Web Hosting Services: a new way to do business

As the central IT organization, it is expected that we will offer secure and reliable web services to campus, yet at the same time, there are other parts of campus that are asking for flexibility and opportunities to teach, research and experiment with new technologies. As OIT struggles to meet campus demand for our current web services, we realize that we are not situated to offer additional web services such as Drupal in scalable and supportable ways. We cannot provide quality services without major changes to our infrastructure and our overall business model.

We believe we need to change the way we do our web business. To come up with possible solutions, staff in OCC and ISO have spent the past several weeks investigating how OIT could provide web hosting services to the campus. We began by asking our campus community what needs they had. We then asked our peers how they were providing web services. Finally, we investigated commercial offerings to better understand their business model. This report summarizes this information and includes a proposal for evaluating how the commercial web hosting model could be implemented to meet the growing web services need of our campus community.

Campus needs

To gauge the interests and needs of campus, we invited campus web developers to an open forum where we listened to them talk about their needs, the services they use from OIT, services they currently provide and what they might like to see us provide. We had excellent turnout and heard from both academics, administrators and even from within OIT! We heard support for enhancing our web services and expanding our offerings with newer technologies. There was interest in OIT providing a web hosting model similar to commercial offerings.

For example, students need access to some of these newer tools, but we currently have no good, secure way to offer this. Developers on campus also need a "toolbox" area for testing out new technologies, but with less support; in short, a development area for campus. We also have units that need more support in the areas of database and scripting services, but find our costing model outdated and expensive. Several campus units expressed an interest in using central services, but they need a model that is flexible (both in use and setup), offers different technologies and support levels, and provides opportunities for partnering with us and other colleges and units to share expertise and talents. They also stated a willingness to pay for this type of service environment.

Review of Sister Institutions

Based on an impromptu BOF session at UNC CAUSE we talked to representatives from two schools: ECU and UNC-Charlotte. Both schools are investigating a web services solution similar to what we are considering.

ECU has developed their own hosting management application (similar to cPanel) and are planning to roll it out on a small scale in January. Their application is limited to three open-

source applications (Drupal, WordPress, Joomla). There are currently two staff members, in the central IT office for campus, spending part of their time on the project.

UNC-Charlotte is at a point of evaluation similar to us. They recognize the need for this on their campus, however they are currently implementing tools (WordPress mostly) on an as-needed basis and without much organization or oversight. There seems to be some scattered interest in this but no formal directive.

In a quick review of the other UNC campuses, we found that:

- many offer tiered services (basic/premium, bronze/silver/gold)
- many charge on a monthly basis
- many offer MySQL services as part of one of the packages. A couple also offer Oracle capabilities as well.
- most do not make CMS capabilities generally available to the campus.

We believe we have an opportunity to be a leader in the UNC system with some innovative and scalable web hosting models. Done correctly, other campuses would have a better understanding of the options available to them and the pros and cons associated with each. It is conceivable that we could develop a model that would allow some smaller schools an opportunity to partner with us.

Commercial Offerings Assessment

The most popular commercial LAMP offering is an individual hosting package. These packages offer a variety of languages and technologies (like php, perl, ruby on rails, etc.) and canned web applications (like Drupal, Joomla, Gallery 2, etc.) in a control panel management environment. These packages also provide email accounts, remote shell access, cron, database and other features. Such packages are typically marketed at about $7.00 per month with a two year commitment. This model allows customers to sign-up for accounts and instantly gain access to these services. These packages typically provide very limited support for applications installed on the service.

The control panel software offered with these packages differ based on the provider. The most popular control panel applications implemented are cPanel/WHM, DirectAdmin, or Plesk. All of these control panel software packages offer delivery of web applications via integrated installers such as Fantastico De Luxe, Installatron, or SimpleScripts. This type of management mechanism is exactly what our campus community is requesting.

Our Goals for This Pilot

Based on our feedback from campus and our own internal needs, our goal is to explore options to provide LAMP-based web hosting services to campus, similar to the commercial offerings that are available.

We would like to evaluate:

- new business and support processes for OIT for delivering web services
- a control panel interface (like cPanel/WHM, DirectAdmin, Plesk, etc.)

- an installer service (like Fantastico De Luxe, Installatron, SimpleScripts, etc.) to deliver canned web applications (like Drupal, Joomla, Gallery 2, etc.) with limited support
- a new database provision and management model for MySQL
- offering additional access to scripting languages (like Ruby on Rails, Python, JSP, etc.)

We will offer a recommendation of how best to meet the web service needs of campus at the completion of this pilot project.

Pilot Implementation Options

Our research indicates two options to achieve our goal. The first option is to implement an on-campus solution. The second is an out-sourced approach that would make OIT a reseller of services of a corporate hosting company.

Option 1 - On-Campus Solution

An on-campus hosting model may allow us to take advantage of services which are already available in our current environment (like backup, redundancy, etc). We would purchase a control panel interface along with an associated installer. We would need to obtain hardware, storage, and licensing for virtual machines from our Provisioning group.

Costing estimates [1] : $120 for initial setup. $24 annual renewal fee.

- cPanel software: education licenses are free of charge with a $30 processing fee. This license is considered a lifetime license, meaning no renewal frees.
- Fantastic de Lux installer software: 1 year for 1 physical server (unlimited domains) is $90 with a $24/annual renewal fee.
- hardware, storage fee, licensing of VMWare from OIT's Provisioning unit: No cost for the trial period.

Option 2 - Out-sourced Reseller Hosting Solution

Reseller Hosting is where a vendor sells access to server equipment running commodity control panel based server configurations that can be accessed as either the system administrator role or the domain reseller role by customers. These customers in turn intend to market and resell accounts to a second tier of their customers after branding and/or enhancing the environment. There are many tiers of reseller hosting mostly distinguished by disk quota, bandwidth limits and number of other reseller customer's that share the same physical hardware. Prices increase as a reseller uses more of the physical hardware with dedicated and semi-dedicated reseller hosting costs approaching that of Cloud Computing or equipment outsourcing configurations.

The idea behind Reseller Hosting is that OIT would be the reseller host and would be responsible for reselling accounts and services to campus customers. Pricing would be on a tiered level depending on the type of service and support needed / required by the customer. For evaluative information on resellers, see the notes at the end of this proposal.

Costing estimates [1] : $3,372 /yr. Most vendors will waive setup fees.

- contract to become a reseller host [2] for NC State sub-domains: $241/month = $2892/year
    - this is for a dedicated host with root access totally managed

- purchase[2] 20GB of backup for our services: $40/month = $480/year

Our proposal

We would like to pilot a project to explore both of the implementation options. We see the project taking approximately three to four months to complete. At the end of the project, we will make a recommendation of how best to meet the web service needs of campus. To assist us in making this recommendation, we will be creating a list of requirements and resources that each proposed implementation will require. Financial, people, time, and physical resources will all be part of the evaluation criteria. We estimate that this pilot will take 1 to 1.5 FTE's to complete; this would be spread across several people/departments. Currently we are looking at the expertise of our current Drupal Admin team plus the expertise of our hosted services group. We are asking for $5,000 for this pilot project; this will allow us to explore both options and provides a small cushion in case we have any incidentals.

[1] = Pricing based on a one-year license.
[2] = Based on a single quote from The Planet

Notes on services

For evaluative information on LAMP service models:
Several web sites rate these sites and their features; see My Bestrated Web Hosting, Best Hosts 2008, or Cheap Web Hosting for examples. The take away for everyday consumers is a buyer's market that offers many, many more packages than OIT will ever have resources to support in the current model. However, these services typically come with no support and/or limited support. However, there is a segment of campus that would be willing to take the risk of no support as long as that was spelled out clearly in our service level agreements.

Commodity Hosting Systems:
In Leong and Chamberlin's Garnter report titled Magic Quadrant for North American Web Hosting, 2008, they focus on commodity hosting systems, but the systems they discuss are different than where we believe we need to be going. The Gartner report deals with what is essentially machine room and equipment outsourcing from large providers such as AT&T, SunGuard, and Qwest. The focus of these companies is to essentially outsource the provisioning of equipment and allow IT staff to administer web and business services on this equipment. Some vendors also offer "Cloud Computing" which includes basic LAMP tools without the rich web applications or control panel packages standard with commodity hosting. While equipment outsourcing could save some capital cost, in the long run the more expensive labor resources are still required. Further, control panel, domain management and sales, and web application software packages would need to be acquired, packaged, and managed in the same way as if equipment was in-house in OIT's facilities at similar costs in time and labor.

Reseller Hosting companies:
Vendors such as Host Gator, Eleven 2, and Reseller's Panel are typical of the services and prices available with ranges from $30 to several hundred dollars per month. As with Leong's and Chamberlin's findings on equipment outsourcing companies, most reseller hosting review sites differentiate reseller hosts by their support team response rates and uptime

histories granting more favor to vendors that provided managed features behind the scenes such as firewall, server backup, and intrusion detection.

Infrastructure needs and changes:
Our current infrastructure and business models need to be rethought and updated so as to provide quality services and up-to-date technologies to campus, as well as to provide our staff the means to keep it manageable, scalable and supportable.

Infrastructure:
Our current AFS file system is not able to adequately grow and provide enhanced options as we move into more advanced and diversified web services. We'd like to see us move away from AFS for file storage; the PTS permissions model is too inflexible for most of our needs. This means, however, that we need an alternate way to make sure we have high availability and backups of the files, not to mention a possible change in how we handle login accounts.

We suggest that:

- files live in some sort of highly available file system accessible to the VM host system(s) that run the client host
- we have one (or more) login accounts on the web server to allow our users to manage their files
- the file system would need a backup arrangement (that possibly lives in the SMS)

Business processes:
Our business processes from billing to provisioning, backups, support, etc all need to be rethought. Our proposal includes two pilots that would allow us to consider various options and what the work flow for them might be.

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