

# Introduction to CS Network

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## About the Course

- Today
  - Infrastructure and overview
  - No exercises today
  - Will maximum take two hours
- Important: Ask questions!
- Slides are based on previous slides by Gerd Behrmann and Henrik Thostrup Jensen

## Lectures with exercises

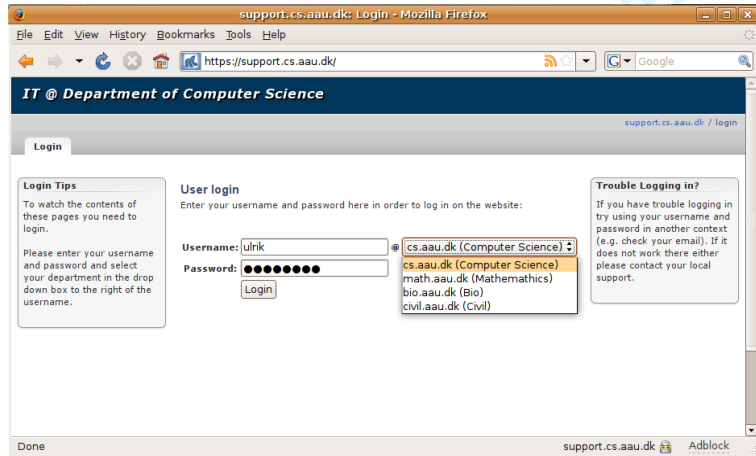
- Hands-on exercises
  - Practical skills does not come from lectures
  - 3-4 Hours
  - Make sure you have a CS (or Math) account
  - Bring a laptop
- Topics
  - 10/10 The Unix shell (file & process management)
  - 15/10 L<sup>A</sup>T<sub>E</sub>X
  - 14/11 Revision Control
  - 17/11 Emacs

## Course homepage

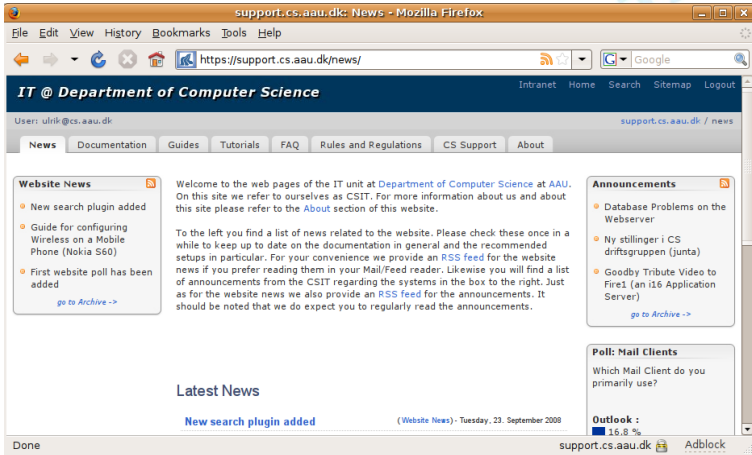
- <http://www.cs.aau.dk/~ulrik/teaching/E08/EDBINTRO/index.html>

CS Intranet CS Network	<h3>Introduction to the CS network Fall 2008</h3> <p><b>About the Course</b></p> <p>This course gives an introduction to the network and computer systems at Institute for Computer Science. All lectures will be in the auditorium. The first lecture will give you a brief introduction to the systems. The following lectures will focus on a specific topic and be followed exercises.</p> <p>There is no exam in the course, it counts as a free study activity. To get the course on your diploma you have to meet up to the first lecture.</p> <p><b>First Lecture: Wednesday October 8th</b></p> <p>First lecture will be in the main auditorium. The lecture will start 12:30 the 8th of October and will take between 1 and 2 hours. There is no preparation for the first lecture.</p> <p><b>slides</b></p> <p><b>Topic lectures with exercises</b></p> <p>For the remaining lectures you will have to bring a laptop on which you can do the exercises.</p>
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# support.cs.aau.dk



support.cs.aau.dk



The screenshot shows a Mozilla Firefox browser window displaying the website <https://support.cs.aau.dk/news/>. The page title is "support.cs.aau.dk: News - Mozilla Firefox". The browser's address bar shows the URL. The website header includes "IT @ Department of Computer Science" and navigation links for "Intranet", "Home", "Search", "Sitemap", and "Logout". The user is identified as "ulrik@cs.aau.dk". A navigation menu contains links for "News", "Documentation", "Guides", "Tutorials", "FAQ", "Rules and Regulations", "CS Support", and "About".

The main content area features a "Website News" section with the following items:

- New search plugin added
- Guide for configuring Wireless on a Mobile Phone (Nokia S60)
- First website poll has been added

A link "go to Archive ->" is provided below the news items. The central text area contains a welcome message and a paragraph of information:

Welcome to the web pages of the IT unit at [Department of Computer Science at AAU](#). On this site we refer to ourselves as CSIT. For more information about us and about this site please refer to the [About](#) section of this website.

To the left you find a list of news related to the website. Please check these once in a while to keep up to date on the documentation in general and the recommended setups in particular. For your convenience we provide an [RSS feed](#) for the website news if you prefer reading them in your Mail/Feed reader. Likewise you will find a list of announcements from the CSIT regarding the systems in the box to the right. Just as for the website news we also provide an [RSS feed](#) for the announcements. It should be noted that we do expect you to regularly read the announcements.

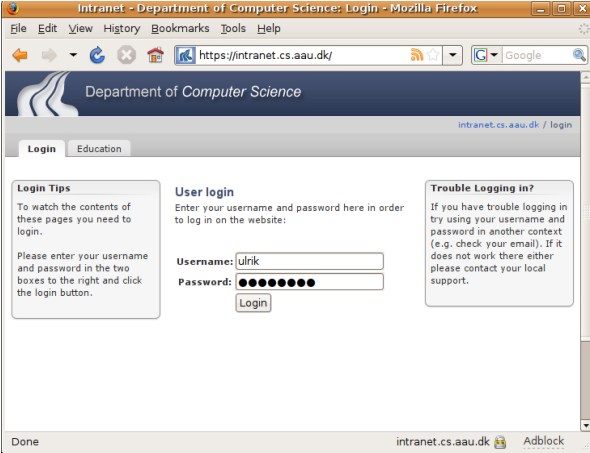
The right sidebar contains an "Announcements" section with the following items:

- Database Problems on the Webserver
- Ny stillinger i CS driftsgruppen (junta)
- Goodby Tribute Video to Fire1 (an i16 Application Server)

A link "go to Archive ->" is provided below the announcements. Below the announcements is a "Poll: Mail Clients" section with the question "Which Mail Client do you primarily use?" and a progress bar showing "16.8 %".

The "Latest News" section at the bottom features the headline "New search plugin added" with a date of "(Website News) - Tuesday, 23. September 2008". The browser's status bar at the bottom shows "Done" and "support.cs.aau.dk".

# intranet.cs.aau.dk



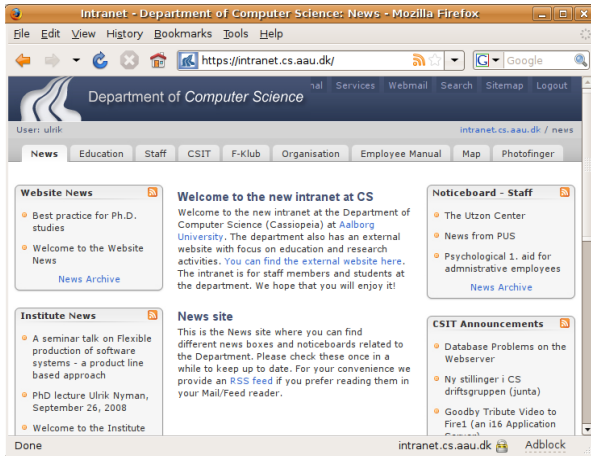
The screenshot shows a Mozilla Firefox browser window titled "Intranet - Department of Computer Science: Login". The address bar contains "https://intranet.cs.aau.dk/". The page header features the "Department of Computer Science" logo and the URL "intranet.cs.aau.dk / login". Below the header are two tabs: "Login" (selected) and "Education".

The main content area is divided into three sections:

- Login Tips:** A box containing the text: "To watch the contents of these pages you need to login. Please enter your username and password in the two boxes to the right and click the login button."
- User login:** A section with the instruction: "Enter your username and password here in order to log in on the website:". It includes a "Username:" label with an input field containing "ulrik", a "Password:" label with a masked input field (represented by 10 black dots), and a "Login" button below the fields.
- Trouble Logging in?:** A box containing the text: "If you have trouble logging in try using your username and password in another context (e.g. check your email). If it does not work there either please contact your local support."

The browser's status bar at the bottom shows "Done", the URL "intranet.cs.aau.dk", and the Adblock extension icon.

# intranet.cs.aau.dk



The screenshot shows a Mozilla Firefox browser window displaying the intranet for the Department of Computer Science at Aalborg University. The browser's address bar shows the URL `https://intranet.cs.aau.dk/`. The website header includes the department name and navigation links for Home, Services, Webmail, Search, Sitemap, and Logout. A user is logged in as 'ulrik'. Below the header is a navigation menu with tabs for News, Education, Staff, CSIT, F-Klub, Organisation, Employee Manual, Map, and Photofinger. The main content area is divided into several sections:

- Website News:** Contains two bullet points: 'Best practice for Ph.D. studies' and 'Welcome to the Website News'. A 'News Archive' link is provided below.
- Welcome to the new intranet at CS:** A central announcement stating: 'Welcome to the new intranet at the Department of Computer Science (Cassiopeia) at Aalborg University. The department also has an external website with focus on education and research activities. You can find the external website here. The intranet is for staff members and students at the department. We hope that you will enjoy it!'
- Noticeboard - Staff:** Contains three bullet points: 'The Utzon Center', 'News from PUS', and 'Psychological 1. aid for administrative employees'. A 'News Archive' link is provided below.
- Institute News:** Contains three bullet points: 'A seminar talk on Flexible production of software systems - a product line based approach', 'PhD lecture Ulrik Nyman, September 26, 2008', and 'Welcome to the Institute'.
- News site:** A section explaining the purpose of the news site: 'This is the News site where you can find different news boxes and noticeboards related to the Department. Please check these once in a while to keep up to date. For your convenience we provide an RSS feed if you prefer reading them in your Mail/Feed reader.'
- CSIT Announcements:** Contains three bullet points: 'Database Problems on the Webserver', 'Ny stillinger i CS driftsgrupper (junta)', and 'Goodby Tribute Video to Fire1 (an i16 Application)'.

The browser's status bar at the bottom shows 'Done' and the address 'intranet.cs.aau.dk'.



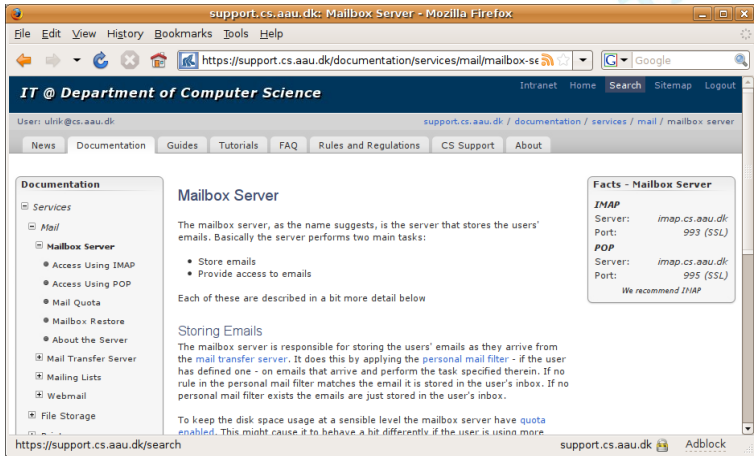
## Group Room Equipment

- Default is nothing
  - Everyone has laptops these days
- Possible to get one machine
  - Form can be fetched from Technicians / Junta
  - Windows preinstalled
  - You can do pretty much what you want with this
  - Except take it apart or remove it from the room
- Might be possible to get more than one machine

## Email & News

- Two email servers
  - Outgoing (Sending): `smtp.cs.aau.dk`
  - Incoming (Reading): `imap.cs.aau.dk`
    - Also does POP3
  - Encryption is enforced (SSL / TLS)
- News server:
  - NNTP: `http://dotsrc.org/usenet/`
    - Not as much life as in the good old days
    - But still being used, CS Announce lives there
    - Requires account for external usage

# Mail



The screenshot shows a Mozilla Firefox browser window with the address bar displaying `https://support.cs.aau.dk/documentation/services/mail/mailbox-se`. The page title is "Mailbox Server - Mozilla Firefox". The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The address bar contains navigation icons and a search engine dropdown set to Google.

The website header features the text "IT @ Department of Computer Science" and navigation links for "Intranet", "Home", "Search", "Sitemap", and "Logout". Below the header, the user is identified as "User: ulrik@cs.aau.dk" and the current page path is "support.cs.aau.dk / documentation / services / mail / mailbox server". A secondary navigation bar includes links for "News", "Documentation", "Guides", "Tutorials", "FAQ", "Rules and Regulations", "CS Support", and "About".

The main content area is titled "Mailbox Server" and includes a "Documentation" sidebar on the left. The sidebar lists "Services" with a sub-section "Mail" containing "Mailbox Server" (expanded) and "Mail Transfer Server". Under "Mailbox Server", there are links for "Access Using IMAP", "Access Using POP", "Mail Quota", "Mailbox Restore", and "About the Server".

The main text describes the mailbox server's function: "The mailbox server, as the name suggests, is the server that stores the users' emails. Basically the server performs two main tasks:"

- Store emails
- Provide access to emails

It notes that "Each of these are described in a bit more detail below". A section titled "Storing Emails" explains that the mailbox server stores emails as they arrive from the mail transfer server, applying a personal mail filter if defined. It states that if no rule matches, the email is stored in the user's inbox, or if a filter exists, it is stored in the user's inbox.

A note at the bottom of the main text states: "To keep the disk space usage at a sensible level the mailbox server have **quota enabled**. This might cause it to behave a bit differently if the user is using more".

On the right side, a "Facts - Mailbox Server" box provides technical details:

Facts - Mailbox Server	
<b>IMAP</b>	
Server:	<code>imap.cs.aau.dk</code>
Port:	<code>993 (SSL)</code>
<b>POP</b>	
Server:	<code>imap.cs.aau.dk</code>
Port:	<code>995 (SSL)</code>
We recommend IMAP	

The browser's status bar at the bottom shows the URL `https://support.cs.aau.dk/search` and the Adblock extension logo.

## Recommended Email Clients

- Webmail
  - <http://www.cs.aau.dk/mail>
- Thunderbird
  - [www.mozilla.org](http://www.mozilla.org)
  - `/usr/bin/thunderbird`
- Pine (text based)

# Webmail

E-mail :: indbakke - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://webmail.cs.aau.dk/index.php?url=https%3A%2F%2Fwebmail.cs.aau.dk%2F

Åben mappe Indbakke

Indbakke Nye besked Mapper Søg Hent e-mail E-mail Filre Adressekortet Fihændtering Kodeord Slet Greylisting Printer Accounting Indstillinger

Problem Hjælp Log ud

Quota status: 337,93 MB / 976,56 MB (34,60%)

Indbakke 1 til 19 af 19 beskeder

Vælg: Markér som: Flyt Kopier Beskæder til

Slet Forfryd sletning Blakliste Postvliste Videre-send Se beskeder Skjul slettede Fjern slettede

<input type="checkbox"/>	#	Dato	Fra	Emne [Tråd]	Str.
<input type="checkbox"/>	1	03-06-2008	Rico Wind	Departmental Christmas dinner for employees	2 KB
<input type="checkbox"/>	2	23-09-2008	Biblioteket	"An introduction to Pecs" liår til afhentning	2 KB
<input type="checkbox"/>	3	24-09-2008	Lene Winther Even	FW: Antal deltagere fra Mat til Uniit-Lursus	2 KB
<input type="checkbox"/>	4	01-10-2008	TELMORE	[Info fra TELMORE	3 KB
<input type="checkbox"/>	5	01-10-2008	Alexandre David	Re: teaching	1 KB
<input type="checkbox"/>	6	01-10-2008	Andrzej Wasowski	Re: Tillykke	2 KB
<input type="checkbox"/>	7	01-10-2008	Lars Mikkelsen	RE: Aalborg Universitet Slides	3 KB
<input checked="" type="checkbox"/>	8	02-10-2008	Brian Nielsen	[Fwd: Re: Informal seminars]	6 KB
<input type="checkbox"/>	9	02-10-2008	Helle El-strom	Nyt fra IDA Nord - oktober 2008.doc	109 KB
<input type="checkbox"/>	10	03-10-2008	Peter Frederiksen	Valg 2008 / General Elections 2008	26 KB
<input checked="" type="checkbox"/>	11	05-10-2008	Jesper B. Rosenkilde	Re: Mat-netværket	3 KB
<input checked="" type="checkbox"/>	12	06-10-2008	Brian Nielsen	Re: [Fwd: Re: Informal seminars]	5 KB
<input checked="" type="checkbox"/>	13	06-10-2008	Jesper B. Rosenkilde	Re: Mat-netværket	2 KB
<input checked="" type="checkbox"/>	14	06-10-2008	Brian Nielsen	Re: Mus samtale	3 KB
<input checked="" type="checkbox"/>	15	06-10-2008	Brian Nielsen	Re: [Fwd: Re: Informal seminars]	6 KB
<input type="checkbox"/>	16	06-10-2008	Brian Nielsen	[DSS] Informal seminar organizer	4 KB
<input type="checkbox"/>	17	06-10-2008	Casper Thomsen	Re: Mat-netværket	2 KB
<input checked="" type="checkbox"/>	18	08:31:36	Hanne Klitgaard	SV: Ph.D.-navneomtale (Ulrik Nyman)	3 KB
<input checked="" type="checkbox"/>	19	12:18:33	Sygeforsikringen "danmark:	Tid til udbetaling - slal dine regninger med?	3 KB

Done webmail.cs.aau.dk Adblock

## Greylisting of Emails

- Fighting the disease by killing the patient
- Temporarily blocks mails
- Dramatically reduces spam
  - Before: 50-90 spam mails pr day
  - After: 0-7 spam mails pr day
  - Delays mail, usually 30-120 minutes

## Living with greylisting

- Whitelisting
  - Once accepted, the sending mailserver is whitelisted for a period of time
  - Some mailservers are permanently whitelisted
- Disabling greylisting
  - Create `.cswhitelistme` in home directory

## Mail filtering

- SIEVE filters are used on the IMAP server
- Can be created and edited in the web interface
- Allows:
  - Sorting mail to different folders
  - Forwarding with rules
  - Block senders or subjects
  - Filter spam
- Howto on `support.cs.aau.dk`
- One inbox equals chaos



## Mail filtering

Filters :: Filter Rules - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://webmail.cs.aau.dk/index.php?url=https%3A%2F%2Fwebmail. Google

Filter Rules Whitelist Blacklist Vacation Forward Spam Script Mail Password Shell Greylisting Printer Accounting

Greylisting Options Problem Help Log out

Existing Rules

Edit Rule	Enabled	Move
1. ✓ Whitelist	✓	↓ To: <input type="text"/>
2. ✗ Vacation [disabled - click to enable]	✗	↑↓ To: <input type="text"/>
3. ✗ Blacklist	✗	↑↓ To: <input type="text"/>
4. ✗ Spam Filter [disabled - click to enable]	✗	↑↓ To: <input type="text"/>
5. ⇐ Forward	✓	↑ To: <input type="text"/>

New Rule

https://webmail.cs.aau.dk/ingo/ webmail.cs.aau.dk Adblock

## Home Directories

- Home (student) directory: 300 MB Quota
  - Mount path: `\\lfs0\username`
- Project directory: 500 MB Quota
  - Mount path: `\\lfs0\groupname`
- Check your quota with `quota`
- Group quota `quota -g d201a`
- Web interface as well (Through webmail login)

## Printers

- You get 300 pages per semester
- Color prints cost 10 pages!
  - *Do not set your default printer to a color printer*
- Read CS Network for a printer list
- Additional prints can be purchased
  - Somewhat expensive (Copydan tax)
- Print quota 1pac
  - Or your neighbour 1pac -u user
  - Also on webmail system

## Printing

- Windows
  - Print to `\\cups.cs.aau.dk`
  - You must login first - Enter the above in the run dialog
  - Also works for other SMB clients, i.e., Samba
- Unix Application Server
  - Check printer queue `lpstat -d printer`
  - Print `lp -d printer doc.pdf`
  - Cancel print job `cancel printid`

## PDF Printer

- Special printer called pdfmailer
- Generates a PDF file and send it attached to a mail
- Good for converting things into PDF
- Its free!

## Networks

- CS: Application servers and labs, routable
- A: Administration network (routers & printers)
- K: Internal network for employees and students
  - This is where you connect your machine with a cable
- W: Wireless network, isolated internal network
- VPN: Virtual Private Network

## K Network

- The in house network
  - Access to Internet happens through NAT
- Access to proxy and application servers
- IPs are assigned by a DHCP server
  - Proxy autodetection is also enabled
  - IP lease time are somewhat short
- Do NOT setup a DHCP server
- Do NOT setup private wireless access points

## VPN

- Provides secure access to CS network over insecure networks
- Cisco VPN Client can be fetched from CS network
  - Supports Windows, Mac OS X, and Linux
  - Linux client is rather specific about kernel
  - Linux/BSD alternative: vpnc (google for it)



## Wireless Network

- **SSID AAU**
  - Available most places at the university
  - Must use VPN before anything interesting can happen
  - Install the VPN client
- **SSID I16-1x**
  - Log in with cs account
  - No need for VPN
- **Make sure you have wireless access before next lecture**

## Security 1/3

- What is being done to ensure a secure environment
  - All mails are scanned for viruses
  - External access to resources is limited
  - External access is always encrypted
  - Access to physical network is limited
  - Logging

## Security 2/3

- What you can do ensure a secure environment
  - Install and use virus software (esp. Windows)
  - Install and use a personal firewall (esp. Windows)
  - Keep your computer updated with latest patches
  - Do not run unnecessary services
  - Use good passwords
  - Most important: Keep your system updated

## Security 3/3

- Password
  - NOT a name or word found in any dictionary
  - NOT the previous with a digit before/after
  - Use nonsense words with mixed letters and digits
  - Or use the first/last letters in a sentence, title, song, etc.

## OSs at the department

- Redhat
- Suse Linux
- Microsoft Windows
  - We have access to the MSDN Academic Alliance Program
- Clients: Windows, Mac, Linux, everything

## Application Servers

### 116 Application Servers

At the Department of Computer Science the following application servers are available.

Hostname	Host Type	Priority	OS
<b>homer.appl.cs.aau.dk</b>	Sun Fire X4100, 2x2.4 GHz CPU (Dual Core AMD Opteron 275), 4096 MB RAM	Interactive use	Redhat Enterprise Linux 5 - 64bit
<b>marge.appl.cs.aau.dk</b>	Sun Fire X4100, 2x2.4 GHz CPU (Dual Core AMD Opteron 275), 4096 MB RAM	Interactive use	Redhat Enterprise Linux 5 - 64bit
<b>bart.appl.cs.aau.dk</b>	Sun Fire X4100, 2x2.4 GHz CPU (Dual Core AMD Opteron 275), 4096 MB RAM	Interactive use	Redhat Enterprise Linux 5 - 64bit
<b>lisa.appl.cs.aau.dk</b>	Sun Fire X4100, 2x2.4 GHz CPU (Dual Core AMD Opteron 275), 4096 MB RAM	Heavy applications	Suse Linux Enterprise Desktop 10 - 64bit
<b>apu.appl.cs.aau.dk</b>	Dell PowerEdge 2950, 2x2.5 GHz CPU (Quad Core Intel Xeon), 32 GB RAM	Heavy applications	Redhat Enterprise Linux 5 - 64bit

A lot of software is installed on the servers.

## Secure Shell

- Provides secure login into Unix machines from other machines
  - Including Windows
- Can be used for:
  - Get shell access
  - Start graphical applications
  - Copy files (sftp)
- Only way to access files from the outside
- Windows SSH client
  - putty (google for it)
  - Java Applet <http://www.cs.aau.dk/login/> (slow)
  - Same login as webmail

## X11 Window System

- The underlying graphic mechanism in Unix
  - Also exist for Windows
  - Xwin client can be downloaded from CS Network
  - Also possible to use Cygwin ([www.cygwin.com](http://www.cygwin.com))
- Makes it possible to run programs on Unix servers, with the window displayed at your computer
- X11 via SSH
  - `ssh -X host`
  - `ssh -Y host` (if you get strange security warnings)
  - Sets up an X11 tunnel to the host



## Unix Directory Structure

- Or: Where is all the stuff hidden
- User home `/user/username`
- Project directory `/project/groupname`
- Programs
  - `/pack/program`
  - `/pack/program-version`
  - The usual places, i.e. in `/bin/`, `/usr/bin`, etc
- Collections
  - `/coll/local/bin`
  - `/coll/new/bin`
- Paths should already be setup in your environment

## Changing your password

- Use webmail system

## Your Own Web Page

- `www.cs.aau.dk/~username`
  - Store HTML files in: `/user/name/.public.html`
  - Only serves static content (no CGI, PHP, etc)
  - `www.cs.aau.dk/cs_network/web/personal.html`
- For CGI, PHP, etc. use the development server
  - Can only be accessed from the inside
  - Possible to generate password for outside access
  - `dw3.cs.aau.dk/~your_username`
  - Create `/user/name/.public_dw3` directory
  - Description on `support.cs.aau.dk`

## Jabber Server

- The department has a jabber server.
  - Instant messaging (MSN Messenger, ICQ, etc).
  - Lives at `cs.aau.dk`
- Account name is the same as your email
  - Same goes for password
- Possible to log on from home

## Text Processing

- For reports,  $\text{\LaTeX}$  is recommended
  - Read *The not so Short Introduction to LaTeX*
  - Link at the course homepage
- Alternatives to  $\text{\LaTeX}$ 
  - ...
- What some use instead
  - OpenOffice, MS Office
  - But they suck for writing reports

## Where to find Documentation

- CS Network: `http://support.cs.aau.dk`
- Manual pages: `man topic`
- Emacs: `emacs -f info` or `C-h i` in Emacs
- Course web page
- Fellow Students
- `www.google.com`
- The Junta (Room 2.2.32) `junta@cs.aau.dk`

## Summary

- Yes, the system is complex
- Lots of well organized information at <http://support.cs.aau.dk>
- Come for the exercises
- Questions?