

# IRU Computational Lab

## Overview and Progress Report

Andreas Krueger, IRU day 11/5/2010

# Migration into our LAN

- All machines are now connected to the switch behind our firewall.
- Everything seems to work fine, even using the 4<sup>th</sup> floor printers.
- If ever you suspect problems, just use the UCD cable.
- Do NOT connect to *both* networks at the same time (e.g. Ethernet LAN + Wireless UCD) !
  - we were warned that *you* then might power down the whole CASL network!
  - and you would be a security risk (loop around the firewall)
  - → **Switch off Wifi !**
- TODO: re-route Petra's cables into the LAN

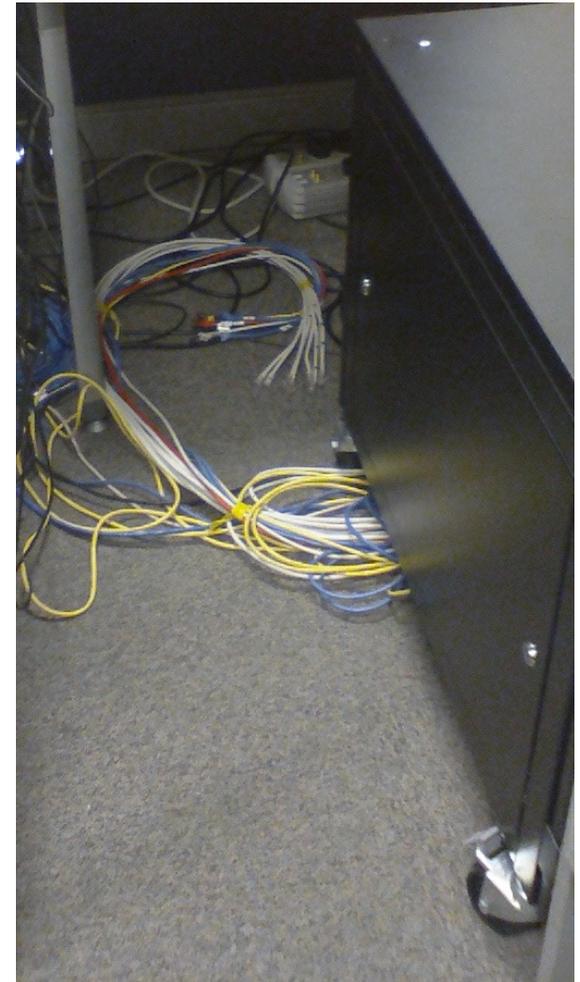


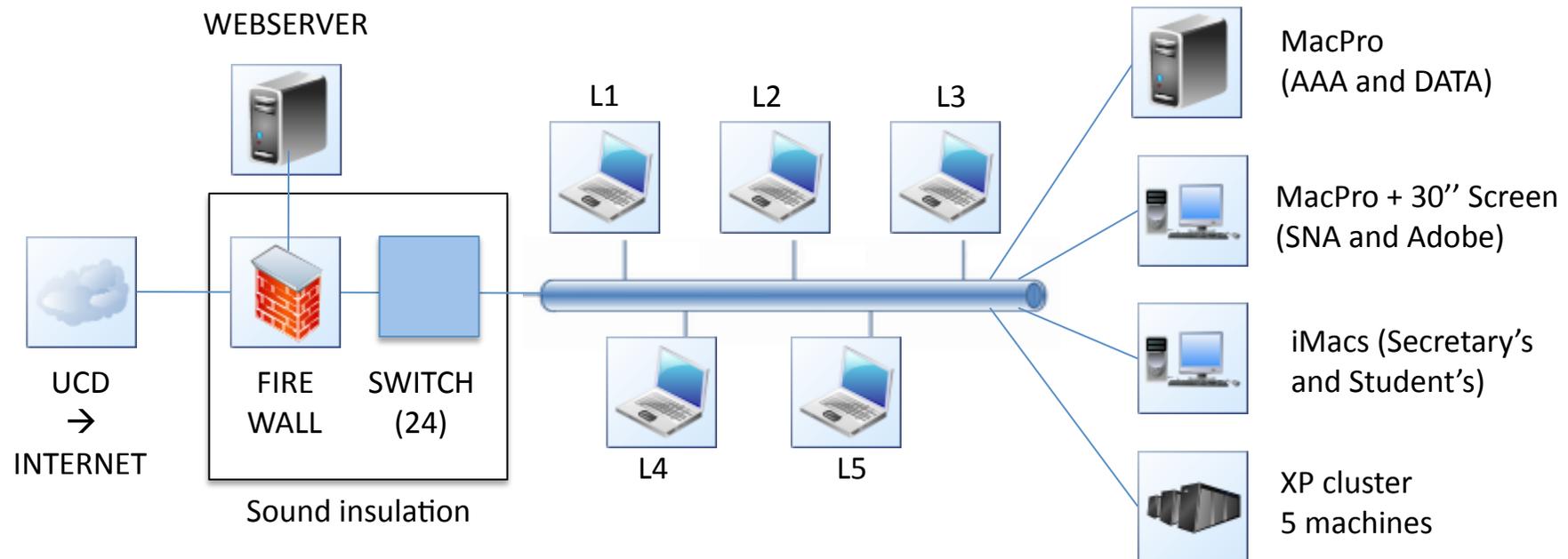
# Firewall

- Juniper SSG140
- 600 pages manual, we got training
- Sound insulated, together with switch in black box →

## Firewall functions:

- protects our LAN against attacks
- Behind it we can trust each other  
→ Shared folders, Remote Desktop Connection, etc.
- We have more control than in the UCD network
- VPN “Virtual Private Network” = Login from Internet





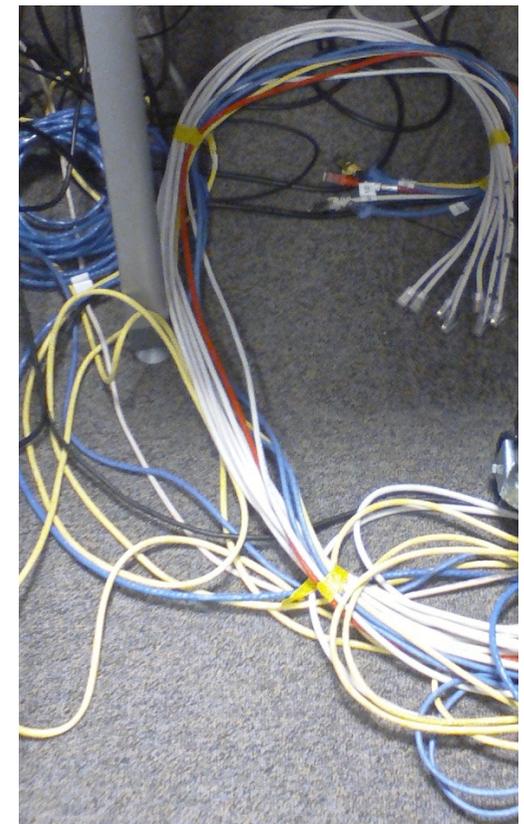
# LAN structure

Local addresses:

192.168.**XX**. the webserver in the DMZ (demilitarized zone)

192.168.**XX**.xx for all other local machines

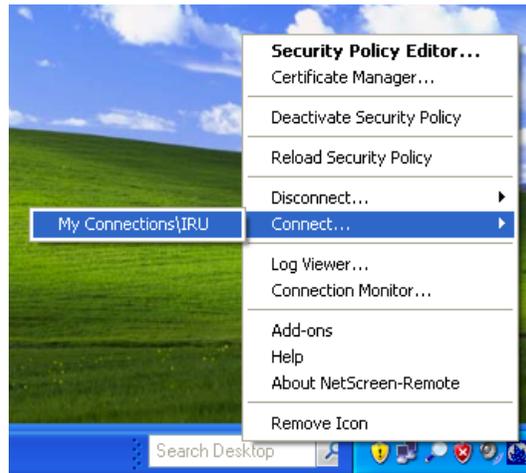
192.168.**XX**.xx for VPN connection from the internet  
(Virtual Private Network)



# VPN

## TODOs:

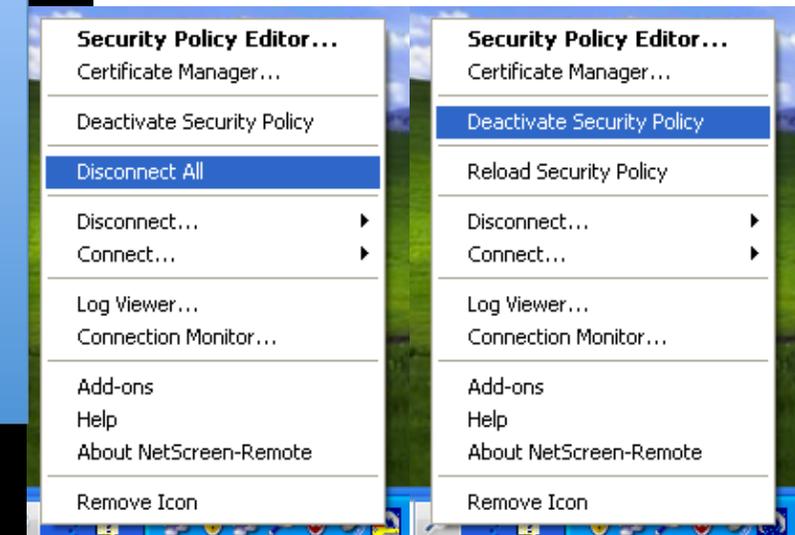
- Try from at home
- Hand out passwords
- OS X configuration not only Windows “NetScreen-Remote”



```
Ethernet adapter Local Area Connection 2:
Connection-specific DNS Suffix . :
Description . . . . . :
Physical Address . . . . . :
Dhcp Enabled. . . . . :
Autoconfiguration Enabled . . . . :
IP Address. . . . . :
Subnet Mask . . . . . :
Default Gateway . . . . . :
DHCP Server . . . . . :
DNS Servers . . . . . :
Lease Obtained. . . . . :
Lease Expires . . . . . :

PPP adapter SafeNet Virtual Adapter Interface:
Connection-specific DNS Suffix . :
Description . . . . . :
Physical Address . . . . . :
Dhcp Enabled. . . . . :
IP Address. . . . . :
Subnet Mask . . . . . :
Default Gateway . . . . . :
DNS Servers . . . . . :
```

```
C:\>ping [redacted]
Pinging [redacted] with 32 bytes of data:
Reply from [redacted]: bytes=32 time=3ms TTL=127
```

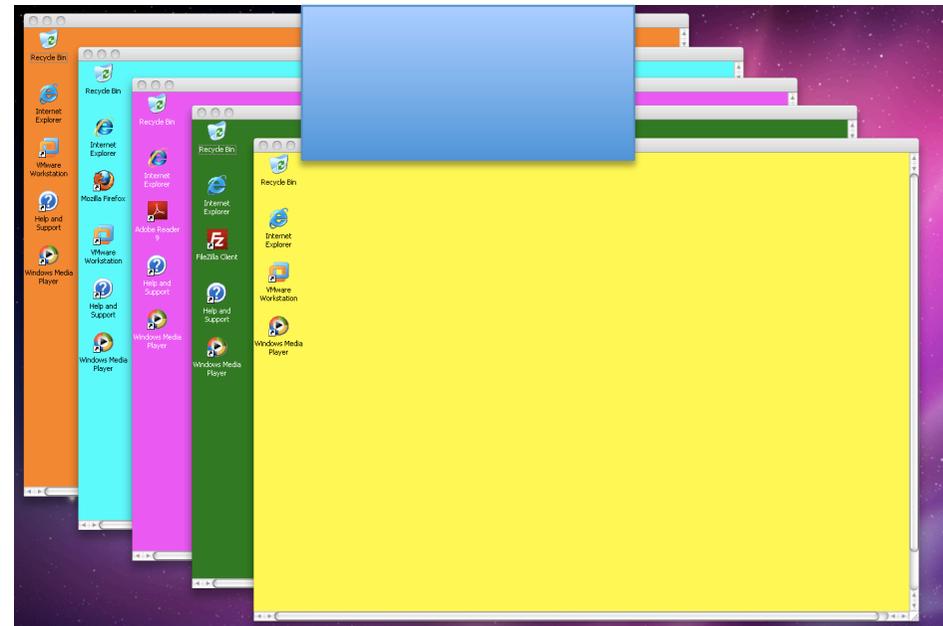
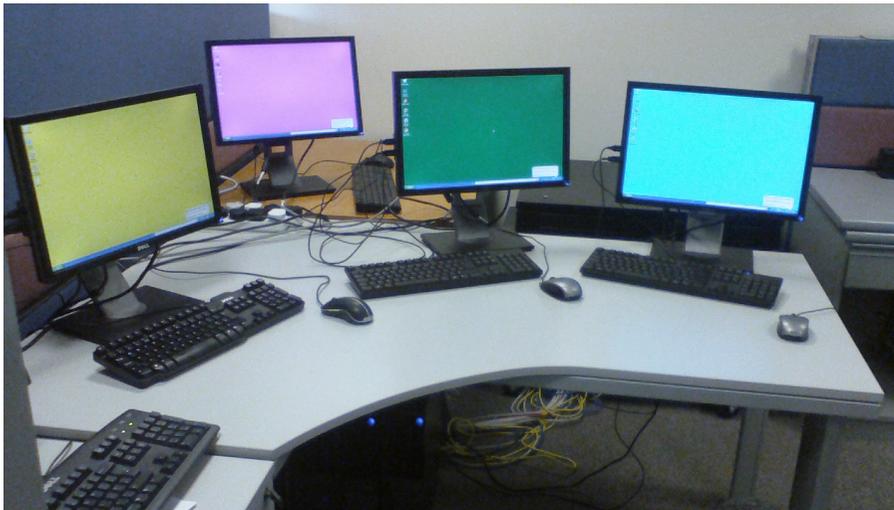


# Simulation Cluster

- 5 PCs (Core 2 Duo 2.8 Ghz) Windows XP
- → we can do 5 experiments in parallel
- → we can speed up simulations by factor 5
- → or we can increase the accuracy of the results

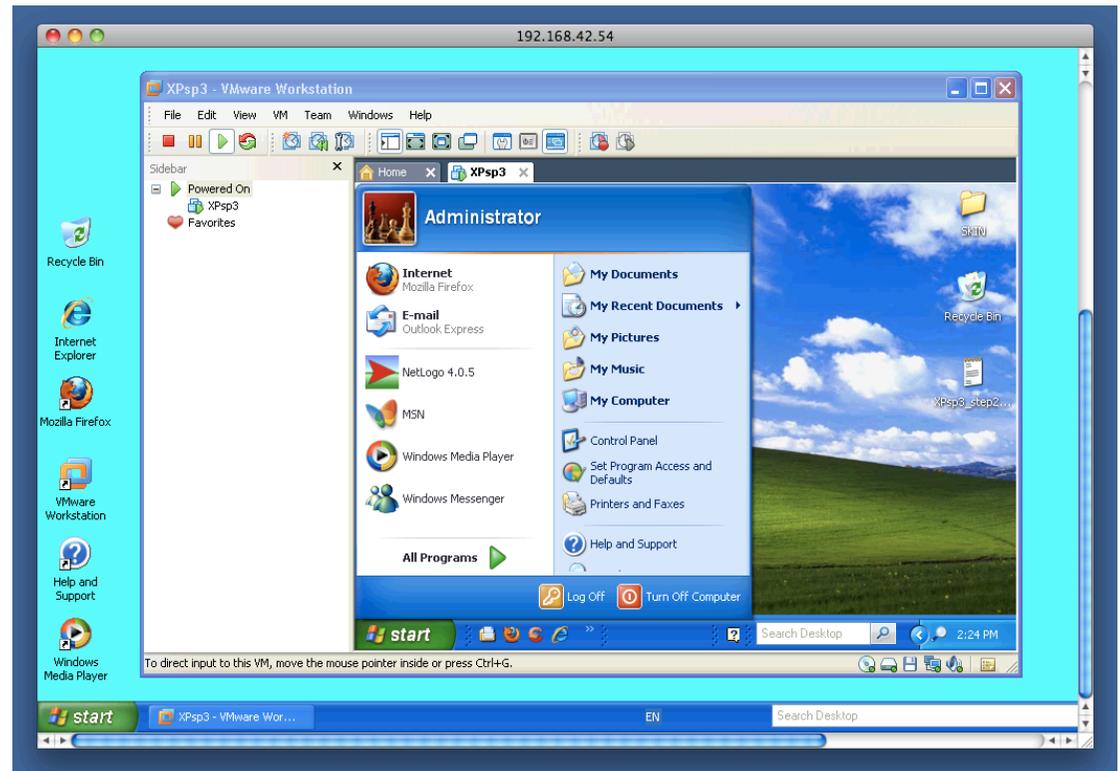


- Use “Remote Desktop Connection” to access the machines  
<http://support.microsoft.com/kb/974283> Download for Mac
- at the moment by their IP-address (192.168.XX.XX/XX/XX/XX/XX)  
but soon by name, too (DNS server)



# Virtualisation

- The XP hardware machines are only “hosts” for vmware “guest” systems
- All software is installed into the guest images (guest is also also XP)
- Every researcher keeps his own guest image copies
- “VMware Workstation” is like “Parallels Desktop” - the guest images can even be imported there
- TODO: Buy the VMware license



# Adobe Software



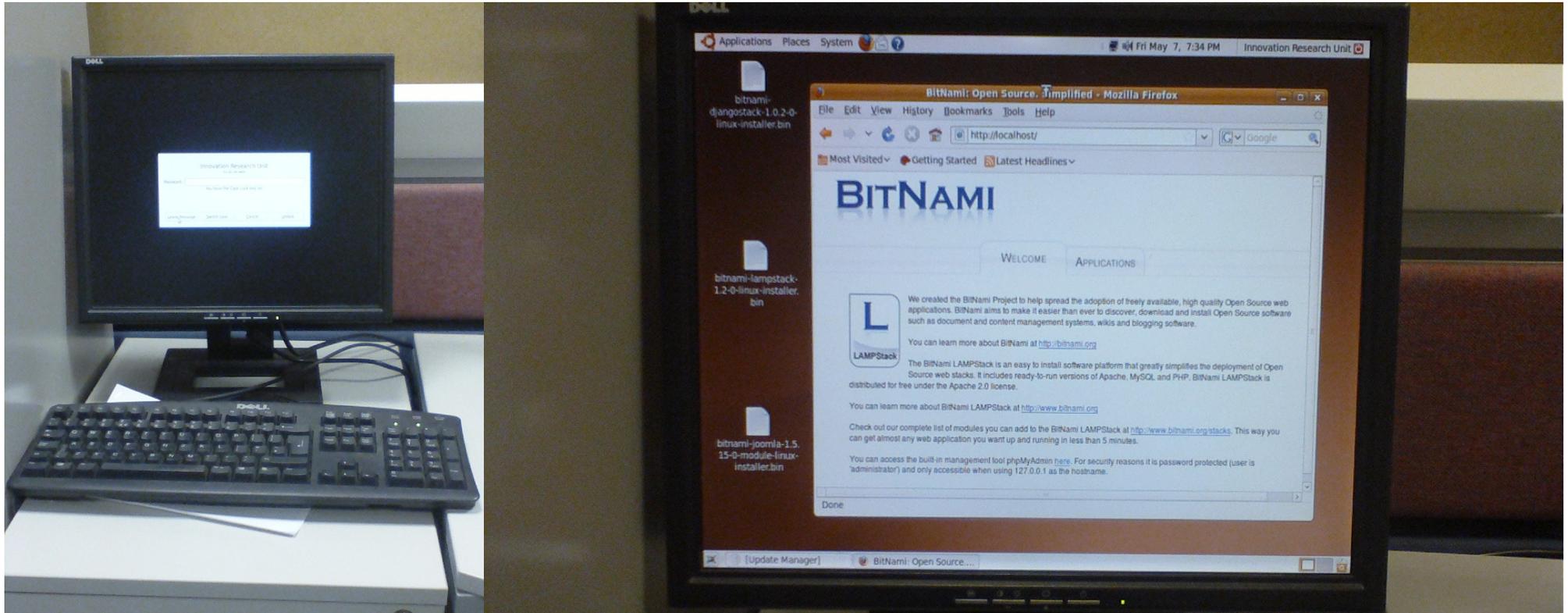
- As research institute, we could buy the 1900€ / 2900€ (excl. VAT) Adobe software collections for only 290€ / 450€ !
- Creative Suite 5 **Design Premium**:  
Photoshop, Illustrator, InDesign, FlashCatalyst, FlashProfessional, Dreamweaver, Fireworks, AcrobatPro, Bridge, DeviceCentral
- Creative Suite 5 **Master Collection**:  
+ FlashBuilder, Contribute, PremierePro, AfterEffects, Soundbooth, OnLocation, Encore

# Large screen (30''): SNA + Adobe Software

- Updated to 10.6 Snow Leopard – Thanks, Benjamin
- Solved the resolution riddle (Dual Link DVI-cable)
- $2560 * 1600$  pixels = 4 MegaPixels  
→ FOUR times Apple Cinema Display



# Webserver – Ubuntu Linux



- Installed by Conrad. And I checked and updated it manually last week.
- From Internet <http://193.1.133.29> (IP of our firewall, port 80 routed to this machine)
- TODO: Have <http://iru.ucd.ie> point to this
- TODO: “Webmin is a web-based interface for system administration for Unix. Using any modern web browser, you can setup user accounts, Apache, DNS, file sharing and much more. Webmin removes the need to manually edit Unix configuration files like /etc/passwd, and lets you manage a system from the console or remotely.”

# Display adaptors

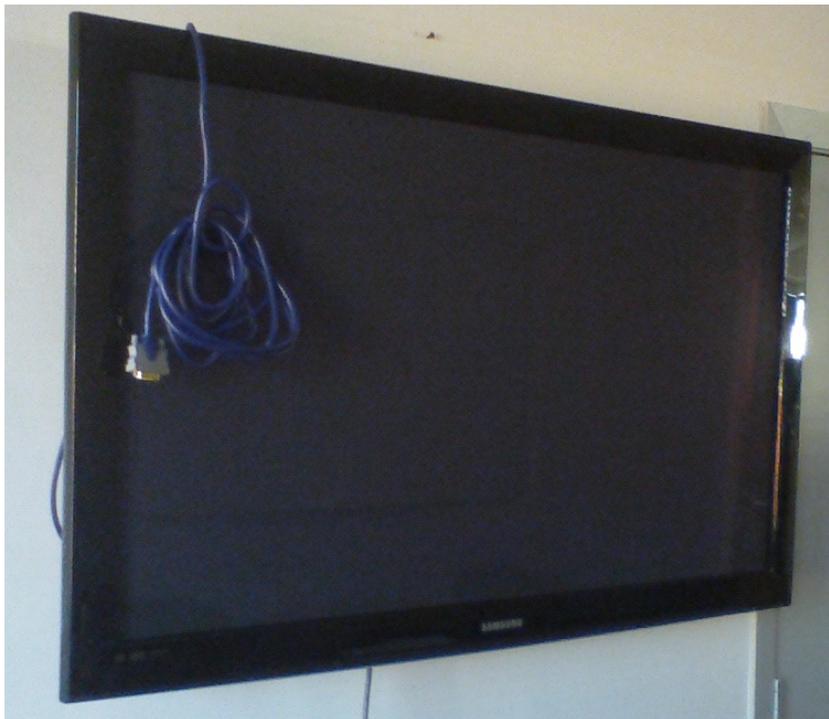
- Soon have adaptors – thanks, Lisa!
- Analog: VGA / Digital: DVI
- Petra's huge 50" HD screen can then be used, blue cable (digital)



Video Graphics Array (1987)



DVI = Digital Visual Interface (1999)



# OS X Server = DATA-Server and AAA

- **AAA:** Authentication, Authorization and Accounting
- **Data storage:** Your home folder centrally → backup.
- RAID data security (2 disks as 1)
- DNS for computer names,  
internal WikiWiki,  
Address book server?  
~~iCal server? ...~~
- 2679 pages of manuals 😊
- work in progress ...



# all machines - DNS preparations

role	given name	DNS name	hardware	user	location	IP address	Ethernet ID
	please choose	<b>.IRU.local</b>					
webserver	<b>dark green</b>	<b>dark green.IRU.local</b>	Dell old 2003		4j6		
internal server: AAA and DATA	<b>dark blue</b>	<b>dark blue.IRU.local</b>	macpro		4j2		
xp 01 "orange"	<b>orange</b>	<b>orange.IRU.local</b>	dell		4j4		
xp 02 "cyan"	<b>cyan</b>	<b>cyan.IRU.local</b>	dell		4j6		
xp 03 "magenta"	<b>magenta</b>	<b>magenta.IRU.local</b>	dell		4j6		
xp 04 "green"	<b>green</b>	<b>green.IRU.local</b>	dell		4j6		
xp 05 "yellow"	<b>yellow</b>	<b>yellow.IRU.local</b>	dell		4j6		
Secretary		<b>.IRU.local</b>	iMac	<b>Lisa</b>	4j1		
Student's (Dan)		<b>.IRU.local</b>	iMac 2.66 Duo	<b>Dan</b>	4j5		
SNA & Adobe Collection		<b>.IRU.local</b>	mac pro		4j7.5		
Student's (Benjamin)		<b>.IRU.local</b>	old MacBookPro	<b>Benjamin</b>	4j8		
Researcher Laptop (Andreas)	<b>light green</b>	<b>light green.IRU.local</b>	Macbook Air 2.13 Duo	<b>Andreas</b>	4j3		
Researcher Laptop (Michel)	<b>light _____</b>	<b>light blue.IRU.local</b>	Macbook Pro	<b>Michel</b>	4j4		
Director Laptop (Petra)	<b>light _____</b>	<b>light _____.IRU.local</b>	Macbook Air	<b>Petra</b>	4D		
Intern Laptop (white)	<b>light _____</b>	<b>light white.IRU.local</b>	Macbook		4D		
HighPerformance Laptop	<b>light _____</b>	<b>light _____.IRU.local</b>	Macbook Pro 3.06 Duo		4D		
Presentation Laptop	<b>light _____</b>	<b>light _____.IRU.local</b>	Macbook Air 1.86		4D		
old Windows machine		<b>.IRU.local</b>	old Dell		4j3		

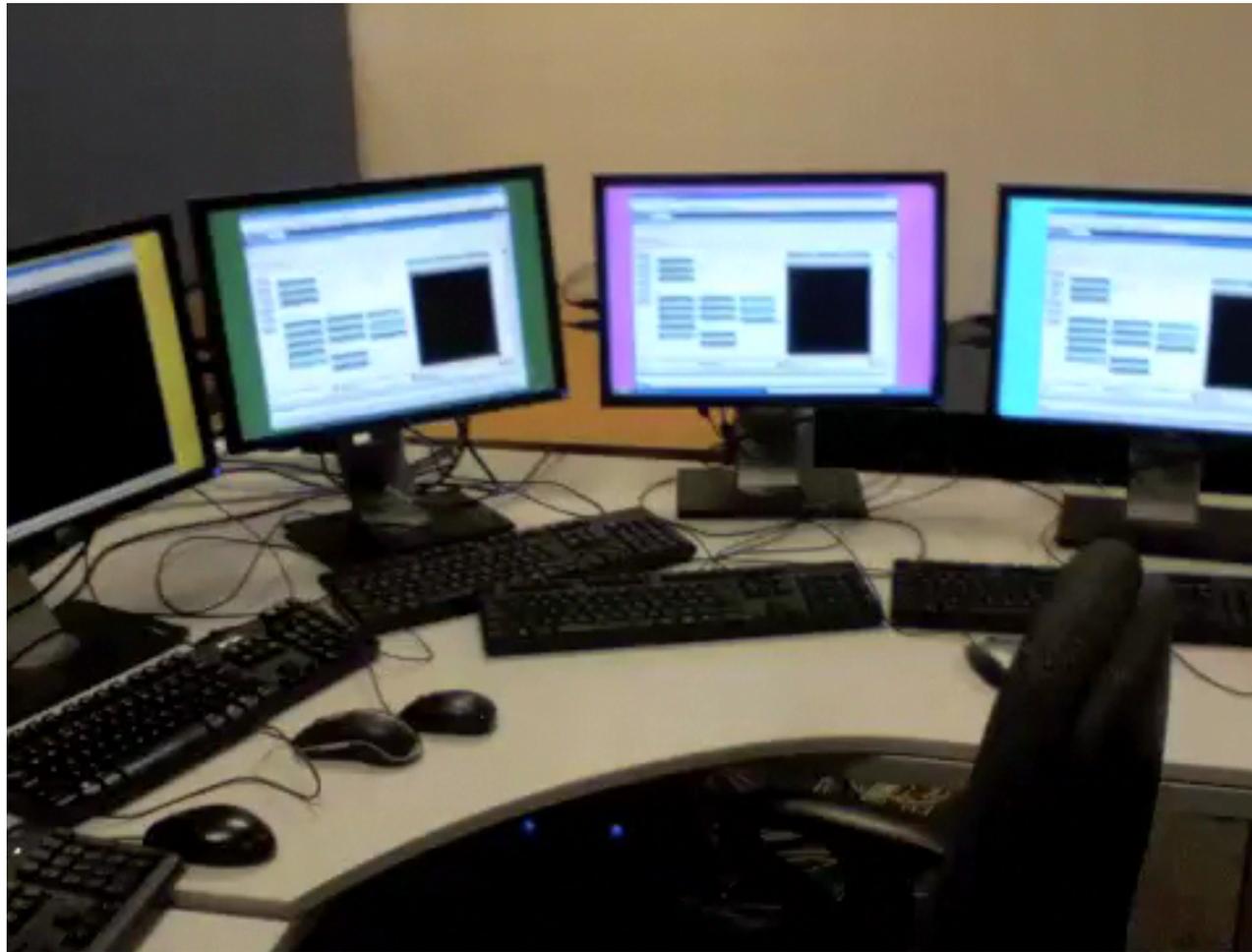
# More Todos, misc

- Consistent naming scheme, 17 machines
- File Sharing among Windows Machines
- Upgrade to 10.6 Snow Leopard on all OS X machines ↑
- Register all Ethernet IDs in switch  
→ restricted access only for our machines
- High Security Data Storage, external, RAID →  
<http://www.tomshardware.com/reviews/external-raid-storage,1922.html>
- Parallelization Plattform  
(e.g. Mathematica Gridserver)
- Remote Access to Mac OS X machines →  
“Apple Remote Desktop” (299\$ for 10 machines)
- RAID: two harddisks used as one  
→ second 1GB harddisk into dataserver



# Historical Moment: 04/05/2010 at 17:53

## The first IRU simulations are started



Sorry for the shaky camera – this was one of my very first movies ever, so I did not know yet how unstable the picture can be