SEST system administration handbook

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Mikael Lerner

Contents

Chapter 1

System administration tasks

1.1 Periodic tasks

This chapter describes the tasks that the system administrator has to perform regularly on our system.

1.1.1 Upon arrival and departure

- Clean the DAT-drives on PUPPIS and VELA. The cleaning tape is used up when there is nothing left on the left reel.
- Check that there is a large enough supply of printer paper, toner cartridges, DAT-tapes, CDs and diskettes.

1.1.2 Daily tasks

- Check the CPU-load on all HPs:
  > `top`
  Some programs may crash for the user but are still running on the system consuming all CPU-time they can get (*Netscape* has a habit of doing this sometimes). If there are any such runaway programs, kill them with:
  > `kill` *process-ID*
  or
  > `kill -9` *process-ID* (necessary for *Netscape*)
- Check that the printers are OK and that they have paper and toner. If the `Form Feed` button is lit on LYNX, then there is a job hanging on the printer. To get it started, press the `On Line` button followed by `Form Feed` and then `On Line` again. If there is a paper jam, check what is in the queue first:
  > `lpstat -t`
  or

> `ls -l /var/spool/lp/request/`*printer*
If there seems to be multiple jobs, delete them with:
> `cancel` *printer-queuenumber* (e.g. > `cancel lynx-342`)
You can also stop the queue, while you are fixing the printer:
> `disable` *printer*
and then restart the queue with:
> `enable` *printer*

- Check that the printers are enabled and that there are no jobs hanging in the queues:
  > `lpstat -t`
  If there are jobs hanging in the LYNX queue on VELA, check that there are no Postscript files in the queue:
  > `file /var/spool/lp/request/lynx`
  Each print job has two files in this directory: the actual file to be printed has a name starting with a "`d`" and there is also a corresponding status file starting with a "`c`". Delete all Postscript files with:
  > `cancel` *printer-queuenumber* (e.g. > `cancel lynx-342`)

1.1.3 Bi-weekly tasks

The bi-weekly maintenance tasks should be performed right before a back-up of the system. Since the back-ups require the system to be taken down, the bi-weekly maintenance should be planned in advance and announced properly. Especially for PUPPIS, it is important to inform the users about the maintenance several days in advance.

- The message-of-the-day facility can be used to give all users a message when they login to a computer. To activate this facility, type:
  > `install_motd`
  Edit the old message (Yes, the automatic editor is `emacs` — remember: `Ctrl-X`+`Ctrl-C` to exit) and select a proper message for the button in the X-version. Do NOT try to manipulate the `/etc/motd` file directly, since that will not update the X-version.

- To deactivate the message-of-the-day, use:
  > `install_motd -n`

All monitors (on all HPs, X-terminals and PCs) should be degaussed regularly. Some monitors have special buttons for degaussing, while others perform a degaussing when the power is cycled to them.

These are the tasks that the system administrator has to perform on each HP during the bi-weekly maintenance. You need to be logged in as `root` to be able to perform most of these tasks. All tasks can be performed through `telnet` sessions from another machine with the exception of those tasks requiring the computer to be in maintenance mode, which will require you to work from the console.

- Perform the normal daily tasks.
  - See the section above.
- Check the security.
  - Check consistency of `/etc/passwd` and `/etc/group`:
    > `pwck` (should give no reply)
    > `grpck` (should only complain about `tty` and `nogroup`)
  - Check consistency of authentication database:
    > `authck -p` (should give no reply)
  - Check which machines that are using local disks over NFS (not available on VELA):
    > `showmount -a`
    Make sure that there are only "friendly" machines in the list. On VOLANS, there should be no exported disks.
  - Check successful logins:
    > `last -R | more`
    or
    > `who -a /var/adm/wtmp | more`
    Check for logins to rarely used accounts, excessive logins to some accounts and for remote logins from suspicious computers.
  - Check unsuccessful logins:
    > `lastb -R | more`
    or
    > `who -a /var/adm/btmp | more`
    Check for repeated login attempts to accounts, login attempts to non-existing accounts and attempted logins from suspicious computers.
  - Check current logins:
    > `who -a`
  - Check the usage of the `su` command since last reboot:
    > `more /var/adm/sulog`
    A successful `su` is indicated with a '+' and an unsuccessful one with a '−'. The last entry on each line indicates from which account the `su` was run and to which user the change was. Note, this file only exists if someone has used `su` since the last reboot. On VELA and VOLANS, `su` commands are used by `root` to start up the database

server and each time a Pegasus account is cleaned from another account. If the computer has been rebooted since the last bi-weekly maintenance, also check the log file for the period before the last reboot:
> `more /var/adm/OLDsulog`

- Check the system log.
  - The system log is located in `/var/adm/syslog` and should be checked for errors, problems and hacking attempts:
    > `cd /var/adm/syslog`
    > `ls -l`
    > `more syslog.log`
  - If the computer has been rebooted since the last bi-weekly maintenance, the old log file `/var/adm/syslog/OLDsyslog.log` should be checked:
    > `check_messages -o`
  - Check for various messages and connections in the current log file:
    > `check_messages`
    The messages found on non-ESO and unknown connection attempts are automatically appended to the files `~root/connections` and `~root/unknowns`.
- Check a number of crucial system files.
  - To compare the current files with the on-line back-ups which are stored in `/var/adm/checks/`*computername*, type:
    > `check_sysfiles`
    Check for any strange modifications. If files have been updated and you want to put the new versions in `/var/adm/checks/`*computername*, go to this directory and use the the `cp` command with the "`-p`" option to preserve ownership and modification date.
  - Check `suid` and `sgid` programs:
    > `check_suid`   (this takes a couple of minutes)
    Any change to a `suid` or a `sgid` program reported should be investigated. If files have been updated and you want to generate a new reference list, run `check_suid` with the "`-s`" option.
- Check the network.
  - Check the network connection with:
    > `netstat -i`
    The number of errors should be less than 0.1% of the traffic and the number of collisions should be less than 5% of the traffic.

- Check the time synchronisation system.
  - To get the status of the time synchronisation, type:
    > `ntpq -c peers carina puppis vela volans`
    Check that there is either a '`*`' (main server) or a '`+`' (secondary server) in front of the computer names in the field "`remote`", indicating that data is coming from the servers. The "`when`" field indicates the time (in seconds) since the last successful connection, and this value should be less than the poll interval shown in the field "`poll`".
- Clean-up the anonymous FTP-area (only applies to PUPPIS).
  - Check that there is no security hole allowing up-loads:
    > `cd /home/ftp`
    > `ls -l`
    There should only be three directories in this directory called `etc`, `pub` and `usr`. The `pub`-directory should be owned by `root:users` and have permissions `drwxrwxr-x`, while the two others should be owned by `root:sys` and have permissions `dr-xr-xr-x`.
    > `find . -user ftp` (should reply nothing)
    Uploaded files will be owned by the user `ftp`. If such files exist, something is wrong.
  - Check the size of the FTP-area:
    > `cd /home/ftp/pub`
    > `du -k` (size of each directory reported in kB)
  - Check for old files in the FTP-area and ask the owners if they can be removed:
    > `ls -ARl | more`
  - Make sure that the directory for the observers has not been removed:
    > `ls -l`
    Verify that the directory `observer` exists and is owned by `daprog:observer` and has the permission `drwxrwxr-x`. If not, create it:
    > `mkdir observer`
    > `chown daprog:observer observer`
    > `chmod ug=rwx,o=rx observer`
  - Check that there are no files with too generous permissions, i.e. `other` should not have write permission:
    > `find . -perm -o=w` (should reply nothing)
    If you find files with write permission for `other`, remove that permission with:
    > `find . -perm -o=w -exec chmod o-w {} \;`

- Check the mail status.
  - Check whether there are undelivered mails:
    > `ls -l /var/spool/mqueue`
    This directory should be empty, or any files in it should have been created very recently (hours). If there are older files, there may be a problem with the mailing daemon.
  - Check the incoming mailboxes:
    > `cd /var/mail`
    > `ls -lt`
    Check that the mailboxes are not becoming too large; complain to the owner if that happens. Check that the mailboxes of accounts that should not get any mails are empty (e.g. `daprog` and `director`). Mails are for example sent to accounts when printer jobs are cancelled or if there are problems with cron jobs. Also check the observing accounts and clean mailboxes belonging to observer's that has already left SEST. The best way to empty a mailbox is to type (Note that using `rm` and `touch` will NOT work unless you also change the ownership and permissions of the new mailbox!):
    > `cat >!` *account* followed by a `Ctrl+D`
    Emails to unexpected accounts should be checked before being removed, but otherwise respect people's privacy and DO NOT READ other peoples' emails!

- Clean-up temporary disk areas.
  - Search for `core` files:
    > `qfind '/core$'`
    and delete any files you find.
  - Delete any files found in the following directories that are older than an hour:
    `/var/preserve`
    `/var/spool/cron/tmp`
  - Delete all files in `/var/tmp` except the two sockets that are called `psb_*_socket` and the file `swagent.log`.
  - Clean up in `/tmp`. This is usually a bit tricky since there are a number of files there which must not be removed (and a number of them are even empty). Here are a few hints:
    * Any `Netscape` file or directory can be removed. The name begins with "`ns`".
    * Of the files starting with a number followed by either "`.sh`" or "`.ps`", everyone can be deleted except those created at the last reboot, i.e. the files with the most recent date.

      * Delete any file ending with "`.tmp`" (except "`weather.tmp`"), "`.gif`" (except "`meteo.gif`"), "`.jpg`", "`.jpeg`", "`.ps`" (except for files beginning with a number).
      * On PUPPIS and CARINA both the files "`weather_data.log`" and "`weather_image.log`" can be safely erased.
      * Old mail files can be safely deleted if the user is not logged in. Mail files have names beginning with "`maa`", "`mail`" or "`send.`". Some mail files are owned by the group `mail`.
      * Any file larger than 250 kB can probably be safely erased. These are the files we really want to get rid of since they consume disk space.
      * On VOLANS, any file starting with "`lock`" can be removed.
  - Clean up old Pegasus lock files (only applies to VELA):
    > `cd /tmp/cfhtlocks`
    > `find /tmp/cfhtlocks -mtime +1 -exec ls -ld {} \; | more`
    Verify that there are only old Pegasus lock files before actually removing them:
    > `find /tmp/cfhtlocks -mtime +1 -exec rm {} \;`
  - Check the usage of the scratch areas `/cdscr` on VELA, `/cdscr` on VOLANS and `/scratch` on PUPPIS. Ask owners of large and old file sets whether they can be deleted.

- Check the disk quotas (does not apply to VOLANS).

  - Disk quotas are used on `/staff` on CARINA, `/home` on PUPPIS and `/` on VELA. Run the following check:
    > `quotacheck -v -a`
    > `repquota -v -a | sort`
    Check if anyone is above the limits and decide on whether to increase the quota or not. The amount of available space of the disk should be taken into consideration when handling disk quotas. Remember, the idea with disk quotas is to protect the disk from becoming completely filled. This is extra important on VELA since non-Pegasus users' accounts reside on the root-disk and a full root-disk will crash VELA completely. To change the diskquota, type:
    > `edquota` *account*
    and edit the values.

- Check disk usage.

  - Check that there is free space left on all disks:
    > `bdf -i`
    One way of keeping track of the disk use is to compare it with old statistics available from old configuration reports (see next task).

- Generate a configuration report.
  - Go to the configuration report directory and create a new configuration report:
    > `cd ~/reports`
    > `config_report > config_report.`*YYMMDD*
    Check this file and also make a `diff` with the last configuration report.
- Move Pegasus log files (only applies to VELA).
  - Transfer all log files in `/logs/pegasus-logs` on VELA to the corresponding directory on CARINA. Login as `root` on CARINA and run:
    > `extract_pegasus_logs`
    When all files have been transferred to CARINA, check that everything has been removed from `/logs/pegasus-logs` on VELA. The daily log files are put into the directory `/logs/pegasus-logs`. At the beginning of a new month, a new subdirectory should be created in this directory called `Logs_`*YYYY_MM* and all the daily log files for that month should be moved into this subdirectory. However, be careful NEVER to remove the last daily log file from `/logs/pegasus-logs`!
- Check if there is a need to create a new emergency tape.
  - Type:
    > `check_recovery` (this takes a couple of minutes)
    and check if there seems to be any critical system files that have been changed. If so, you will have to make two new emergency back-up tapes later during the back-up. There are three emergency tapes for each HP: one contains an older system and two contains the latest system. You should save the tape with the latest system that is marked with "RECOVERY MAIN" and use the two other tapes for the back-up.
- Switch-over to single-user mode.
  - Unmount those disks that are exported via NFS. If the maintenance is being performed on PUPPIS, login to CARINA and type:
    > `umount /scratch`
    If the maintenance is being performed on CARINA, login to PUPPIS and type:
    > `umount /aux2`
    If the `umount` command fails, use `fuser -cu` *disk* and `psgrep` *process-ID* to identify who is using the disk and tell them to move away

from that disk or kill their processes. You can kill all the processes by giving the command:
> `fuser -cuk` *disk*

- Check that all other users have logged out and that there are no processes running on the machine:
  > `w`
  > `top`
- Switch over to single-user mode. If you have been doing the maintenance via a `telnet` session, you should now logout, move over to the console and login again as `root` from there. Then type:
  > `cd /`
  > `shutdown -y 0`
  If you want to give users time to logout properly, you can substitute the `0` for a delay time specified in seconds. It may take a couple of minutes for the machine to go down to single-user mode. On CARINA and PUPPIS it frequently happens that the screen freezes during this process. If this happens, just press `Shift+Reset` to reset it. You should ignore any login prompts — at the end of the process you will be automatically logged in as `root`.

- Check the health of the disks.
  - Start the disk check by typing:
    > `check_disks`
    and select '`a`' for all disks. This program will interactively run through all disks. Do not unmount any of the mounted disks. For mounted disks select '`d`' for "`don't fix anything`", for unmounted disks select '`i`' for "`interactive`" and answer '`y`' to all questions. Checks on unmounted disks should not produce any errors and the status flag should be '`0`'. Mounted `VxFS` disks may produce error messages of the type "`au 0 summary incorrect`" after `pass 4` and return the status flag '`1`'. Any other error messages means that something is wrong with that disk.
  - Check the emergency disk (only applies to VELA):
    > `check_disks /etc/fstab_mirror_total`
    and select '`a`' for all disks. The root-disk of the emergency disk will be erroneously reported as mounted. The '`i`' option should thus be used for all the disks.
- Back-up all disks.
  - Switch over to run-level 1:
    > `init 1`

- Login again as `root`.
- Check that there were no orphaned files found during the previous disk checks:
  > `check_lost+found` (should give no reply)
  If any files are found, go to that directory and try to find out what sort of files it is. If files are found, something is probably wrong with the disk!
- Clean the DAT-drive with the cleaning tape.
- If you earlier found out that you have to create new emergency tapes, put one of the old emergency tapes into the DAT-drive and type:
  > `make_recovery -C -v`
  It may take up to two hours to create the emergency tape (PUPPIS is slowest). It should be labeled with the current date (in UT) and "RECOVERY MAIN". On CARINA and on VOLANS, this is a bit complicated since you will have to switch off both VELA and CARINA (or VOLANS and then move the DAT-drive between the two machines (since the DAT-drives are not identical, you should NOT use the DAT-drive on PUPPIS). Eject the tape afterwards with:
  > `mt -t /dev/rmt/dat offl`
  Note that the `make_recovery` program fools `fbackup` (which is used by `make_backup`) to believe that a large fraction of the root disk has been modified. The best thing to do in order to keep the incremental back-ups small is thus to create BOTH the new emergency tapes BEFORE a full back-up.
- Make back-ups of all the disks. Full back-ups should be made every 1.5–2 months with incremental back-ups in between. Back-ups of CARINA use the DAT-drive on PUPPIS, while back-ups of VOLANS use the DAT-drive on VELA. Type:
  > `make_backup`
  and select the appropriate disk. The time estimates should not be trusted, since the program simply reports the time it took for the last similar back-up. If multiple tapes are needed, you will have to eject the first tape with the button on the DAT-drive, insert a new tape and then type "`yes`". The best is if all back-ups can be made in single-user mode; however, if this is not possible, disks marked with '`*`' and possibly '`(*)`' in the table below can be backed up once you have rebooted the machine. If `make_backup` can't be run due to problems with its log-file, type:
  > `cd /var/adm/fbackupfiles`
  > `mv backup.log backup.log_OLD`
  The disks that should be backed up are:

VELA		PUPPIS		CARINA		VOLANS
/root		/root		/root		/root
/aux2	(*)	/home	(*)	/staff	(*)	
/archive	*	/vg01	*	/aux2	*	
				/logs	*	

- Update the emergency mirror disk (only applies to VELA).
  - Run the mirror disk updating program:
    > update_mirror
    and select the type of update you want to perform:
    * REPLACEMENT: everything on the mirror disk is erased and replaced. This mode also rebuilds the file systems from scratch.
    * OVERWRITE: all files existing on VELA will be written to the mirror disk.
    * INCREMENTAL: only files that have a more recent modification date on VELA will be updated on the mirror disk. This option is much faster than the others, since only a small amount of data has to be transferred.

    After you have selected type, the program will go through all directories and ask you how to treat them. Normally, you should just hit Return to select the default answer to all these questions. After the list is finished, you will be asked whether you want to see a list of all files being copied. It is only for incremental copies that it might be interesting to say YES. You will then be asked whether you want to have an index file generated listing all files that have been copied and whether you want to have a statistics file to be generated. Finally, you will be asked to confirm that you want to start the updating process.
    Note that some of the special files on the root disk will produce a number of warnings saying "cannot stat <>" and "no such file or directory".

- Test the emergency mirror disk (only applies to VELA).
  - Reboot VELA by typing:
    > cd /
    > shutdown -ry 0
    and immediately start hitting the Escape key to interrupt the boot selection process when it starts. When you get the boot menu prompt, type:
    > boot alt
    and answer "n" to the next question. The computer is now booting up from the emergency disk. Login to any Pegasus account and

make a quick test to verify that the system is working. After that, login as `root` again.

- Reboot the machine.
  - Reboot the machine by typing:
    > `cd /`
    > `shutdown -ry 0`
    If you reboot VELA while PUPPIS is down or rebooting (but not when it is in maintenance mode), VELA will not get the proper time synchronisation. Time synchronisation will be restored after a while but it can take up to half an hour.

- Remount NFS disks.
  - If you unmounted any NFS-mounted disks before taking the machine down to single-user mode, you should now remount them again. If you are working with PUPPIS, login to CARINA and type:
    > `mount /scratch`
    If you are working on CARINA, login to PUPPIS and type:
    > `mount /aux2`

- Remove the message-of-the-day.
  - If the message-of-the-day facility has been used, remove it with:
    > `install_motd -n`

- Create the second emergency tape.
  - If you earlier found out that you have to create new emergency tapes, put the second of the old emergency tapes into the DAT-drive and type:
    > `make_recovery -C -v`
    This tape should be labeled "RECOVERY SPARE".

- Make any remaining back-ups.
  - If you earlier decided to skip some disks during the back-up to shorten the down-time of the computer, you should now make these back-ups. Type:
    > `make_backup`
    and answer "`y`" to force the program to run although the computer no longer is in maintenance mode.

- Copy the `/aux2` disk from VELA to CARINA (only applies to VELA).

- Make sure that neither daprog nor any Pegasus user is logged in to VELA.
- Check whether daprog or any Pegasus user is logged in to CARINA and log them out.
- Start the copying on VELA by typing:
  > update_carina
  You will now have to decide on what type of copy you want to perform:
  * REPLACEMENT: everything on CARINA's /aux2-disk is erased and replaced. This option should be used with caution since this means that all projects in development stages on CARINA will be deleted!
  * OVERWRITE: all files on CARINA that also exist on VELA will be overwritten by copies of corresponding files on VELA. This option ensures that all files on VELA also exist on CARINA in the same version but leaves any extra files on CARINA untouched.
  * INCREMENTAL: only files that have a more recent modification date on VELA will actually be copied to CARINA. This option will restore any files that have been deleted on CARINA but will not alter anything that has been otherwise modified on CARINA. This option is much faster than the others, since only a small amount of data has to be transferred over the network.

  After you have selected type, the program will go through all directories and ask you how to treat them. Normally, you should just hit Return to select the default answer to all these questions. After the list is finished, you will be asked whether you want to see a list of all files being copied. It is only for incremental copies that it might be interesting to say YES. You will then be asked whether you want to have an index file generated listing all files that have been copied and whether you want to have a statistics file to be generated. Finally, you will be asked to confirm that you want to start the copying process.
- If the copying process fails, you will have to unmount CARINA's /aux2-disk which has been NFS-mounted to VELA and clean up temporary files in /cdscr on VELA:
  > umount /cdscr/mount_update_disk/aux2
  > rmdir /cdscr/mount_update_disk/aux2
  > rmdir /cdscr/mount_update_disk
  > rm /cdscr/update*
- Logins to daprog or any Pegasus user should be avoided on both VELA and CARINA until update_carina has completed.

- Copy the Pegasus system from VELA to VOLANS (only applies to VELA).
  - Make sure that neither `daprog` nor any Pegasus user is logged in to VELA.
  - Make sure that noone is logged in to VOLANS.
  - Start the copying on VELA by typing:
    > `update_volans`
    You will now have to decide on what type of copy you want to perform: replacement, overwrite or incremental. The questions you will get are similar to the ones you get when you run `update_carina`.
  - Logins to `daprog` or any Pegasus user should be avoided on both VELA and VOLANS until `update_volans` has completed.
- Update the list of tape back-ups.
  - Go to the backup directory which resides on PUPPIS:
    > `cd ~/backups`
    Edit the file `backups.tex` and add data on the new back-ups. Don't forget to change the status of the old tapes, if you have been reusing old back-up tapes. Run this file through TEX and print it out:
    > `./tex backups.tex`
    > `./dvips backups.dvi`
    > `mpage -4 backups.ps | lp`

1.1.4 Occasional tasks

For example: qfind and backup logs cleaning, other logs cleaning ...

1.1.5 Tasks to be performed every third month

This is a list of tasks that the system administrator should perform once every third month.

- Cleaning up the mail logs.
  - Go to the log directory `/var/adm/syslog`:
    > `cd /var/adm/syslog`
    > `ls -l`
  - Remove any old mail log file, if there is one:
    > `rm OLD_mail.log.gz`
  - Copy the mail log file to a back-up file before emptying `mail.log`. Also compress the old log file:
    > `cp -p mail.log OLD_mail.log`

> cat >! mail.log   followed by a Ctrl+D
> gzip -v OLD_mail.log

  - Verify that `mail.log` has the right permissions and ownership:
    > ls -l
    The permissions should be `-r--r--r--` and the file should be owned by `root:root`.

- Rebuild the `/usr/share/lib/whatis` used by "`man -k`" and the `apropos` script.

  - Rebuild the database by typing:
    > catman -w
    Note: the rebuilding process takes a couple of minutes.

- Clean up the web server logs (only applies to PUPPIS).

  - Clean up the web logs in `/usr/local/etc/httpd/logs` on PUPPIS. This should preferrably be done when PUPPIS is down in maintenance mode during a bi-weekly maintenance session. You may want to copy all the log files found in this directory to `/scratch` in case Felipe wants to do some statistics on them:
    > cd /usr/local/etc/httpd
    > cp -r logs /scratch/http_logs
    > cd logs
    > cat >! access_log   followed by a Ctrl+D
    > cat >! agent_log   followed by a Ctrl+D
    > cat >! error_log   followed by a Ctrl+D
    > cat >! referer_log   followed by a Ctrl+D

  - Type:
    > ls -l
    and verify that all log files have permissions `-rw-r--r--` and are owned by `root:sys`.

- Pegasus maintenance (only applies to VELA).

  - There are a few maintenance tasks to be performed on the Pegasus system on VELA once every three months. Consult the "*Periodic maintenance tasks*" section in the "*SEST Pegasus administration handbook*" for descriptions and instructions for these tasks.

1.1.6 Tasks to be performed every sixth month

This is a list of tasks that the system administrator should perform once every half year, preferably around 1 January and 1 July.

- Pegasus maintenance (only applies to VELA).
  - There are a few maintenance tasks to be performed on the Pegasus system on VELA once every three months. Consult the "*Periodic maintenance tasks*" section in the "*SEST Pegasus administration handbook*" for descriptions and instructions for these tasks.

1.1.7 Testing Volans

Once every few months, test observations should be carried out with VOLANS to verify that it is properly configured. This can be done without moving VOLANS, but VELA has to be shut down during the test. The way to proceed with the test is as follows:

- Logout all users from VELA.
- Shut down VELA by logging in as `stop` with the staff password. Wait until you get the "`System is halted`" message and switch off the power to VELA.
- Login as `root` on VOLANS and make sure that noone else is logged in. You should then prepare VOLANS to become a new VELA:
  > `cd /etc/rc.config.d`
  > `cp -p netconf.VELA netconf`
- Reboot VOLANS:
  > `cd /`
  > `shutdown -ry 0`
- When VOLANS has been properly rebooted, login again as `root` and adapt the shutdown allowance file:
  > `cd /etc`
  > `cp -p shutdown.allow_VELA shutdown.allow`
- Log out as `root` and login to any Pegasus account.
- Start testing the system. In case of communication problems you may have to reboot SCORPIUS, compiccabin, compantlia or ICCNTRL. Remember that a few things will not work properly in this set-up like the disk usage monitor and the LYNX printer. Also, there will be no weather data coming in from `Rosasix`, since that unit is not connected to VOLANS, so you can also expect the weather alarm to be activated.
- After you have tested the system, logout from the observing account and login again as `root`. Restore the network identity and reboot the system:
  > `cd /etc/rc.config.d`

> `cp -p netconf.VOLANS netconf`
> `cd /`
> `shutdown -ry 0`

- When VOLANS has been properly rebooted, login again as `root` and reset the shutdown allowance file:
  > `cd /etc`
  > `cp -p shutdown.allow_VOLANS shutdown.allow`
  and then logout from VOLANS.

- Start up VELA again.

- Login as `director` on VELA and make a quick check that the system is working.

Full scale test of volans

If you are very keen on verifying that the procedure of replacing VELA with VOLANS, you can run the following test to physically replace VELA with VOLANS. Start with all the instructions for replacing VELA with VOLANS as given in the section "*A crash of Vela itself*". Do not bother to move the screen of VOLANS; instead, use the screen of LEO.

When VOLANS is up and running as a new, temporary VELA, login as `director` and make some test observations to verify that everything is working properly.

After the test, you should restore the system by doing the following things:

- Logout from the observing account.

- Login as `root` and restore the network identity and the proper `cron` jobs:
  > `cd /etc/rc.config.d`
  > `cp -p netconf.VOLANS netconf`
  > `cd`
  > `crontab -r`
  > `crontab crontab.root_VOLANS`
  > `su daprog`
  > `crontab -r`
  > `exit`
  > `su archive`
  > `crontab -r`
  > `exit`

- Shut down the system with
  > `cd`
  > `shutdown -hy 0`

- Switch off VOLANS and all the external devices. Disconnect it and restore the original configuration of VELA and VOLANS. When everything is properly connected power up the computers again. VELA should be OK as soon as it has booted up, but VOLANS still needs some more software changes so login to VOLANS as `root` again and type:
  > `cd /etc`
  > `cp -p shutdown.allow_VOLANS shutdown.allow`

- Login as `director` on VELA and make a quick check that the system is working.

1.2 Maintenance of PCs

Maintenance and back-ups of the office PCs are the responsibility of their users. However, several PCs do belong to the general system and should thus be maintained by the system administrator. These machines includes DORADO (LINUX), CRUX (LINUX), MUSCA (LINUX), SCORPIUS (LINUX), CETUS (LINUX) and HOROLOGIUM (Windows).

The system administrator is responsible for regularly updating the passwords on a number of UNIX/LINUX machines. The lists of accounts to be maintained is given in the section "*Accounts and passwords*".

1.2.1 Dorado

For the time being, all users will have to be responsible for backing up their own accounts.

1.2.2 Crux

The PC located in the correlator rack is called CRUX. No maintenance procedures have yet been established since it is not yet in use.

1.2.3 Musca

Not much maintenance should be needed, since this PC is run in a static configuration.

1.2.4 Scorpius

Normally, SCORPIUS do not need much maintenance except password updates and small back-ups. However, any maintenance done to SCORPIUS should also be done to its replacement VINCHUCA.

Small back-ups of SCORPIUS should be made whenever something has been changed on SCORPIUS. The only changes that are usually made to SCORPIUS are either changes of passwords or corrections for AOS drifts. This back-up will be stored on-line on PUPPIS and will be used in case SCORPIUS needs to be replaced by VINCHUCA. The procedure is:

- Login to SCORPIUS as `root` (sysadm password).
- Make a `tar`-archive of those directories that may change:
  \> `tar cvf /tmp/scorpius_`*YYMMDD*`.tar /etc /lbin /root /home/aoscon /home/kosma`
- Compress the archive:
  \> `gzip /tmp/scorpius_`*YYMMDD*`.tar`
- Login to PUPPIS as `root` and move to the on-line back-up directory:
  \> `cd /backup`
- Verify that there is enough disk space on `/backup`:
  \> `bdf`
  If there is less than 20 MB free on `/backup`, delete one of the old back-ups.
- Open an `FTP` session to SCORPIUS. Login as `aoscon` (staff password) and retrieve the file:
  \> `cd /tmp`
  \> `get scorpius_`*YYMMDD*`.tar.gz`
- Close the `FTP`-session and remove `/tmp/scorpius_`*YYMMDD*`.tar.gz` from SCORPIUS.

Full back-ups are made once or twice a year. The procedure for making a full back-up of SCORPIUS is the following:

- Login to PUPPIS as `root` and mount the root-disk of SCORPIUS through `NFS`:
  \> `mkdir /scratch/scorpius`
  \> `mount -F nfs -r scorpius:/ /scratch/scorpius`
  \> `cd /scratch/scorpius`
- Put a 60M DAT-tape in the DAT-drive on PUPPIS and start the back-up:
  \> `tar cvf - * | dd bs=128k of=/dev/rmt/dat`
- Unload the tape and unmount the root-disk:
  \> `mt -t /dev/rmt/dat offl`
  \> `cd ..`
  \> `umount /scratch/scorpius`
  \> `rmdir /scratch/scorpius`

1.2.5 Vinchuca

There is also a spare PC (sometimes called VINCHUCA) that can replace SCORPIUS in case of a hardware failure. Whenever, something is changed on SCORPIUS, the same change should also be applied to VINCHUCA. This can only be done when there are no observations being carried out, since it requires SCORPIUS to be taken off-line. You should be logged in to PUPPIS as `root` and perform all software maintenance through `telnet` sessions from there. The proper procedure to follow is:

- If you want to check which files have been changed on SCORPIUS since a certain date, you can do like this:
  - Login to SCORPIUS as `root` (sysadm `root` password) and go to the directory `/tmp`.
  - Check the disks for recently modified files by typing:
    > `find / -mtime -`*DDD* `-exec ls -ld {} \; > /tmp/list`
    where *DDD* is the number of days you want to check. This takes a few minutes and generates a list in the file `/tmp/list`. Note that this list will also include temporary files and log files that should not be transferred to VINCHUCA.
- Bring out VINCHUCA to the control room and connect a keyboard (a screen is not necessary, since the console display will be flooded with error messages about missing DSP boards anyway).
- Disconnect the network connection from SCORPIUS.
- Connect VINCHUCA to the control network.
- Switch on VINCHUCA and wait two minutes.
- On PUPPIS, type:
  > `arp -d scorpius`
  to clear the hardware address to SCORPIUS.
- Open a `telnet` session to VINCHUCA:
  > `telnet scorpius`
  and login as `root` (sysadm `root` password).
- Go to `/tmp` and set the date on VINCHUCA:
  > `cd /tmp`
  > `date` *MMDDhhmmYYYY*
- Open an `FTP` session to PUPPIS as user `sest` and retrieve the last back-up from SCORPIUS:

> `cd /backup`
> `binary`
> `get scorpius_`*YYMMDD*`.tar.gz`
> `bye`

- Uncompress the back-up:
  > `gunzip scorpius_`*YYMMDD*`.tar.gz`
- Extract those files that have been changed (but only relevant ones — there are for example a lot of temporary files and log files on `/etc` and `/tmp` that should NOT be installed) using:
  > `tar xvf scorpius_`*YYMMDD*`.tar` *file*
  and move it to its correct location. For example, if the AOS drifts have been changed, the file `home/aoscon/src/cid/defaults.c` should be extracted and moved to its proper position and then the instructions in the *Staff instructions* binder should be followed to recompile the program.
- Remove the file `scorpius_`*YYMMDD*`.tar` from `/tmp`.
- Shut down VINCHUCA:
  > `shutdown -h now`
- Switch off VINCHUCA and disconnect it from the network.
- Reconnect SCORPIUS to the network.
- On PUPPIS again type:
  > `arp -d scorpius`
- Login to SCORPIUS as `root` and move to the directory `/tmp` and remove the file called `LAST_VINCHUCA_`*YYMMDD*. Create a new file with the current date:
  > `touch LAST_VINCHUCA_`*YYMMDD*
- Write a new note and put it on VINCHUCA.

This procedure should also be followed, if VINCHUCA is needed and it turns out that VINCHUCA has not been properly updated.

1.2.6 Cetus

The VLBI PC is mainly maintained by Fredrik. The system administrator is responsible for updating passwords on it.

1.2.7 Horologium

This PC runs a basic Windows system with the GPS clock. No maintenance is required as long as nothing changes.

1.3 Printers

There are two laser printers available: ORION and LYNX. The main printer is ORION (a LaserJet 5M) which can handle both ASCII and PostScript files. It is connected to the outer network. The old LaserJetIII (LYNX) can only handle ASCII and PCL — it can thus NOT handle PostScript files! It can only be accessed from VELA since it is connected directly to the parallel port on VELA.

The default printer on all machines is ORION. Some software on VELA and VOLANS may, however, not be configured to directly print to ORION. In that case, save the output to a file and send it to the printer with the "`lp`" command from a shell window.

1.3.1 Changing toner on the printer

The two printers are using different toner cartridges:

- ORION uses toner cartridge 92298A
- LYNX uses toner cartridge 92295A

When the toner cartridge is running low, the LaserJet starts switching between the messages "`READY`" and "`TONER LOW`". It is then time to regularly take out the cartridge and shake it gently to prolong its useful lifetime. Note that there is no indication of low toner when the LaserJet is in power save mode! A toner cartridge typically lasts some 7000–8000 pages.

To change the toner cartridge on ORION follow this procedure:

- Switch off the power to the printer. You might also want to stop the printer queue on PUPPIS by logging in to PUPPIS and typing:
  > `disable orion`
- Remove the old cartridge and clean the printer gently.
- Get the new cartridge, shake it gently, remove the protective strip of plastic and install it.
- Switch on the printer and print out a test page by selecting "`TEST MENU`" and "`PRINT SELF TEST`" followed by "`Seleccionar`". Write the date on this test page and put it in the appropriate plastic folder residing in the

green box marked with *HP LaserJet 5M* in the computer documentation cabinet.

- If you disabled the queue, enable it again with:
  > `enable orion`

So far I have never changed toner on LYNX, but the procedure should be similar.

1.4 Shutting down and rebooting HPs

1.4.1 Using special logins

All four HPs have a login called `stop` (staff password) which can be used for a shutdown. It takes a few minutes for the machines to halt, so you must not turn off the power until you get the "`System is halted`" message on the screen. On CARINA and PUPPIS it frequently happens that the screen freezes during this process. If this happens, just press `Shift+Reset` to reset it.

There is also a login on all four HPs called `restart` (staff password) which can be used to automatically reboot the machine.

1.4.2 From an account with proper privileges

To shutdown or reboot an HP from the `root` account, first make sure that you are on the root disk ("`cd /`") and then type "`shutdown -hy 0`" or "`shutdown -ry 0`", respectively. The zero can be exchanged for a delay in seconds between the shutdown message and the start of the actual shutdown.

A couple of users other than `root` also have the privilege to use the `shutdown` command. They are `daprog`, `director` and `lerner` on VELA and VOLANS; `daprog`, `sest` and `lerner` on PUPPIS; and `daprog` and `lerner` on CARINA. Since these users normally do not have the `shutdown` command in their paths, they have to give the full address to it which is `/sbin/shutdown`.

To bring down an HP to maintenance mode, use the command "`shutdown -y 0`". After having written a login prompt three times to the console, you will be automatically logged in as `root`. In maintenance mode only the root disk is mounted; if you want to have the rest of the disks mounted you can type "`mount -a`" or take the machine up to run-level 1 by typing "`init 1`" and then login again as `root` on the console.

1.5 Shutting down and rebooting LINUX PCs

1.5.1 Using special logins

Of the LINUX PCs, CETUS and SCORPIUS also have the login `stop` (staff password) installed for quick shutdowns and the login `restart` for quick reboots. The `restart` login also uses the staff password *except* on SCORPIUS which uses the guest password, since observers use this facility to reboot SCORPIUS when the communication to the AOSs has been lost from VELA (to avoid having them opening the door to the temperature-controlled AOS-room).

1.5.2 From an account with proper privileges

You have to be logged in as `root` to shutdown or reboot a PC. The command to shutdown a LINUX PC is "`shutdown -h now`", while "`shutdown -r now`" is used to reboot it.

1.6 System administration responsibilities

This is the current distribution of responsibilities for the system administration tasks at SEST:

• System administration of HPs: VELA, PUPPIS, CARINA and VOLANS:	Felipe
• System administration of PCs belonging to the control network: CRUX, SCORPIUS, VINCHUCA, MUSCA and CETUS:	Lerner — *so far only done on* SCORPIUS
• System administration of PCs belonging to the office network:	each user
• System administration of OS-9 systems: ANTLIA, ICCABIN, ICCNTRL and FORNAX:	Michel
• Back-ups of HPs: PUPPIS, CARINA and VOLANS:	Felipe
• Back-ups of HP: VELA:	Lerner
• Back-ups of PCs belonging to the control network: CRUX, SCORPIUS, VINCHUCA, MUSCA and CETUS:	Lerner — *so far only done on* SCORPIUS
• Back-ups of PCs belonging to the office network:	each user
• Back-ups of OS-9 systems: ANTLIA, ICCABIN, ICCNTRL and FORNAX:	Michel
• Maintenance of emergency systems: the mirror disk, VOLANS and VINCHUCA:	Lerner

• Password changes (according to lists in section "*Accounts and passwords*"):	Lerner
• System upgrades:	Lerner
• Software upgrades:	Lerner & Felipe
• Pegasus administration:	Lerner
• SEST web page administration:	Felipe
• Resupply of printer paper, toner, DAT-tapes, CDs and floppies:	Lerner
• Maintenance of DAT-drives and printers:	Felipe & Lerner
• Dust removal and replacement of fans in computers, hard disks, screens and other peripherals:	**electronics team**

The system administration of the PCs is yet far from what should be done. In several cases, procedures have not yet been established. There are several reasons for this: lack of time, lack of knowledge of Linux and Windows, and the fact that these machines have a very static configuration with no users logging in to them. Also the situation was not so critical before CRUX and MUSCA were added: back then, SCORPIUS (and VINCHUCA) was taken care of by Lerner and CETUS was maintained by Fredrik.

When it comes to the last item of physical preventive maintenance, the idea now is to have the electronics team to do this work once a year.

Chapter 2

System configuration

2.1 Networks

We have three computer networks at SEST: the *control network* (134.171.148.*) for the telescope control system, the *bolometer network* (192.168.0.*) for the bolometer and the *office network* (134.171.128.*) for all others computers. The first two networks are for time-critical systems and they are both coaxial-cable nets. None of them are available to computers outside the SEST building.

2.1.1 The control network

The control network (134.171.148.*) is a coaxial-cable network. The computers connected to it are all involved in telescope or instrument control. It is a time-critical network that should not be loaded with tasks besides the necessary ones. Although a list of the computers on the control network has been added to the official La Silla DNS server, it is not accessible from outside the SEST building. The control network is available in the cabin, the pedestal, the control room, the correlator room, the AOS room and the terminal room.

The gateway to the office network is PUPPIS which on the control network is called GWPUPPIS and has the IP-address 134.171.148.1. The gateway to the bolometer network is through MUSCA (134.171.148.22). None of the computers on the control network know that these two machines are gateways to other networks. The routing is thus set-up without any default machine to route communication outside the control network to. The exceptions are VELA and VOLANS which both have host-based routing to CARINA (134.171.128.12) through PUPPIS. CARINA is thus the only computer besides PUPPIS that can access parts of the control network.

Name	IP-address	Type	Location
GWPUPPIS	134.171.148.1	HP-720 work station	terminal room
CORVUS	134.171.148.7	???	???
VOLANS	134.171.148.11	HP-735 work station	control room
VELA	134.171.148.14	HP-778 work station	control room
MUSCA	134.171.148.22	Linux PC	control room
SCORPIUS	134.171.148.23	Linux PC	AOS room
CETUS	134.171.148.24	Linux PC	control room
PYXIS	134.171.148.25	*spare*	
ANTLIA	134.171.148.45	VME OS-9	pedestal
ICCNTRL	134.171.148.46	VME OS-9	control room
ICCABIN	134.171.148.47	VME OS-9	cabin
CRUX	134.171.148.50	Linux PC	correlator room
LEPUS	134.171.148.51	*spare*	
CRATER	134.171.148.52	*spare*	
VINCHUCA	134.171.148.23	cold spare for SCORPIUS	AOS room

2.1.2 The bolometer network

The bolometer network (192.168.0.*) is a coaxial-cable network for control and data transmission from the SIMBA bolometer array. It is a highly time-critical network. It only consists of two computers: the BOGLE data collecting unit and the data formatting PC MUSCA. The bolometer network is connected to the control network via MUSCA but can't be accessed at all from the outside. It does not appear on the La Silla DNS-server.

Name	IP-address	Type	Location
MUSCA	192.168.0.1	Linux PC	control room
BOGLE	192.168.0.2	???	cabin

2.1.3 The office network

The office network (134.171.128.*) is used for all computers that are not directly involved in the observations. It physically consists of two parts: a new twisted-pair network with 33 connections and an old coaxial-cable network. It is available in all rooms of the SEST control building.

It is connected to La Silla back-bone through the GWYSES router (134.171.128.1) and to the control network via PUPPIS (134.171.128.13), although the latter one is not accessible from any other computers than PUPPIS and (to some parts) CARINA.

Name	**IP-address**	**Type**	**Location**
GWYSES	134.171.128.1	CISCO router	correlator room
APUS	134.171.128.2	*spare*	
COLUMBA	134.171.128.3	Mac SE/30	terminal room
GRUS	134.171.128.4	Mac IIci	Lars-Åke's room
PHOENIX	134.171.128.5	*spare*	
TUCANA	134.171.128.6	Mac ??? laptop (PRIV)	Lars-Åke's room
SEXTANS	134.171.128.10	HP-735 work station	*not used yet*
OCTANS	134.171.128.11	HP-735 work station	*not used yet*
CARINA	134.171.128.12	HP-730 work station	Lerner's room
PUPPIS	134.171.128.13	HP-720 work station	terminal room
DORADO	134.171.128.14	Linux PC	control room
ERIDANUS	134.171.128.15	*spare*	
HYDRA	134.171.128.20	Windows/Linux PC	Michel's room
LUPUS	134.171.128.21	Windows laptop (PRIV)	Michel's room
SAGITTARIUS	134.171.128.22	??? laptop (PRIV)	astronomers' room
PICTOR	134.171.128.23	Windows/Linux PC	operators' room
VIRGO	134.171.128.25	*Linux PC*	???
TAURUS	134.171.128.26	*Linux PC*	terminal room
ARIES	134.171.128.27	Windows laptop	lab
GEMINI	134.171.128.28	Windows/Linux PC	Lauri's room
CAPRICORNUS	134.171.128.29	Windows/Linux PC	Lager's room
LIBRA	134.171.128.32	HP-700 X-terminal	astronomers' room
LEO	134.171.128.33	HP-700 X-terminal	control room
AQUARIUS	134.171.128.34	*spare*	
FORNAX	134.171.128.40	VME OS-9 spare	lab
INDUS	134.171.128.41	???	
ARA	134.171.128.50	work station ???	Japanese room
PAVO	134.171.128.51	Macintosh ???	Japanese room
MENSA	134.171.128.52	NEC ???	Japanese room
HYDRUS	134.171.128.53	*spare*	
ORION	134.171.128.60	LaserJet 5M printer	terminal room
CANIS	134.171.128.61	*spare*	
CORONA	134.171.128.70	Windows laptop (PRIV)	operators' room
CIRCINUS	134.171.128.71	*spare*	
CAELUM	134.171.128.72	Windows/Linux PC	Lars-Åke's room
SCULPTOR	134.171.128.73	*spare*	
NORMA	134.171.128.74	Linux laptop	Lauri's room
SCUTUM	134.171.128.80	*guest laptop*	
SERPENS	134.171.128.81	*guest laptop*	
AQUILA	134.171.128.82	*guest laptop*	
PISCES	134.171.128.83	*spare*	
CANCER	134.171.128.84	*spare*	

2.2 Computer configurations

2.2.1 Overview

The following tables summarises the configurations of the computers used at SEST. More detailed information is provided in the subsequent sections.

Hardware

CARINA	HP-730	RISC	66 MHz	96 MB	4+1+2+9 GB
PUPPIS	HP-720	RISC	50 MHz	132 MB	4+9+4+4 GB
VELA	HP-B132L	RISC	132 MHz	128 MB	2+9+4 GB
VOLANS	HP-735	RISC	99 MHz	144 MB	4+4 GB
LEO			MHz	MB	GB
LIBRA			MHz	MB	GB
DORADO	Dell 620MT		MHz	MB	GB
ERIDANUS	Dell 620MT		MHz	MB	GB
SCORPIUS			MHz	MB	GB
VINCHUCA			MHz	MB	GB
CRUX			MHz	MB	GB
MUSCA			MHz	MB	GB
CETUS		Pen 100	MHz	24 MB	GB
ANTLIA		68000	? MHz	MB	GB
ICCABIN		68000	? MHz	MB	—
ICCNTRL		68000	? MHz	MB	—
FORNAX		68000	? MHz	MB	GB
HOROLOGIUM		Pen-S	75 MHz	32 MB	6 GB
ARIES			MHz	MB	GB
PICTOR			MHz	MB	GB
CORONA			MHz	MB	GB
CAPRICORNUS		Pen	133 MHz	32 MB	GB
HYDRA		Pen-II	333 MHz	96 MB	8 GB
LUPUS			MHz	MB	GB
SAGITTARIUS			MHz	MB	GB
CAELUM		Pen-II	400 MHz	96 MB	12 GB
TUCANA			MHz	MB	GB
GRUS			MHz	MB	GB
GEMINI		Pen-Pro	200 MHz	32 MB	6 GB
NORMA			MHz	MB	GB

Equipment

CARINA	19”	CD
PUPPIS	19”	DAT
VELA	21”	CD-RW + CD + DAT + printer
VOLANS	19”	CD
LEO	”	
LIBRA	”	
DORADO	21”	CD-RW + CD + DAT + floppy
ERIDANUS	21”	CD + DAT + floppy
SCORPIUS	”	
VINCHUCA	”	
CRUX	”	
MUSCA	”	
CETUS	”	CD
ANTLIA	”	
ICCABIN	—	
ICCNTRL	—	
FORNAX	”	
HOROLOGIUM	”	floppy
ARIES	”	
PICTOR	”	
CORONA	”	
CAPRICORNUS	”	
HYDRA	”	
LUPUS	”	
SAGITTARIUS	”	
CAELUM	”	CD-RW + CD
TUCANA	”	
GRUS	”	
GEMINI	”	CD-RW
NORMA	”	

Usage

CARINA	HP-UX 10.20	software development
PUPPIS	HP-UX 10.20	general + data reduction
VELA	HP-UX 10.20	observations
VOLANS	HP-UX 10.20	spare for VELA
LEO		observer's X-terminal
LIBRA		astronomer's X-terminal
DORADO	RedHat 7.1 (2.4.3-12)	general + data reduction
ERIDANUS	RedHat 7.1 (2.4.3-12)	???
SCORPIUS	SUSE 2.0.27	AOS control
VINCHUCA		SCORPIUS spare
CRUX	RedHat 5.2 (2.0.36)	correlator control
MUSCA	RedHat 6.2 (2.4.5)	BOGLE control
CETUS	Debian 2.0	VLBI control
ANTLIA	OS/9	telescope control
ICCABIN	OS/9	cabin control
ICCNTRL	OS/9	instrument control
FORNAX	OS/9	ANTLIA spare
HOROLOGIUM	Win-98	GPS clock
ARIES		
PICTOR		operator
CORONA		private (Felipe)
CAPRICORNUS		Lager
HYDRA		Michel
LUPUS		private (Michel)
SAGITTARIUS		private (Markus)
CAELUM		Lars-Åke
TUCANA		private (Lars-Åke)
GRUS		Lars-Åke
GEMINI		Lauri
NORMA		Lauri

2.2.2 Vela

- **Basic properties**

Model:	HP 9000/778 (B132L)
OS:	HP-UX B.10.20A
Processor:	132 MHz PA-risc 1.1e PA7300
Memory:	132 MB
Cache:	64 kB
ROM:	Firmware 2.5, IODC rev. 1
Machine-ID:	2003552897
Address:	00:60:B0:18:63:63
Monitor:	HP P1110, 21" (*spare:* HP A4331D, 19")

- **Hardware configuration:**

Primary boot path:	8/16/5.6.0
Alternate boot path:	8/16/5.3.0
Graphics path:	graphics(0) — (type 1: 1280x1024, 75 Hz, VESA)
	(*spare:* type 12: 1280x1024, 72 Hz)
Keyboard path:	PS2

- **Hardware**

SCSI–6 Internal disk	—	2 GB	*IBM DORS–32160*
SCSI–5 External disk	—	8.7 GB	*IBM DDRS–39130*
SCSI–4 External CD–RW	—		*Yamaha CRW4416SX*, SE SCSI
SCSI–3 External disk	—	4 GB	*Seagate ST15230N*, SE SCSI
SCSI–2 Internal CD–ROM	—		*Toshiba XM–5401TA*
SCSI–1 External DAT	—		*HP C1533A, 4 GB DDS*, F/W SCSI
SCSI–0 Empty			

- **Interfaces**

LAN interface (AUI [with BNC adapter] & twisted pair)
2 * Serial RS-232 interface
Parallel interface
Single-ended SCSI
Audio interface (in & out)
Keyboard
Mouse
Monitor (HP 3-row connector)

- **I/O cards:**

8/16/0	CentIf	Built-in parallel interface
8/16/4	asio0	Built-in RS-232 interface
8/16/5	c720	Built-in SCSI
8/16/6	lan2	Built-in LAN
8/16/7	ps2	Built-in keyboard/mouse
8/20/2	asio0	RS-232 interface (#2)
8/20/5	eisa	EISA bus adapter

- **Disk usage**

SCSI–6	—	2 GB	—	whole	—		—	–/2048 MB
SCSI–5	—	8.7 GB	—	LVM	—	`/vg02` (5)	—	8/8712 MB
SCSI–3	—	4 GB	—	LVM	—	`/vg05` (5)	—	4/4088 MB

- **Local file systems**

`/`	HFS	1752 MB	`/dev/dsk/c0t6d0`	automount
`/archive`	VxFS	2048 MB	`/dev/vg02/lvol1`	automount
`/aux2`	VxFS	4096 MB	`/dev/vg02/lvol2`	automount
`/cdscr`	VxFS	1536 MB	`/dev/vg02/lvol3`	automount
`/logs`	VxFS	512 MB	`/dev/vg02/lvol4`	automount
`/alt`	VxFS	512 MB	`/dev/vg02/lvol5`	automount
`/`	HFS	1792 MB	`/dev/vg05/lvol1`	(**mirror**)
`/aux2`	VxFS	1536 MB	`/dev/vg05/lvol3`	(**mirror**)
`/archive`	VxFS	256 MB	`/dev/vg05/lvol4`	(**mirror**)
`/logs`	VxFS	224 MB	`/dev/vg05/lvol5`	(**mirror**)
`/cdscr`	VxFS	24 MB	`/dev/vg05/lvol6`	(**mirror**)
`/cdrom`	CDFS		`/dev/dsk/c0t4d0`	
`/cdrom`	CDFS		`/dev/dsk/c0t2d0`	

- **Imported file systems — only for disk copying**

`/cdscr/mount_update_disk/aux2`	—	RW	—	`carina:/aux2`
`/cdscr/mount_update_disk/aux2`	—	RW	—	`volans:/aux2`
`/cdscr/mount_update_disk/archive`	—	RW	—	`volans:/archive`
`/cdscr/mount_update_disk/cdscr`	—	RW	—	`volans:/cdscr`
`/cdscr/mount_update_disk/logs`	—	RW	—	`volans:/logs`

- **Exported file systems**

  none

- **Swap and dump space**

  256 MB primary device swap/dump on `/dev/dsk/c0t6d0`
  252 MB primary device swap/dump on `/dev/vg05/lvol2` (**mirror**)

2.2.3 Puppis

- **Basic properties**

Model:	HP 9000/720
OS:	HP-UX B.10.20A
Processor:	50 MHz PA-risc 1.1a PA7000
Memory:	132 MB
ROM:	???
Machine-ID:	2003885826
Address:	08:00:09:95:5E:70
Monitor:	HP A1097C, 19"

- **Hardware configuration:**

Primary boot path:	2/0/1.6.0
Alternate boot path:	2/0/1.5.0 (*non-bootable*)

- **Hardware**

SCSI–6 Internal disk	—	4.3 GB	*Seagate ST34520N*
SCSI–5 Empty			
SCSI–4 External disk	—	8.7 GB	*Seagate ST39173N*, SE SCSI
SCSI–3 External disk	—	4 GB	*Seagate ST15230N*, SE SCSI
SCSI–2 External disk	—	4 GB	*Seagate ST15150N*, SE SCSI
SCSI–1 External DAT	—		*HP 35480A, 2 GB DDS*, F/W SCSI
SCSI–0 Empty			

- **Interfaces**

  LAN interface (AUI & BNC)
  EISA LAN interface (AUI & BNC)
  2 * Serial RS-232 interface
  Single-ended SCSI
  Audio (single)
  HIL device
  Monitor (3 BNCs)

- **I/O cards:**

2/0/1	c720	Built-in SCSI
2/0/2	lan2	Built-in LAN
2/0/4	asio0	Built-in RS-232 interface
2/0/5	asio0	Built-in RS-232 interface
2/0/6	CentIf	Built-in parallel interface
4	eisa	EISA adapter
4/0/1	lan2	EISA card HWP1850

- **Disk usage**

SCSI–6	—	4.3 GB	—	LVM	—	`/vg00` (8)	—	368/4340 MB
SCSI–4	—	8.7 GB	—	LVM	—	`/vg01` (4)	—	72/8680 MB
SCSI–3	—	4 GB	—	whole	—		—	–/4095 MB
SCSI–2	—	4 GB	—	LVM	—	`/vg02` (1)	—	92/4092 MB

- **Local file systems**

`/stand`	HFS	48 MB	`/dev/vg00/lvol1`	automount
`/`	VxFS	84 MB	`/dev/vg00/lvol3`	automount
`/opt`	VxFS	1024 MB	`/dev/vg00/lvol4`	automount
`/tmp`	VxFS	128 MB	`/dev/vg00/lvol5`	automount
`/backup`	VxFS	128 MB	`/dev/vg00/lvol6`	automount
`/usr`	VxFS	1024 MB	`/dev/vg00/lvol7`	automount
`/var`	VxFS	1024 MB	`/dev/vg00/lvol8`	automount
`/home`	HFS	4096 MB	`/dev/dsk/c0t3d0`	automount
`/app`	HFS	2048 MB	`/dev/vg01/lvol1`	automount
`/vela_archive`	HFS	4000 MB	`/dev/vg01/lvol3`	automount
`/aux3`	HFS	2048 MB	`/dev/vg01/lvol4`	automount
`/scratch`	VxFS	4000 MB	`/dev/vg02/lvol1`	automount

- **Imported file systems**

  `/aux2` — RW — `carina:/aux2`

- **Exported file systems**

`/home`	—	RW
`/aux2`	—	RW
`/scratch`	—	RW

- **Swap and dump space**

  512 MB primary device swap/dump on `/dev/vg00/lvol2`
  512 MB secondary device swap on `/dev/vg01/lvol2`

2.2.4 Carina

- **Basic properties**

Model:	HP 9000/730
OS:	HP-UX B.10.20A
Processor:	66 MHz PA-risc 1.1a PA7000
Memory:	96 MB
ROM:	PDC 2.1, IODC 2.1
Machine-ID:	2007424834
Address:	08:00:09:24:B4:17
Monitor:	HP A4033A, 19”

- **Hardware configuration:**

  Primary boot path: 2/0/1.6.0
  Alternate boot path: 2/0/1.4.0 (*non-bootable*)

- **Hardware**

SCSI–6 Internal disk	—	4.3 GB	*Seagate ST34520N*
SCSI–5 Internal disk	—	1 GB	*Seagate ST11220N*
SCSI–4 External disk	—	1.8 GB	*Seagate ST42100*, F/W SCSI
SCSI–3 Empty			
SCSI–2 External disk	—	8.7 GB	*IBM DDRS–39130*, SE SCSI
SCSI–1 Empty			
SCSI–0 External CD–ROM	—		*Toshiba XM–3401TA*, F/W SCSI

- **Interfaces**

  LAN interface (AUI & BNC)
  2 * Serial RS-232 interface
  Single-ended SCSI
  Audio (single)
  HIL device
  Monitor (3 BNCs)

- **I/O cards:**

2/0/1	c720	Built-in SCSI
2/0/2	lan2	Built-in LAN
2/0/4	asio0	Built-in RS-232 interface
2/0/5	asio0	Built-in RS-232 interface
2/0/6	CentIf	Built-in parallel interface

- **Disk usage**

SCSI–6	—	4.3 GB	—	LVM	—	`/vg00` (8)	—	368/4340 MB
SCSI–5	—	1 GB	—	LVM	—	`/vg04` (1)	—	4/1004 MB
SCSI–4	—	1.8 GB	—	LVM	—	`/vg03` (1)	—	8/1808 MB
SCSI–2	—	8.7 GB	—	LVM	—	`/vg02` (2)	—	520/8712 MB

- **Local file systems**

`/stand`	HFS	48 MB	`/dev/vg00/lvol1`	automount
`/`	VxFS	84 MB	`/dev/vg00/lvol3`	automount
`/home`	VxFS	128 MB	`/dev/vg00/lvol4`	automount
`/opt`	VxFS	1024 MB	`/dev/vg00/lvol5`	automount
`/tmp`	VxFS	128 MB	`/dev/vg00/lvol6`	automount
`/usr`	VxFS	1024 MB	`/dev/vg00/lvol7`	automount
`/var`	VxFS	1024 MB	`/dev/vg00/lvol8`	automount
`/aux2`	VxFS	4096 MB	`/dev/vg02/lvol1`	automount
`/staff`	VxFS	4096 MB	`/dev/vg02/lvol2`	automount
`/logs`	VxFS	1800 MB	`/dev/vg03/lvol1`	automount
`/syslogs`	VxFS	1000 MB	`/dev/vg04/lvol1`	automount
`/cdrom`	CDFS		`/dev/dsk/c0t0d0`	

- **Imported file systems**
  `/scratch` — RW — `puppis:/scratch`

- **Exported file systems**
  `/aux2` — RW

- **Swap and dump space**
  512 MB primary device swap/dump on `/dev/vg00/lvol2`

2.2.5 Volans

- **Basic properties**

Model:	HP 9000/735
OS:	HP-UX B.10.20A
Processor:	99 MHz PA-risc 1.1b PA7100
Memory:	144 MB
ROM:	PDC 1.1, IODC 1.0
Machine-ID:	2014895682
Address:	08:00:09:24:A4:3E
Monitor:	HP A2094A, 19" (*spare:* HP A1097C, 19")

- **Hardware configuration:**
  Primary boot path: 2/0/7.6.0
  Alternate boot path: 2/0/1.5.0 (*non-existent*)

- **Hardware**
  Fast/Wide SCSI chain (2/0/7):

SCSI–6 Internal disk — 4.3 GB *Seagate ST34501W*
SCSI–5 Internal disk — 4.3 GB *Seagate ST34501W*
SCSI–4 Empty
SCSI–3 Empty
SCSI–2 Empty
SCSI–1 Empty
SCSI–0 Empty

Single-ended SCSI chain (2/0/1):

SCSI–6 Empty
SCSI–5 Empty
SCSI–4 Empty
SCSI–3 Empty
SCSI–2 External CD–ROM — *Toshiba XM–3301TA*, F/W SCSI
SCSI–1 Empty
SCSI–0 Empty

- **Interfaces**

  LAN interface (AUI [with BNC adapter])
  2 * Serial RS-232 interface
  Parallel interface
  Single-ended SCSI
  Fast/Wide SCSI
  Audio interface (in & out & mic & phones & speakers)
  HIL device
  2 * Monitor (3 BNCs)

- **I/O cards:**

2/0/1	c720	Built-in SCSI
2/0/2	lan2	Built-in LAN
2/0/4	asio0	Built-in RS-232 interface
2/0/5	asio0	Built-in RS-232 interface
2/0/6	CentIf	Built-in parallel interface
2/0/7	c720	Built-in Fast/Wide SCSI
4	eisa	EISA adapter

- **Disk usage**

SCSI–6	—	4.3 GB	—	LVM	—	`/vg00` (8)	—	0/4336 MB
SCSI–5	—	4.3 GB	—	LVM	—	`/vg02` (4)	—	240/4336 MB

- **Local file systems**

`/stand`	HFS	64 MB	`/dev/vg00/lvol1`	automount
`/`	HFS	96 MB	`/dev/vg00/lvol3`	automount
`/home`	HFS	512 MB	`/dev/vg00/lvol4`	automount
`/opt`	HFS	1024 MB	`/dev/vg00/lvol5`	automount
`/tmp`	HFS	256 MB	`/dev/vg00/lvol6`	automount
`/usr`	HFS	848 MB	`/dev/vg00/lvol7`	automount
`/var`	HFS	1024 MB	`/dev/vg00/lvol8`	automount
`/aux2`	VxFS	2048 MB	`/dev/vg02/lvol1`	automount
`/archive`	VxFS	512 MB	`/dev/vg02/lvol2`	automount
`/cdscr`	VxFS	1024 MB	`/dev/vg02/lvol3`	automount
`/logs`	VxFS	512 MB	`/dev/vg02/lvol4`	automount
`/cdrom`	CDFS		`/dev/dsk/c0t2d0`	

- **Imported file systems**
  none

- **Exported file systems**

`/aux2`	—	RW
`/archive`	—	RW
`/cdscr`	—	RW
`/logs`	—	RW

- **Swap and dump space**
  512 MB primary device swap/dump on `/dev/vg00/lvol2`

2.2.6 Dorado

- **Basic properties**

Model:	Dell Precision workstation 620MT
OS:	RedHat Linux 7.1 (Seawolf) 2.4.3-12
Processor:	933 MHz Pentium-III
Memory:	1024 MB, ECC RDRAM
Cache:	256 kB level 2
Bus speed:	133 MHz
BIOS:	A09 Adaptec v25113 © 1999
Machine-ID:	
Address:	00:B0:D0:E9:67:C5
I/O buses:	
Monitor:	21” Dell P1110, 1600x1200, 106.1 kHz, 85 Hz
Video card:	32 MB, nVidia Geforce2 GTS
Sound card:	

- **Hardware**

SCSI–0	Internal disk	—	8.9 GB	*Quantum Atlas 10K2-TY092L*
SCSI–1	Internal disk	—	17.8 GB	*Fujitsu MAJ3182MP*
SCSI–3	Internal DAT	—		*HP C1537A*
SCSI–4	External disk	—	35.8 GB	*Seagate ST336704LW*
SCSI–5	Internal CD–RW	—		*Sony CRX145S* (10x/4x/32x)
IDE	Internal CD	—		*Samsung SC-148C* (???x)
IDE	Internal floppy	1.44 MB	3.5"	

- **Interfaces**

  LAN interface (twisted pair)
  2 * Serial RS-232 interface
  Parallel interface
  2 * USB
  Wide single-ended SCSI
  Audio interface (3 connectors)
  Keyboard
  Mouse
  Monitor

- **Local fie systems**

`/`	512 MB	`/dev/sda2`	automount
`/var`	512 MB	`/dev/sda3`	automount
`/home`	256 MB	`/dev/sda5`	automount
`/tmp`	256 MB	`/dev/sda6`	automount
`/opt`	512 MB	`/dev/sda7`	automount
`/usr`	3072 MB	`/dev/sda8`	automount
`/scisoft`	3072 MB	`/dev/sda9`	automount
`/staff`	16841 MB	`/dev/sdb2`	automount
`/data`	35000 MB	`/dev/sdc1`	automount
`/mnt/cdrom`		`/dev/cdrom`	automount
`/mnt/cdrom1`		`/dev/cdrom1`	automount
`/mnt/floppy`		`/dev/fd0`	automount

- **Swap and dump space**

  517 MB primary device swap on `/dev/sda1`
  517 MB secondary device swap on `/dev/sdb1`

2.2.7 Eridanus

- **Basic properties**

Model:	Dell Precision workstation 620MT
OS:	RedHat Linux 7.1 (Seawolf) 2.4.3-12
Processor:	266 MHz Pentium-III
Memory:	512 MB, ECC RDRAM
Cache:	256 kB level 2
Bus speed:	133 MHz
BIOS:	A09 Adaptec v25113 © 1999
Machine-ID:	
Address:	00:B0:D0:AB:E7:81
I/O buses:	
Monitor:	21” Dell P1110, 1600x1200, 106.1 kHz, 85 Hz
Video card:	32 MB, nVidia Geforce2 GTS
Sound card:	

- **Hardware**

SCSI–0	Internal disk	—	8.9 GB	*Quantum Atlas 10K2-TY092L*
SCSI–1	Internal disk	—	17.8 GB	*Fujitsu MAJ3182MP*
SCSI–3	Internal DAT	—		*HP C1537A*
SCSI–4	External disk	—	35.8 GB	*Seagate ST336704LW*
IDE	Internal CD	—		*Samsung SC-148C* (???x)
IDE	Internal floppy	1.44 MB	3.5”	

- **Interfaces**

  LAN interface (twisted pair)
  2 * Serial RS-232 interface
  Parallel interface
  2 * USB
  Wide single-ended SCSI
  Audio interface (3 connectors)
  Keyboard
  Mouse
  Monitor

- **Disk usage**

2.2.8 Scorpius

- **Basic properties**

Model:	
OS:	
Processor:	MHz
Memory:	MB
Cache:	kB
BIOS:	
Machine-ID:	
Address:	00:60:97:9F:C0:F8
I/O buses:	
Monitor:	”
Video card:	
Sound card:	

- **Hardware**

- **Interfaces**

- **Disk usage**

2.2.9 Vinchuca

- **Basic properties**

Model:	
OS:	
Processor:	MHz
Memory:	MB
Cache:	kB
BIOS:	
Machine-ID:	
Address:	
I/O buses:	
Monitor:	”
Video card:	
Sound card:	

- **Hardware**

- **Interfaces**

- **Disk usage**

2.2.10 Crux

- **Basic properties**

Model:	
OS:	RedHat 5.2 (Apollo) 2.0.36
Processor:	MHz
Memory:	MB
Cache:	kB
BIOS:	
Machine-ID:	
Address:	00:90:FB:00:03:EE
I/O buses:	
Monitor:	”
Video card:	
Sound card:	

- **Hardware**

- **Interfaces**

- **Disk usage**

2.2.11 Musca

- **Basic properties**

Model:	
OS:	
Processor:	MHz
Memory:	MB
Cache:	kB
BIOS:	
Machine-ID:	
Address:	00:01:02:D9:8F:9D
I/O buses:	
Monitor:	”
Video card:	
Sound card:	

- **Hardware**

- **Interfaces**

- **Disk usage**

2.2.12 Cetus

- **Basic properties**

Model:	IBM PC/AT or compatible, Intel(R) 430FX PCIset
OS:	
Processor:	100 MHz Pentium
Memory:	24 MB
Cache:	kB
BIOS:	Copyright (C) 1995, Award Software, Inc., 08/28/1995
Machine-ID:	
Address:	00:20:AF:F2:3F:4E
I/O buses:	ISA, PCI, IDE, SCSI
Monitor:	”
Video card:	1 MB, 86C764/765 TRIO32/64/64V+ GUI Accelerator, Rev 01
Sound card:	

- **Hardware**

Internal CD	*Toshiba XM-5302TA (4x)*

- **Interfaces**
  2 * serial (COM1 & COM2)
  parallel (LPT1)

- **Disk usage**

2.2.13 Horologium

- **Basic properties**

Model:	
OS:	Windows-98
Processor:	75 MHz Pentium-S
Memory:	32 MB
Cache:	256 kB
BIOS:	
Machine-ID:	
Address:	
I/O buses:	
Monitor:	”
Video card:	
Sound card:	

- **Hardware**

Internal floppy	1.44 MB	3.5”

- **Interfaces**

- **Disk usage**

2.2.14 Aries

- **Basic properties**

Model:	
OS:	
Processor:	MHz
Memory:	MB
Cache:	kB
BIOS:	
Machine-ID:	
Address:	
I/O buses:	
Monitor:	"
Video card:	
Sound card:	

- **Hardware**

- **Interfaces**

- **Disk usage**

2.2.15 Pictor

- **Basic properties**

Model:	
OS:	
Processor:	MHz
Memory:	MB
Cache:	kB
BIOS:	
Machine-ID:	
Address:	
I/O buses:	
Monitor:	"
Video card:	
Sound card:	

- **Hardware**

- **Interfaces**

- **Disk usage**

2.2.16 Capricornus

- **Basic properties**

Model:	IBM PC/AT or compatible, Intel(R) 430FX PCIset
OS:	
Processor:	133 MHz Pentium
Memory:	32 MB
Cache:	kB
BIOS:	Copyright 1985-1994 Phoenix Technologies Ltd.
Machine-ID:	
Address:	
I/O buses:	ISA, PCI, IDE, SCSI
Monitor:	”
Video card:	2 MB, 325 ViRGE
Sound card:	Legacy ISA sound card

- **Hardware**

  Internal floppy 1.44 MB 3.5”

- **Interfaces**

  2 * serial (COM1 & COM2)
  parallel (LPT1)

- **Disk usage**

2.2.17 Hydra

- **Basic properties**

Model:	IBM PC/AT or compatible, Intel(R) 440LX AGPset
OS:	
Processor:	333 MHz Pentium II
Memory:	96 MB
Cache:	kB
BIOS:	Intel Corp., 4A4LL0X0.10A.0027.P09
Machine-ID:	
Address:	00:20:18:02:34:2B
I/O buses:	ISA, PCI, IDE, USB
Monitor:	”
Video card:	8 MB, STB Velocity 128 AGP
Sound card:	AU8820 Vortex Digital Audio Processor

- **Hardware**

Internal disk	8.1 GB	*IBM-DHEA-38451 (SH0SH1Q9547)*
Internal floppy	1.44 MB	3.5”

- **Interfaces**

  serial (COM1)
  2 * parallel (LPT1 & LPT2)

- **Disk usage**

2.2.18 Caelum

- **Basic properties**

Model:	IBM PC/AT or compatible, Intel(R) 440BX AGPset
OS:	
Processor:	400 MHz Pentium II
Memory:	96 MB
Cache:	kB
BIOS:	Intel Corp., 4A4RB0X0.10A.0018.P06
Machine-ID:	
Address:	00:10:5A:AB:AD:01
I/O buses:	ISA, PCI, IDE, USB
Monitor:	”
Video card:	8 MB, Rage 3D Pro AGP
Sound card:	YMF724-Based PCI Audio Adapter

- **Hardware**

Internal disk	12.4 GB	*IBM-DTTA-351290 (WG0WGF54190)*
Internal CD-RW		*RICOH MP7040A (4x/4x/20x)*
Internal CD		*CDU701 (14x)*
Internal floppy	1.44 MB	3.5”

- **Interfaces**
  serial (COM1)
  parallel (LPT1)

- **Disk usage**

2.2.19 Gemini

- **Basic properties**

Model:	IBM PC/AT or compatible
OS:	
Processor:	200 MHz Pentium Pro
Memory:	32 MB
Cache:	kB
BIOS:	Phoenix Technology, 4.05
Machine-ID:	
Address:	
I/O buses:	ISA, PCI, IDE, SCSI
Monitor:	”
Video card:	4 MB, 325 ViRGE
Sound card:	Creative Labs Audio Device (V16CL/V32D/V32G)

- **Hardware**

Internal disk	6.15 GB	*Quantum Fireball SE6.4A (336818971967)*
Internal CD-RW		*RICOH MP7040A (4x/4x/20x)*
Internal floppy	1.44 MB	3.5”

- **Interfaces**
  2 * serial (COM1 & COM2)
  parallel (LPT1)

- **Disk usage**

2.2.20 Norma

- **Basic properties**

Model:	
OS:	
Processor:	MHz
Memory:	MB
Cache:	kB
BIOS:	
Machine-ID:	
Address:	
I/O buses:	
Monitor:	"
Video card:	
Sound card:	

- **Hardware**

- **Interfaces**

- **Disk usage**

2.2.21

- **Basic properties**

Model:	
OS:	
Processor:	MHz
Memory:	MB
Cache:	kB
BIOS:	
Machine-ID:	
Address:	
I/O buses:	
Monitor:	"
Video card:	
Sound card:	

- **Hardware**

- **Interfaces**

- **Disk usage**

2.3 Accounts and passwords

2.3.1 Accounts

All account managing on the HPs should be done with `SAM` and with `Linuxconf` on Linux-PCs. Accounts are disabled if the password gets older than 4 months or if there are too many unsuccessful login attempts to them.

- The distribution of user-IDs are roughly following this scheme:

0–100	HP-UX system accounts
101–199	Pegasus and observering accounts
200–299	Staff accounts
500–	Special services

Since there are a vast number of user-IDs to choose from there is no need to reuse user-IDs that have been used before. Each new user should be assigned a new, unique user-ID!

Accounts on the HPs

user-ID	username	group	VELA	PUPPIS	CARINA	VOLANS
0	root	sys, root, bin, ...	*	*	*	*
1	daemon	daemon	*	*	*	*
2	bin	bin	*	*	*	*
3	sys	sys	*	*	*	*
4	adm	adm	*	*	*	*
5	uucp	sys	*	*	*	*
9	lp	lp	*	*	*	*
11	nuucp	nuucp	*	*	*	*
27	hpdb	other	*	*	*	*
101	daprog	observer, daprog	*	*	*	*
102	pegasus	observer	*	*	*	*
103	aips	users	-	*	*	-
104	blue	observer	*	*	*	*
105	yellow	observer	*	*	*	*
106	red	observer	*	*	*	*
107	green	observer	*	*	*	*
108	orange	observer	*	*	*	*
109	violet	observer	*	*	*	*
110	director	observer	*	*	*	*
113	fauliffe	-	-	-	-	-
114	lundahl	users	*	*	*	*
115	vlbi	observer	*	-	*	*
116	puma	observer	*	-	*	*
201	rlemke	users	-	*	-	-
202	gdelgado	users	-	o	-	-
203	postgres	users	*	-	-	*
204	nick	users	-	o	-	-
206	lnyman	users	-	*	*	-
207	michel	users	-	*	*	-
208	angel	users	-	o	-	-
210	sest	users	-	*	*	-
211	fazagra	users	-	*	o	-
212	database	users	*	-	-	*
214	denis	users	-	o	-	-
215	correlat	users	-	*	-	-
216	twiklind	users	-	o	-	-
220	fauliffe	users	*	*	*	*
221	gpersson	users	-	*	*	-
222	gipsy	users	-	*	-	-

user-ID	username	group	VELA	PUPPIS	CARINA	VOLANS
223	mnielboc	users	-	*	-	-
224	atieftru	users	-	o	-	-
225	mlerner	users	o	*	*	-
230	lerner	users	*	*	*	*
241	skontine	users	-	*	-	-
242	lhaikala	users	-	*	*	-
243	jscobbie	users	*	*	*	*
244	frantaky	users	-	*	*	-
245	lgunnars	users	-	*	-	-
246	anders	users	-	o	-	-
247	kbrooks	users	-	o	o	-
248	mlager	users	-	*	-	-
249	scurran	users	-	o	o	-
250	observer	users	*	-	*	*
260	archive	users	*	*	-	*
500	ftp	guest	-	*	-	-
510	tftp	other	*	*	*	*
600	stop	commands	*	*	*	*
601	restart	commands	*	*	*	*

Active accounts are marked with '`*`' and accounts that have been removed are marked with '`o`'.

2.3.2 Root accounts

There are two different `root` passwords: one that is supposed to be known only by the system administrators and one that is used on the staff PCs. The sysadm `root` password is used on all HPs, DORADO and all Linux-PCs belonging to the control network. All other PCs use the other `root` password. The exception is CRUX, the correlator PC, which still uses the original passwords installed by our Australian friends.

The only Linux machine allowing `root` logins via `telnet` is SCORPIUS (to avoid opening the door to the AOS-room). Remember to start up and upgrade VINCHUCA whenever SCORPIUS is upgraded (see the chapter on maintenance of PCs)!

Remember that passwords on HPs must not contain the characters "`@`" and "`#`"!

Accounts with the sysadm root password

VELA	root
PUPPIS	root
CARINA	root
VOLANS	root
DORADO	root
MUSCA	root
SCORPIUS	root
VINCHUCA	root
CETUS	root

Old sysadm root passwords

1999–06–11	4fju2no
1999–09–18	t's4me!!
1999–12–07	vikING[]
2000–03–01	?priVADo?
2000–05–28	!HEMligt!
2000–09–08	bara4SUs
2000–10–06	YoYmyHP.
2001–01–01	NowRvi2.
2001–04–19	paRa/Adm
2001–05–14	a_New_1!
2001–07–22	

Accounts with the LINUX root password

GEMINI	root
PICTOR	root
CAELUM	root
TUCANA	root
CAPRICORNUS	root
HYDRA	root

Old LINUX root passwords

—	4Get_Eso
1999–04–12	2Get_Out
2000–03–01	whatHAT?
2000–09–08	EnRO"Den
2000–10–06	(Lin)uxOS
2001–01–01	SU_4_PCs
2001–04–19	no-WIN!!
2001–07–22	

2.3.3 Staff accounts

All staff accounts have the same password which should be known only by staff members. Use `SAM` to change all the accounts on the HPs. On the Linux-PCs, you can use `Linuxconf`. On SCORPIUS and CETUS, login as `root` and type "`passwd stop`" and, for SCORPIUS, "`passwd restart`". Remember to start up and upgrade VINCHUCA whenever SCORPIUS is upgraded (see the chapter on maintenance of PCs)!

Accounts with the staff password

VELA	`daprog`, `pegasus`, `violet`, `director`, `vlbi`, `puma`, `postgres`, `database`, `archive`, `stop`, `restart`
PUPPIS	`daprog`, `pegasus`, `aips`, `violet`, `director`, `sest`, `gipsy`, `archive`, `stop`, `restart`
CARINA	`daprog`, `pegasus`, `aips`, `violet`, `director`, `vlbi`, `puma`, `sest`, `stop`, `restart`
VOLANS	`daprog`, `pegasus`, `violet`, `director`, `vlbi`, `puma`, `postgres`, `database`, `archive`, `stop`, `restart`
DORADO	`daprog`, `pegasus`, `violet`, `director`, `vlbi`, `puma`, `sest`, `archive`, `bolodata`, `admin`
MUSCA	`vxworks`
CETUS	`prog`, `oper`, `stop`, `restart`
SCORPIUS	`aoscon`, `stop`
VINCHUCA	`aoscon`, `stop`
GEMINI	`staff`, `pointing`
PICTOR	`sest`
KILA	`sest`
AYLLA	`sest`
PCLIN7	`sest`, `lhaikala`
Garching	`sest` (for example OPUS2.HQ.ESO.ORG)
PUPPIS	`/usr/local/etc/httpd/cgi-bin/password.cgi`
MELI	`/home/sestweb/.webauth/.htpasswd`

Make sure that the file `/usr/local/etc/httpd/cgi-bin/password.cgi` is only readable by `root`! On MELI, login as `sestweb` and go down in the directory `.webauth` and run the program "`htpasswd -c .htpasswd sest`".

Old staff passwords

1999–06–20	`rm_glennito`
1999–09–18	`don'tTELL`
1999–12–05	`4us*SEST`
2000–03–01	`Only4OSS`
2000–05–28	`RweBEST?`
2000–09–08	`UbetWEr^`
2000–10–06	`=SOLo4uS`
2001–01–01	`fin%DISh`
2001–04–19	`->SiMBa!`
2001–07–22	

2.3.4 Guest accounts

All guest accounts have the same password. Use `SAM` to change all the accounts on the HPs. On the Linux-PCs, you can use `Linuxconf`. On CETUS, login as `root` and type "`passwd` *colour*". On SCORPIUS, login as `root` and type "`passwd restart`". Remember to start up and upgrade VINCHUCA whenever SCORPIUS is upgraded (see the chapter on maintenance of PCs)!

Accounts with the guest password

VELA	`blue`, `yellow`, `red`, `green`, `orange`, `observer`
PUPPIS	`blue`, `yellow`, `red`, `green`, `orange`
CARINA	`blue`, `yellow`, `red`, `green`, `orange`, `observer`
VOLANS	`blue`, `yellow`, `red`, `green`, `orange`, `observer`
DORADO	`blue`, `yellow`, `red`, `green`, `orange`
MUSCA	`rlemke`
CETUS	`blue`, `yellow`, `red`, `green`
SCORPIUS	`restart`
VINCHUCA	`restart`
GEMINI	`guest`

Old guest passwords

1999–01–07	2Baguest
1999–03–19	Heyw84me
1999–05–13	4more2go
1999–08–08	SEST4you
1999–10–30	kom->oss
1999–12–29	Feliz_MM
2000–03–01	HejYHola!
2000–05–28	4mm_data
2000–09–08	RYMDo"ra
2000–10–06	aim>las**
2001–01–01	NewAn~o!
2001–04–19	galaX+**
2001–07–22	

2.3.5 Correlator accounts

There is an account needed for the correlator support from Australia.

Accounts with the correlator password

PUPPIS	correlat

Old correlator passwords

2000–05–12	mult_acc
2000–10–06	dig+-COR
2001–01–01	tiMe2GO!
2001–01–11	crUx5:64
2001–04–19	5:64crUx
2001–07–22	

2.3.6 Web accounts

There is an account used for material published on the Web. This account is also used for retrieving weather data and the password is thus hardcoded into several programs.

Accounts with the web password

MELI	`sestweb`
VELA	`/aux2/local/cfht/dev/argo/weather/meteo_data_server.c`, `/aux2/local/cfht/dev/argo/weather/meteo_image_server.c`,
PUPPIS	`/home/daprog/meteo_data_server.c`, `/home/daprog/meteo_image_server.c`,
CARINA	`/aux2/local/cfht/dev/argo/weather/meteo_data_server.c`, `/aux2/local/cfht/dev/argo/weather/meteo_image_server.c`,

On VELA and CARINA, make copies of these two files by using the `pcp` command, then edit the files and change the password. Make sure that the files only are readable by the owner and recompile them with "`make all`" followed by "`make install`".

On PUPPIS, modify the files and check that they only are readable by `daprog`. Then compile them by running "`Compile_server`".

Old web passwords

—	`sio2-1`
2000–10–21	`4OurPaGe`
2001–01–01	`our<>WeB`
2001–04–19	`WwW->uS.`
2001–07–22	

2.3.7 Documentation accounts

There is also an account used for documentation published on the Web.

Accounts with the documentation password

MELI	`docses`

Old documentation passwords

—	`Manuals4SEST!`
2001–01–01	`DOCs4Us*`
2001–04–19	`OurDOCs,`
2001–07–22	

2.4 Scratch areas

There are four scratch areas where everybody have write permissions. The `/cdscr` on VELA is a 1.5 GB area primarily intended for CD creation. It is also used as temporary storage during system maintenance. You should therefore clean up after yourself as soon as possible. Since the area is needed for system maintenance, the system administrator may delete files there without any warning.

There is also a `/cdscr` on VOLANS which is a 1 GB area duplicating the `/cdscr` on VELA. It will only be used if VOLANS has to replace VELA.

The third area is called `/scratch` and is located on PUPPIS. It is a 4 GB disk which can be used more freely. However, try not to fill it up with old garbage. This particular disk suffered from a disk failure in April 1999, but has performed flawlessly since it was reformatted in July 1999.

The fourth area is `/data/scratch` on DORADO. This scratch area is part of a large 36 GB partition that fills the entire external disk and which also holds the on-line SIMBA archive and all the observing accounts. This area can thus be used for as much space as there is left on the disk, but that should, of course, be avoided since it will make the observers using DORADO very unhappy.

Back-ups are not taken of anything residing in the scratch areas.

2.5 Anonymous FTP

There is an account for *anonymous* `FTP` on PUPPIS. However, due to problems with hackers it is only open for downloads and it is only accessible from **within** the ESO domain. None of the Linux-PCs allow *anonymous* `FTP`.

For instructions on checking the set-up and security of the *anonymous* `FTP` area, see the chapter on bi-weekly maintenance tasks.

2.5.1 Putting stuff on our anonymous FTP area

The `/home/ftp/pub` directory is open for writing for all users on PUPPIS who belongs to the group `users`, i.e. all accounts belonging to staff members. Accounts belonging to the group `observer`, i.e. all observing accounts, do not have this privilege and have to use the directory `/home/ftp/pub/observer` instead.

- From a `users` account, just create a proper directory in the *anonymous* `FTP` area:
  > `mkdir /home/ftp/pub/`*directory-name*
  Then put your stuff there with
  > `mv` *stuff* `/home/ftp/pub/`*directory-name*
  or
  > `cp` *stuff* `/home/ftp/pub/`*directory-name*

- From an `observer` account, proceed as above but use the directory `/home/ftp/pub/`*directory-name* instead.

2.5.2 Putting stuff on ESO's anonymous FTP server

The *anonymous* `FTP` area on FTP.ESO.ORG must be used for any `FTP` transfer to or from the outside world. SEST do not have a separate area on this machine but uses the general area. All transfers are done through *anonymous* `FTP`. Files are deleted automatically on FTP.ESO.ORG after 15 days.

Making files available to the outside world

From within ESO, we can make an *anonymous* `FTP` to FTP.ESO.ORG and deposit files in the directory `pub/general`. Outside users only have read permissions in this directory. It is recommended that any files from SEST are put in the subdirectory `sest` (if it has been erased, recreate it with "`mkdir sest`"). If you have more than one file to deposit, create a new subdirectory for them below `pub/general/sest`.

Receiving files from the outside world

Any outside user can make an *anonymous* `FTP` to FTP.ESO.ORG and deposit files in the directory `incoming/general`. However, an outside user do not have read permissions for this directory so he/she can't check what files reside in this area. From within ESO, we have both write and read permissions and can thus retrieve the files from this area.

2.5.3 Switching off anonymous FTP

Edit the file `/etc/passwd` and remove the line with the `ftp` entry (but don't touch the `tftp` entry, which is used for booting the X-terminals). Always check ownership and permissions on `/etc/passwd` after any modification (should be `root:sys` and `-r--r--r--`) and run the command `pwck` to check the integrity of the file.

If you want to switch off all `FTP` access from other machines (i.e. all incoming but not outgoing `FTP`), you will have to edit the file `/etc/inetd.conf` and add a '`#`' first at the line starting with `ftp`. You should reboot the machine after this change. The `/etc/inetd.conf` file should be owned by `root:sys` and have permissions `-rw-r--r--`.

2.6 Back-ups

...

2.7 On-line data archives

The observational data are stored in two on-line archives, one located in the directory `/archive` on VELA and one located in `/vela_archive` on PUPPIS. Both archives are supposed to be identical and contains the `gziped` `tar`–files generated when an observing account is archived. The files are storied in subdirectories named after the month of the year (`MmmYY`) which are created automatically. When half a year of data has been accumulated in the archives, two identical CD-ROMs should be created containing all the data, which should then be removed from the on-line archives.

The archives are owned by the user `archive` which belongs to the group `user` and has the standard staff password. Normally, there should be no need for anyone to log in to this account, other than for maintenance purposes. All files have the permission `rw-r-----`, which makes it possible for all staff members to access the data directly. The observers, however, can not access the archives, since they belong to the group `observer`. An evil observer can thus not steal observations from the archive. It also prevents us from accidental manipulation or removal of data from the archive.

Since no user except `archive` has write permissions to the archives, it is not possible to directly put new files into the archive when archiving is done. Instead, the archiving command stores a temporary copy of the new file in the directory `/archive/incoming/MmmYY` on VELA. The subdirectory `MmmYY` is automatically created and deleted. The directory `/archive/incoming` is the only directory in the archive to have a special ownership (`archive:observer`) and special permissions: `drwxrwxr-x`. This directory is thus writable for observers but not for staff members.

There is then a `cron` job run by `archive` once an hour (at hh:55) which checks for new files in `/archive/incoming`. The new files are then transferred into their proper directories (automatically created if necessary) on both VELA and PUPPIS, and the files are then removed from `/archive/incoming/MmmYY`. If some stage of the transfer fails, the files will remain in `/archive/incoming/MmmYY` and new attempts will be made once an hour until the transfer is successful. It is thus possible to do archiving on VELA even if PUPPIS is down for maintenance.

A log of all transfers and transfer attempts is written to the file `/tmp/archive.log` on VELA. This file can be deleted at any time, since it will be generated automatically if it does not exist.

2.8 Weather server

'`@`' refers to `/aux2/local/cfht/dev/argo`

The weather data from ESO is retrieved from two sources:

- as an ASCII-file wither from ESO server 134.171.80.7 (`dimm.ls.eso.org`) or 134.171.81.14 (`meli.ls.eso.org`)

- as a GIF-image from ESO server 134.171.81.14 (`meli.ls.eso.org`)

These files are retrieved by two server programs (`meteo_data_server` and `meteo_image_server`) that are scheduled to run once every minute as `cron` jobs. These two programs run both on CARINA (in main server mode) and on PUPPIS (in backup server mode).

Their job, in main server mode, is to download the data by `ftp` from the ESO servers, process the data and make it available to the Pegasus system on VELA. In case of the weather data, the processed ASCII-file is sent to VELA using `rcp` and in case of the weather image, it is stored on the server machine and VELA will then fetch it by `rcp` when needed. Both programs signal the existence of new data by touching the corresponding update flag files on VELA (`/tmp/weather_carina_data`, `/tmp/weather_carina_image`, `/tmp/weather_puppis_data` and `/tmp/weather_puppis_image`).

In backup server mode, the servers don't do anything unless there is a recent request file (`/tmp/weather_data_requested` or `/tmp/image_data_requested`), which forces them to perform the same job as the main server and then remove the request file. The request files are put onto the backup server by a verification program (`check_weather_server`) running on VELA whenever there has been no new data from the main server for some time. A too old request file is ignored and removed.

On VELA, a verification program (`check_weather_server`) is running during the observations. It periodically checks the flag files from the main weather server (`/tmp/weather_`*main*`_data` and `/tmp/weather_`*main*`_image`) and if they are too old, it puts request files (`/tmp/weather_data_requested` and `/tmp/image_data_requested`) on the backup server. The verification program is started automatically in the startup script (`@/misc/startup`).

There is also a weather server monitor (`@/monitor/monitor_server_bg` and `@/monitor/monitor_server_fg`) which also checks the flag files for the weather data (`/tmp/weather_carina_data` and `/tmp/weather_puppis_data`) and reports which of the servers that is currently used or warns if both these files are too old.

- Files on CARINA and PUPPIS (in /tmp): ('*' = temporary file)

	meteo.gif	weather image from ESO's weather server
*	meteo_tmp.gif	weather image (created when server downloads image)
*	meteo_retrieve.gif	weather image (created from VELA when someone asks)
	meteo.last	raw ASCII-data from ESO's weather server
	weather_eso	formatted ASCII-data from ESO's weather server
	weather_data.log	error and backup log for meteo_data_server
	weather_image.log	error and backup log for meteo_image_server
*	weather_data_requested	weather data request (from check_weather_server)
*	weather_image_requested	weather image request (from check_weather_server)

- Files on VELA (in /tmp): ('*' = temporary file)

*	meteo.gif	weather image (only when someone asks for it)
	weather_eso	ASCII-data from ESO's weather server
	weather_sest	ASCII-data from our own weather station
	weather.log	log of recent wind data from our weather station
	weather.tmp	log of recent wind data from our weather station
	weather_carina_data	update flag file from CARINA for the weather data
	weather_carina_image	update flag file from CARINA for the weather image
	weather_puppis_data	update flag file from PUPPIS for the weather data
	weather_puppis_image	update flag file from PUPPIS for the weather image

- Programs on CARINA:

@/weather/cronfile_carina	crontab job file
@/weather/meteo_data_server	weather data server
@/weather/meteo_image_server	weather image server

- Programs on PUPPIS:

~/daprog/cronfile	crontab job file
~/daprog/meteo_data_server	weather data server
~/daprog/meteo_image_server	weather image server

- Programs on VELA:

@/weather/check_weather_server	program checking the servers' status
@/weather/cronfile_vela	crontab job file
@/weather/show_meteo_image	script to show weather image
@/weather/retrieve_meteo_image	called from show_meteo_image
@/monitor/monitor_server_bg	weather server monitor program
@/monitor/monitor_server_fg	program called by monitor_server_bg

Important note! All files residing on @/weather must be present on both CARINA **and** VELA, since /aux2 on CARINA is supposed to be a copy of /aux2 on VELA!

2.9 Time server

At SEST we have two time servers: PUPPIS and CARINA. Both these time servers get their time from two La Silla time servers: TYMESERVE.LS.ESO.ORG (134.171.90.127) and SG5TIM.LS.ESO.ORG (134.171.136.25). Both these time servers get their time from GPS clocks. The first one is the official La Silla time server and is set up to be our preferred one, while the second one is an NTT time server. Both PUPPIS and CARINA are also using each other as time servers, in order to reduce the errors if we loose connection with the rest of the mountain.

Time synchronisation messages are broadcasted onto the control network from PUPPIS. VELA is set up to use both PUPPIS and CARINA as time servers by polling them regularly, with PUPPIS being the preferred server. VOLANS is set up in a similar way.

To improve the time keeping on the control network, we may want to set up the system so that VELA and VOLANS also use each other as time servers.

NOTE! Since PUPPIS is the gateway between the control network and the outer network, PUPPIS must be up and running (or, if CARINA is running, at least in maintenance mode) when VELA is rebooted! Otherwise, VELA will not be able to synchronise its clock during the boot. If PUPPIS is booted up after VELA, it may take up to half an hour before the clock of VELA is resynchronised.

2.10 Web serber

SEST maintains a set of web pages, that are located on ... Personal web pages of the SEST staff are located on PUPPIS. The web pages are administrated by Felipe.

2.11 Cron jobs

Several important `cron` jobs are running on all four HPs as well as on DORADO. Only certain users are allowed to run `cron` jobs. These users are specified in the file `/var/adm/cron/cron.allow` on HPs and in the file `/etc/cron.allow` on LINUX-PCs. Those users that have `cron` jobs all have a file named `cronfile`, `crontab` or something similar in their home directories. `cron` jobs are started by typing "`crontab` *crontabfile*". To list an active `cron` job, use "`crontab -l`" and to stop a `cron` job, use "`crontab -r`".

2.11.1 Cron jobs on Vela

Allowed cron users

- `root`, `adm`, `uucp`, `daprog`, `archive`

Active cron jobs

- `root`: runs "`qfind_builder_for_cron`" each day at 14:30 UT as well as "`get_pegasus_log 2`" at 14:45 UT. The first program rebuilds the database used by `qfind`, while the second program stores a copy of the Pegasus log file once every second day.

- `daprog`: runs "`read_rosasix -r`" once every minute. This program retrieves weather data from the ROSASIX weather station.

- `archive`: runs "`archiving_daemon`" once every hour at hh:55. This program looks for new data to be put into the observational archives.

2.11.2 Cron jobs on Puppis

Allowed cron users

- `root`, `adm`, `uucp`, `daprog`

Active cron jobs

- `root`: runs "`qfind_builder_for_cron`" each day at 9:30 UT. This program rebuilds the database used by `qfind`.

- `daprog`: runs "`meteo_data_server -backup`" and "`meteo_image_server -backup`" once every minute. These programs are the back-up servers providing VELA with ESO weather data and the meteo monitor image, in case CARINA can't provide these services.

2.11.3 Cron jobs on Carina

Allowed cron users

- `root`, `adm`, `uucp`, `daprog`

Active cron jobs

- `root`: runs "`qfind_builder_for_cron`" each day at 9:30 UT. This program rebuilds the database used by `qfind`.

- daprog: runs "meteo_data_server -main" and "meteo_image_server -main" once every minute. These programs are the main servers providing VELA with ESO weather data and the meteo monitor image.

2.11.4 Cron jobs on Volans

If VOLANS has to replace VELA the cron jobs normally running on VELA has to be started up on VOLANS. The instructions for doing that are included in the instructions for the replacement procedure.

Allowed cron users

- root, adm, uucp, daprog, archive

Active cron jobs

- root: runs "qfind_builder_for_cron" each day at 9:30 UT. This program rebuilds the database used by qfind.

2.11.5 Cron jobs on Dorado

Allowed cron users

- everyone

Active cron jobs

- root: runs "archiving_daemon" once every minute. This program checks for incoming SIMBA data from VELA and stores it in the on-line archive as well as on the observer's account.

2.12 Future upgrades

Several staff computers are old and need to be replaced: CAPRICORNUS, GEMINI and PICTOR. Also, we still don't have a computer for the short-contract astronomer position.

Spare parts should be bought and stocked for PCs, since we are becoming more and more dependent on PCs for the observations.

A second graphics card and a second screen for VELA would drastically improve the situation for the observers, since we could then reduce some of the information overload that is now presented on a single screen. (The three replacement work stations are all supposed to come with two graphics cards and two screens, but we can not fully utilise this until we have upgraded VELA, unless we decide to replace VELA by one of this machines although it is 25

Replacement of the 2 GB internal root disk on VELA with a 4 GB disk would allow a transition to the modern way of root partitioning that we use on all other HPs, and would remove the current problems of having the root disk filled to 95%.

Chapter 3

Hardware failures or disk crashes

3.1 Hardware replacement options

Spare parts as well as spare computers exist for several of the most critical computer systems.

3.1.1 HPs

The best protected work station is VELA. It has a spare disk with both operating system and the Pegasus system that can be used in case of a disk crash of one of the main disks. In case that VELA itself breaks down, there is another work station, VOLANS, that can be used as a replacement. VOLANS is a dedicated replacement computer. It is normally connected to the control network. Procedures for handling hardware problems on VELA are described in the section "*Diagnosing a disk crash on Vela*".

There are also two other HP-735 work stations that can be used as replacements for the data analysis HP PUPPIS and the development HP CARINA. None of these machines have yet been prepared for this role, but they both have a standarised operating system installed. The current plan is to replace CARINA and probably also PUPPIS with these two HP-735s, since they are more powerful, and instead use the old work stations as dedicated spare computers.

The role as the major data analysis computer will anyhow be transferred from PUPPIS to a new Linux-PC called DORADO, since none of the HP work stations will be able to handle the data flow from SIMBA. This PC will have a standard configuration so that the software team easily can replace it with one of their spares in case of problems.

All three HP-735s share an identical hardware configuration (at least that is the plan; we have still not got all the parts needed for this to be true), which means that it should be possible to replace anyone of them with any of the others.

We have also got two extra 4 GB hard disks from the software team as part of the HP-735 agreement. These will be kept as spares until they are needed.

No spares exist for the two X-terminals LIBRA and LEO.

3.1.2 PCs

Four PCs belong to the control network and are critical for certain observations.

- The AOS control PC SCORPIUS has a complete spare PC that can be used as a replacement. This machine is called VINCHUCA. It is configured as SCORPIUS and is switched off. The DSP cards for the AOSs have to be transferred between the computers in case of a change. The procedure for replacing SCORPIUS with VINCHUCA is described later in this chapter.
- The VLBI PC CETUS have two hard disks with identical set-up. In case of a disk crash, it should be easy to switch over to the alternative disk.
- The correlator control PC CRUX has no spares.
- The bolometer PC MUSCA has no spares.

No spares or spare parts exist for other PCs. They have to be ordered, in case something breaks.

3.1.3 OS-9 systems

The telescope control computer ANTLIA can be replaced with the FORNAX spare computer sitting in the lab. They are not identical but there should not be any degradation in performance if FORNAX is used instead of ANTLIA.

The IP-address is burnt into the EPROMs, which means that in case of a replacement, the two EPROMS in ANTLIA must be transferred to FORNAX. If this is not possible, the EPROMs in FORNAX have to be reburnt.

3.2 Diagnosing a disk crash on Vela

The first thing to do is to make sure that the problem really is a disk crash. Try to reboot VELA (see the section on how to reboot the HPs). If you can't login from the console, try to login from PUPPIS via `telnet`. If you get a login prompt but can't get in with `daprog` or any of the Pegasus accounts, try `observer` (guest password) or `root`. These two accounts only use the internal disk and should work even if the external disk has crashed. As a last resort, cycle the power to VELA — but don't do this until you have tried all other possibilities!

Watch the output on the console during the boot process! The computer should report that it has found a disk to boot from and then report the status of all attached disks (hopefully seeing messages saying something like "`filesystem clean`"). If the machine does not boot up to the login screen or you do get the login screen but can't login as `daprog` or on any of the colour accounts, then you are in trouble!!!

Let's start with the case where you can get a login prompt, either on the console or via `telnet` from PUPPIS.

If you can log in as `observer` (guest password) or as `root`, then the root-disk should be OK. Try the command `bdf`. The system should respond with one line of data for each of the six file systems installed on VELA: `/`, `/aux2`, `/archive`, `/cdscr`, `/logs` and `/alt`. "`/`" represents the root-disk which is a 2 GB internal disk, while the other five file systems reside on an external 8.7 GB disk.

If you can see all six of them, then things are not catastrophically bad. Make sure that none of the file systems has been filled up, i.e. "`%used`" must not be 100%! If this should be the case, you must clean up the full file system. If "`/`" is full, check out the directories `/tmp` and `/var/tmp`. However, be sure that you don't delete any important files (see the instructions on file cleaning in the section covering the bi-weekly tasks)! If `/aux2` is full, look through the different Pegasus accounts and try to find files that can be erased. If you don't want to erase files, you can try to move them to another file system, for example `/cdscr`.

If you can't see all of them, try "`mount -a`" (you need to be `root`) followed by `bdf`. If you still do not have the six file systems online (and you probably won't), the external disk is bad.

The computer makes a quick check of the disks when it boots, but you can force it to make a more extensive check with the command `check_disks`. All disks except the root-disk should be unmounted when you run `check_disks`. For more instructions on how to use this program, see the chapter on bi-weekly maintenance tasks. It is a good idea to run a thorough disk check as soon as there is any reason to suspect that there is a problem with a disk.

Don't try to play around with a broken disk! If you do, the chances that we can recover what is on it may decrease rapidly!

3.2.1 Replacing a crashed disk on Vela

There is a second external 4 GB disk connected to VELA. This disk is bootable and contains a fairly fresh (bi-weekly) back-up of the operating system as well as the Pegasus system and all the user accounts. This disk can thus be used as a fullworthy replacement for both the other disks on VELA. However, due to its limited size, the amount of disk space available is less, especially on the `/cdscr` file system which has been cut down to 24 MB (for more information of the configuration of the emergency disk, see the chapter on the physical set-up of VELA). To conserve disk space, `/cdscr` as well as `/archive` and `/logs` are empty.

The normal system on VELA consists of two disks: an internal disk with the root partition and an external disk with the rest of the partitions. There are thus three possible failure modes: the internal disk crashes, the external disk crashes or both disks crash. To completely switch over to the emergency disk is probably the safest thing to do, if you are uncertain about the status of the main disks. However, if the problem is clearly localised to the main root disk, you may want to use the emergency disk as root but still use the external main disk for Pegasus, since the observer then will be able to access his/her data and won't have to bother about setting up source lists and maps again.

Complete switch over to the emergency disk

- If possible logout anyone still logged in to VELA.
- Shut down VELA by logging in as `stop` (staff password) or login as `daprog` or `root` and type:
  > `cd /`
  > `shutdown -hy 0`
  Wait until you get the "`System is halted`"-message on the console and then switch off the power to the main computer followed by all external units. If it is impossible to login to VELA, just turn off the power.
- Disconnect the main external harddisk from the SCSI chain. Make sure that you reconnect the SCSI-chain properly.
- Switch on the external units (except the disconnected disk), wait 15 seconds and then switch on the power to VELA itself.
- Interrupt the boot process by continuously hitting `Escape` until you get the boot menu. Then type:
  > `boot alt`
  followed by "`n`". If you can't type anything at the boot menu, hit `Return` and try again. The boot process will be fully automatic once it has started.
- It should now be possible to login on any account and start up Pegasus again!

Use of the emergency disk only for root (normal Pegasus)

- If possible logout anyone still logged in to VELA.

- Reboot VELA by logging in as `daprog` or `root` and type:
  > `cd /`
  > `shutdown -ry 0`
  If it is impossible to login to VELA, just cycle the power.

- Interrupt the boot process by hitting `Escape`. When you get the boot menu type:
  > `boot alt`
  followed by "`n`". If you can't type anything at the boot menu, hit `Return` and try again. The boot process will be fully automatic once it has started.

- When VELA has booted up, login as `daprog` and bring it down to maintenance mode:
  > `cd /`
  > `shutdown -y 0`
  Wait until VELA has gone down into maintenance mode. You will be logged in automatically at the end of the process.

- Change the disk configuration file:
  > `cd /etc`
  > `cp fstab_mirror_root fstab`

- Reboot VELA again:
  > `cd /`
  > `shutdown -ry 0`

- Interrupt the boot process by hitting `Escape`. When you get the boot menu type:
  > `boot alt`
  followed by "`n`" and wait until the machine has rebooted.

- It should now be possible to login on any account and start up Pegasus again!

Use of the emergency disk only for Pegasus (normal root)

- If possible logout anyone still logged in to VELA.

- Login to VELA as `daprog` or `root` and type:
  > `cd /`
  > `shutdown -y 0`
  Wait until VELA has gone down into maintenance mode. You will be logged in automatically at the end of the process.

- Change the disk configuration file:
  > `cd /etc`
  > `cp fstab_mirror_external fstab`

- Shut down VELA by typing:
  > `cd /`
  > `shutdown -hy 0`
  Wait until you get the "`System is halted`"-message on the console and then switch off the power to the main computer followed by all external units.

- Disconnect the main external harddisk from the SCSI chain. Make sure that you reconnect the SCSI-chain properly.

- Switch on the external units (except the disconnected disk), wait 15 seconds and then switch on the power to VELA itself. The boot process will be fully automatic.

- It should now be possible to login on any account and start up Pegasus again!

3.2.2 A crash of Vela itself

If the VELA computer itself appears to be dead, i.e. nothing happens when you try to reboot it, then you will have to replace VELA with VOLANS. The procedure is as follows:

- Login as `root` on VOLANS and prepare it to become the new VELA:
  > `cd /etc/rc.config.d`
  > `cp -p netconf.VELA netconf`

- Switch off both VELA and VOLANS together with all external hardware. First log out all users and then shut them down by logging in as `stop` with the staff password.

- Disconnect and remove VELA, its two external harddisks, its screen, its keyboard and its mouse. Leave the DAT-drive and the CD-drive.

- Move VOLANS, its screen, its keyboard, its mouse and (optionally) its external CD-drive to their new location in the control room. The screen from LEO can be used instead of VOLANS's screen.

- Build a new VELA by connecting all the pieces in the control room together including the DAT-drive and the CD-drive(s). Make sure that you terminate the SCSI-chain properly by connecting a terminator at the last open SCSI port. If you decide to include the external CD-drive from VOLANS, you will need the spare wide SCSI-cable, that is located in the first cabinet on the left in the software engineer's room. The same cabinet also holds a spare RGB-cable that will be needed if you decided to use the screen of LEO. The weather station should be connected to the first RS-232 port. The printer cable to LYNX should be connected to the parallel port.

- When everything is properly connected, turn on the power and wait while the computer boots up.
- Login as `root` and adapt the shutdown allowance file:
  ```
  > cd /etc
  > cp shutdown.allow_VELA shutdown.allow
  ```
- Start `cron` jobs that are needed:
  ```
  > cd
  > crontab -r
  > crontab crontab.root_VELA
  > su daprog
  > cd /aux2/local/cfht/dev/argo/weather
  > crontab cronfile_vela
  > exit
  > su archive
  > cd /home/archive
  > crontab cronfile
  > exit
  > logout
  ```
- It should now be possible to login to any Pegasus account.
- Start testing the system. In case of communication problems you may have to reboot SCORPIUS, ICCABIN, ANTLIA or ICCNTRL.
- The pointing model and AOS drifts on VOLANS are updated in the bi-weekly back-up, and may thus not be fully up-to-date. If things have changed, you should follow the standard procedures to update them on the new VELA.
- When you have verified that the new system is working, resume observations. Since VOLANS receives a back-up from VELA once every two weeks, the observing accounts will probably contain data from old projects. If that is the case, you will have to clean them first. Do not archive anything from the account before cleaning, since it is old data that already has been archived. If the cleaning program refuses to clean the account,

type:
> `rm archive.id`
before restarting the cleaning. The observer will also have to recreate source lists and possible customized map files.

Note that the performance using VOLANS may be a little bit worse, since VOLANS only is running at 75% of the clock speed of VELA. VOLANS is, on the other hand, equipped with more memory and more swap space than VELA.

Most things will work normally on VOLANS with a few exceptions: the disk usage monitor must be switched off and printing on LYNX will produce extra pages.

3.3 Disk crash on Puppis or Carina

There are two disks that can be used as replacements for failed disks. One is the 4 GB disk used as `/scratch` on PUPPIS and the other is the 1.8 GB disk used as `/logs` on CARINA. Since the disks currently are handled through LVM, it is important to remove them logically from the system using `SAM` before they are physically removed or used for something else.

3.4 Disk crash on Scorpius

If SCORPIUS fails, there is a spare PC called VINCHUCA that is configured and ready to take over. This PC has no DSP boards installed so the three DSP boards must be transferred from SCORPIUS, since each AOS has its own DSP board. There is also one spare DSP board located in the small drawer below the AOS table.

There may be a few small software configurations that need to be done before VINCHUCA can become the new SCORPIUS. Check the date of the last update made on VINCHUCA as indicated by the Post-It note attached to VINCHUCA. Then login to PUPPIS and check out the date of the most recent back-up of SCORPIUS residing in the directory `/backup`. If VINCHUCA has been updated after this back-up was made, then it is just to start observing. Otherwise, you will have to install any modified files on VINCHUCA:

- On PUPPIS, type:
  ```
  > gzcat /backup/scorpius_YYMMDD.tar.gz | tar tvf - |
        sort -k 7nr -k 4Mr -k 5nr -k 6nr | more
  ```
  and note which files that have been changed since the last update of VINCHUCA. Note that there will be a lot of temporary files and log files on `/etc` and `/tmp` that should not be copied.

- Follow the procedure given in the chapter on maintenance of PCs.

Note that if you can't reach the new SCORPIUS from VELA or PUPPIS, type "`arp -d scorpius`" as `root` to reset the hardware address table.

3.5 Disk crash on Dorado

DORADO is supported by the La Silla software team. They will restore the computer with a standard RedHat LINUX system. The `/staff` and `/data` disks must be configured by SEST staff. There is a CD with the parts of the system that has been modified.

3.6 Disk crash on Musca

MUSCA can in principle be replaced by any PC with two network cards. It is running RedHat LINUX 6.2. There is a CD with a tar-file containing everything that is needed on the two accounts `rlemke` and `vxworks` as well as a copy of `/etc` so that the configuration can be restored.

3.7 Replacing the monitor on vela

There is a 19" A4331D spare monitor sitting on top of one of the document cabinets that can be used on VELA if the 21" monitor fails. It is basically just to plug it in, but you will get a better configuration (and a larger viewable screen if you first reconfigure the graphics card on VELA. To do this you have to reboot VELA (for example by using the `restart` account with the staff password) and then abort the boot of VELA by hitting `Escape` until you get the boot menu and then follow these instructions.

- Get to the configuration menu by typing:
  \> `co`
- List all available configurations with:
  \> `mo list`
- Select the appropriate configuration by typing:
  \> `mo graphics(0)` *number*
  where number is "1" for the 21" P1110 monitor and "12" for the 19" A4331D.

If the graphics card is not properly configured, you may not see anything on the monitor. In that case, you need to connect a monitor that do show something and use that one to configure the graphic card before switching to the new monitor. The configuration needed for the new 21" monitor also works for the old 19" monitor but the reverse is not true.

3.8 Restoring a crashed file system on an HP

3.8.1 Restoring a root file system

3.8.2 Restoring a non-root file system