

How To Compute Like A Grad Student

<http://www.cs.cmu.edu/~mpa/ic08/>

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Featuring slides stolen from
cache, josullvn, colohan, mahim

Why this talk?

Some nuggets of accumulated wisdom

Some strong opinions

... and everything else you wanted to know, but were afraid to ask

- What does the computing infrastructure look like?
- What does the network look like?
- Where are the printers?
- How do I obtain help?
- What is with all these +s in email addresses?
- What is this zephyr thing?
- Can't sleep, computer will eat me

(but really, all you need is at <http://www.cs.cmu.edu/~help>)

Talk organization

- What you get
- SCS community
- SCS hardware/software
- Other helpful resources
- TODOs for today

I will run through many slides. Look them over at your leisure.
(<http://www.cs.cmu.edu/~mpa/ic08/>)

What sits on your desk

- Dell Optiplex 755
- 2.40 GHz Core 2 Quad processor
- 250 GB hard disk
- 4GB RAM
- 19" LCD

- Dual boot
 - Fedora Core 7, 2.6.21 kernel
 - Windows Vista Enterprise

What sits on your friend's desk

- '90 Concept Terminal w/ Vaxen
- '91 IBM RT 12MB/250MB
- '92 16MHz MIPS R3000 DecStation 3100
- '93 20MHz MIPS R3000 DecStation 5000/20
- '94 25MHz MIPS R3000 DecStation 5000/25 or PowerMac 7100/66
- '95 DecStation 5000/200s with mono monitor
- '96 Sun SparcStation 4
- '97 266MHz Pentium II/64MB/4GB
- '98 400MHz Pentium II/128MB/6GB
- '99 500MHz Pentium III/128M/8GB
- '00 733MHz Pentium III/256MB/20GB
- '01 1GHz Pentium III/512MB/40GB
- '02 1.8GHz Pentium IV/1GB/60GB
- '03 2.4GHz Pentium IV/1GB/80GB LCD
- '04 3.0GHz Pentium IV/1GB/80GB LCD
- '05 3.2GHz Pentium IV (EMT64)/2GB/160GB/LCD
- '06 3.4GHz Pentium D (EM64 Dual core)/2GB/160GB/LCD
- '07 2.66GHz Core 2 Duo/2GB/250GB/LCD

SCS and Andrew accounts

	SCS	Andrew
e-mail	mpa@cs.cmu.edu	mpa@andrew.cmu.edu
websites	www.cs.cmu.edu/~mpa	www.andrew.cmu.edu/~mpa
home	/afs/cs/user/mpa	/afs/andrew/usr11/mpa
public servers pools	linux.gp.cs.cmu.edu	linux.andrew.cmu.edu
Machines	Desktop machine	Cluster machines

E-mail address

- You have TWO e-mail addresses
 - mpa@andrew.cmu.edu
 - mpa@cs.cmu.edu
- Can forward one to the other
 - Andrew forwarding: www.cmu.edu/myandrew
 - CS forwarding: www.cs.cmu.edu/~help/jeeves

Websites

- You have TWO websites
 - www.andrew.cmu.edu/~mpa
 - www.cs.cmu.edu/~mpa
- You probably want to redirect one to the other
- CS links to www directory
 - www.cs.cmu.edu/~mpa is /afs/cs/user/mpa/www
 - See www.cs.cmu.edu/~help
- Andrew requires “publishing”
 - See www.cmu.edu/myandrew

SCS Community

- Facilitudes and facilitudettes

- Your friends
- Overworked
- Keep them your friends
 - Be polite and considerate
 - Bake them cookies!

- Users

- Many platforms
 - Windows, Linux, MacOS, Solaris, freeBSD, netBSD, IRIX, Plan9...
- Many users, many problems...

SCS Community

- Volunteers
 - Maintain critical/useful software
 - gcc, matlab, mozilla, ...
 - Help facilities serve other students
 - Volunteer today to maintain a software collection! (write to `ken2@cs`)

SCS Community – RPP

- Reasonable Person Principle
 - “Do unto others...but better”
- Respect others’ privacy
- Ask before doing anything Weird
 - Download mirrors, Floods, Moving Hardware, ...

SCS Community – Finding Help

- Officemates, google, man pages
- Fac Documentation
 - <http://www.cs.cmu.edu/~help>
- Zephyr, FZQ, Zarchive
 - <http://zarchive.srv.cs.cmu.edu/>
- Facilidades
 - **help@cs** : “When you get a chance, how do I?”
 - Help Desk (8-4231) : “How do I?”
 - Operations (8-2607) : “Network is on fire!”, “No more printer paper/toner!”

SCS Community – Volunteering

■ Volunteers

- Maintain critical/useful software
 - gcc, matlab, mozilla, ...
 - Volunteer to maintain a software package! (write to `ken2@cs`)
- Help facilities serve other students
- Serve tea on Mondays at 4pm in the lounge
 - Come to tea!
 - Volunteer to be a Tea Troll! (write to `mpa@andrew`)
- Maintain the espresso machine
 - Volunteer to be an Espresso Elf! (write to `rjsimmon@cs`)
- Maintain/stock the coke machine
 - Volunteer to be a minion of the Coke Czar (write to `mmcg1oho@cs`)

SCS network

- See <http://www.cs.cmu.edu/~help/networking/>
- Network service needs to be paid for (magic money)
 - Do not plug computers in without registering
 - <http://www.cs.cmu.edu/~help/networking/netregister.html>
- Switched network, 10/100 Mbps to offices
- We connect to CMU, they connect to PSC, they connect to the world

SCS network (cont)

- Wireless network
 - Run by the Andrew folks
 - Free, look at <https://netreg.net.cmu.edu>
- Connecting from home
 - Cable or DSL broadband service
 - <http://www.broadbandreports.com> and zephyr for comparisons
- When traveling
 - iPass will let you connect to pay wireless networks
 - <http://www.cs.cmu.edu/~help/networking/ipass.html>

WebISO

- WebISO provides authentication to useful websites
 - OLR – Online Registration (ANDREW)
 - SIO – Student Information Online (ANDREW)
 - My Andrew (ANDREW)
 - Black Friday Page (CS)
- Login once to WebISO, can access all sites
- Some of these require andrew credentials, some require cs credentials
 - <https://webiso.andrew.cmu.edu/logout.cgi>

Printers

- Printer List

- <http://www.cs.cmu.edu/~help/printing>

- Extra-RPP

- Big jobs at off hours Pick up your printouts "soon"
- Clean up messes, jams Refill paper, Report ENOPAPER
- Color printers best for final color documents

- Windows

- Printers off `\\monolith`

- Linux – CUPS

- Configuration: <http://localhost:631/>

Misc hardware

- Fax machine in WeH 4212
 - Free for work
 - Fee for personal
 - Work stuff can also be handled by your advisor's AA
- Copiers in the large printer rooms
- Scanners in WeH 3501 Terminal Room
- Windows machines in Andrew clusters have flash card readers (see the cluster in the 5100 corridor)

Communications – Email

- http://www.cs.cmu.edu/~help/mail_news/index.html
- Mail Server
 - `imap.srv.cs.cmu.edu`
 - POP wrapper provided
- Clients
 - Outlook, mutt, pine, thunderbird, kmail (unsupported but works), anything using IMAP should work
 - <http://webmail.cs.cmu.edu/>
 - <http://webmail.andrew.cmu.edu/>

Communications – Email Filtering

- IMAP and Sieve
 - http://www.cs.cmu.edu/~help/mail_news/imap.html
 - http://www.cs.cmu.edu/~help/mail_news/impsieve.html
- Facilities detects spam for you
 - Sieve rule to filter it to INBOX.SPAM
- Mail sent to `mpa+foo@cs` is delivered to `mpa+@cs`
 - Can filter `mpa+foo@cs` to different folder
- See talk resource page for an example filtering script (<http://www.cs.cmu.edu/~mpa/ic08>)

Communications – Netnews

- cmu.cs.scs: important announcements
- cmu.cs.*.announce: new software or changes
- cmu.cs.general: general interest items
- cmu.misc.market: for sale, and randomness
- official.cmu-news: updates on campus news

- Servers
 - Unix : localhost
 - Windows : dnntpd.srv
- Clients
 - <http://webmail.andrew.cmu.edu/>
 - Mozilla, Thunderbird, slrn, pine etc.

Communications – Zephyr

- Private zephyr
 - Great for communicating with your friends, group members, other CS folks, email and printer notifications
- Public zephyr
 - First: Think IRC Chat
 - Restrict it to CMU students (many ex-CMU students too)
 - Add helpful facilities, superpeers
 - Add notices for free food, talks, weather, dept problems, news
 - Add daylong flamewars and thesis avoidance
 - Add bitterness
 - Public Zephyr is Logged: <http://zarchive.srv.cs.cmu.edu/>

Communications – Zephyr

- Xemacs
 - Most easy-to-use and comprehensive client
 - See talk resource page for directions
- owl
 - Ncurses based zephyr client
- pidgin/gaim
 - Supports zephyr
- Kzephyr
 - Not currently installed on FC7
 - Run from `/afs/cs.cmu.edu/local/kde/i386_rh80/3.1/bin/kzephyr-bin`
- Commandline
 - `zwrite` to send
 - `zwgc` to receive– On by default
 - To stop: remove from `~/.xinitrc`
- Java/Windows
 - `jzephyr`: <http://www.cs.cmu.edu/~honus/jzephyr/>

Communications – Phone/Addr

■ finger

- `finger mpa@cs`
- `finger mpa+@cs`
- `finger michael.ashley-rollman@cs`
- Does some fuzzy matching and disambiguation
- Somewhat retarded; follows email forwarding

■ lookup

- Especially useful for people whose email is forwarded off-site

■ Phone

- `man phone`
- `phone help`
- `phone pizza`
- `phone burks`

Software – Facilitization

■ Pluses

- Kerberos, AFS, Misc Collections
 - Hacked Fedora Core 7
- Security fixes/updates
- Backups (Impossible on non-fac'ed hosts)

■ Minuses

- Network outages
- Kernel patches become scary
 - Rebuild AFS, who knows what
- What if you really want BSD or gentoo or Windows ME?

Software – Defacilitization

- WAIT. Don't do it
 - Unless you're REALLY sure. 2nd year?
- Pluses
 - Install whatever OS you want
 - Bypass CS problems (AFS, depot breakages, ...)
- Minuses
 - You must update, patch, troubleshoot, ...
 - No backups

Software: administering your machine

- You will get root access if you ask nicely, but...
- If you mess something up, you fix it.
 - Fac will do a clean reinstall, recover data from backups.
 - That's it.
- Installing software
 - Be nice, don't install random RPMs
 - Learn about **depot**
 - This will make your life MUCH better
 - We will come back to depot later

Software – Kerberos

- Authentication/Encryption Clearinghouse
 - Login and get a “ticket”
 - Expires in 25 hours
 - Good for authentication/encryption for AFS/telnet
 - `kinit` – get fresh (ticket-granting) ticket
 - `krenew` – renew tickets as long as possible (a month)
 - `klist` – list tickets
 - `klog` – get AFS tokens for many different cells
 - “Access Denied” usually implies tickets expired
- Create `.mail`, `.ftp` instances, ask help desk to create `.root`
- http://www.cs.cmu.edu/~help/accounts_passwords/kerberos.html

Software – AFS

“You know you have [a distributed system] when the crash of a computer you've never heard of stops you from getting any work done.”

- Leslie Lamport

At CMU, AFS is that distributed system.

Software – AFS

- /afs
 - Links to hundreds of sites
 - Stitched together from multiple AFS volumes
 - Fancy, painful “cross-realm authentication” to access them
- You have CS and Andrew accounts
 - /afs/cs.cmu.edu/user/mpa, /afs/andrew.cmu.edu/usr11/mpa
- Day-old backups in `~/OldFiles`
- Use local disk wisely
 - AFS/Network failures suck
 - Home dir on /usr0 ?
 - Compiles, etc, slow out of afs

Software – AFS

- **fs help**
- Access control: rlidwka!
 - Read, Lookup, Insert, Delete, Write, lock, Administrative
 - `fs listacl /afs/cs/user/mpa`
 - `fs setacl /afs/cs/user/mpa mpa rlidwka`
 - `fs setacl ~/pub system:anyuser rl`
 - `fs setacl ~/drop system:anyuser i`
 - `fs setacl ~/private -clear mpa rlidwka`
 - *Ignores* unix permissions! (except for execute)
- Quotas:
 - `fs quota /afs/cs/user/mpa`
 - Max 1GB: telnet jeeves
 - you can get more if you ask nicely
- Install OpenAFS client to access AFS from home/laptop

Software – AFS: Default acs

Access list for

`/afs/cs.cmu.edu/user/<user_id>` is

Normal rights:

`system:friendlyhost rl`

`system:authuser rl`

`<user_id> rlidwka`

Software – Depot

- Packages copied/symlinked from AFS each night
 - gcc, matlab, maple, perl, etc
- AFS failure means software failure
 - Force copies in `/usr/local/depot/depot.pref.local`
 - `collection.installmethod copy PKGNAME`
 - pine, gcc?, ssh? etc
- **man depot.pref.local**
- See example on talk resource page
- VOLUNTEER

Software – Windows Misc

- `\\monolith\pc_dist` is your friend
- www.cmu.edu/myandrew
- Install Updates Regularly
 - (All you should need to do is reboot)
 - Vulnerable machines pulled from the network
- Secure Connections
 - AFS module can be flakey
 - Putty (ssh), NiftyTelnet
- Dual Boot Systems
 - Share data via FAT partitions or AFS
 - 10 GB on your machines, mounted as /shared
 - `ntfsresize` can change allocations

ssh

- “Secure shell”: Secure connections sans kerberos
 - `ssh -X mahim@host` (-X for X11 forwarding)
 - `ssh -Y mahim@host` (-Y for secure X11 forwarding)
 - `ssh -X mahim.root@host` (Login as root)
 - `ssh mahim@cs remote-command`
 - `scp src mahim@host:dst`
 - `scp mahim@host:src dst`
 - `sftp mahim@host`
- Windows
 - Use putty or WinSCP (google them)
- Fancy tricks let you login without typing passwords
 - <http://www.snailbook.com/faq/no-passphrase.auto.html>
 - You will still need to kinit to use any kerberos-protected resources

Web Proxies

- Reduces Bandwidth, Improves Response Times
- Removes Ads

- Servers
 - Squid:3128, junkbuster:8000
 - <https://www.vpn.cmu.edu/webvpn.html>
 - Lets you access CMU-only material

Free Food Cam

- <http://freefood.pc.cs.cmu.edu>

Resources

- Help

- <http://www.cs.cmu.edu/~help>

- FZQ

- <http://www.cs.cmu.edu/~fzq>

- Zarchive

- <http://zarchive.srv.cs.cmu.edu>

Resources

- www.library.cmu.edu
 - Free IEEE, ACM Databases
 - Use <https://www.vpn.cmu.edu/webvpn.html> externally
 - Loads of other resources

Do Today – Part 1

- Make ~/ .plan
 - Office Location, Office, Home, Cell Phone Numbers
 - Contents show up in your finger information

- Make doorlabel
 - <http://www.cs.cmu.edu/~mpa/ic08/doorlabel>
 - <http://www.cs.cmu.edu/~aothman/doorlabel.html>

- Make web page
 - <http://www.cs.cmu.edu/webhelp/howto.html>
 - Office Location, Office, Home, Cell Phone Numbers

- Ask Main Office for Copier #
 - Library uses SCS copycard

Do Today – Part 2

- MyAndrew: <http://www.cmu.edu/myandrew>
 - Forward your @andrew mail to @cs
 - create @cmu.edu address
- Root Access
 - Ask help@cs to add <you>.root@CS.CMU.EDU to ~root/.klogin.local
- Kerberos .mail instance
 - telnet jeeves; kerberos create <you>.mail
 - Use this in mail clients

Do Today – Part 3

- Local Passwords
 - Login as root, use `passwd <you>`
 - Login as `<you>/local` or `<you>:local`
 - Do this for you AND for root
- Create private directory with appropriate permissions
 - `mkdir private`
 - `fs sa private -clear <you> all`

Conclusion

- <http://www.cs.cmu.edu/~mpa/ic08>
- <http://www.cs.cmu.edu/~help>