



# **State of Idaho Cloud Computing Pilot**

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# Cloud Computing Pilot

- **Platform As A Service (PaaS)**

- An integrated hardware/software environment hosted off premise, providing everything needed to develop and operate an automated application, and delivered as a service.
- You build the application to provide a function you need and run it on someone else's computer.

- **Software As A Service (SaaS)**

- Business applications such as email that are hosted off premise and delivered as a service.
- Someone else builds the application to provide a function you need and runs it on their computer or on a computer other than yours.

# Why Cloud Computing ?

**Business**

**Continuity**

**flexibility**

**Cost Efficiency**

**focus**

**agility**

**No Startup  
Capital**

**Fault Tolerance &  
Rapid Recovery**

**remote  
access**

**Economies of Scale**

**collaboration**

**disaster  
recovery**

# Cloud Computing Pilot

- Cost and Operational Efficiency
  - Pay only for what you use.
  - No startup capital expenditures.
  - No infrastructure procurement, installation and maintenance costs or delays.
  - Processing capacity can be added almost instantly and without limit and eliminated just as quickly.
  - Savings on Department PaaS pilot since the January 1 of 2011 has been 82%.
  - Savings on Department email on the cloud (SaaS Pilot) is **ESTIMATED** to be around 65%.
  - Public Clouds/Massive Economies of Scale/Low Unit Costs.
  - Built in Disaster Recovery/Business Continuity

# Cloud Computing Pilot

- Platform as a Service – Microsoft Azure
  - Job Search Web Service.
    - Application converted to Azure in October, 2010.
    - Conversion primarily involved reconfiguring for the cloud.
    - Conversion accomplished using Visual Studio 2010.
    - Changes were minor—would take about 3 hours today.
  - Job Search was migrated to Azure in November of 2010.
  - At first 50% of job searches were directed to Azure.
  - Starting in late December of 2010, 100% of job searches were directed to Azure.
  - We have had absolutely no problems running the Job Search Web Service in Azure. In fact it operates better in the cloud than it did on-premise.
  - Our biggest concern with Azure is not being able to use it after the end of the pilot in September.

# Cloud Computing Pilot

- Platform as a Service – Microsoft Azure
  - Job Search Web Service
    - Called by IdahoWorks – Labor’s Internet-based Service Platform.
    - Searches through national and state job databases using search criteria (22 GB) sent from IdahoWorks.
    - Returns a listing of jobs (620 GB) meeting the search criteria.
    - Minimum of 2 virtual machines/servers running at all times.
    - Virtual machines added when average CPU utilization hits 60%. Accomplished by an on premise Windows service.
    - Virtual machines terminated when average CPU utilization hits 30%.
    - Customer response times are thus always optimal.

# Cloud Computing Pilot

- Platform as a Service – Microsoft Azure
  - Job Search Web Service
    - January had 3.7 million job search transactions; February had 3.6 million; March had 4.1 million.
    - January cost \$299.99; February cost \$313.40; March cost \$360.54.
    - On premise cost last year averaged \$1,700 per month
      - On premise cost based on 3 virtual machines.
        - » Number of Servers static.
      - Azure cost includes up to 5 virtual machines.
        - » Number of Servers dynamic depending on load.
    - Azure Pilot has proven to be a huge success!

# Cloud Computing Pilot

- Software as a Service – Email (Microsoft Exchange)
  - Preparations are underway for Microsoft’s SaaS platform which is called Office 365.
    - Office 365 includes Microsoft Exchange (Email), SharePoint (Collaboration), Lync (Communications), and Office.
      - Office 365 is Linked to Office 2010 on the desktop/laptop for a seamless interface with the cloud.
    - Active Directory Federation Services has been installed and configured.
    - Directory Synchronization has been installed and configured.
    - On-premise Exchange 2010 Server has been installed and configured. (Required to migrate users to and from Office 365.)
  - Pilot will begin when the final Office 365 is released and the Department is able to migrate all email users to it.

# Cloud Computing Pilot

- Software as a Service – Email (Microsoft Exchange)
  - Testing of the Beta release of Office 365
    - Created an Azure application to test sending email between two cloud infrastructures using an on premises account. Test was successful.
    - Successfully tested user account creation in Office 365 and Active Directory synchronization between on premise and Office 365.
    - Created mailbox in test domain and successfully migrated mailbox to Office 365. More tests with groups of mailboxes underway.
    - Had various Department staff use Office 365 on a test basis.
    - Numerous technical issues have been overcome and documented.
    - Microsoft support team for the Office 365 Beta was implemented within the last month so answers to some questions are hard to get.

# Cloud Computing Pilot

- Remaining Issues
  - RFP for PaaS—Joint effort with OCIO and the Division of Purchasing.
    - Hopefully completed by September so the Job Search web service can be left on Azure instead of moving it back on premise.
  - Total Data Encryption in Azure/Explore TDE alternatives.
  - Commercial Release of Office 365—When will it happen?
  - Create plan to migrate all Idaho Department of Labor email users to Office 365.
  - Test Office 365 migration plan on a small organizational unit.
  - Migrate all Department of Labor email users to Office 365.
  - Gather actual data on cost, reliability, functionality, etc.
  - Determine whether Software as a Service, specifically email, is something the state wants to pursue.
  - If yes, work with the OCIO to Develop an RFP for SaaS.
  - If no, Migrate Labor back to on premise and eventually ICS.

# **Cloud Computing Pilot**

**Questions?**