DESY Computing Newsletter
No. 7 June 1995

A Publication of the DESY User Support Group

Contents

Editorial

by Michael Behrens

In former issues of the *DESY Computing Newsletter* we put an emphasis on training and educational aspects. This issue deals to a larger extent with organizational issues.

The computer centre noticed the need for improvements in the organization of central computing. On one hand this refers to the organization of the staff or the computer centre, on the other hand to the services provided to our users. The staff side is covered in the article by Dietrich Mönkemeyer, the new head of the central computing group, ZDV (*Zentrale Datenverarbeitung* in German).

More and more users and services have moved from the former IBM/MVS system to the central UNIX systems. This had caused considerable trouble with respect to system load and interactive response on several of our central Unix systems. Some measures by the computer centre have lessened the impact for the users already, but much more remains to be done. In addition, the computer centre is taking a new approach in supplying the necessary computing resources. The work group server model was selected as the new model for organizing central computing at DESY in the Unix environment. Karsten Künne describes this new work group server model for interactive computing in the Unix environment. The first work group servers are already in use for ZEUS and machine physics. H1 has recently decided to move in this direction too, and the general users will be using work group servers in future as well.

PCs are playing an ever more important role within central computing, and we have to support large numbers of PCs with only a few support staff. A network based service which allows the maintenance of almost all applications centrally was selected to achieve this goal. This service - based on a concept developed at CERN - is currently being introduced. The general concept of this service has been presented in several talks during the last month and we hope to present a detailed description in the next DCN. PC users come from all fields and occupations within DESY. This extends beyond our previous clientele of mainly English speaking physicists and technicians, and we will have to deal with new classes of problems and new tools for these new users.

Consolidation of our support services is yet another topic. Central Computing is trying to improve the availability and reliability of our services. This means that we prefer to have users contact us through organized channels rather than going directly to the person presumed responsible. This will assure that each problem is given prompt attention even when some of the computer centre staff are absent.

The User Consulting Office (UCO) should be the key contact, and in addition we have prepared a set of generic email addresses for various classes of problems. An initial list of contacts and procedures is printed in this Newsletter. We will update and improve this list in the future and make it available through other channels as well.

This newsletter and all the earlier issues are also available from www under the URL `http://www.desy.de/UCO/documentation.html`.

Editors of the DCN are:		
Katherine Wipf	wipf@desy.de	ext. 3222
Michael Behrens	M.Behrens@desy.de	ext. 2556
Jan Hendrik Peters	petersjh@desy.de	ext. 2583

ZDV –The New Organization of Central Computing and its Objectives

by Dietrich Mönkemeyer

Since the 1st of January, 1995, the two groups R1 and R2 are merged into one single group, ZDV, responsible for the complete central computing at DESY.

The main tasks for the nearest future have been defined and appropriate working groups formed. The following list shows the different groups, their spokesmen, and their main tasks.

- **Operations** - Hans Kammerlocher

  Operation, maintenance, control, and automation of all central computing equipment

- **User Support** - Michael Behrens

  Consulting, training, documentation, and user registry

- **Application Software** - Peter-Klaus Schilling

  Choice, installation, and maintenance of application software supported on central systems

- **Desktop** - Erwin Deffur

  Support and development of systems for PCs, X-Terminals, and distributed printers and the development of administrative information systems

- **Networking** - Michael Ernst

  Development of an adequate, hierarchical, local area network, provision of a well performing wide area networking environment

- **Data Management** - Martin Gasthuber

  Planning and installation of soft- and hardware for mass storage systems

- **Unix** - Karsten Künne

  Development and implementation of Unix systems based on a client/server architecture

- **VMS** - Wolfgang Krechlok

  Support of the VMS platform

- **MVS** - Dieter Wiemann

  Support of the MVS platform

What are the Most Important Challenges for the Next Months ?

Work Group Servers

The first and foremost challenge is the realization of the work group server concept for the Unix world at DESY. This concept, based on reliable central servers, distributed work group servers, and the AFS file system, has been presented by Karsten Künne several times. The Unix group is now going to implement the concept which is developing step by step. Some of the central servers already exist, others will follow during the next weeks. Some work group servers, for example the *zedy* cluster of ZEUS, are already working. Finally we hope to have a well performing client/server system with very stable central servers for binaries, home directories, and batch jobs and with a high bandwidth to our mass storage systems used by different work group servers. In this context the machines from the HP cluster will be transformed into elements of work group servers.

Mass Storage Systems

Another big challenge is the provision of a suitable system for accessing all current and future mass storage systems at DESY. The OSM is already working for the HERA experiments and will also be used to access data for other users. New hardware for the ACS has been ordered, including faster drives for the 3490 technology (same capacity, 6 MByte/sec transfer rate) as well as helical scan drives for video cartridges (25 GByte capacity, 12 MByte/sec transfer time). The existing ACS drives are migrating step by step from MVS to the Unix world. 16 of the 36 ACS drives are connected to Unix already and operated by the OSM. This process will continue over the next months.

The ADSM is backing up 3.6 Million files from about 70 workstations and PCs. The server is still running on the MVS mainframe, but it will be ported to Unix when a usable connection to the ACS drives exists. Software for an ADSM Server on a Unix platform (RS/6000) is now available and will be ordered.

PC Support

A Novell based system for the PC world , very similar to the NICE system at CERN, has been developed and is already running for a certain number of users. With this system it will be possible to support many PCs in a standardized way. All software and the home directories are stored and managed on central servers and will be loaded from there into the PC if necessary.

The Situation of the IBM/MVS

The new CMOS mainframes for MVS are running very stably and without any problems. The load is going down continually. The CPU power of the two systems is adequate. If the ADSM can be ported to an RS/6000 and Ultranet is no longer used, it should be possible to remove the smaller system (9221/211) by the end of this year. About 50 of the old IBM disks, together with some disk controllers, have been donated to the JINR in Dubna. Further removal of IBM disks is planned during the year. The remaining disks will be replaced by modern RAID disks, which are much cheaper in terms of maintenance and power consumption.

Summing up, the era of big mainframes has ended sooner than expected. We are consequently migrating to the client/server world. There are many problems to be solved and above all we are missing tools for efficiently controlling and managing the whole distributed system and for preventing the misuse of the tremendous possibilities opened by this technology. However, there is no alternative at the moment. Please be patient and use the resources in a reasonable way.

Leaving DESY

by Michael Behrens

Sooner or later most people leave DESY – because they retire, because their contract ends, or simply because they go back to their home institute. Until now the computer center did not have adequate procedures for signing off. Now we have installed a scheme that should complement the User Registration scheme for all centrally managed systems.

We have developed a form for signing off one's computer accounts, and everybody leaving DESY must use this form in future. For DESY employees an established procedure exists – enforced by the DESY administration – that must be followed upon contract termination or retirement. Unfortunately most computer users are not employed by DESY and are not covered automatically by this procedure. We therefore need the help of group leaders and account representatives to achieve a full coverage.

How to Sign Off

The UCO provides Signoff Forms, similar to the usual Registration Forms, at the UCO or via WWW. A user leaving DESY has to fill out this form, sign it, and get his group administrators signature too. Then s/he should return the form to the UCO. The UCO will then remove the accounts as described below. Deleting an account is usually not as urgent as creating one, so please leave a few days for completion of the task. The form can be found on the web as
http://www.desy.de/pub/usg/ps/signoff.ps
We even have a german version of this form as
http://www.desy.de/pub/usg/ps/signoff.deutsch.ps

Safety Measures

At the first glance one might believe that it would be sufficient for a former user to simply send a mail containing the text: *"Please remove all my accounts. I have left DESY forever."* Unfortunately it is not so simple, and this results in the administrative procedures and the signatures required.

Owning an account on a computer implies two different things. One is the right to use this computer, the other is to store data on it. Terminating the first right is extremely simple and – in the case of a mistake – the right is easily reinstated without further harm for the user. This is quite different for the second point. When files are deleted, they are usually lost permanently.

Another point is that many people own files that are used by others, and quite often they are not aware of this fact. This is the reason that we ask for the groups signature in addition to the user's signature.

Experience has shown that even this is not enough. Once user files are deleted, it will sometimes happen that another user needs one of these files. For this reason we will preserve backup copies of the files for a few month to allow later recovery.

What Happens When an Account is Removed

All accounts to be removed will become unusable immediately – login and ftp will be disabled.

All files will either disappear or become inaccessible immediately, depending on the type of computer involved. After a few month time the remaining (but inaccessible) files and all file backups will be deleted completely.

Unix (SGI, HP)

All data will be deleted. The automatic backup system, ADSM, holds backup copies for all files older than the last working day. These backup will be preserved for 90 days. After 90 days the backups will be deleted.

VMS

The system administrators will produce a saveset of the existing files. This saveset is currently copied to an IBM cartridge and will be subject to the rules for unused files on IBM/MVS. It will be deleted automatically after the usual aging process.

IBM/MVS

On the IBM/MVS, manual backups are the user's responsibility, while an automatic backup is done only for NEWLIB libraries. All datasets will become inaccessible immediately. They will be deleted after the usual aging process and there will be no warning letters *since the files are not needed any longer and the owner does not exist any more.* Backup files will also be deleted at this point.

Novell

Home directories of Novell users are actually home directories on the central VMS system. Thus the rules for VMS apply to Novell users as well.

Oracle

User data will be EXPORTed and deleted immediately. The exported data will be deleted after the standard 90 day period.

Preserving "Group" Files

Many users will own files needed by other people. These files must simply be copied or moved to an existing account before the Signoff Form is completed. If – on the IBM/MVS system – a user owned many tape files used by other people, s/he could hand over the account to another person who inherits the responsibility for this account

Change in X-Terminal Chooser Policy

by Till Poser and Jan Hendrik Peters

Until very recently, only central unix clusters where accessible for login service from X-terminals at DESY.

From now on the choosers on NCD and Tektronics X-terminals will display the central VMS-cluster in addition to the central Unix machines. This new configuration is implemented step by step, and you may have to wait for some time until your terminal is setup this way. When you connect to the VMS cluster, some features are different from the ones you will normally find when you connect to the central unix systems at DESY. A description of what has to be observed can be found below.

At the same time the input field for hosts other than those listed in the chooser menu will be opened for user input. This will allow users to connect to any machine at DESY which is offering an X-based login service (xdm). Whenever the host or cluster you want to access is offered in the menu you should use this entry. This will insure the proper connection to the correct network interface and will help system managers to distribute the load across their workstation clusters.

Security Aspects

For central machines listed in the chooser menu the DESY computer center will ensure security at the level of MIT-Magic-Cookie (host, user and session) for the unix machines and on the host level for VMS machines. For all other machines the security level will be the one provided by the system administrator of the respective machine.

Security based on the MIT-Magic-Cookie will only grant access to your X-session for those applications that know your security key, e.g. all applications that you start in a given session on this specific host.

Host based security does not insure the complete privacy of your X-session. Knowledgeable users on that host might be able to read the contents of your screen or input from your keyboard. Therefore host based X-authorization should be avoided whenever possible, or should only be activated if needed, e.g. during the opening of a new X-window. On UNIX machines the command to allow X-applications to appear on your screen is called *xhost*. A typical session could look like this:

```
[host] ~ $ xhost +foreign-hostname
[host] ~ $ your-xapplication &
[host] ~ $ xhost -foreign-hostname
```

The last command would remove the x-authorization given by the first command. **Note: the command xhost + with no host name should NEVER be given!** It will allow X-access for the entire internet community!

Direct VMS Access from X-Terminals

As of recently, the VXDESY VMS cluster has been enabled in the chooser menu of nearly all Tektronix terminals that are centrally served and maintained by the X11-support group. This means that users can now log in to the VMS Cluster directly via the VMS login box after choosing the machine in the XDMCP menu.

This service is now also available for most NCD-terminals that are able to run the newer NCDWare programs (3.3 images or higher versions). However, there are a few things to be aware of:

- The security mechanism between host and terminal is host-based, i.e. the authorization to use the X-terminal is granted to all users on the specified host. This is contrary to the way normal DECWindows security works on DECNET, i.e. via hostname, username and transport name.
- Users who jump to UNIX nodes will have to enable those machines from within the "Security" panel that can be called up via the session manager menu "Customize." Note that this security feature is host based only.

- The VMS security panel is, in effect, a way to maintain the list of nodes that are allowed to connect to the X-terminal. Each individual entry which has been created during a session will be **retained** until expressly removed either in the active session or in subsequent sessions.
- To insure proper behavior of the security mechanism, always use a full "TRANSPORT USER HOST" authentication. Do **not** use wild-card characters (* or %)! Some X-terminal software will show unpredictable behavior with respect to security after such characters have been downloaded. Wild-cards work under DECNET **only**!

XDM Login to VXDESY

The direct way to a session on VXDESY is simple. In the chooser menu on your X-terminal, choose a VMS service, either via the cluster alias VXDESY or via an explicit name.. The VMS login box should now appear on your screen. Just type in your user name and your password and the session will start up. You can configure your session via the "Options" menu in the session manager menu bar.

Users accustomed to the standard UNIX environment on the central facilities will notice that neither the xctrl window nor the toolchest will appear on VMS. Both roles are taken over by the "session manager". This window will appear by default with only three menus in its menu bar: Session, Applications, and Options. This can be changed by using the customization entries in the Options menu. Online help on this subject is available by clicking on the Help button in the session manager menu bar

Users who log in to UNIX hosts via a VMS X-windows session and who expect to start X-applications there must enter that host into the session security panel:

- Go to the session manager
- Choose the menu "Options"
- Choose the item "Security"
- Enter host, username and transport (always TCPIP) in the dialog box that pops up.
- Click on the ADD-Button (repeat this operation for all required nodes)
- Click on the APPLY-Button to down-load the information to the X-terminal.

Once that is done, you can start X-applications.

If the VMS-machines are included in an .rhosts file on the UNIX host, an X-application may be started by a command such as the following:

```
$ rsh x4u2 "setenv DISPLAY " -
_$ "''DECW$DISPLAY_NODE':0.0; xterm"
```

Note: the command to set the display environment variable depends on your default shell, on ksh or zsh it should be:
`"export DISPLAY=''DECW$DISPLAY_NODE':0.0"`

Starting a Session on VXDESY from a Different X-Server

To start up an X-session on VXDESY from another machine, the straight-forward way is to use telnet or xtelnet on the respective UNIX machine. When using this method, however, the proper display variable on the VMS side may not be set and the session on the VAX may not be authorized to start an X-application on the display. To correct this, issue the following command in the UNIX session:

`[host] ~ $ do_xauth vxdesy`

(if your machine does not have `do_xauth`, which is a DESY product, use
`$ xhost <vmsnodename>` *(see above for the security aspects)*)
On the VMS side, issue the command:

```
$ set display/create/transport=tcpip -
_$ /node=<terminal name>
```

The terminal name in the above line is the IP-address (or the IP-number) of the physical device (X-terminal, workstation) that your screen is connected to.

A more elegant solution is to trigger the creation of a DECTERM window on your display. This requires a bit of preparation, but is simpler in the long run:

```
1. Create (or update) an .rhosts file in your VMS login directory.
    Insert possible machine-username combinations into this file:

$ create sys$login:.rhosts   ! This is an example!
x4u2 jones
lutefisk jones
^Z

2. Create the following command file in your VMS-Account:
   (Call it XT.COM, or whatever)

$ if p1.eqs.""
$ then rem_node="xtr999" ! default xterminal, insert your own
$ else rem_node=f$element(0,":",p1)
$ endif
$ set display/create/transport=tcpip/node='rem_node
$ unam = f$edit(f$getjpi("","username"),"trim")
$ unod = f$getsyi("nodename")
$ create/terminal/detach-
        /window=(title="''unam' on ''unod', a ''f$getsyi("hw name")'",-
                 icon="''unam'@''unod'")
$ logout

3. Issue the following commands in your UNIX session:

[host] ~ $ do_xauth vxdesy
[host] ~ $ rsh vxdesy @xt $DISPLAY >/dev/null
```

A full DECTERM should pop up with title bar and icon name properly set. This window is completely independent from the rest of the X-session.

The UNIX commands can obviously be aliased or put into a shell script. If you require a specific VMS CPU, replace vxdesy with that machine name.

Users on the central UNIX machines are urgently advised to create a zero length file .Delete in their UNIX home directories: This will get rid of the totally annoying BACKSPACE <—> DELETE key mapping problem, since the DELETE–key ⟨⌧⟩ on the keyboard will be remapped to %X7F by system utilities.

Access to Non-central Hosts

With the opening of the chooser menu, you can now type any hostname into the login chooser menu, provided that the host you select runs xdmcp (the XDM control program). Pressing the ⟨RETURN⟩ key will set up an xdm session. Depending on the level of X11 running on the remote host, the security mechanism might vary. Please contact the system manager of the remote machine for questions concerning security.

If the remote host is not part of the domain desy.de, you should NOT setup a remote X-session to this host. Due to network considerations and possible security problems this is strongly discouraged. If the host is on the DESY site, you should specify the correct network interface of the machine when setting up the connection. Usually an X-connection will only work with one of the interfaces. When in doubt, contact the system manager of the machine.

The setup of the DESY X-terminals will work with almost all machines on the DESY site. However, under certain circumstances the setup might not work properly.

I Have a Problem, What Should I Do ?

by Michael Behrens

The following list should help you to find the proper contact if you have a request, a problem or need help. It contains a short description of administrative procedures, addresses to consult in case of trouble, some information regarding support for PCs and a (very) short list of recommended books. In future, we will extend this list and make it available online as well.

Accounts, Terminal Requests and Name Service

New account needed	Get a **Registration Form** from the UCO, or via `WWW` from the User Support page, or via anonymous ftp to `ftp.desy.de` from the directory pub/usg/ps
Modem access	Get the **Modem Form** from the UCO. Phone number and password for access to DESY are available from the UCO once the completed form with all signatures is returned to the UCO.
Leaving DESY	Get the **Signoff Form** from the UCO or via `WWW` and return the completed form to the UCO. *(See also the corresponding article in this Newsletter.)*
IP address request	Send email to **dns@desy.de** containing at least the name you have selected, the type of equipment and the location.
New X terminal requested	Send an email to **deffur@desy.de** with a detailed request. This should normally be done by the group and not by individual people.

Something Does Not Work

X terminal out of order	Send email to **X-terminal.service@desy.de** containing a description of the problem, an identification of the device and its location.
IBM terminal out of order	Send email to **IBM-terminal.service@desy.de** with the information as described above
Falco terminal out of order	Send it to F54/EPOS in building 2b, 6th floor, for repair
Falco terminal misconfigured	A writeup *How to SETUP a Falco Terminal* is available from the UCO.
Network printer out of order	Basic operations you should do yourself, e.g. remove paper jam. For other problems send an email to **print.service@desy.de**
PC printer out of order	Ask B. Lange, F54 / ext. 2351. There are no plans for a general service for local printers at DESY.

PC Related Stuff

PC registration	Before you get the benefits of the DESY Desktop Support, you have to register your PC. This can be done individually or for a whole group. For each PC, a form has to filled out and sent to Erwin Deffur via email to **deffur@desy.de** or via ordinary mail. Registration forms are available online through `WWW` or from the UCO.
PC documentation needed	Documentation for Microsoft products is available online in the NICE standard setup for Novell based PCs. Printed documentation is available from the DESY *Lager*. Two smaller books in German covering the basic functions for Word 6.0 (nr. 67002) and Excel 5.0 (nr. 67000), are available as well as the full Microsoft documentation in English or German. The DESY library has a copy of all the documentation as well.
PC software needed	Get your PC registered first (see PC registration above). The standard DESY NICE setup should give access to most of the necessary software automatically,though currently only the US version of the products. Otherwise the product can be installed locally from the Novell server. For PCs without access to Novell, diskettes for the usual Microsoft products can be borrowed from B.Lange / C. Laumann from the group F54 or from the UCO.
PC training	Send request to UCO@desy.de or to M.Behrens@desy.de We will try to organize basic training for **Word** or **Excel**.

Books

LaTeX book	The DESY library has multiple copies of LaTeX books. The most recommended books are : L.Lamport : LaTeX User's Guide & Reference Manual (*the well known "standard" book*) M.Goossens, F.Mittelbach, A.Samarin: The LaTeX companion. (*more up-to-date, contains the "new" LaTeX*) Ask the library staff if you cannot find them in the bookshelves. Some of these books are kept in the staff offices to prevent thefts.
Unix book	We recommend: M. Sobell *A Practical Guide to Unix...* -or- P. Abrahams *Unix for the Impatient*
Oracle book	P. Stürmer *Oracle 7*

If you do not find your problem mentioned above, then you should contact the UCO.
email: uco@desy.de, phone: 2510, Office hours: Monday – Thursday: 14:00 – 16:30, Friday 9:30 – 12:00

SPIRES on Unix and WWW

by Michael Behrens

SPIRES on x4u and dice

SPIRES has been ported to our central SGI systems by Harald Butenschön. It is available on x4u2 and dice2, and can be used in the same way as the former implementation on the DESY IBM/MVS system. It can be started with the command *spires*. This implementation is identical to the old IBM version, so former IBM users will already know how to use it.

SPIRES Access Through WWW

There is yet another way to access spires besides calling it directly from the machines mentioned above. A forms interface has been included on the **Library and Documentation** page of *WWW* provided by the DESY Library. Under the heading **Search form** you will find a search form which can be used to access the SPIRES database. With this method SPIRES can be used from almost all machines on the site, except for the IBM/MVS system. You simply use your favorite *WWW*–browser, e.g. *mosaic* or *netscape*.

Search Guide

On the Library page you will also find a **search guide** that explains in detail how to use SPIRES. This description has been produced by Sabine Pfaff from the DESY library. There are many more links on this page pointing to the various services provided by the library. You should have a look to check what services are provided online.

The Old IBM Version

Since the beginning of March, 1995, the old version on the IBM can no longer be updated (for technical reasons outside DESY). The contents of this version of the database will therefore become less and less valuable, and all users should use it on x4u or dice or via *WWW* as described above.

Work Group Servers at DESY

by Karsten Künne

Until now, DESY essentially tried to provide what one could call "unix mainframes": relatively large machines or clusters of machines that provided all possible services with a single system. These services included home directories, program binaries, and interactive and batch usage of the processors. With the growing utilization of this type of system we – and you – have experienced stability as well as scalability problems, and we will tackle these problems by introducing a client/server model. In future the existing setup of the central computers will be replaced by a work group server model in an evolutionary manner. The new concept should provide better scalability and reliability and a consistent environment for the user across computing platforms.

General Ideas

In the new structure there will be a strong distinction between different services which are provided by specialized server machines. These server machines are single purpose machines and provide a single specific service to other machines which are clients. The following new services will be provided by the following servers:

- Home directory service by **home directory servers**

- Application programs by **program binary servers**
- CPU and memory for interactive use by **work group servers**
- Batch service by **batch servers**

Due to the specialization and replication of the server machines, the overall availability should be better than before. All servers and clients will be connected via the network (with various networking technologies). The basic network protocol will be TCP/IP and on top of that AFS as a network file system. Users will work with X-Terminals or on the display of the **work group servers** and log in to the **work group servers**.

In the first stage there will be 3 **home directory servers** and 3 **program binary servers** plus a number of **work group servers**. **Home directory servers** and **program binary servers** will be provided centrally, whereas **work group servers** can also come from specific DESY groups. Every **work group server** will be assigned to a specific "work group", which means a collection of people who are somehow related to one another. The size of a work group can be from 5 to 50 people. Every work group can be (and should be) assigned to more than one **work group server**. In order to balance the workload, there will be the option of distributing users automatically among the **work group servers** of a group.

The **program binary servers** will be replicated servers and all serve the same programs. (*Binary Servers are read–only and can therefore be replicated without problems.*) The **home directory servers** can not be replicated, but will be made as reliable as possible by using special disk technology.

Disk Space Issues

In order to increase the availability of the home directories as a key part of the users working environment, the **home directory servers** will be equipped with RAID-arrays. This actually introduces two "flavors" of disk space: reliable, expensive disk space on RAID-arrays and cheap, inexpensive disk space on normal disks. Because of the higher price of the RAID-arrays, the amount of disk space per user on these arrays has to be limited. The home directory of a user should only contain the daily working environment of the user and files which cannot be easily recreated by using CPU power (that includes, for instance, mail files, reports, and other text files, etc.).

Large files with a size > 100 MB (experiment data for instance) should not be accessed over the network for performance reasons. Therefore these files will be located on the **batch servers** which will be equipped with a large amount of disk space. The read and write access to these files must be made via batch jobs running on the **batch servers**. The **batch servers** will also be able to stage files between their disks and various tape devices. In addition, the disks of the **batch servers** could be made accessible over the network for lookup purposes only.

The **work group servers** will also have the ability to stage files from various tapes to local disks. In order to do this, these servers will be equipped with some amount of local disk space (in the range between 1 and 10 GB). This disk space will be treated as temporary space, which means files on these disks will have a limited life time (in the range of 24 hours, maybe longer) and there will be some kind of garbage collection. Later it could be imagined that tape files will be made accessible through a hierarchical storage manager which runs on these **work group servers** and which manages the local temporary disk space.

Because of the decoupling of users from **work group servers** and the optional automatic distribution of users among **work group servers**, it is possible that a user might work on one **work group server** one day and a different **work group server** the next. If the user then wants to access the same large files, these files have to be staged again. In order to avoid a lot of staging activity for files which are of modest size (20 to 100 MB), should be kept for a longer period of time, but aren't valuable enough to go in the users home directory, there will be the option of assigning inexpensive disk space to users on an AFS-Server (either the **home directory servers** or the **program binary servers** or separate data servers). This will not be done automatically for every user but strictly demand!

Home Directory Layout

With the introduction of AFS, there are some issues which have to be kept in mind when talking about access rights for files. In order to make file access more fine grained, AFS uses Access Control Lists (ACL's). These ACL's can only be assigned per directory. Because of the wide area features of AFS it is possible to access AFS files worldwide! Because every user will have the same home directory on **work group servers** of different binary architectures, something has to be done in order to distinguish between programs for these different architectures. All this leads to the following initial layout for a users home directory:

- a user's home directory will be accessible only to the user himself, but other users can see which files are in it (but cannot read the files),
- there will be a subdirectory *private*, accessible only to the user ,
- there will be a subdirectory *public* with worldwide access,
- there will be subdirectories *Mail* and *mail* with access only for the user himself,
- if the user needs a *.forward* file it has to be created in the *public* subdirectory and a link has to be made in the home directory because the mail transport agent usually runs unauthenticated,
- there will be a subdirectory with the appropriate access rights for the DESY group which the user belongs to (*zeus*, *h1* , and so on),
- for every binary architecture which is used at DESY there will be a hidden subdirectory, for instance *.sun4m_53/bin* for Sun's running SunOS 5.3,
- the *bin* subdirectory will be a link *.@sys/bin* which automatically points to the appropriate hidden subdirectory for the architecture of the **work group server** the user is logged in to (this is done by the AFS cache manager),
- if the user has a data volume on inexpensive disks on an AFS-Server, it should be mounted as *data*.

The home directories will be cloned every night, which means that a snapshot of the home directories will be made at that time. This snapshot will be stored under the name *.OldFiles* in the users home directory, so that every user can access files from the previous day.

Miscellaneous Issues

AFS also introduces a new security concept which is based on tokens with a limited life-time. The default token lifetime will be 25 hours. It could be shorter for some accounts, but not longer. Every user will obtain a fresh token on login, either through the login program or, if this is not possible, through some commands in the login profile. This means that if the user logs out at least once per day, he/she should never have problems in this area. Users who stay logged in longer than 25 hours have to use the "klog" command in order to obtain a fresh token. In order to make it easier to get a new token for X-Terminal users, a version of the *xlock* program will be provided which obtains a fresh token on every screen unlock. For batch jobs a solution will be provided which guarantees that the batch process has a valid token during its life time.

Migration Issues

In order to avoid problems and confusion when mixing the old and the new structure, the new structure will be built up mostly separated from the old UNIX structure. During the migration phase the user will have a home directory on the new machines and will still have the old home directories on other machines. If all machines the user is working on are part of the new structure and can access AFS files, the old home directories will disappear. Machines will be converted to the new structure step by step by installing the AFS client code.

In order to make the migration process more painless, the AFS file space will be made accessible to machines from the old UNIX structure through one or more AFS/NFS-translator machines. It should be kept in mind, however, that the use of the translator is painful and slow, and the best way to access AFS is always through a real AFS client. The old home directories will also be made available on the new **work group servers** via NFS. This will be done through the usual auto-mounter setup which will be transferred to the new NIS domain.

Current Status

Currently the central **home directory** and **program binary servers** are in the process of installation. Two servers are running already and currently serve program binaries as well as home directories. The RAID-array for the home directories will hopefully be up and running in the next weeks. At this time all **home directory servers** will also go into production.

There are currently two clusters of **work group servers** available. One cluster consists of the *zedy* machines (Sun workstations running Solaris 2.3) belonging to the ZEUS collaboration. The other cluster consists of HP workstations and is exclusively used by the M-Groups at DESY (MPY and others). In the future it is planned to convert the machines which are part of the well known HP-Cluster to **work group servers** and integrate them into the new UNIX structure.

PC Training at DESY

by Michael Behrens

This is the first article of the DESY Computing Newsletter that is written using the wrong language, because the intended audience usually speaks German and probably won't even read this newsletter.

Since the announcement of a central service for PCs at DESY last summer , the User Support Group has received lots of requests for PC training and education. Until recently, computing was mainly done by physicists and for physics needs. Physicists usually have a reasonable background and experience in computing when they come to DESY. They need only a limited amount of education or training in this field, and they can get most of it from manuals, from their colleagues or from their home university.

Now, with the arrival of PCs on many people's desks, a completely new clientele emerges. Computing - or data processing - has left the technical areas and is present in almost all offices and workshops as well. This is a demanding job for the Desktop Support people in the computer center, and has led to a dramatic increase in requests for training and education. Often these requests come from people who were never involved with computing before.

User Support has started to offer training courses for PC users. We either hold internal classes or organize external ones. Our main aim is to provide basic skills in the standard applications.

The current offerings provided internally by User Support are classes for beginners in **Word** and **Excel**. We also organize external classes if we cannot provide internal ones because we do not have the necessary capacity or knowledge.

All requests for training should be discussed with User Support.

Questions and Answers from the UCO

by Katherine Wipf

The User Consulting Office answers quite a variety of questions, but usually only a few people hear the answers. This column tries to bring the answers to more frequently asked questions to a larger audience.

. . . *about Printing*

○ **Question:** I need to print a large document (more than 100 pages) and would like to do this after 18:00 so that it doesn't disturb others so much. Is there any way I can start the print command and give a time when the document should be printed?

○ **Answer:** Depending on which platform you are printing from, there are different solutions to this problem:

UNIX: You can use the unix at command. Simply type in `at 18:00` and press ⟨RETURN⟩. Now type in your print command, remembering to give the full path name of the file you want to print. Finally press ⟨Ctrl⟩d in order to send off the command. Here is an example at command on the x4u2:

```
[x4u2] ~ $ at 19:30
lp -dr02ps2 /home/x4u/wipf/dir/file.ps
⟨Ctrl⟩d
[x4u2] ~ $
```

VXDESY: The simplest way to execute a command at a certain time is to write it into a command file and submit the file to a batch queue with the `/after` qualifier. To avoid surprises, you should specify the fully qualified name of the file to be printed (with disk and directory). Here is an example of a command file, pr.com, for printing myfile.txt from the login directory:

```
$ print/queue=r02ps3 sys$login:file.txt
```

To submit pr.com to a batch queue you would use the following command:

```
$ submit/after=19:30/queue=sys$fast -
_$ pr.com
```

○ **Question:** How can I produce single sided output on a duplex printer?

○ **Answer:** The command you need to use depends on the platform you are printing from:

VXDESY: It is not possible to produce single sided output using the standard VMS `print` command. Use the `lpr` command with the -osim option instead, for example:

```
$ lpr -osim -qr02ps2 myfile.txt
```

IBM: On the IBM you need to use either the `print` command to print plain text files, or the `plot` command to render postscript output. Both commands offer a simplex option and would look something like this:

```
print opt simplex dest r02ps2 mymember
plot opt simplex dest r02ps2 myfile.ps
```

UNIX: Use the `lp` command with the -osim option:

```
lp -osim -dr02ps2 myfile.ps
```

. . . *about Unix*

○ **Question:** Whenever I give a unix command such as `ps` or `ls` I get the message

```
zsh: fork failed:
        resource temporarily unavailable
```

What does this mean? How can I fix the problem? I can't do anything at the moment!

○ **Answer:** This means that you have too many processes running and have reached the process limit for your session. You will have to stop one process, an xterm for example, before you can do anything. Then you can use the `ps` command to get a list of your current processes so that you can remove the unnecessary ones. You may also see processes which, instead of showing a command, are marked <defunct>. These are processes which have ended without their parent process registering the termination. You can only remove defunct processes by stopping their parent process (the `ps -f` command will show you the id of the parent process under `PPID`).

○ **Question:** I use pine on unix to send my email and would like my name, address, phone number, etc. to appear on each message I send. Can this be inserted into each mail automatically?

○ **Answer:** Yes. You need to create a file named .signature in your home directory. The contents of this file will automatically be inserted into each mail that you send (regardless of the mail program you use).

○ **Question:** I have a file in my unix home directory which has a very strange name containing a * and blanks. I can't list this file, copy it or delete it. How do I get rid of it?

○ **Answer:** There are several tricks which you can try:

1. Files containing blanks in their name can be copied, listed, deleted, etc. by surrounding the name with quotation marks. Example:
   `rm "`*`file with blank in name`*`"`
2. Special characters in file names can be protected with a backslash (so that they aren't interpreted by your shell). Example:
   `cp` *fi\#lena*me filename*
3. If your filename starts with a minus sign, neither of the first two tricks will work because your file name will be interpreted as command options. The simplest way to remove such a file is to create a dummy file (for example by copying an existing file) and then delete both the dummy and the file starting with minus. Example:
   `rm` *dummy -filename*
4. If the file name contains characters which aren't on the keyboard, you can sometimes manage to enter the name using zsh command completion. If the z shell is not your default shell, type in zsh. Then type a command such as cp and the beginning of the file name and press the ⟨TAB⟩ key. The zsh should complete the name.
5. If none of these tricks work, you could also try giving the `rm -i *` command. You will be prompted about deleting each file in your directory and can say no for all files except the one with the strange name which you want to remove.

. . . about VMS

○ **Question:** When I submit a batch job on VXDESY, the job output is sent to my default printer and deleted from the disk. I would prefer that it remain on the disk and not be printed. Is this possible?

○ **Answer:** Yes. You need to submit your job with the `/noprinter` qualifier.

○ **Question:** I was editing a file with the lse editor when the machine crashed. Is there a way to retrieve my unsaved changes?

○ **Answer:** Yes. Start to edit the file using lse. Once you are in the editor, press the ⟨Do⟩ key and give the command `recover buffer`. You will be prompted for a file name and can type in either the name of the file or of the corresponding journal file (visible when you list your directory). Typing the file name will lead to an error message and the question: `Recover next lower version?` Answer this and the following questions with yes and you unsaved changes should be restored.

User Support Group Publications

Document №	Title	Current Version
USG/90/1	Printing at DESY *(to be revised)*	October 17, 1990
USG/90/2	IBM/MVS Extended Architecture	December 12, 1990
USG/93/1	Reference Card for the *vi* Editor on Falcos and X-terminals	June 28, 1993
USG/93/2	Pico - a very Simple Editor on Unix	June 21, 1993
USG/93/3	How to use the Previewer *xdvi* and *ghostview*	June 29, 1993
USG/93/4	The UCO Diskette Copying Facility	December 22, 1993
USG/93/5	X-Terminal *Choosers*	November 23, 1994
USG/93/6	Introduction to *NCSA Mosaic*	December 14, 1993
USG/93/7	*Emacs* Mini-Reference Card	August 4, 1993
USG/93/8	Introduction to *Unix* at DESY	August 5, 1994
USG/93/9	How to Send a FAX Using Email from any Computer at DESY	June 22, 1995
USG/93/10	Remote Login Without a DESY Computer Account	October 22, 1993
USG/93/11	Compiling *FORTRAN* and *C* Programs on *Unix* Machines	December 14, 1993
USG/94/1	Basic Introduction to SQL*PLUS	September 5, 1994
USG/94/2d	Das DESY-Rechenzentrum	November 18, 1994
USG/94/2e	The DESY Computer Center	November 18, 1994
USG/94/3	How to Include PostScript and Encapsulated PostScript into LaTeX	September 5, 1994
USG/94/4	Emacs Commands for NEWLIB Users	August 16, 1994
USG/94/5	How to use X-Terminals	August 18, 1994
USG/95/1	Introduction to Lynx	April 27, 1995

These publications are available in the self-service area of the computer center and from WWW under the URL `http://info.desy.de/UCO/documentation.html`