







Partnership for International Research and Education A Global Living Laboratory for Cyberinfrastructure Application Enablement

"Deploying Research Applications In The Cloud"

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I. Research Overview and Outcome

Problem Statement

Today many important scientific applications and experiments are "anchored", limited to the software and hardware sources physically owned by or available to the institutions that are conducting the research.

What Is Cloud Computing?

Cloud computing is, simply put, "internet-based computing". It provides abstract layer of services to an consumers that allows them to avoid expensive installation and maintenance of software and hardware in order to accomplish commercial or research goals in a more cost-effective manner.

Research Results

The application chosen for this project was the **Rice University Bidding Information System** (RUBIS), an open-source e-commerce system modeled after eBay.com. Originally deployed on two local servers, the system was redeployed into the cloud using Amazon's Elastic Cloud (EC2) platform.

Over time, additional human and technical resources are required to maintain, upgrade, license, and scale these implementations. This results in increased complexity and monetary costs. Some areas driving these additional requirements include:

Hardware	Databases	Software	O/S
Research Objectives			

Redeploy an existing implementation from a locally-based platform to a cloud-based platform:

- Identify an application to redeploy
- Choose an available cloud platform
- Prepare the cloud-based environment
- Migrate the application software
- Build and populate the databases
- Integrate and test



http://insuranceecosystem.com/wp-content/uploads/2010/01/Cloud-Computing.jpg

Users of "the cloud" are able to deploy and execute applications on remote hosted by commercial platforms providers, without the need to invest in a costly physical infrastructure.



Future Work

Future work will focus on extending the current implementation:

- Modify the database to use Amazon RDS (Relational Database Service)
- Modify the model from an e-commerce to healthcare-related application
- Add mobile device support

II. International Experience

Tsinghua University

Our group of 7 students lived together in an apartment in the Wudaokou area of Beijing for 7 weeks. We were within walking distance of Tsinghua University, the Beijing subway and many restaurants and shops. Two students worked at nearby IBM China Research Laboratory (CRL), while the rest of us did our research at Tsinghua University.

Tsinghua University, founded in 1911, is considered one of the most prestigious universities in mainland China. It is home to nearly 27,000 students, almost half of which are post-graduates. Some of the brightest minds in China have attended or are attending this university, and it was an honor to have the opportunity to collaborate and work directly with them.





The Great Wall of China

Perhaps our most memorable outing was to the famed Great Wall of China. We visited an un-restored section near the village of Zhihuigu in the Huaiyou district. It was a challenge of strength and perseverance in order to reach the top of one of the nearby watch towers. The Great Wall is over 5,000 miles in length and sections of it are more than 2,500 years old.







Tian'anmen Square, Forbidden City, Beijing Zoo & Aquarium

Just a short subway ride from Wudaokou is Tian'anmen Square and Forbidden City, which are across the street from each other. The Beijing Zoo & Aquarium

Those of us studying at Tsinghua worked the Future Internet Technology IN Research Center building (FIT), located just inside the south gate of the campus. We were not in Beijing long enough to explore the entire campus, and were still discovering new areas even on our last day there.



was also less than 20 minutes away.

In the Forbidden City, you can literally walk around for an entire day and not see it all. An imperial palace during the Ming and Qing Dynasties, it is largest palace complex in the world with nearly 1,000 buildings. Some of the structures are 500 years old, and the area marks the very center of Beijing.



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