Blackboard Advisory Committee: Status Report, spring 2010

JQ Johnson, May 2010

This spring has seen a large number of significant changes and transitions in the UO’s Blackboard service, including hardware/infrastructure, software, and staffing. This memo attempts to briefly summarize some of the highlights of the changes.

Blackboard usage

As predicted, Blackboard usage this term has grown only slightly, reflecting the fact that the system is now mature. Overall, spring term usage measured in number of active (available) courses is up only 1.5% compared to spring 2009. The average size of a course using Blackboard has grown slightly, and total enrollments in active courses showed a 7.6% increase.

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Blackboard usage continues to be very heavy. In April, for example, we recorded a total of some 527,000 visits and more than 116 million page hits. For more details on traffic, see https://blackboard.uoregon.edu/local/awstats/awstats.pl.

System physical configuration

As noted in the winter status report, the Library and Information Services began a collaboration last term to revamp the Blackboard hardware architecture. After two months of planning, we implemented a major architectural change over spring break (downtime Mar 24 and 25), with further changes this term. The move was part of a larger effort to centralize enterprise servers and take advantage of likely cost savings, increased security, and greater reliability in the event of campus-wide power outages. This move also allows us to respond more easily to increases in demand on the system in the future.

The Blackboard applications were moved from 2 dedicated Linux servers in the Library to a pair of virtual servers (now 3 as we tune the configuration) running on the IS virtual server cluster. Blackboard files were moved from a redundant pair of NAS servers in the library to the IS filer (see http://systems.uoregon.edu/services/storage/ for a description of this IS service offering). The 4 Linux servers were transferred to IS for eventual reuse and expansion of the IS systems.

We can provide a great deal more detail about the configuration changes. JQ’s overall assessment is that in the short run the amount of dedicated computing power and allocated storage for blackboard applications has decreased slightly (we were over-configured), but that the quality of the hardware, and particularly the disk subsystem, has been substantially improved. In addition, we now have a much
easier growth path for future expansion, and numerous possibilities for further reconfiguration (e.g. placing the application servers behind the IS load balancer front ends).

Although we expect a few rough edges in support over the next month or two, we are very pleased with the overall results of the move, and with the really excellent working relationships that are developing between Library and IS Systems staff.

**Staffing and user support**

This spring has also seen significant changes in the management structure of the system. JQ Johnson was diagnosed with cancer, and as of April 5 is presently on indefinite sick leave. Although I expect to return to work part time this summer, we took several significant steps to restructure our management and responsibilities based on the assumption that the amount of FTE I will be able to devote to Blackboard may continue to be near zero (rather than about .3 as it has been in the last year). Among the changes:

- As part of the hardware transition to IS-managed virtual servers, primary responsibility for maintaining the Linux operating system on the Blackboard application servers and system backup have shifted from Library Systems to the IS Systems team, working in close collaboration with Tim Boshart. The point person in IS for virtual server management is Brandon Davidson. Database management continues to be handled by the IS database administrators, primarily Stephany Freeman. In addition to coordinating this server management, Tim continues to have full responsibility for management of the Blackboard application software, with technical backup from the Library Systems department and to a limited extent from Blackboard Inc.
- Tim has changed his formal reporting from Scholarly Communications and Instructional Support to Library Systems. This change may be temporary, but at least for now his department head is Sara Brownmiller.
- Tim’s overall role in policy formation and coordination of the service as a whole has expanded. Consistent with this change, we have reclassified his position to Operating System/Network Analyst 2.
- Nargas Oskui has increased her library FTE from .5 to 1.0, and has assumed more responsibility for Blackboard user services. For example, she is now monitoring the Blackboard trouble ticket queue and handling most day to day questions and problems, escalating to Tim when needed.

**Software and services**

For more detail on recent support and operational issues, I have included as an appendix copies of the weekly status report that Tim generates. As you can see, we deal with a wide range of issues, but currently there don’t seem to be any really serious ones pending.

**Blackboard Mobile Learn**

Anyone tracking the computer industry becomes immediately aware of huge changes recently in a move towards handheld devices replacing the traditional desktop computer and perhaps eventually even the traditional laptop. Smart phones clearly are becoming ubiquitous, and new devices such as the Apple iPad are hugely popular. The iPad has already in less than a month sold more than a million units, and excitement about it on campus is very high.

It is very obvious that mobile devices are poised to become extremely important in educational computing in ways that don’t correspond well to current course management systems. For example, see the EDUCAUSE Learning Initiative 7 Things You Should Know About Mobile Apps for Learning at [http://www.educause.edu/ir/library/pdf/ELI7060.pdf](http://www.educause.edu/ir/library/pdf/ELI7060.pdf). Still, we need to bridge these new m-learning approaches to our course management system. For some time we have been working on strategies for
providing better Blackboard support for such devices, and are now pleased to report that we have the beginnings of a plan, at least for immediate iPad support.

Our short-term strategy is to commit to Blackboard Mobile Learn, a new Bb product that attempts to provide a user interface on a variety of mobile devices (notably iPad, but soon also iPhone and analog phones). Blackboard Inc. provides a good overview of their product at http://www.blackboard.com/Mobile/Overview.aspx. The Blackboard product is dual-licensed, with a free version available that is specifically designed to support the course management system (and which is limited in various ways, for example being only accessible via WiFi and Sprint, but not other 3G carriers). That’s the version we are presently implementing. We are one of the first major universities to have rolled out a Mobile Learn implementation. Meanwhile, other groups at the UO are looking into the full Blackboard Mobile Central product for possible purchase and implementation.

The Mobile Learn product consists of 2 components, a building block that we installed in production on May 8 (3 days after it’s general public announcement), and client apps for various devices including iPad, iPhone, and Android devices. Several iPad users on campus are assisting us with evaluation of the iPad app.

The iPad app offers a login screen then a custom (blackboard-branded, so unfortunately not UO colors) user interface that allows the user to access a fairly wide variety of information from blackboard sites. In particular, it is easy to navigate through the site and view announcements and static content in content areas, including attachments in all major formats such as PDF, Powerpoint, and Word. The application also works well to allow students and instructors to participate in discussion forums and blogs. It seems to be adequate for taking short quizzes, though it’s easy to accidentally disconnect so probably should be avoided for longer online tests, at least until iPhone OS 4 is released this summer. Students can also view their grades if the instructor has added a My Grades link within the site; the app does not currently provide access to the tools normally found on the My UO page. If you visit areas that you can't view directly in the app it will automatically open a Safari window and show it there. One major lack is that since the iPad doesn’t really have a file system it isn’t feasible to use an iPad (either with Mobile Learn or the browser) to submit assignments or safeassignments.

Overall, our assessment is that it provides 75% of the functionality that a student might want checking Blackboard for course updates. For the remaining 25%, the student would still have to use the iPad web browser, which is familiar but for some students much less convenient.

On the other hand, the app is quite limited for instructor use, mostly because there’s no easy way for an instructor to have a file attachment stored on her iPad to upload.

Our current plans are to actively encourage Blackboard to improve their app, and to develop more expertise in supporting student users, mostly on iPads, with the expectation that by fall we will be fully up to speed on documentation and support. One major question for the iPad is whether we should recommend a particular set of standard apps. We also expect to use the same software to support Android devices.

Longer term, we need to begin a campus-wide discussion of mobile learning and the new opportunities created by ubiquitous handhelds, geolocation, voice input, built-in cameras, etc.

**Moodle**

Given the range of other changes, particularly in staffing, we have temporarily deferred further Moodle development. We had initially planned to run a small number of Moodle test courses as part of the Blackboard system spring term, but it turned out that no instructors were especially interested in trying
it out. Meanwhile, our experiments with the Blackboard/Moodle integration building block made it clear that the functionality we want isn’t yet available in that tool. The major developer of the tool, Iowa State U, is working on a new release, but will be targeting Blackboard 9.1 and doing most of their development this summer, so we currently plan to reevaluate the options in late summer, and may defer significant Moodle activity until after we upgrade our own system to 9.1. Meanwhile, we expect to continue to offer Moodle coursesites “as is” to any faculty member interested in experimenting.

Looking forward – summer and fall, 2010

Planning the future of the Blackboard Advisory Committee

Given my reduced FTE, it is particularly important that the Advisory Committee be able to provide advice and faculty perspective during the 2010-11 academic year. Perhaps most importantly, it is the library’s key tool for identifying faculty needs in the course management system arena.

Should we consider any restructuring of the committee? Are the size of the group, the mix of teaching faculty with support personnel, and the frequency of meetings, optimal? Are there additional approaches, such as faculty surveys or focus groups, that would be useful? Should there be a closer tie between this committee and the University Library Committee?

One immediate possibility that we might consider is setting up a Blackboard coursesite for the advisory committee, then using it (in particular the discussion board), for information sharing and debate in between our face to face meetings.

Another possibility is identifying one faculty member on the committee who would be willing to serve as the chair of the committee.

Software upgrade planning and downtime schedule

As usual, our downtime plans are documented at http://libweb.uoregon.edu/scis/blackboard/schedule.html. We currently do not expect to need any substantial downtime during summer, though it is likely that a new Blackboard 9 service pack (SP4) will be released in July. We would install on August 14 or 21 (precise date dependent on Information Services maintenance schedules). The major upgrade currently on the horizon is Blackboard 9.1.

For summer, we do expect to have periods due to staff vacations and travel when we have limited support coverage. For example, the annual BbWorld and Blackboard Developer Conferences are scheduled for July 12-16 in Orlando FL. Tim Boshart will be attending and presenting from UO. Tim has plans in place for backup coverage if there are any major issues.

Blackboard 9.1

As expected, Blackboard released their next major software version, Blackboard 9.1, in April. This version has fairly small user interface changes from our current Blackboard 9.0, but large internal changes. Among the new features are the addition of Wikis, connecting blogs to the Grade Center, improved navigation in Grade Center, shortcuts for quick creation of tests, and integration with Bb Connections.

A good discussion of Blackboard 9.1 can be found at the University of Kentucky, which is a Blackboard customer that was one of the first major universities to upgrade. See http://wiki.uky.edu/blackboard/Wiki Pages/Blackboard 9.1 Update Info.aspx
Although a few other universities have upgraded to it, most are planning a cautious upgrade schedule. One reason for caution is that the new version radically changes the backend file system used to store course documents. Instead of simply using a native file system with file names stored in the Blackboard database as our current system does, the new version uses the Xythos content system to manage the files. This architecture has been in use by Blackboard in their Content System software version, but was not previously used in the (much less expensive) Learning System version that the UO licenses. Although we look forward to the change, we note that it will require substantial downtime to implement, probably two full days, with some possibility of additional time as we resolve unforeseen problems.

In addition, any major new software release such as 9.1 brings with it not just bug fixes and new features but additional bugs. We believe that it will be much better to wait until 9.1 service pack 1 is released this fall.

Given the difficulty in finding a substantial block of time in late summer for a major upgrade and the desirability of waiting for 9.1SP1, we are planning the 9.1 upgrade for early in winter break, 2010. Since winter break will start early this year, we plan to do the upgrade before Christmas, on Dec. 21-22. This will give us adequate time for a major upgrade, plus will provide us the buffer of the week between Christmas and New Year’s to deal with any unforeseen problems.
Appendix: weekly status reports for the first part of spring term

From: Tim Boshart <tboshart@uoregon.edu>
Date: April 16, 2010 2:51:20 PM PDT
Subject: Blackboard status report

Things are starting to slow down a little. With the help of Nargus I have started to get caught up on the ticket queue. I received 50 tickets in the Blackboard RT queue so far in the last week. The most common problem once again was expired passwords.

The second most common problem was complaints that documents and assignments were disappearing. While that sounds alarming it turns out to not be a big problem. Some of the complaints came from faculty saying their students were claiming things were disappearing and some from students. It turns out that the students were only looking at the "What's New" module instead of looking in the course menu in areas such as "Course Documents" and "Assignments". When told to look there they always found the "missing" documents and assignments. The "What's New" module only shows items added in the past two weeks.

I also received confirmation from Blackboard that they will be sending me an iPad to be used in setting up the Mobile Learn building block. It should be arriving in the next 2 weeks. As long as I have the building block installed and running within 45 days of receiving the iPad the library will be able to keep it. I've already done some preliminary checking and it appears to be a relatively easy install. I am planning on installing the building block on the production server on the next scheduled downtime on May 8.

I spent some time talking to Brandon Davidson today. He is ready to setup a third server for us that will run all of the background tasks as well as Snapshot and the collaboration suite. Since activating it will involve taking down the to current app servers for a few minutes, this will be done during the May 8 scheduled downtime.

Brandon is also working out some of the policy details to give me access to the Puppet server so we can work on a way to setup shared admin access to the Blackboard servers. We will be getting together sometime in the next week or so to start working on Puppet and also getting Blackboard behind the F5 load balancers.

He also reports that they are almost ready to move the mount points for the data storage to the new units. This will also be done on May 8. After that they should be able to get their backups running so the backups won't need to be done by the library any longer.

I will also take care of a few other minor things on May 8 such as updating Java to the latest version and possibly installing some minor patches. Total downtime should be less than 2 hours. I will start advertising soon that Blackboard will be unavailable from 8:00am until noon.
Finally, the Washington Post ran a story this week that a nine year old boy "hacked" into his schools Blackboard system and deleted a bunch of information and changed some grades and passwords. It turns out to be a non-story. He managed to find the password of one of his teachers that had administrative access to Blackboard. As usual a computer system is only as secure as the user passwords.

From: Tim Boshart <tboshart@uoregon.edu>
Date: April 22, 2010 9:14:03 AM PDT
Subject: iPad first thoughts

I've had some time to play with the new iPad and get the new app working with our Blackboard server. Here are some quick thoughts about it.

General iPad thoughts first.

- The screen as a real glare problem outdoors. I took it outside when it was mostly cloudy and had a hard time reading it. It will probably be useless in bright sunlight.

- There is a really bad security flaw. Whenever you type in a password it shows the character you typed for about a second before converting it to a '*'. If you do a demonstration for someone where you have to enter a password, they will see it. If anyone ever hooks one up to a projector everyone will see your passwords.

- There probably isn't any way to make it accessible. There's no screen reader and it will be nearly impossible for a sight-impaired person to use the on screen keyboard. Some of the buttons are small and hard to hit precisely for someone with fine motor control problems.

- The eBook reader that comes with it is very primitive. There doesn't appear to be any way to annotate the books like there is on the Kindle. The book prices are also higher.

- There isn't any multi-tasking. You have to quit one app before using another.

The app for Blackboard is much improved over the old iPhone app. You can see more of the materials and go into areas such as the discussion board. I even was able to take a short quiz using the app with it's built in browser. If you touch any areas that you can't view directly in the app it will automatically open a Safari window and show it there. It uses single sign on with Safari so you only have to sign in on the app and you don't have to sign on again when you go into Safari.

Since there isn't any multi-tasking every time you close the Bb app you have to log in again. If anyone was using it to take a test and closes the app without saving their questions so they can check something else such as their email they will have to start the test over again.

From: Tim Boshart <tboshart@uoregon.edu>
Date: April 23, 2010 3:16:44 PM PDT
Subject: Blackboard report, week of April 19, 2010
I've already covered the iPad and the bb1 crash in other emails. Here's a report on the rest of the week.

This week there were a total of 44 tickets coming into the Blackboard queue. The most tickets were about a new problem students were having seeing their grades. I had eight reports of students getting an error message when trying to click on "My Grades" in the "Tools" module of the main page. Looking into it I couldn't see any courses in common that the students were taking this term. After I was able to get one of the students to send me a screen shot of the error message I was able to track the problem down to a date problem on older course sites. It turns out that if an instructor sets only an end date for a course without a start date, after the end date passes any students registered for that course will get this error message when trying to check their grades.

I wrote a quick SQL statement that finds all of the courses like this and sets a start date for them so these students could check their grades and added to my daily fix script. There were 18 course sites on our system with this problem.

Also, since I setup the fix SQL to re-enable menus for users that have minimized their menus, I haven't had any more tickets related to this problem. The script is fixing an average of 12 accounts each evening.

The largest number of ticket requests this week involved Google Chrome browsers. They included instructors getting error message while trying to create tests and upload content along with problems students were having with tests. I reminded them that Chrome is not supported and posted a statement to the blog about it. My guess is that there may have been another update to Chrome this past week that broke some javascript that Blackboard depends on. This seems to happen with Chrome alot. Some versions will work with Blackboard and other versions won't.

Chrome also appears to have changed the way it does caching. In one course 8 students using chrome were unable to see a test that was made available today until they switched browsers. Apparently chrome was just showing them what was in it's cache and now what was currently on Blackboard.

I also had a student from Central Oregon Community College asking for help in logging into the COCC Blackboard system. Seems like I get a request like this every quarter.

From: Tim Boshart <tboshart@uoregon.edu>
Date: April 30, 2010 3:18:42 PM PDT
Subject: Blackboard status report, week of April 26, 2010

This week there were 43 tickets to the Blackboard RT queue. There was a mix of problems without any one issue standing out. Nargas is now able to spend more time helping with the ticket queues so I have had more time to work on other issues.
This week I spent most of my time getting the new background tasks server up and running. It is currently running all of the snapshots along with the background course copies along with generating the awstats pages.

The root disk space on bb1 got up to 94% full. I found that it was because of a change in the Blackboard log files in SP 3 resulting in some of the log files for background tasks not being rotated and old files being deleted. After clearing older log files I modified the log rotate scripts to rotate the log files and updated the weekly maintenance tasks to delete older files automatically. We now have 64% of the root filesystem space free on bb1 now. I checked the log spaces on all of the servers and updated the log rotate scripts on all servers. Brandon is also now monitoring root filesystem disk space on all servers.

Blackboard released a new version of the Mobile Web Services building block for the iPad app. I updated the bbtest server and did some testing. It fixed some problems where not all of the announcements were showing for the courses. The updated iPad app should be released next week to fix the password problem so we should be prepared to go live on May 8. I will be spending some time next week writing some brief documentation for support people.

From: Tim Boshart <tboshart@uoregon.edu>
Date: May 7, 2010 3:01:22 PM PDT
Subject: Blackboard report for week of May 3, 2010

So far we have received 46 tickets through the RT queue. Once again we got a number of them that were about the Chrome browser.

A lot my time this week was spent preparing for tomorrows downtime and testing the iPad software. Blackboard has released new versions of the Mobile Web Services Building Block and the app for the iPad which together fixes a number of problems. I installed and tested the new version of the building block on t bbtest. I have also installed the updated building block on the production server and will enable and configure it during the downtime.

In addition to testing the iPad software I gave demonstrations of it to Nargas, JQ and Katie Brennan.

I have also started a review process of the iptables firewall rules used by the Blackboard servers with Brandon Davidson and Duncan.

Another new item is that Blackboard is in the process of forming a Blackboard 9.1 Upgrade Cohort. This is made up of a group of Blackboard Admins who are planning to upgrade to Blackboard 9.1 this year. Blackboard is setting up weekly 1 hour online meetings where there will be presentations from schools that have already upgraded and discussions on problems that are being found and how different schools are creating documentation and training for faculty. I will attend as many meetings as I can.

This is Blackboards first attempt at a program like this. If successful
the plan on continuing it for future releases.

From: Tim Boshart <tboshart@uoregon.edu>
Date: May 14, 2010 12:57:38 PM PDT
Subject: Blackboard report week of May 10, 2010

The biggest item this past week was the downtime over the weekend. During that time IS moved the Blackboard data storage to a new data storage unit, installed OS updates for the app servers, and I moved all of the background tasks to the new bbtask server and configured the Blackboard Mobile Web Services Building Block to support the new Blackboard iPad app.

IS is currently working on doing backups of the Blackboard system onto their tape storage units. As soon as this is done and it has run for several days Duncan will be able to shutdown the last Blackboard server that is in the library server room that is currently doing the backups.

Since moving all of the background tasks to the bbtask servers, the two app servers are now doing about 1/2 the number of memory garbage collections than they were doing when they were handling the background tasks. This will make a big difference in performance when we hit our peak usage during dead week and exam week next month.

This was a fairly slow week for support tickets coming in, only 26 tickets so far. The biggest difference is that there have been only 2 tickets relating to Google Chrome since I setup a simple javascript on the login page that puts up a warning message when it detects a user using Chrome.

The biggest issue has been WebAssign. Since Monday evening students have been getting sporadic error messages when trying to use WebAssign. They will often be able to get on at a later time on the same computer. The java error messages that they have been getting point to an error when our Blackboard servers are trying to connect to the WebAssign servers. This was reported to WebAssign. They claim it is an isolated incident but admit that they have been getting reports of the same problem from Florida State University. David Herrick pointed out that for many universities this is the last week of classes. It appears that there are more than the usual number of students trying to get onto WebAssign at the same time and it is overloading their systems.

This week was the first meeting of the Blackboard 9.1 Upgrade Cohort. There are more than 40 schools that are in the cohort that are looking to upgrade to 9.1 sometime this year. The next meeting will be looking at how different schools are implementing test servers and pilot programs. The week after there will be some presentation from schools that have already upgraded to 9.1. This will be a useful source of information to help in planning our own upgrade to Blackboard 9.1.

Addendum:

One more item for the weekly report. This week Blackboard released a patch for the problem of instructors receiving an error message when
trying to batch download assignment files when the assignment name contains a special character such as '#'. I have tested the patch on the test server and have now installed it on the production servers. It will be active after Blackboard restarts during the log rotate process tonight.