user during the drag.
- Allow the target application to choose whatever data format it prefers from among all the formats that the source can provide. Thus a word processor might tell a image program to provide a picture in a specific format in order to avoid useless conversions.

In addition, it must be efficient so that the visual feedback does not lag behind the user's actions, and it must be safe from deadlocks, race conditions, etc.

Two well-known DND protocols are the *Motif* DND, provided with the *Motif* toolkit, and *OffiX*. *Motif* DND implements correctly all DND functionalities but it is a rather complex protocol. *LessTif* (a free *Motif* clone) implements also a simplified version but generally, *Motif* DND is rarely used outside *Motif*-based applications. The *OffiX* protocol, used by applications like *ImageMagick* or *Xemacs*, is fairly simpler to use than *Motif*, but also less powerful as it lacks some characteristics like visual feedback or choosing the data format by the target application.

The XDND (*X Drag and Drop*) protocol is a new standard which implements all DND requirements but in a more

lightweight fashion, overcoming the problems with *Motif* and *OffiX*. XDND has been spreading wide since its creation and is supported both by GNOME and KDE and their underlying libraries (GTK and Qt), by some window managers (like enlightenment) and by many other applications.

## Session Management

The purpose of *session management* is to provide users a possibility to save and restore their whole working environment or session. A session is a collection of applications, all of them having an internal state. This state may be the name of an open file, a displayed image or the score of a game. When quitting a session, the states get saved and restored the next time the user logs in, retrieving his working environment the way he left it.

Every application that is session management aware connects to one special server: the session manager. A session manager sends commands to his clients telling them to save their state or to terminate. A client must provide the session manager with all information that is needed to restart the client in the same state as it is running now. The session manager's task is to take care of this information and to use it when restarting a session. In order to distinguish all clients, the session manager assigns them a unique identifier: the so called *client id*. Currently, two different protocols for the Session Management are available. On one hand, the ones collected in the ICCCM manual under *Obsolete Session Manager Conventions* (described in the ICCCM appendix C); and on the other hand, the ones defined by the *X Session Management Protocol*. KDE uses an extended version of the Obsolete Session Management Protocol, whereas GNOME uses the X Session Management Protocol.

## Documentation systems

Documentation is perhaps one of the most important features for users. However, it is a subject which is quite often forgotten. KDE and GNOME help-browsers are able to work with HTML files. An emerging standard is to use DocBook SGML. SGML stands for Standard Generalized Markup Language, and is a system for organizing and tagging document elements. DocBook is a document definition based on SGML, and defines how the tags must be interpreted by the application that displays the document.

In KDE, application documentation is made in HTML, although they are starting to use DocBook SGML/XML. For the source program documentation a program named KDoc is being used. KDoc is a documentation tool initially developed for documenting KDE libraries. KDoc extracts documentation and information of classes of C++ header files. Then this information is used for making HTML documents, L<sup>A</sup>T<sub>E</sub>X documents or man pages. It also generates cross references when appropriate.

In GNOME, application documentation is made normally using DocBook SGML/XML which is then translated to HTML. For documenting libraries, the gtk-doc application is used, which reads C header files and generates a template which is filled in by the authors. These templates can be translated to DocBook SGML/XML and from this to HTML, L<sup>A</sup>T<sub>E</sub>X or man pages.

## Programming environments

Both KDE and GNOME are working on rapid application development toolkits. The KDE team is working on KDevelop, an IDE (Integrated Development Environment) which offers you on-line access to all KDE and Qt documentation, as well as a friendly editor and application template generation engines. KDE tools include also KDDL (KDE Dialog Definition Language) and KDE SDK (Software Development Kit). For GNOME, Glade (a visual user interface builder à *la VisualBasic*) and gIDE are being developed.

Table 6.1 on page 17 shows a comparison of both technologies.

## Coming soon

In the next (and last) part of this article, we will analyze in more depth the internal architecture, including the usage of CORBA and compound documents, and how to install those desktops at CERN.

More information is at the URL

[http://wwwinfo.cern.ch/pdp/ose/gnome\\_kde/](http://wwwinfo.cern.ch/pdp/ose/gnome_kde/).

**About the author(s):** *Victor Robles visited CERN in 1999 as Technical Student; his research in the area of desktop environments was so remarkable that an Spanish computing magazine of national reach accepted publication of his articles.*

*German Cancio works in the PDP/OSE Section and was recently awarded a staff contract.*

	KDE	GNOME
Toolkit	Qt 1.42 (Qt 2.0 in v2.0)	GTK+ v1.2.7
Toolkit Programming Language	C++	C
Toolkit License	Qt Free Edition License in Qt 1.42. QPL in 2.0	LGPL
Toolkit Language Bindings	Python, Perl	Ada 95, C++, Dylan, Eiffel, Guile, Haskell, JavaScript, Objective C, Objective Caml, Objective Label, Pascal, Perl, Pike, Python, TOM.
Toolkit support graphics 2D/3D through OpenGL/Mesa	Yes	Yes
Toolkit support themes	No	Yes
Desktop License	LGPL/GPL	LGPL/GPL
Support ICCCM Mechanisms	Yes	Yes
<i>Drag and Drop Protocol</i>	KDND in KDE v1.1.2. XDND in KDE v2.0	<i>Motif</i> , XDND
Session Management Protocol	Proprietary in v1.1.2. XSMP in v2.0	XSMP
Theme support	Yes	Yes
Compatible Window Managers	KWM, WindowMaker, BlackBox, Enlightenment, fvwm	Enlightenment, WindowMaker, fvwm, IceWM, SCWM, gtkWM, etc.
Application documentation	HTML, DocBook SGML/XML	DocBook SGML/XML
Library Documentation	KDoc	gtk-doc
Language Bindings	Tcl/tk, Python, Java, Perl	Java, Python, Dylan, TOM, C++, Ada 95, Perl

Table 6.1: Technology overview

## 6.2 Questions and Answers from the Computing Helpdesk

*Collected by the IT/User Support Team*

*Nicole Crémel (Editor), IT/User Support*

### Abstract

*This is a collection of Questions & Answers that have been treated by the Computing Helpdesk managed by the User Support group.*

*N.B. The number in parentheses refers to its relative numbering in the User Support "Question-Answer" database, at URL <http://cern.ch/consult/qa/NNN>, where NNN is the problem identifier (number).*

### PC Support

**(Hannes Schwarzbauer, IT/User Support)**

#### Question [192] – Reset profile on Windows NT

*I lost my profile on Windows NT (or it is corrupted). Who can reset it?*

#### Answer

Any authorized administrator can do it, including the Computing Helpdesk (78888) who have been granted these privileges.

To see the list of authorized people:

```
Start
System Management
Nice NT Domain Admin
Reset local administrator password
```

and then click on "show authorised": you will find all accounts that have the required privileges for this, including "helpdesk".

N.B. The people currently authorised to reset roaming profiles are the same people authorised to reset computer accounts.

The procedure to be followed by the administrator is explained in a separate QA, at URL: <http://consult.cern.ch/qa/284>.

#### Question [204] – Visual Studio and Visual Basic on NICE

*Could you please clarify the puzzling situation with different versions of Visual Studio, VC++, Visual Basic on NICE?*

## Answer

Today we have two versions of *Visual Studio* available on our NICE servers:

### 1. *Visual C++ V5* and *Visual Basic V5*.

They come as two separate packages and can be installed via the NICE Start Menu:

```
8-Software Engineering
  Development
    Visual C++ (or Visual Basic)
```

The service pack 3 (icon 2 in both groups) for this version has to be added after installing the main product(s).

Applications developed under VC++ and VB mostly require additional components to run properly (e.g., OCXs and DLLs). For applications developed with *Visual Studio 5*, all these components are already pre-installed on NICE, so the applications compiled by the user will run on any NICE machine.

### 2. *Visual Studio 6*.

This single package (including VC++ and VB) should be installed by running `setup.exe` from the path:  
\\ntinfo01\vol2\Visualstudio6Enterprise.  
Afterwards the service pack 3 from VS6 should be added by running `setupsp3.exe` from:  
\\ntinfo01\vol2\VisualStudio\_Servpacks\Vssp3.

**Caution:** Since the VS6 required components are *not* distributed on NICE, version 6 compiled applications will *not* run. The user has to deliver the required OCXs, DLLs and registry settings with his applications. In other words, he has to create a package. This can be easily done for VB applications using the "Package and deployment wizard" in the VS6 tools program group. For C++ programs, you can use the "Depends" tool to find the dependent components. In any case, packaging applications will become the standard on Windows 2000 and is the only way to distribute your application(s) on large scale.

### Question [227] – Default browser

*How can I "force" my PC to open certain files (e.g., .jpeg) with Netscape instead of the default Internet Explorer?*

#### Answer

By default, the browser used by the PC is *Internet Explorer*. To change it to *Netscape*:

From the Start menu:

- 2 More applications
- 3 WWW
- 0 Set default browser Netscape

### Question [262] – NICE space

*I need about 400MB disk space on my J:\ home directory (I am dealing with a lot of graphics). Actually I have about*

*300MB of used space. The Helpdesk gave me an extra 50 MB, I got confirmation, but nothing happens. Why?*

#### Answer

Most probably you have reached the "hard-coded" upper limit of 300 MB which cannot be over-ridden by the Helpdesk anymore and a manual intervention (from the NICE team) is needed.

### Question [265] – NICE server

*How can I see on which NICE server(s) I am attached to?*

#### Answer

From the DOS prompt (Start - Applications - 12) either type the command: `net use` or `whoami`.

### Question [268] – Powerpoint and NICE logo

*Using Powerpoint and CERN templates, how can I keep the CERN logo and my personalised footer without having the NICE logo?*

#### Answer

- Choose the template.
- Go from "view" into "Master", then "slide master".
- Click on the field that you want to delete, e.g. "NICE". The field is now surrounded by some manipulation buttons.
- right-click the mouse, choose "cut". The field "NICE" disappears.
- Somewhere in the middle of your screen you have a small "master" window. Close it.
- Your template should now be as before, but without the NICE logo.

---

## UNIX Support

(Nicole Crémel and Roger Woolnough, IT/User Support)

### Question [181] – Login scripts initialization

*I accidentally erased my home directory contents: is there a way I can re-initialize my login scripts (files .profile, .cshrc, .login, and such)?*

#### Answer

First note that your complete directory from last night is available online in the `/afs/cern.ch/ubackup` directory corresponding to your AFS login (e.g., `/afs/cern.ch/ubackup/a/abcd` for login abcd) so you might be able to copy back the contents from there.

If that is not sufficient then the command `uco` can be used on all UNIX central systems (type `man uco`).

### Question [194] – CPU time exceeded in batch job

*I submitted a batch job in the RSPLUS cluster and it finished due to CPU time exceeded. For this reason it did not copy in my directory the files created in \$WORKDIR. Is there a way to retrieve these files?*

*The \$WORKDIR was /pool/lsf/pilar/170289\_135917 in rsbat001.*



## Answer

Unfortunately not: unless the user explicitly specifies to keep some files in the work directory, all files — except the standard output — are deleted when the job terminates.

If files were kept, they could be copied back by the user with a simple `rcp` command, i.e., in your case:

```
[rsplus08] rsh rsbat001 ls -l /pool/lsf/pilar/170289_135917
total 32
-rw-r----- 1 pilar t2 13552 Nov  4 12:02 941588516.170289.out
```

## Question [195] – Linux machine shutdown

*What is the procedure to shut down a Linux machine? Can I just power it off?*

## Answer

From the machine:

- hit the <CTRL> <ALT> <F6> keys altogether, then you should get a console prompt. Log as `root`, then execute `/sbin/halt`

You can also do it through `telnet`:

- log on with your `userid`, then as `root`, then execute the `/sbin/halt` command.

Never power off your machine without making a clean halt.

## Question [208] – GNU make

*There is a problem with GNU make: gmake is re-building the entire library even for the members which were not touched.*

## Answer

This is apparently a bug which has disappeared with GNU make 3.78.1. Since end-December 1999 it had been installed on all platforms in ASIS and the problem has disappeared on all central platforms at CERN.

## Question [219] – LXPLUS and LXBATCH

*I want to run a batch job on the central Linux cluster, shall I run the job on LXPLUS or LXBATCH?*

## Answer

LXPLUS/LXBATCH is managed in a similar way as RSPLUS/RSBATCH:

- RSPLUS in an interactive AIX service where users log in to submit batch jobs to RSBATCH.
- LXPLUS is an interactive Linux service where users log in to submit batch jobs to LXBATCH.

## Question [220] – xlsbatch on LXPLUS

*When I run the command `xlsbatch` on LXPLUS I get a core-dump, while on RSPLUS it displays the job status as it should.*

## Answer

There is a known bug on Linux with LSF programs using X core dump (such as `xlsbatch`) when these programs print a warning message at startup. This can happen if there are not enough colours available: then the command `xlsbatch`

can crash or not depending on whether *Netscape* is open or closed respectively in the X session. It can also crash when there is a message for missing font (or any other warning message).

Note that `xlsbatch` for Linux will be upgraded as soon as CERN will receive a fix for it. Meanwhile it can still be used provided that there are enough colours available in the colormap when launching it. Alternatively, equivalent LSF line commands (`bhosts` / `bsub` / `bqueues` /, etc.) can be used instead.

## Question [225] – "invalid user" from the stagein command

*I'm having trouble staging tapes. When I try to stage in a tape with the `stagein` command, it fails with an "invalid user" error:*

```
stagein -v LT0097 -q 1 Ze20
STG11 - invalid user: 6919
```

*So it looks like I don't have permission to stage atlas tapes.*

## Answer

The first thing to be checked is that the user has 2 accounts (`login`) on TAPES and the ATLAS Work Group Server ATLAS\_WGS (or CMS\_WGS for CMS staging).

## Question [303] – hsm command on a private LINUX desktop (PC)

*I cannot run the `hsm` command on my PC (private LINUX desktop) and get the error message "configuration file not found" for some of the `hsm` commands.*

## Answer

To fully use the `hsm` command on a private LINUX desktop you need to be using an AFS login, that has an associated DCE service account, and have a copy of a small system file named `/etc/shift.conf`.

Note: this has to be installed as `root` but can be copied from any LXPLUS node. A few times per year this file is changed on LXPLUS that may affect `hsm`, so users who have this file and still get errors should first take a fresh copy.

## Mail Support

### (Michel Franceschi and Miguel Marquina, IT/User Support)

#### Question [289] – Netscape version 4.7

*What is new in Netscape 4.7 and where can I find relevant documentation?*

#### Answer

There are no important changes regarding the "Web client" part (WWW browser) but more for the *Netscape* mail agent. New features for *Netscape* version 4.7 are listed at URL:

<http://consult.cern.ch/services/netscape/v4.7/new-features.html>

What happens when you change to this new version is explained at:

<http://consult.cern.ch/services/netscape/v4.7/upgrade.html>

A printable version of this documentation of this product is at:

<http://consult.cern.ch/services/netscape/mail/nsmailf.html>

### Question [292] – Mail on Netscape

*I cannot open Netscape/mail on my AXCAD station. I try and the window keeps disappearing. This is irritating, please do something about it!*

#### Answer

We have already seen “misbehaviours” with *Netscape* on ALPHA machines. All is reduced to reset your own *Netscape* configuration which is probably corrupted.

Try this:

```
cd $HOME
mv .netscape .netscape-bad
```

and then launch *Netscape*. If “cured”, you would only need to copy back both your bookmarks and your addressbook:

```
cp .netscape-bad/bookmarks.html .netscape
cp .netscape-bad/abook.nab .netscape
cp .netscape-bad/address-book.html .netscape
```

## DeskTop Publishing

(Andreas Wagner, IT/User Support)

### Question [182] – Strange characters in Word document

*I find very strange characters in my Word document which make it difficult to read (e.g. all spaces contain these characters). However, it's perfectly ok when I print (the characters are not printed then).*

#### Answer

While you view or edit a document on the screen, you can display characters such as tab characters, spaces, and carriage returns that don't appear on the printed page. (For example, *Word* uses arrows to represent tab characters and dots to represent spaces.)

To see if you added an extra space between words, typed spaces instead of a tab character, and so on:

- On the **Tools** menu, click **Options**, and then click the **View** tab.
- Under **Nonprinting characters**, select the check boxes of the characters you want to display.

*Tip:* To display all nonprinting characters, select the “All” check box instead of selecting each individual check box, and deselect it when you want to get rid of them.

## Web Publishing

(Maria Dimou IT/User Support)

### Question [184] – Installing Internet Explorer 4

*I tried to install Internet Explorer 4 from the Start Menu (Start->2->3->1s) but it fails when trying to install the components. All the items are marked with a red cross and I get the error message that the installation failed. Nothing more.*

#### Answer

In the last few months NICE system people have noticed PCs having corrupted registry settings preventing MSIE4 or MSIE5 from being installed. They checked that this problem does not come from NICE itself (otherwise they could have fixed it for everybody).

The only workaround to this problem is to do a full re-install of *Windows/95* before installing MSIE4. Once this is done the user should not have any further problems.

### Question [185] – Internet Explorer version

*Which version of Internet Explorer is supported by NICE?*

#### Answer

*MSIE4* has been replaced by *MSIE5*. This is the only version you can install from NICE, but people who use *MSIE4* can continue to do so.

Please note that *MSIE3* does not work correctly with the current NICE nor with numerous Web sites around the world.

When users complain about MSIE, it is important to know which version they run with. Hence try Help menu - About.

### Question [190] – Directory browsing from the Web on NICE

*I would like to be able to do a directory browsing from the Web of the directory (for example):*

```
\\srv1_home\usr11\HOME\USER\MyDocs\
```

*What is the way to do it? Can I make my "Public" directory browsable too?*

#### Answer

*nicewww* considers now the "root" of all files accessible from the web to be the "www" folder in your home directory. Thus, if you try to retrieve: <http://nicewww.cern.ch/~USER>, it will try to get `default.htm` from your `j:\www`, not just `j:\`.

The same situation exists with directory browsing requests. If you enter <http://nicewww.cern.ch/~USER/abc/> in your browser, you will get:

1. the directory listing for `j:\www\abc` if directory browsing is enabled in `j:\www\nicewww.ini`;
2. the `default.htm` file if directory browsing is disabled (and the file exists, of course);
3. an error otherwise.

This is described at the URL <http://nicewww.cern.ch/doc/usere/uswww/uswww2.htm>

Concerning the "Public" directory browsing, unfortunately, you can not make contents of your Public folder available from the Web. Your web space is mapped to your `j:\www` folder, for example:

```
http://nicewww.cern.ch/~USER/
```

will show you contents of the `j:\www` folder, and

```
http://nicewww.cern.ch/~USER/foo/bar/
```

the contents of `j:\www\foo\bar`. To enable directory browsing you have to put a `nicewww.ini` file into the `j:\www` folder, containing the following lines:

```
[NiceWWW]
EnableDirectoryBrowsing = 1
```

This is all explained in the file at the URL:  
[http://cern.ch/consult/cnl/230/art\\_enice.html](http://cern.ch/consult/cnl/230/art_enice.html)

### Question [199] – Default Web-page

*What are the filenames usable to display a default Web-page?*

#### Answer

On `wwinfo.cern.ch`, `consult.cern.ch`, and `home.cern.ch` the sequence of files which are searched for in a directory is the following (in order of precedence):

- `Welcome.html`
- `Welcome.shtml`
- `index.html`
- `index.shtml`

NB: The extension `.shtml` is used for server parsed files. For more information please have a look at <http://cern.ch/consult/qa/60>.

### Question [210] – Priority for search engines

*How can I ensure that people using search engines on the Web and looking for "my type of information" will find it at the top of their list?*

#### Answer

As stated in the the *Infoseek* manual (<http://wwwsearch.cern.ch:8765/help/meta.html>), you can put the following line in the HEAD section of your pages (especially in the home page):

```
<META name="keywords" content=
  "MY_TYPE_OF_INFO, RELEVANT_KEYWORDS">
```

Like that, the search engine will index your page giving a higher rate to these keywords, making your page appear higher in the result list, if the search was on these keywords.

N.B. You can read more on metadata at URLs:

```
http://www.cern.ch/WebOffice/Doc/DCmetadata.html
http://www.cern.ch/WebOffice/Presentations/Tutorials/
Metadata/
http://www.cern.ch/WebOffice/Presentations/Tutorials/
Searching/
http://cern.ch/consult/cnl/233/art_metad.html
```

### Question [217] – Password protection

*Would you please explain to me how I can introduce a password on my home page?*

#### Answer

If the page is in AFS and served by `home.cern.ch` then one should know that protections are not allowed (in principle) on that server. For other hosts running the *Apache* Web Server (e.g., `wwinfo.cern.ch`) a typical `.htaccess` and `.htpasswd` (file for private page protection) extract can be found in a previous CNL, at URL: <http://cern.ch/consult/cnl/236/apache.html>

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## Miscellaneous

### Question [189] – Colour problem with *Exceed*

*In order to run `xwpick` with *Exceed*, I had to change the default "Video" setting into "PseudoColor" mode (instead of "Auto Select" which is the default).*

*See <http://cern.ch/consult/qa/2254>*

*An unexpected feature is that it then changes the colours in the output. What can be done to avoid this problem?*

#### Answer

This is a bug in *Exceed* and we still expect a proper solution from *Hummingbird's*. However it seems that you can solve the problem by changing the "Display Properties" settings from 16 bits planes to 8 bits planes:

```
Start -->
  Settings -->
    Control Panel -->
      Display -->
        Settings -->
```

The bug is the following: if the Windows 95 color depth is 16 while the server is using only 8 planes (Pseudo-Color) - setting required by `xwpick` to work properly - the `XGetImage()` call capture 8 planes, but not those used by the X server itself. This can easily be seen using the standard `xwd/xwud` programs from the X11R5 distribution.

**About the author(s):** *Nicole Crémel* is working in the User Support group and, with *Roger Woolnough*, is responsible for the supervision of operations of the Computing Helpdesk. Editing and revising the "Question and Answers" database is a daily task of most members of the group.

# 7. User Documentation

Everything related to "computer documentation": updates to computer documentation distributed by IT (including the User Support reference cards), offerings of the Computing Bookshop, etc.

## 7.1 News from the Computing Bookshop

Roger Woolnough and Jutta Megies, IT/User Support

### Abstract

Regular update on the Bookshop activities and an executive summary of latest changes to the catalogue.

Several new books and editions have been received since the last CNL and we also have a new supplier with *Hachette France*. Towards the end of last year, we started to stock English dictionaries by popular demand. We naturally wanted to extend this to French and French/English copies as well, and *Hachette* will enable this to happen in the coming weeks. As the *Oxford University Press* dictionaries are compiled in association with *Hachette* we felt this would add continuity to the collection.

As far as computing books are concerned the most important arrival has been the Special Edition of the "C++ Programming Language" by Stroustrup. This is a complete rewrite of the book which is now a hard-back edition of over 1000 pages. The only disadvantage is that we pay our Pearson account in dollars and with the present exchange rate the book now costs 75CHF. The other new edition we have in stock is "Visual Modelling with rational Rose 2000" by Quatrani.

New books added to the list this year are:

1. *Learning Red Hat Linux from O'Reilly*

2. *Dynamic HTML*
3. *Essential GNI*
4. *Teach yourself C for Linux*
5. *Goal Directed Project Management*
6. *The Grid*

We also have the CD for the new CERN certified version of Red Hat Linux 6.1 with a lot of Linux documentation. The ASIS CD contains a recent and almost complete snapshot of ASIS including CERNLIB 2000, *TeXlive 4.00*, *Star Office*, *Netscape 4.7*. The products are now available in RPM format. For more information on these CDs, see: <http://www.cern.ch/linux/cds/>.

For those persons using the *MATLAB* programme we used to have copies of *Simulink* to go with this but all copies are now sold and the product is no longer available from the publisher.

The complete list of books and prices is available at <http://cern.ch/consult/books/> and you can mail us at [Bookshop@cern.ch](mailto:Bookshop@cern.ch) where we always welcome suggestions for new titles.

**About the author(s):** *Roger and Jutta run jointly the appreciated Computing Bookshop.*

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## 7.2 User Support Book Catalogue

Roger Woolnough and Jutta Megies, IT/User Support

### Abstract

Reference to the Bookshop catalogue in the Web.

Situated in Building 513 1-022 (tel. 74050) is the Computing Bookshop. provided by the *IT / User Support group*, where CERN users can find computer books and CDs at discount prices. The service is open weekdays from 8.30 to 12.30 or contactable by e-mail to [Bookshop@cern.ch](mailto:Bookshop@cern.ch). Books are

purchased from some 15 publishing houses and the catalogue offers a selection of documentation aimed at the range of computing utilities available at CERN. The service welcomes suggestions from the user community for new acquisitions. Purchasing may be done internally via EDH or TID or alternatively cash payments via the CERN Bank.

The list, with all the relevant information, is compiled regularly at the URL: <http://cern.ch/consult/books>.