

Linux Student Focus Group

Date: October 23, 2006

Facilitator: Laura Valentine

Computing Services attendees: Connie Deighan Eaton

Student attendees: [removed for privacy]

Setup

Invitations were sent out to students who had RSVP'd for the focus group earlier in the semester, to a list of students provided by Mark Stehlik, and to a random sample of students who had used either the Linux clusters or the public unix servers (or both) since the beginning of the Fall 2006 semester. A total of 153 students were invited.

13 students responded that they could make at least one session. These students were offered places in two different focus groups. 9 of those students ended up attending; 1 of the focus group attendees was not invited but heard of the focus group by word-of-mouth.

The faculty committee had expressed concern about unmet student needs. We developed a list of questions that we felt would help clarify student needs, desires, and current use patterns, and would help inform data analysis to answer other questions the faculty committee had asked. We specifically asked student attendees about issues/concerns, their idea of a perfect cluster, use of space, and remote vs. cluster uses.

Issues

We began the focus group by creating an Issues board. These were items that we may or may not discuss, but we wanted to know what the concerns were, even if we did not talk about them during the focus group.

Students were asked to take a few minutes to write down any issues they wished to discuss, or concerns they wanted to raise. They then posted these concerns on a board and we discussed them briefly. The students raised both major and minor issues during this portion of the focus group. A *major issue* is any issue listed at least three times by students, or where there was a great deal of verbal agreement when the issue was posted to the board.

Table 1: Frequent Major Issues in the Linux Cluster

Issue	# of times mentioned
Need Unix or Linux CSW	5
Software problems	5
Not enough machines	5
Screen size of machines in cluster	3
Documentation	3
Clusters are difficult for people not already familiar with Linux to use	3

The full text of written responses is available in Appendix A.

Many concerns centered around the sense that the Linux clusters were limited in their utility to most students because of a less-friendly setup and lack of available knowledge (or

documentation). The students were concerned that people who would otherwise happily use the cluster might be frightened off by not being able to get help when they tried to use the machines.

Summary of frequent major concerns

Need Unix or Linux CSW

Students are concerned that because there is not enough coverage of Linux in CSW, most students on campus do not know how to use Linux.

Software problems

Andrew Linux does not have the most modern versions of software available, nor a wide enough selection. In addition, the machines are prone to crashing.

Not enough machines

Students were concerned about support for class needs & partner work, especially for the Operating Systems course.

Screen size of machines in cluster

The screens are both physically small, and have a low resolution. This makes a lot of work (especially partner/group work) difficult.

Documentation

There is little documentation on how to get started, change your setup, or on how to fix problems. Many of the students are providing their own documentation or signage in the clusters to try to get around this issue.

Clusters are difficult for people not already familiar with Linux to use

There was a lot of indication that this has gotten better with the new setup, but it is still a concern. This is closely related to the CSW and Documentation concerns.

Other Major Issues

- Are they (clusters) staying?

- Available desk space to spread out work
- Printing problems

Minor issues

- Hardware in clusters is the oldest on campus
- Availability of remote access to cluster machines
- That number of logins is not a good metric for cluster use

The Perfect Cluster

Students were asked to brainstorm elements of a perfect cluster. Then, they were asked to pair off, discuss their lists, and rank their items with a partner. Each pair then listed their top three items, which were recorded on a board. We ended up with a total listing of 16 items, due to a last-minute brainwave from a group that had already listed three items.

- No reservations – cluster would be open for use at all times, without classes taking place
- Knowledgeable (about Linux) ccon on duty
- Modern machines, not hand-me-downs
- Layout for pair programming – make it easier to work together
- Larger screens (size & resolution)
- Documentation for all tools
- More space (desk, disk, and AFS – many students are storing work in AFS, or providing programs or scripts in their space for other students to use)
- Remote access to machines via ssh
- Whiteboard walls (very important; lots of agreement on this)
- 1 big more social room for group work, then smaller quiet rooms
- Keyboards that don't cause RSI (the current ones have high travel and no snap)
- Empty desk with plugs and network for laptops
- Collaborative environment
- Clean, comfortable, ergonomically correct chairs
- Disability support/ADA compliance (not just for wheelchairs, but for people who cannot type or need a screen reader, etc.)
- Local root on the machines

The written lists were also collected, and the full text of written responses is available in Appendix B.

Use of Space

In the first faculty committee meeting, we asked the faculty about what they perceived the use of space in the Wean clusters to be. We repeated that question to the students, to find out how they are actually using the space. The responses were recorded on a board.

- collaborative work (any work where there is more than one person and computing resources are necessary)
- teaching work
- talking about technical issues
- hanging out/playing games/sleeping/eating
- working on classwork
- being in TA mode (available for students in classes they are TAing to ask questions)
- lots and lots of homework (computing and written)

The students also described the differences in the uses of the Wean Linux clusters.

Table 2: Reported Use of Wean Cluster Spaces

Cluster	Use of Space
5201	Quiet, sparser use, OS work. People will walk in and check email here.
5203	Computers taken/in use, a lot of traffic in and out
5205	OS cluster, lots of long-term logins
5207	Noisy OS cluster, discussions

Student responses seem to indicate that students of the Operating Systems course are the primary users of the Wean Linux clusters at any given time. We may wish to verify this via data analysis.

Remote vs. Cluster use

Table 3: Typical Software Use

Remote	Cluster
screen	"all the same stuff" as is typically run remotely
pine	Simics*
zephyr	SML
gcc	X-versions of editors (Xemacs, etc.)
editor (emacs, vim, etc.)	Web browsers
scp (and other secure file operations)	Thunderbird*
rsync	pine
Text-based web browser	Xmms*
Matlab, Maple, Mathematica	Graphics packages*
Versioning software (subversion, cvs, etc.)	LaTeX* StarOffice*
	Acrobat reader*

We asked students about what software they typically use remotely and in the clusters. We also asked what they *can* do remotely, but not in clusters, and vice versa. Generally, the students stated that anything CPU-intensive, they tend use only in the clusters. They report that over a remote connection (with x-forwarding), graphics and math packages are often "unusably slow".

Starred (*) items were reported as only usable in clusters, and difficult or impossible to use remotely. Only three items were reported as possible to do remotely, but not in the cluster; all three items were viewed as important. These were ssh connections, persistent sessions, and voice access (for disability reasons).

Appendix A – Full text of responses to Issues question

Need Unix or Linux CSW

- No CSW in Linux
- More coverage of Andrew Linux in CSW
- Lack of coverage in CSW
- Not much linux taught in CSW
- Unix-based CSW

Software problems

- Better support for the software
- Modern versions
- Clusters crash alot [sic] w/ new kernel
- Software selection
- Software selection

Not enough machines

- Running out of machines
- Availability of machines
- Not enough computers (for partner work) at night
- Classroom space
- OS

Screen size of machines in cluster

- Screen size
- Small screens in largest cluster
- Small screens

Documentation

- Little/no documentation of starting env. vars?
- Document
- Documentation

Clusters are difficult for people not already familiar with Linux to use

- Default X config is difficult to use. Use gnome or xfce.
- Lack of awareness of use
- Ccons do not know enough to help people in Linux cluster

Other Major Issues

- Are they (clusters) staying?
- Desk space [two identical responses]
- default printer setup in X software is wrong
- printing

Minor issues

- Hardware in clusters is the oldest on campus
- Availability of remote access to cluster machines
- That number of logins is not a good metric for cluster use

Appendix B - Full List of Responses to "Perfect Cluster" Brainstorming

All answers are verbatim; duplicates are included.

Cluster Equipment (Non-Computer)

- whiteboards
- Whiteboards
- comfortable chairs
- clean chairs (smelly)
- whiteboards
- Dry Erase Board
- Big white boards on all walls
- High quality office chairs
- Bigger trash cans in cluster
- Dry erase boards

Hardware

- new hardware
 - o big screens!
- Linux clusters tend to be oldest HW, fix that
- dual screens
- keyboards/ergonomics
- Larger Screens (Size/Resolution)
- Multiple Screens
- Much larger screens Ideally [sic] 1600x1200 or larger 17" or larger
- Large/multiple screens per machine
- Dual boot/kvm switch
- Larger screens

Software and Printing

- running linux
- Linux or *NIX/BSD
- AFS shouldn't hose its cache!
- Easier software (eg printing) - should need no changes
- TeX, etc. printing just work. web browsers work pretty much already.
- Easy to change defaults
- Not crashing with FS errors
- Printing
- Choose between Windows + Linux
- working software
- no crashes
- easily configurable
- can install software
- Ability to print easily

- Linux Build that will allow me to compile software to help me work more easily than the contrib system
- Local root
- Ability to boot from diskette/cd
- ssh server on every machine
- OS Mix?
- SSH
- VMware w/ability to contribute images

Cluster Space and Layout

- pair programming layout
- one cluster w/classroom layout for CSW?
- designated "quiet" cluster
- More space
- 1 cluster for TAs
- workspace on desks
- 1 for quiet, 1 loud
- several rooms (quiet, and less)
- side-by-side computers
- Space for Laptops (Desk, Network, Power)
- Pair Programing [sic] layout (Space/Collaboration Area)
- Network sockets for laptops
- Space to layout Laptops and Papers
- 1 big room with several smaller rooms
- Desks for people with laptops (wired connections + plugs)

Resources

- informed ccons
- Easily accessible (changeable?) docs
- CCon always available for Linux
- Good documentation/knoweleble [sic] C-con

Other

- Lack of reservation is nice.
- even heating
- food/drink
- La Prima open late hours
- Accesable [sic] to non-cs magiors [sic] (it's nice to have friends around)