

System Guide for Visitors

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1 Introduction

This small Guide describes the computing system used by the Astronomy Group at the Department of Physics and Astronomy, Aarhus University. It is meant to supply visitors with the necessary information to use the system, without discussing all the options and facilities available.

As this is about the same information needed by beginners, it can be considered a Beginners' Guide, but it has a special section on connecting laptops, which is mainly aimed at visitors.

2 Overall system description

The Astronomy Group has a system, which is partially integrated into the main computer system of the department. The basic structure like network, user administration and backup is taken care of by the department. Connected to this common backbone we have a range of equipment, which is dedicated to astrophysics, with software installed mainly serving the astronomers. We have our own printers and other peripheral equipment.

2.1 Servers

The core of our computing system is constituted by a small set of Unix/Linux servers. The Linux servers all run the Redhat Linux OS. The most important linux servers are listed here:

- **hercules** is the main file server. The machine has dual Opteron processors and 2Gbyte memory. User files (home directories) are on the main disk. It has a 1Gbit network interface.
- **mblade** is the first part of cluster. It represents the master node in a blade system with more nodes to come later. It is our fastest machine with dual Opteron CPUs and 2Gbyte memory. 64 bit Portland compilers and 64bit IDL are installed. The server is mainly thought of as a heavy processing machine.
- **tuc47** is also a file server with a 2Tbyte RAID5 disk system attached. It is a general resource used for all sort of purposes. It runs dual Pentium4 CPU's and has 1 Gbyte memory.
- **ocen** is similar to **tuc47**, except that it has dual Athlon CPU's. The RAID disk system is a scratch system, as it has turned out to be somewhat unstable.

A couple of older servers are SGI machines running dual MIPS CPUs and SGI's IRIX 6.5 Unix system:

- **origo** was our previous file server. It is the license server for IDL and is a good server for text processing with TeX/LaTeX, while all macros and other stuff work well here.
- **bigcat** is an old machine, but it still works as our main Web server. The reason, we keep it, is the stability. As I am writing this, the machine has been running for 397 days since last reboot.

2.2 Workstations

The preferred operating system is Unix/Linux, and you will find a mix of old and new workstations running IRIX 6.5 or Mandrake Linux, which we prefer on the workstations. The system is setup such that wherever you login, the environment is the same. You have the same home directory and printers are defined the same way. This is at least the idea, but in practice there are differences, either because of incompatibilities or because of lack of time to get everything to look similar.

You have access to workstations the following places:

- The Atlas Room, where a single SGI O2 is placed. The room is in building 1520 on the 2. floor (The astronomy corridor).
- The PC bar also placed in 1520, 2. floor, which consists of 12 PCs with half of them running Linux and the other half running Windows. The room is provided for the students, but is also open for other users.
- The computer room, where 6 workstations are placed, rather old except for one Linux station **neptun**. It's a mix of O2's and PC based Linux stations. The room is in building 1525 on the 2. floor.

2.3 Disk space

If you need to store large amount of data, we can create folders for you on the RAID systems or some other large data disks. Disk names are everywhere following the standard name /ai44 or similar. These names are kept consistent on all machines. However, not all disks are accessible from all servers or workstations. If you need a disk to be mounted on a particular workstation, feel free to ask. Normally, it can easily be arranged. A folder /ai39 will always refer to the same disk on any system and your data folder will have the name, e.g. /ai37/username.

2.4 Printers

The workhorses are two printers placed in the Atlas Room. They are both duplex printers, able to print on both side of the paper. One is a black and white printer, the other a colour printer.

- **hpast02** is an HP Laser Printer, which in the default mode prints black and white in duplex on A4 paper. Using appropriate drivers one can print single sided and on other paper formats as well as on transparencies.
- **phaser** is a wax based colour printer (Xerox Phaser 8200), which can print in simplex and duplex mode and on paper or transparencies. Do not use for b/w material, as the cost per page is higher than the Laser Printer.
- **hpnew** is the oldest printer and is placed in the computer room. It is a Laser printer with provision for double-sided printing (default).

2.5 Peripherals

Placed mainly in the computer room is a variety of equipment.

- Tape drives (DAT, Exabyte and DLT)
- CD and DVD burners
- Scanner.
- Projectors are installed in most lecture rooms, but we also have a unit which can be set up in locations where projectors are not permanently installed.

2.6 The network

The building has a 100Mbit ethernet installed with several access point provided in all offices. Not all are necessarily activated. If active it is marked with a small, blue disk label. We have a firewall installed, and traffic in and out of our internal network is checked for virus and spam.

In addition, a wireless network is available in the major part of the building. See later how to connect via the wireless net.

3 Getting access to the system

Visitors can get an user account on the system. If you let us know beforehand, we can have it ready when you arrive. Otherwise it might take half a day before the system administrators have time to create a new account.

With an account you can login on the workstations described earlier. You will have access to most of the usual resources like email, web browsers, file transfer etc. Your email address will be username@phys.au.dk.

From a workstation you will be able to connect to the servers or other Unix/Linux workstations. We recommend that you use a secure shell (ssh). A few of our servers are visible from outside our firewall, so that you will be able to connect from the outside to our system before or after your visit. The 'public' servers are **origo**, **tuc47** and **neptun**. Alternatively you can connect to our network using VPN. You must then register as a VPN user first and get a VPN client and/or the group password to our system.

3.1 Laptops

Many visitors bring their own laptop.

In order to connect your laptop to the internet, we need to know the MAC address. Then we will create a name connected to your laptop, and if you connect using DHCP, you will get an internet address and name automatically. If you send us your MAC address in advance, we can have it ready when you arrive.

After being connected you can access resources on the internet including your home institution. If you have an account on our system, you can use your laptop to access the local servers and services.

If your laptop has a wireless network adaptor, you can get connected using the following scheme:

1. Make sure you have a Cisco VPN client installed. We will provide one with the proper encrypted password included. If you already have a VPN client you need a profile from here.
2. Get a user account on our system and right to use VPN.
3. Switch on your laptop and enable the wireless net.
4. Connect to the wireless net AUWLAN and start your browser.
5. Register your laptop via the web page that comes up.
6. Restart.
7. Create a VPN connection to the system using the VPN client.
8. Now you can work as though you were directly connected to the local domain.

This may sound a bit complicated, but it has been required by the university to avoid unwanted persons to use the wireless net.

4 Using the system

The system offers a wide range of software and utilities. In this guide only a small fraction is described. Ask for help, if you have a particular wish.

4.1 Changing your password

The password you get for your account you may not like. You can change your password on the server **origo** with the usual command:

```
passwd
```

which is aliased to a special password program. Only 8 characters are used, and in a few cases it is actually a problem to have a password which is longer, so keep it at 8 characters.

4.2 Reading emails

In addition to the usual programs for reading emails, you can use the web program from any browser on any machine:

```
http://webmail.phys.au.dk
```

This is one of the (few) cases, where 8 character passwords are required.

4.3 Printing

Typically you print on one or the other of our two main printers. Use the command:

```
lpr -Phpast02 file.ps
```

to print a postscript file on the Unix/Linux stations in black and white.

or if you want to print an ASCII file (text file)

```
a2ps -Phpast02 file.txt
```

where the a2ps command has a long list of command line options.

Colour prints are best done using the special program

```
xprint -dphaser file.ps
```

which brings up a menu where you can change from single sided to double sided print. You can also demand transparencies, in which case you have to load transparencies and change the setting of a switch on the paper tray. The **xprint** program is only installed on the main servers, and maybe not even all of them.

More information about printing can be found on the Astronomy web page <http://astro.phys.au.dk> using the link in the left column.

4.4 Computing

The different servers have a variety of compilers installed. On AMD CPUs you can use the Portland compilers and on our 64bit systems **mblade**, **blade01**, **blade02** even the 64bit version. The **tuc47** and **mblade** servers have the Intel compiler installed. The login information gives some advice on how to use these compilers.

Of course, the standard Linux GNU compilers are installed as well.

4.5 Environment

When you use the Unix/Linux machines you will normally, when given access to the system, have a **.cshrc** file, which reads the Physics standard setup file. If you want to use the astronomy servers and use IDL or astronomy related software, then you should have a **.cshrc** file like this:

```
source /hercules/aisys/cshrc.obs
source $HOME/cshrc.user
```

where **cshrc.user** is a file with your own special definitions like specific aliases. The file **cshrc.obs** is a good model file, where you can remove all definitions and use it as a skeleton for your own setup.

4.6 Graphics

Our standard tool for producing graphics is IDL (Interactive Data Language), which we also use extensively for programming. We have IDL installed on all machines. The IDL setup varies slightly from server to server. You can copy the standard **idlsetup** file to your own directory and adjust it according to your own needs for every server you will be using.

Other systems (MATLAB, Mathematica etc.) are also installed.

4.7 Data reduction

IDL is used extensively with the common astronomy libraries included in the standard path definition. We also run IRAF on some of the servers.

5 Assistance

If you have questions, please, address them to me at the email address:

`srf@phys.au.dk`

You are also welcome to send requests for user accounts, VPN software and other resources which you need before, during and after your visit.