

Cloud Computing: Risky AND Ready for Prime Time

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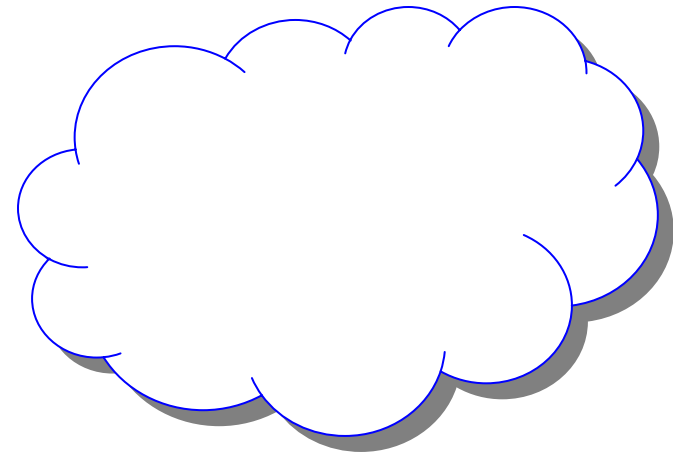
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Contractor Accountability Mission, Army Materiel Command

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National Highway Traffic Safety Administration
Department of Transportation

4 August 2009

Panel Agenda

- ▶ **Introduction and Session Overview**
- ▶ **Cloud Computing:**
 - who, what, why?
 - The Cloud and federal IT
- ▶ **How can cloud computing could be applied to my challenges?**
 - Contractors on the Battlefield (LTC Faulkner)
 - Cash for Clunkers (Dan Pitton)
- ▶ **Questions and Discussion**
- ▶ **Session Summary**



NIST defines cloud computing as a set of characteristics, delivery models, and deployment models

“Cloud computing is a pay-per-use model for enabling available, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

5 Characteristics

- ▶ *On-demand self-service*
- ▶ *Ubiquitous network access*
- ▶ *Resource pooling*
- ▶ *Rapid elasticity*
- ▶ *Pay per use*

3 Delivery Models

- ▶ *Software as a Service (SaaS)*
- ▶ *Platform as a Service (PaaS)*
- ▶ *Infrastructure as a Service (IaaS)*

4 Deployment Models

- ▶ *Private Cloud*
- ▶ *Community Cloud*
- ▶ *Public Cloud*
- ▶ *Hybrid Cloud*

Cloud Computing Trends in Industry and Federal Government

- ▶ Industry is leading the way to implementing Cloud Computing
 - Amazon’s EC2 (Elastic Cloud Compute) product offering allows for rapid deployment of computing power into the cloud all the while allowing its customers to pay for only what compute power they use at that point in time.
 - Google is offering several SaaS (Software as a Service) solutions, most notably is its Gmail e-mail service for businesses.
 - VMware is an industry leader in virtualization who has released what is being called the first cloud operating system with their vSphere product this past April. This operating systems will further drive customers to become “cloud-enabled.”

- ▶ However, the U.S. government has several ongoing Initiatives
 - Obama Administration Priorities include Cloud Computing
 - “The cloud will do for government what the Internet did in the ‘90s...It’s a fundamental change to the way our government operates by moving to the cloud. Rather than owning the infrastructure, we can save millions.” ~ Vivek Kundra, Federal CIO **
 - DISA is developing RACE to provide an unclassified cloud for DoD

Moving federal IT to cloud computing won't be easy Be Prepared to Address the most common responses:

▶ Objections or Concerns about...

- Security requirements, either existing or imposed
- Migration costs that will be incurred by government agencies
- Using a “middleman” to obtain cloud computing resources.
- Concerns about GSA/DISA’s abilities to provide “yet to be proven” services across Government.
- Significant investments that have been made in operational government data centers that cloud computing services will soon replace.
- Ability to enforce service level agreements (SLAs)

▶ In order to be successful, organizations need to establish...

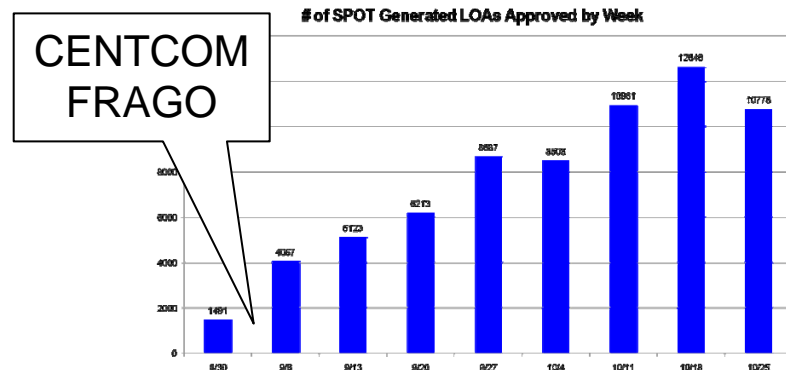
- The business case for potential customers: ROI, payback period, etc.
- Appropriate service charges and charge-back models
- New billing policies and procedures, as well as automated mechanisms.
- Incentive program around cloud computing, allowing agencies to clearly see the value proposition of cloud computing on their mission/business.

Department of Defense Scenario: Tracking Contractors on the Battlefield



- ▶ **Mission:** SPOT is the single, joint enterprise system employed for the management, tracking and visibility of contractors accompanying U.S. forces in support of contingency operations.
 - Generates Letters of Authority (LOA) for contractors deployed to CENTCOM AOR.
 - Uses point of service scans of contractor's credentials to verify a person's identity, track movements, and provides commanders up-to-date visibility of contractor assets and capabilities
- ▶ **Critical Event:** in September 2008, the CENTCOM Commander issued a Fragmentation Order (FRAGO) mandating use of SPOT for all contingency contractor deployments
 - With the FRAGO, the program now had a "stick" to force usage
 - Program was unable to forecast impact
 - Insufficient time to prepare (assess capacity, acquire HW, conduct performance testing)

- ▶ **Impact:** Overnight, system usage spiked
 - The FRAGO restricted entry and exit for all contractors in theatre without an approved LOA
 - Initial surge in calls to help desk to get registered on system
 - Second wave was felt when new users overwhelmed the computing capacity
 - Resulted in a 4-fold increase in LOAs generated within the 1st week leading to 10x within a month.



Cloud Computing's potential impact on SPOT

- ▶ Benefits of implementing SPOT in the Cloud:
 - Minimize impact of peak usage by adding computing capacity on demand and bursting to other clouds when needed.
 - Significantly reduce number of calls to help desk regarding slow performance – enable call center staff to focused on solving real user problems instead
 - Avoid the cost and time acquiring and configuring excess capacity in advance of unknown requirements.
- ▶ Critical risks to cloud computing
 - How to ensure that data is secure when you don't control the servers and storage that it is using in the cloud?
 - Who is responsible for accrediting the cloud(s) that you will operate in?
 - How to ensure that you receive services when other applications may "trump" your priority?
 - How do you ensure throughput to authoritative data stores?
- ▶ What would it take for SPOT to shift to a cloud computing model?
 - "**Cloud-enable**" the **ALTESS datacenter** and business model
 - **Reduce time to add capacity from days to minutes** by dynamically allocating virtual servers
 - Implement a monitoring capability that **adds resources based on demand** (currently provide only "report what you see" status monitoring with whatsappgold)
 - Create a "**pay for what you use**" cost model (currently pay a flat fee to host based on high level SLA's)
 - **Provide burst support** by establishing relationship with other private, public, community clouds
 - **Retrain staff** to operate using new framework, policies, and procedures

National Highway Traffic Safety Administration: CARS- Using the Cloud!

The screenshot shows the CARS website interface. At the top, there is a green header with the CARS logo (a car icon inside the letter 'A') and the text 'car allowance rebate system'. To the right of the logo is a link for 'Español'. Below the logo are four navigation buttons: 'DEALER LOCATOR', 'CARS FAQ', 'OFFICIAL INFORMATION', and 'FUELECONOMY.GOV'. The main content area features a green circular icon with a car and the heading 'What is the Car Allowance Rebate System?'. The text explains that CARS is a \$1 billion government program that helps consumers buy or lease a more environmentally-friendly vehicle from a participating dealer when they trade in a less fuel-efficient car or truck. It also mentions that consumers can receive a \$3,500 or \$4,500 discount and that they do not need to register anywhere. A link 'click here' is provided for more information. Below this, there is a link 'here' for more information about fraud prevention. At the bottom of the main content area, there is a link 'Check back to this site often for updates and further information.' and a link 'Download a printable PDF' with three numbered circles (1, 2, 3) indicating the number of pages. On the right side, there is a green sidebar with the heading 'OFFICIAL GOVERNMENT SITE'. It includes the U.S. Department of Transportation logo and the text 'National Highway Traffic Safety Administration'. Below this, there are links for 'HOTLINE: (866)-CAR-7891' and 'TTY: (800)-424-9153'. There is also a section for 'HOURS OF OPERATION' with the following times: 'MON - FRI: 8A - 10P', 'SAT - SUN: 10A - 8P'. At the bottom of the sidebar, there is a link for 'MEDIA INQUIRIES ONLY: (202)-386-8550'. Below the sidebar, there are three green buttons: 'HOW WILL CARS WORK?', 'CARS FAQ', and 'DEALERS'.

Spanish

CARS
car allowance rebate system

DEALER LOCATOR CARS FAQ OFFICIAL INFORMATION FUELECONOMY.GOV

What is the Car Allowance Rebate System?

The CAR Allowance Rebate System (CARS) is a \$1 billion government program that helps consumers buy or lease a more environmentally-friendly vehicle from a participating dealer when they trade in a less fuel-efficient car or truck. The program is designed to energize the economy; boost auto sales and put safer, cleaner and more fuel-efficient vehicles on the nation's roadways.

Consumers will be able to take advantage of this program and receive a \$3,500 or \$4,500 discount from the car dealer when they trade in their old vehicle and purchase or lease a new one. Consumers you do not need to register anywhere or at anytime for this program. However, to find out eligibility requirements [click here](#).

What is NHTSA doing to guard against fraud? Click [here](#) for more information. Allegations of fraud may be reported by calling our toll-free 24-hour hotline at 1-800-424-9071.

Check back to this site often for updates and further information.

[Download a printable PDF](#) 1 2 3

OFFICIAL GOVERNMENT SITE

U.S. Department of Transportation
National Highway Traffic Safety Administration

HOTLINE: (866)-CAR-7891
TTY: (800)-424-9153

HOURS OF OPERATION
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HOW WILL CARS WORK?

CARS FAQ

DEALERS

National Highway Traffic Safety Administration: CARS- Using the Cloud!

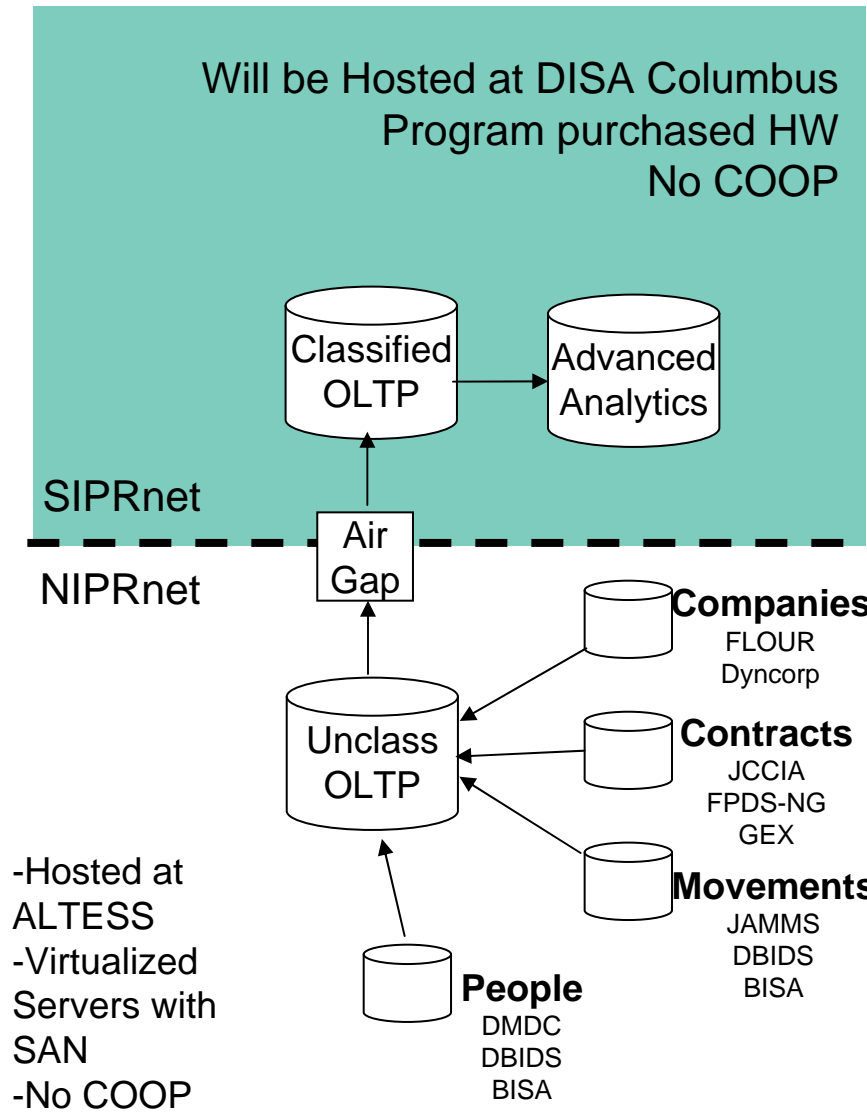
- ▶ **NHTSA Mission: Save lives, prevent injuries and reduce economic costs due to road traffic crashes, through education, research, safety standards and enforcement activity.**
- ▶ **The Task:**
 - **Consumer Assistance to Recycle and Save Act of 2009 (Cash for Clunkers)**
 - **Immediate roll out required**
- ▶ **The Solution**
 - **Cloud Computing: why, how, who**
- ▶ **The “Rest of the Story (“ ... and here’s what we found....”)**
 - **Know your Clouds**
 - **Security –pros and cons**
 - **Core Competencies- ours and theirs!**

Summary, Questions and Discussion



Backup slides to be removed from the presentation

SPOT As-Is.....Could-be



- ▶ Host in a secure cloud (Race)
 - Provide COOP Failover and Redundancy
 - Improve Reliability and Performance
 - Capacity on Demand – Scale to 3x users and 10x data
 - Tactical Cloud to support Tsunami Deployments

- ▶ Data as a service
 - Advanced Analytics –RDEC-like capability
 - Processing of data to support integration with external personnel and movement data – for reporting, and to repackage and deliver value added services
 - Tactical Cloud –support to enable decision making based on SPOT data while in austere environments (remote CENTCOM, Katrina-like situations)

- ▶ Software as a service
 - Right Now - Call Center: Web service delivery through cloud to support fluctuations in usage volume based on operational requirements (LOGCAP changeover)