



The FirstClass® Application Server in Higher Education

Profile

Emory University is one of the largest educational FirstClass sites in North America, with 18,000 users in 2,727 privilege groups and 14,190 active conferences. 90,000 total messages are generated daily and traffic on the system can vary between an average of 170 concurrent users to a peak of 420 concurrent users.

LearnLink is Emory's campus-wide online community resource. Sean Murphy is the project director and lead systems administrator for LearnLink, responsible for server maintenance, upgrades, and project planning. Gary Falcon is an educational analyst whose primary focus is helping faculty utilize LearnLink as an educational tool and secondary focus is systems administration. Kathy Gardner is the third systems administrator with full-time responsibilities for LearnLink. She focuses on working with student organizations and building community.

Vision

The mission of LearnLink is to enhance learning and to build a stronger sense of community among students, faculty, and staff. LearnLink envisioned a highly enhanced FirstClass network that would allow them to accomplish more with FirstClass than ever before. To realize their vision, the LearnLink staff devised a plan to deploy numerous FirstClass integrated client-server applications, which would facilitate learning online, put campus community & resources online and develop useful administrative tools.

Solutions

Emory has been a prolific user of the FirstClass Rapid Application Developer (FirstClass RAD). To date they have developed over 30 solutions based on FirstClass Application Server (FCAS). The following examples are some of the most exciting applications Emory has developed.

Learning Online

Emory has a large contingency of online classes, over 600 courses are offered online via FirstClass. FirstClass RAD and FCAS are helping to facilitate online learning with integrated applications that augment the basic Intranet functionality of FirstClass.

Adaptive Learning Systems

The Religion Study Guides application, developed by Sean Murphy, was developed at the request of Vernon K. Robbins, Professor of New Testament and Comparative Sacred Texts, Department and Graduate Division of Religion. Robbins was looking for a way to present the students with specific texts and ask them to find passages which reflect a particular type of interpretation.

"The Religion Study Guides application was developed to allow students to work through these examples at their own pace, working with progressively more difficult examples as they master the basic concepts," says Gary Falcon. "Student responses are compared to a complex range of potential answers, and feedback is provided to help students learn from their mistakes."

The Religion Study Guides application also makes extensive use of adaptive learning routines. These routines refocus content on an individual student's weak areas to ensure a more complete understanding of all of the subject material. Falcon explains:

"First, the student's answers are compared to potential answers in a range of categories. Answers that are on-track but not exactly right are distinguished from answers which are totally wrong. The program can then provide encouragement or help based on the student's performance. Secondly, the program looks at how well a student has done on a particular exercise to determine the difficulty level of the next exercise."

Vernon K. Robbins realizes a tremendous potential for saving time with improved instruction by using FirstClass and FCAS as the vehicle for these study guides.

"To achieve the same results without the Religion Study Guides application would require a large number of individual hours tutoring individual students. The Study Guides really function as individual tutoring sessions," says Robbins.

Community and Resources Online

LearnLink has emerged as an ideal location for communicating across traditional university boundaries at Emory. LearnLink is used in a variety of ways by faculty and students in 7 of the 8 academic divisions at Emory. New applications developed with FirstClass RAD have helped to augment FirstClass functionality and expand the possibilities of FirstClass.

Student Elections Online

This year at Emory, student elections were held online. The ballot application was developed by Sean Murphy for the Residence Hall Association at Emory University and was also later used by Oxford College located on the original Emory campus in Oxford, Georgia.

Previously, voting for student elections was accomplished in the traditional manner, by filling out paper ballots at designated polling locations. Students would present their ID card, which was marked at the time they voted, for identification and to discourage students from voting twice. With the new online voting application developed with FirstClass RAD, students are automatically prevented from voting multiple times by user authentication built into FirstClass.

"User IDs are recorded in a data table, and the application looks to see if a user has already voted before opening the ballot. The user ID table is not linked to the actual votes, so anonymity is maintained," says Falcon.

The results of the Residential Hall Association election showed that about twice as many students voted using the online voting application as compared to the paper-based method from the previous year. Falcon recounts:

"The application performed well. There were no problems with multiple people opening the application at the same time, and the feedback we had from students was that this was an easy, quick method for them to vote."

Campus Surveys Online

Implementing an effective method for gathering survey data can be a daunting task. However, students and Emory staff members have found an easy and very effective way to conduct surveys through FirstClass using an application developed by Sean Murphy with FirstClass RAD. By using FirstClass Protocol Internet links in email messages, the surveyor can immediately deliver the survey to a specific group of users via email. When the user logs in to check his or her mail, they can click on the FCP link included in the message and FCAS launches the survey application.

"Using the LearnLink survey application as a medium for surveys was very beneficial to our organization. We were able to get a great response because it was easily accessible and all someone had to do was click on a link and then they could fill out the survey! So, instead of flooding their mailbox, they could click on the survey whenever they had time to fill it out!" says Neha Shah, Student Programming Council.

Responses to survey questions are entered into the survey form's fields by the user. The completed and submitted information is then immediately saved in an ODBC database for easy retrieval, manipulation and statistical analysis.

Access to Community Resources

To provide the community with an easy way to look up names, addresses and phone numbers of others in the Emory community, an online directory was developed by Sean Murphy with FirstClass RAD. For this particular system, FCAS is used to connect to a proprietary UNIX-based system, instead of a more typical ODBC-compliant system.

"We are actually tying into a UNIX PH server that had already been set up on campus, and which had an interface on the Web," says Falcon. *"FirstClass RAD allowed us to send queries to the PH server, which could not be accomplished with FirstClass alone. The result is that end-users can now do directory lookups without leaving the FirstClass environment."*

Administrative Tools

The basic administrative tools in FirstClass are exceptionally easy to use and very practical for managing moderate numbers of user accounts and conferences. Larger FirstClass systems, like Emory's LearnLink, would require considerable time and numerous trained staff to administer using traditional FirstClass account management tools. FCAS is an excellent way to let FirstClass administrators delegate elements of account administration, manage user accounts 'en masse,' and simplify the management of a wide variety of system content.

Account Management

FirstClass RAD and FCAS have helped Emory to lessen the burden of user account creation on their FirstClass network. Using FirstClass RAD, LearnLink has developed an application called LLAMA (LearnLink Account Maintenance Application) to help with FirstClass administration. LLAMA allows designated people or privilege groups to create accounts or change passwords for users within select access groups. This system supports multiple layers of security and logs all LLAMA transactions to a FirstClass conference via email.

"Account creation is no longer the sole responsibility of the systems administrators. Allowing other specific individuals to create accounts in a secure, easily monitored way allows us to spend our time on other issues," says Falcon. "More importantly, Emory students, faculty, and staff can go to a single location for all their computer questions and accounts, and can get their FirstClass account set up while they wait. Without this tool, all requests would need to be forwarded to an administrator which can be inconvenient."

Account Migration

FCAS also helps manage Emory's large user population by automating the migration of students, faculty and staff from UNIX-based mail systems to FirstClass. LearnLink developers Sean Murphy and Gary Falcon developed two user-friendly applications to accomplish this task, Address Converter and Address Forwarder.

"The Address Converter looks like a standard wizard, prompting for a UNIX ID and password and logs into the server of your choice looking for an address book from Pine or any other compatible UNIX mailer, then converts it on the fly to your FirstClass address book, including lists and individual names. Logging by mail is done on completed entries. This application has saved our users and technical staff the countless hours it would have taken to manually create all of these address books," explains Murphy.

The Address Forwarder gives users an easy way to set up mail forwarding from their legacy UNIX accounts to their FirstClass accounts. Address Forwarder's fool-proof interface automatically modifies users' email forwarding file for them, thereby ensuring that the file is set up properly and that users will not require any of the instruction or support previously associated with account migrations.

"Most users are receptive to the FirstClass interface, and it is small obstacles such as moving an address book or changing email addresses that prevents them from using FirstClass as their primary mail system. These tools have allowed us an easy way to overcome those inconveniences," says Falcon.

Conclusion

Over 30 integrated FirstClass solutions have been created for LearnLink with FirstClass RAD to augment functionality in the areas of online learning, online community resources and FirstClass administration. LearnLink is a model for what can be done with FirstClass RAD to enhance FirstClass systems and a compelling example of why every educational FirstClass network should use FirstClass RAD to add value to their system.

"FirstClass RAD has allowed Emory to increase the pace of internal custom development to the point where fresh and creative applications can be drawn up to meet individual needs. We're writing an average of one new application a week now and all with existing staff. I don't know how we did without it and would highly advise every system to investigate what they can do with a few custom applications to spruce up FirstClass and provide additional functionality to their systems." - Sean Murphy, Project Director, LearnLink.

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