Federal Cloud Computing Initiative
Overview
Program Status

• To support the Federal Cloud Computing Direction and Deployment Approach, the ITI Line of Business PMO has been refocused as the Cloud Computing PMO

• Building on ITI LoB Initiative
  – Infrastructure defined
    • Consensus model
    • Metrics
    • Key Focus Areas
  – Key Themes: consolidation and virtualization

• Cloud Computing Initiative
  – Continue the migration towards a services-based environment that is technology and vendor-agnostic
  – Enable rapid deployment of technology solutions for the Federal government without developing stove-pipes
  – Enable scalability for existing and new capabilities
  – Increase savings through virtualization
  – Potentially reduce cost of infrastructure, buildings, power, and staffing
  – Improve the government's ability to create a transparent, open and participatory government
Building Upon the ITILoB Effort

ITILoB

- Established a vision for Government-wide ITI Optimization
- Created a collaborative governance framework involving 23 Federal Agencies
- Captured and analyzed critical information in terms of:
  - Optimization strategies
  - Common Solutions
  - Performance Metrics
  - IT Infrastructure Tools used across Government
- Benchmarked Federal ITI Data

Cloud Computing

- Will use the information gathered through the ITILoB effort to deploy “Common Solutions” using a Cloud Computing technology platform
- This initiative will:
  - Follow a service oriented approach
  - Be based on agency business needs
  - Maintain a collaborative governance framework

GOAL: To achieve an optimized, cost-effective, government-wide information technology infrastructure that supports agency mission, while providing reliability and security in service delivery.
“The Federal technology environment requires a fundamental reexamination of investments in technology infrastructure.”

“The Infrastructure Modernization Program will be taking on new challenges and responsibilities. Pilot projects will be implemented to offer an opportunity to utilize more fully and broadly departmental and agency architectures to identify enterprise-wide common services and solutions with a new emphasis on cloud computing.”

“The Federal Government will transform its Information Technology Infrastructure by virtualizing data centers, consolidating data centers and operations, and ultimately adopting a cloud-computing business model.”

FY2010 Federal Budget
Analytical Perspectives
Cross Cutting Programs
Cloud Computing Definition

“Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics, three delivery models, and four deployment models”.

NIST

Definition of Cloud Computing, Draft version 14
http://csrc.nist.gov/groups/SNS/cloud-computing/index.html
Five Characteristics:
- On Demand Service
- Ubiquitous Network Access
- Location Independent Resource Pooling
- Rapid Elasticity
- Measured Service

Delivery Models
- Software as a Service (SaaS)
- Platform as a Service (PaaS)
- Infrastructure as a Service (IaaS)

Deployment Models
- Private Cloud
- Community Cloud
- Public Cloud
- Hybrid Cloud
Government Cloud Computing Framework

Cloud User Tools

Application Integration
- API's
- Workflow Engine
- EAI
- Mobile Device Integration
- Data Migration Tools
- ETL

User/Admin Portal
- Customer/Account Mgmt
- User Profile Mgmt
- Order Mgmt
- Trouble Mgmt
- Billing/Invoice Tracking
- Product Catalog

Reporting & Analytics
- Analytic Tools
- Data Mgmt
- Reporting
- Knowledge Mgmt

Core Cloud Services

Software as a Service (SaaS) / Applications
- Citizen Engagement
  - Wikis / Blogs
  - Social Networking
  - Agency Website Hosting
- Gov Productivity
  - Email / IM
  - Virtual Desktop
  - Office Automation
- Gov Enterprise Apps
  - Business Svcs Apps
  - Core Mission Apps
  - Legacy Apps (Mainframes)

Platform as a Service (PaaS)
- Database
- DBMS
- Testing Tools
- Directory Services

Infrastructure as a Service (IaaS)
- Storage
- Web Servers
- Server Hosting
- CDN
- Virtual Machines

Service Mgmt & Provisioning
- Service Provisioning
- SLA Mgmt
- Performance Monitoring
- DR / Backup
- Operations Mgmt

Security & Data Privacy
- Data/Network Security
- Data Privacy
- Certification & Compliance
- Authentication & Authorization
- Auditing & Accounting

Data Center Facilities
- Routers / Firewalls
- LAN/WAN
- Internet Access
- Hosting Centers

Cloud Service Delivery Capabilities

DRAFT - GSA OCIO INTERNAL USE ONLY
## Delivery Model Overview

<table>
<thead>
<tr>
<th>Model</th>
<th>Capability Provided</th>
<th>Example Services</th>
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| SaaS  | To use the provider’s applications running on a cloud infrastructure and accessible from various client devices through a thin client interface such as a Web browser | - Citizen Engagement (Wikis, Blogs, Data.gov)  
- Government Productivity (Cloud based tools)  
- Business Enablement (Salesforce.com)  
- Enterprise Applications (Core Mission & Business Svcs) |
| PaaS  | To deploy onto the cloud infrastructure consumer-created applications using programming languages and tools supported by the provider (e.g., java, python, .Net) | - Database and Database Management Systems  
- Developer / Testing Tools  
- Virtual Environments |
| IaaS  | To provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications | - Computing  
- Storage  
- Application hosting |
Deployment Model Overview

PRIVATE CLOUD
Operated solely for an organization.

PUBLIC CLOUD
Made available to the general public or a large industry group and is owned by an organization selling cloud services.

COMMUNITY CLOUD
Shared by several organizations and supports a specific community that has shared concerns

HYBRID CLOUD
Composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability.
Benefits

• Rapid provisioning and deployment of services

• On-demand scalability and elasticity for new services and capabilities

• Creation of a services-based environment that is interoperable and standards-based

• Opportunity for Cost Savings
  – Leverages economies of scale
  – Promotes innovation and service sharing
  – Allows for “Measured” Payment (Pay per Use)

• Enables agencies to reinvest in, and concentrate on, core mission objective
# Phased Approach for Delivering Cloud Computing

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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<tr>
<td><strong>Target Apps</strong></td>
<td>Light-weight collaboration &amp; productivity tools and basic infrastructure / platform</td>
<td>Rich productivity tools, enhanced platform capabilities</td>
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</tbody>
</table>
| **Cloud Delivery Models** | Commercia
| ily Available Public Clouds | Public and Outsourced Private Clouds | Private and Hybrid Clouds |
| **Procurement** | Advantage, BPA | Smart-Buy, BPA, Directed RFP | Smart-Buy, BPA, Directed RFP |
| **Security** | Low-Impact FISMA Security | Low and Medium Impact FISMA Security | Low, Medium and High Impact FISMA Security |
| **Software as a Service (SaaS)** | TARGET AVAIL: Aug 2009 | TARGET AVAIL: Nov 2009 | TARGET AVAIL: Jun 2010 |
| **Platform as a Service (PaaS)** | TARGET AVAIL: Sep 2009 | TARGET AVAIL: Jan 2010 | TARGET AVAIL: Apr 2010 |
| **Infrastructure as a Service (IaaS)** | TARGET AVAIL: Sep 2009 | TARGET AVAIL: Feb 2010 | TARGET AVAIL: Mar 2010 |
Progress to Date

1. Established and staffed the Cloud Computing PMO under the GSA OCIO

2. Created a Federal Cloud Computing Executive group comprised of Federal Agency CIOs and Executives

   • Federal Cloud Computing Executive group and Executives of leading IaaS and SaaS service providers discussed the readiness and viability of private industry to accommodate Federal Government business needs and requirements.


5. Issued an RFI for IaaS
   [Link to RFI]

6. Issued a data call to Federal Agencies requesting information on current Cloud Computing-related projects. Information will be used to:
   • Assess projects for cross-agency use
   • Facilitate future Federal Cloud Computing service acquisition and deployment planning
1. Met with the FEA PMO to begin discussions on integrating Cloud Computing Planning with the Enterprise Architecture reporting cycle.

2. Developing a Federal Cloud Computing Concept of Operations

3. Developing a Web-Based GSA Cloud Computing Storefront
   • Will allow Federal Agencies to buy Cloud Computing services through a GSA website, as needed

4. RFQ for IaaS
Upcoming Activities

- Finalize Phase 1 Service Definition and Procurement
- Finalize Federal Cloud Computing Concept of Operations
- Continue Cross Agency Collaboration
  - Meet with NASA and Department of Defense
  - Analyze Federal Agency responses to Cloud Computing Data Call
  - Continue Collaboration with FEA PMO
- Launch GSA Cloud Computing Storefront
- Continue to Facilitate Cloud Computing Governance
  - Weekly Executive Meetings
  - Monthly Cloud Computing Governance Meetings
  - Publish Activity Reports and Findings onto OMB’s MAX
Governance Structure

- **CIO Council**
  - Strategic Objective Definition
  - Overall Guidance
  - Adjudication

- **Cloud Computing Executive Steering Committee (ESC)**
  - Strategic Direction
  - Priority Setting
  - Issue Resolution
  - Approval

- **PMO (GSA)**
  - Day to Day Management of the Federal Cloud Computing Initiative
  - Development of required deliverables;
  - Provide Technical Guidance and Subject Matter Expertise

- **Cloud Computing Advisory Council (AC)**
  - Provide Collaborative Federal Agency Input & Feedback for Cloud Computing Initiatives/Deliverables;
  - Support the PMO and Cloud Computing Sub-Committee with Federal Subject Matter Expertise
  - Approve Cloud Computing deliverables for submission to the Cloud Computing ESC
  - Cross Functional Collaboration
## Executive Committee Roles and Membership

<table>
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<tr>
<th>Mission</th>
<th>Membership</th>
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| To provide executive level strategic guidance and direction for the Federal Cloud Computing Initiative | Chair: Casey Coleman, GSA CIO  
Carl Staton, DOE Deputy CIO Members:  
• OMB  
• Federal Agency CIOs & Executives |
| To provide review and approval of Cloud Computing PMO and Working Group deliverables, as appropriate |  |
| To provide a regular interface with OMB and the Federal CIO |  |
| To provide Executive-level sponsorship of the Cloud Computing initiative’s plans and direction so that they are effectively carried out at the Agency-level. |  |
| To set priorities for the Federal Cloud Computing initiative, in consultation with OMB and the Federal CIO. |  |
# Advisory Council Roles and Membership

## Mission

- To provide Federal Agency subject matter expertise in support of the Federal Cloud Computing initiative and the ESC’s strategic direction;
- To provide/represent Federal Agency Cloud Computing issues, requirements, and business needs;
- To effectively disseminate the approved Federal Cloud Computing vision, strategy, and plans throughout their respective agencies. Facilitate Agency outreach activities;
- To review the Federal Cloud Computing PMO’s deliverables, as appropriate and to provide specific feedback;
- To enable cross-functional collaboration with other related Federal initiatives – such as TIC, IPv6, FDCC, etc.
- To share best practices and current activities

## Membership

**Chair:**
Peter Tseronis, Deputy Associate CIO, DOE

**Membership:**
- Federal Agency IT Infrastructure Representatives
- Federal Enterprise Architects
Katie Lewin – mary.lewin@gsa.gov
Questions / Open Discussion