NIST Cloud Computing Program Overview

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National Institute of Standards and Technology (NIST)
Cloud Computing Role

NIST Cloud Computing efforts are consistent with the NIST mission:

“To promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.”

Cornerstone: Advancing Standards Development

• government needs to work collaboratively with private sector
Goal of this briefing – summarize progress since May 2010 & set the stage for the next phase of our work together

- Introduce NIST Strategic Cloud Computing Initiative

Goal: Work together with Federal Chief Information Officers, Industry and Standards Developing Organizations to define a USG Cloud Computing Roadmap

How to build a roadmap:

1. Define Target USG Cloud Computing Business Use Cases

Concurrent & Iterative 3-step process
UPDATE: NIST Tactical projects
what we said we would do in May 2010… and what we’ve done

Special Publications:
1. SP 800-125, DRAFT *Guide to Security for Full Virtualization Technologies*, July 2010

**Complex Information Systems Measurement Science** -- Cloud Computing Simulation Model in Progress

**Technical Advisor to Federal CIO Council** Cloud Computing Executive Steering Committee, Cloud Computing Advisory Council, Standards & Security Working Groups

**Standards Acceleration to Jumpstart Adoption of Cloud Computing (SAJACC)**

*Koala* – simulating an Infrastructure as a service (IaaS) Cloud system

Objectives:

(1) Compare behavior of proposed resource allocation algorithms for IaaS clouds

(2) Discover and characterize complex behaviors that may emerge in IaaS clouds

Early 2011 -- Target timeframe to share initial project findings


*Previous work investigated proposed Congestion Control Mechanisms or the Internet – see NIST Special Publication 500-282  [http://www.nist.gov/itl/antd/Congestion_Control_Study.cfm](http://www.nist.gov/itl/antd/Congestion_Control_Study.cfm)*
Recommendations –
“Federal Risk & Authorization Management Program” concept


Draft Security controls: selected from NIST SP 800-53 Recommended Security Controls for Federal Information Systems

- For low & moderate security impact cloud information systems
- Authorizing officials & information system owners have the authority & responsibility to define requirements and security plans which define how the controls are implemented.
Update: Standards Acceleration to Jumpstart Adoption of Cloud Computing (SAJACC)

SAJACC goal is to help solve the problem:

“How do we support the adoption of a new complex technology during the interim period between when standards are needed and when they are available, and how do we develop standards more quickly?”

SAJACC is: Project, Process & Portal
SAJACC: What does it look like? Where are we?

Portal (version 1)

Sept. 2010 -- public Internet accessible website

Nov. 2010 -- populated with draft use cases

Plan -- iteratively & incrementally populate portal

• documented interfaces
• pointers - reference implementations
• test results

Enable interoperable cloud computing before finalized standards

Faster standards development
NIST Strategy to Develop a Cloud Computing Roadmap
-- Why?  Why Now?

• NIST Strategic & Tactical Cloud Computing program initiated in parallel

• Tactical efforts are fundamental to support adoption of any new emerging technology

• Tactical projects are necessary, but not sufficient to aggressively respond to the rapid pace of Cloud Computing services evolution
NIST Strategic Cloud Computing Program Timeline

**May 2010**
- Outreach & Fact finding with USG, Industry, SDOs
- Evaluate past models & lessons learned

**Nov 2010**
- Define fresh approach to support secure & effective USG cloud computing adoption, prioritize interoperability, portability, & security requirements, collaborate, more quickly respond to operational needs
- Launch CC Strategic Program
- Initiate Stakeholder meetings

**March 2011**
- Execute CC Strategic program
- Continue Stakeholder meetings
- Integrate results into tactical priorities

**Tactical efforts**
NIST Strategy to Develop a USG Cloud Computing Roadmap

1. Define Target USG Cloud Computing Business Use Cases
   - Priorities
   - Risks
   - Obstacles
NIST Strategy to Develop a USG Cloud Computing Roadmap

1. Define Target USG Cloud Computing Business Use Cases
   - priorities
   - risks
   - obstacles

2. Define Neutral Cloud Computing Reference Architecture & Taxonomy
   - Expanded CC Definition
   - ref. architecture
   - Reference implementations
NIST Strategy to Develop a USG Cloud Computing Roadmap

1. Define Target USG Cloud Computing Business Use Cases
2. Define Neutral Cloud Computing Reference Architecture & Taxonomy
3. Generate Cloud Computing Roadmap -- iteratively Translate, Define & Track Cloud Computing Priorities

- Expand CC Definition ref. architecture
- Reference implementations
- Priorities
- Risks
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NIST Strategy to Develop a USG Cloud Computing Roadmap

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Prioritized Tactical Requirements & Deliverables
- Performance based interoperability, security, portability standards requirements (SAJACC)
- Guidance
- Prototypes
- Pilots
- R&D priorities
- Policies
Overview:

- GSA related efforts,
- Lessons Learned,
- Review of the NIST Strategy to Develop a Cloud Computing Roadmap; Process & Working logistics

Please sign up today for a Nov. 5 AM & PM breakout session

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