

Oncourse Status Update September 4, 2007

What was done to prepare for the fall semester?

Preparation for the full migration to Oncourse CL has been underway for three years. During this period, UITS provided faculty with the option to continue using original Oncourse. Supporting both course management systems gave faculty a choice of which system to use and also provided the opportunity for continued development of Oncourse CL to meet and in many cases exceed the functionality that was available in original Oncourse. These development priorities, which were endorsed by the Oncourse Priorities Committee, were completed this summer.

The development team conducted load testing of the Oncourse CL system late spring and throughout the summer and made several adjustments based on the results of that testing. The number of servers needed was estimated based on historical use of Original Oncourse and Oncourse CL.

What caused the slow response times?

There were two separate and unrelated problems on the first days of classes at IUPUI that resulted in slow performance that UITS was able to quickly identify and address without any further problems.

On Monday, August 28 at approximately 11 a.m., many users experienced very slow response times due to extremely high usage resulting from semester startup across IU. Our load testing did not reveal nor adequately predict the bottleneck that resulted from the complex usage of tools in Oncourse CL, and there had been no indication of this particular bottleneck in the prior year's or summer's use.

The bottleneck was not in the Oncourse CL software or the Oracle database but rather, it was the software that manages the communication between Oncourse and Oracle along with the need to tune system administration parameters. Neither the Oncourse application servers nor the Oracle database servers were running even close to capacity.

This bottleneck was very serious and substantially interfered with essential course communications, especially in online courses. Faculty were still able to reach students via email using the Oncourse CL email archive listserv capability.

How did UITS respond?

A team of hardware and software experts in UITS was immediately assembled to analyze and solve the problem. The team worked around the clock until the system was stabilized on Tuesday evening, resulting in marked speed improvements that continue to be better than at any time during the prior years - even during the full load of Wednesday and Thursday. The team changed the middleware software that we had been using to a new package to manage the communication between Oncourse and the database. The System Administrators switched off Oracle's automatic and highly conservative memory management to a more optimized

configuration. The hardware and software adjustments were carefully balanced to achieve the optimal combination of settings necessary to support very heavy and complex usage patterns.

Communication with users included correspondence with IUPUI Deans, the Oncourse Administrators list, Oncourse Priorities Committee, three faculty council technology committee chairs, and individual faculty, schools, and departments. IT Notices and the Oncourse CL Message of the Day was also used to provide updated information.

Plans going forward:

1. UITS will involve faculty from the IUPUI Faculty Council Technology Committee, IUPUI Faculty Council Distance Education Committee, Oncourse Priorities Committee, and Bloomington Faculty Council Technology Policy Committee in completing an After Action Report.
2. UITS technical staff will continue to tune and refine the overall system and several specific Oncourse tools that have been identified for such improvement.
3. Continued load testing will be done, anticipating the next peak periods that will occur during mid term and at semester end. This is critical because faculty and students' usage patterns will change as they use new and different tools that they may not have used early in the semester.
4. The IU Associate Dean for Learning Technologies (Stacy Morrone), who also chairs the Oncourse Priorities Committee (OPC), will invite members of the OPC and other technology-related faculty groups to participate in a task force to help define the ways in which faculty use Oncourse CL in their teaching. This task force would include the following:
 - a. Interested faculty
 - b. One or more computer modeling experts
 - c. Instructional consultants from the campus centers for teaching and learning who understand the functional use cases at a deep level
 - d. Oncourse development staff
 - e. UITS Enterprise Infrastructure staff.
5. UITS Enterprise Infrastructure staff will explore some additional load balancing and management software and hardware that may make the Oncourse system even more robust.
6. The insights from this experience will be shared with the Sakai technical community to aid other institutions, and IU will continue to monitor communications from other sites that may better inform our local configuration.