

# Achieving Rapid Service Deployment in an Academic Environment

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## ABSTRACT

Rapid product or service deployment is most commonly thought of in the corporate, rather than academic, environment. Utilizing a rapid deployment process and a number of highly dedicated team members, the University of Illinois at Urbana-Champaign deployed a new email system for approximately 10,000 users in 2 months after delivery during 2002. We were able to do this without the large influx of additional personnel often seen in corporate deployment projects. Before the deployment, we developed and tested auxiliary software needed to support the email system. Utilizing the assistance of vendor-supplied professional services, user accounts and user data were migrated from the legacy email system to the new email system. One of the keys to the success of this rapid implementation was use of the implementation timeline as one of the criteria for the selection of the new email system.

Such factors as working the timeline into the decision process and partnering with vendors are applicable to other projects as well. The paper will provide guidelines for application of the rapid deployment process for other projects and institutions. In addition to identifying benefits of the rapid deployment process, this paper will discuss weaknesses in the process, as well as process improvements that will be made for future rapid deployments. Also addressed will be planned deployment of the new email system for an additional 40,000 users on our campus, in light of lessons learned in the initial deployment.

## Categories and Subject Descriptors

K.6.1 [Management of Computing and Information Systems]: Project and People Management – *strategic information systems planning, staffing.*

## General Terms

Management

## Keywords

Email, service deployment, project management, colleges and universities, rapid deployment.

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## 1. INTRODUCTION

In the summer of 2002, a new email system was deployed for roughly 10,000 students at the University of Illinois at Urbana-Champaign (UIUC). The deployment was accomplished in roughly 2 months after delivery of hardware and software for the email system. Analysis of the processes used for this deployment identified several best practices and an overall system for service deployment, which will be applied for the campus-wide deployment of the new email system, as well as for future service deployment projects.

## 2. INSTITUTION AND PROJECT BACKGROUND

The UIUC email system supports roughly 50,000 email users, including students, faculty, and staff. In 2001, it was decided that the existing email system, which had been in place for roughly 7 years, was due for replacement. Maintaining accounts for the approximately 10,000 new students estimated for the Fall 2002 would have required a significant financial investment in labor to operate the general purpose Unix servers used for email. Additionally, significant development effort would have been required in order to provide users with expected email service features, such as a more feature-rich and stable web interface. As a result, the decision was made to implement the new email system in time for use by students at the opening of the Fall 2002 semester. Migration of user accounts for the new system from the legacy system was necessary, as accounts had already been created automatically when the students were accepted to the university. While these accounts were capable of receiving email and being used by the account holders, most of the students would not access their accounts until the opening of the Fall 2002 semester.

## 3. PRODUCT EVALUATION AND SELECTION

Evaluation of potential email products began in the winter of 2001. During the product evaluation phase of the project, project team members experienced significant amounts of downtime while waiting for items such as product delivery and communications from vendors. This downtime was devoted to planning and development of preliminary versions of utility software, such as account provisioning/management and system monitoring, which would be needed for the initial deployment. This planning and initial development was done for each of the two leading email products. Permission was granted by the vendors for extended evaluation of software, which allowed UIUC-developed utility software to be debugged and readied for

deployment along with the email service, especially given the amount of time devoted to the RFP and purchasing process.

In order to ensure that the new email system could be deployed in the relatively short amount of time required, the decision was made to heavily weight the time to deployment for each product considered in the product selection process. During the evaluation and bidding process, the deployment needs for the system were clearly defined to the competing vendors, in order to enable each vendor to accurately estimate the amount of time that it would take to deploy the system and migrate data for the required users. These vendor estimates of deployment times were used along with UIUC time estimates for internal tasks needed for the deployment in order to generate implementation scenarios.

#### **4. DEPLOYMENT**

For migration of user data from the legacy email system to the new system, the decision was made to outsource the migration to the professional services organization provided by the vendor. While the use of the professional services organization was an unaccustomed expense, the decision to outsource migration to the vendor was made based on the amount of time that would be required to internally develop the software that would be required to migrate users to the new email system. The vendor's professional services organization came to the table with already developed applications and utilities for migration needs. This allowed UIUC personnel to devote time to other tasks related to the deployment of the email service, such as development of management and maintenance software for the email system and customization of the email web interface.

The software applications used by the vendor's professional services organization were primarily pre-built applications. This resulted in less availability of custom features to handle specific needs of the environment presented by UIUC. One of the primary reasons for choosing to outsource the migration tasks to a professional services group was to provide UIUC staff with additional time to spend on other tasks related to the project deployment, such as hardware installation and configuration. However, the migration process still required that some UIUC staff be entirely available to assist the professional services consultant during the actual migration process. This required that the members of the deployment team work entirely on the migration for roughly five days near the end of the deployment process, rather than being able to devote time to other deployment tasks. While this time commitment is significantly less than it would have been if the deployment had been handled entirely by UIUC staff, it still represents a higher amount of time than originally expected.

Several of the types of data that we requested the vendor migrate to the new email system could not be converted using the applications available through vendor professional services, such as some addressbook formats and all mail filters. While this did represent an unexpected inability by the vendor to deliver all items promised for the migration, UIUC's choice of the audience for the migration resulted in a lessened impact this failure on the part of the vendor. By choosing to migrate data for users who had not been actively using UIUC's legacy email service for a significant amount of time, it was acceptable to be limited in the data formats that could be converted.

For the deployment of the email service to the rest of the UIUC campus, the decision was made not to use the vendor's

professional services. This decision was due to budgetary considerations, a need for UIUC-specific migration functionality that was not available through stock applications from vendor professional services, and the decision to migrate users incrementally, rather than en masse, as was originally done. The additional flexibility provided by development of the migration software in-house allows us to migrate significantly more data than was available through vendor-provided professional services, including additional addressbook formats and many types of mail filters. Providing users with the ability to initiate their own migration to the new email system is expected to increase user acceptance of the new email system, since individual users will be able to migrate their accounts on a timeframe that is convenient for them, rather than having the migration occur on a date decided by the service manager.

#### **5. WEAKNESSES**

While the deployment of the email system was successful, there are several weaknesses in the practices used for the deployment that must be discussed. Due to a lack of available staff members for the deployment team, the success of the deployment was mainly dependent on the work of two people on the project team. As such, there were two definite points of failure in the project. If either of these people had become incapacitated or left employment at the UIUC during the course of the deployment, it is highly unlikely that the deployment could have succeeded in anywhere near the timeframe required, since the staffing model used did not provide for any backup personnel. The relatively small size of the deployment project team resulted in a good deal of the project being dependent on large volumes of work beyond normal work hours. While the deployment was successful, the significant amounts of work that was required resulted in much higher stress levels than normal for the team members involved in the deployment project. This level of pressure did not continue past the completion of the initial deployment, due to the fact that the amount of work required post-deployment was significantly less. However, further projects deployed using the methods described here should take into account the significant time demands on project staff. Additionally, staffing models should provide some backup personnel where appropriate.

#### **6. LESSONS LEARNED/FURTHER DEPLOYMENT**

From the successes and identified weaknesses of this system as applied, there are a number of lessons learned for future project deployment using this methodology. These lessons learned are currently being applied in the campus-wide deployment of the email system for the UIUC campus. First, the size of the deployment team has been increased, although it is still smaller than the typical project team for a deployment of this scale. This maintains the greater agility of a small-scale team, while reducing the unusually high work and stress levels for each project team member. Additionally, for the deployment of the email system to the UIUC campus in general, the project plan includes plans for greater collaboration among the team members involved in the project. This increased collaboration will allow for greater knowledge sharing and transfer among team members. As a result of this increased collaboration and knowledge transfer, the project will be less dependent on specific personnel, resulting in greater flexibility and reliability for the project in case of unavailability of individual project team members.

## **7. CONCLUSION**

While this methodology was used specifically for the implementation of an email system, it is also applicable for other information technology deployments. The general best practices from this project that can be applied to other projects are use of deployment time as a product selection criterion, parallelizing software development during product evaluation, selection of project team members with an eye towards work ethic, and use of outsourcing where appropriate. Additionally, this project was well served by choosing an initial target audience that could be more easily migrated to the new system. Choosing to deploy the service for a smaller initial target audience allows for a faster deployment,

as well as allowing service managers to gain experience with the new system before deploying the service campus-wide. These factors outweigh the additional cost inherent in running two services in parallel until the campus deployment is complete. This methodology will be used again for future projects at UIUC, and will scale well for other sizes of projects.

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