

Cloud Computing Forum & Workshop II Standards Panel

Moderators:

Mike Hogan & Teresa Schwarzhoff

November 4, 2010

Standards Panel

- **Stephen Diamond**, Chair, IEEE Cloud Computing Initiative, General Manager, Industry Standards Office and Global Standards Officer, EMC Corporation, Office of the CTO
- **Winston Bumpus**, Director of Standards Architecture at VMware, DMTF President
- **Mark A. Carlson**, Principal Cloud Strategist at Oracle, SNIA
- **Babak Jahromi**, Microsoft, INCITS DAPS 38
- **Alan Sill**, Vice President of Standards, Open Grid Forum

Standards Panel

- Each panel member will have up to three minutes for opening remarks.
- The panel moderators have prepared eight questions for discussion by the panel.
- Remaining time will be for audience questions.
- Information and issues that are raised by this panel session will be further pursued at Session 3 - *Cloud Standards* on Friday morning.

NIST Cloud Computing Forum & Workshop II

Standards Panel

Steve Diamond

Chair, IEEE Cloud Computing Initiative

General Manager, Industry Standards Office

Global Standards Officer

EMC Office of the CTO

***NIST Cloud Computing Forum & Workshop II
4-5 November 2010, Gaithersburg, MD, USA***



About IEEE

- World's largest professional association dedicated to advancing technological innovation
- 395,000 members in 160 countries
- 45 technical societies and councils
- 148 transactions, journals, and magazines
- More than 2.5 million documents in Xplore
 - More than 7 million downloads per month
- Over 1,100 conferences in 73 countries

IEEE Standards Association

- Globally recognized standards setting body
 - 913 active, published standards
 - Over 400 standards in development

- Addresses all stages of standards lifecycle
 - Early industry consensus building (Industry Connections)
 - Formal, open standards development (individual or entity-based)
 - Industry association/consortium development (IEEE-ISTO)
 - Internationalization (relationships with ISO, IEC, etc.)
 - Conformity assessment & interoperability testing (ICAP)
 - Patent pool creation (Via Licensing)
 - Repositories of shared data, unique identifiers, etc. (Registration Authority)

IEEE Cloud Computing Initiative

- Periodicals
 - ~25 with cloud computing content
- Conferences
 - ~25 with cloud computing content
- Educational Activities
 - Webinar Series in development
- Standards
 - IEEE/CSA cloud security standards survey and panels
 - CLOUD 2010 standards panel
 - IEEE CCSSG
 - CloudCom 2010 standards panel and workshop



Cloud Standards Panel

NIST Workshop
4th November, 2010



Why aren't there any standards?

- My favorite line: “No Cloud Standards Yet”...
- But there are!
 - ◆ CDMI – SNIA Architecture – being adopted by cloud storage vendors
 - ◆ OVF – ANSI Standard (DMTF) – widely adopted by virtualizers
 - ◆ OCCI – Implemented in open source and projects
- But the vendors I want to buy from don't yet implement them
- How do we fix this?

- Any new standard has a “chicken and egg” problem
- Chicken: There are not enough provider implementations of the standard for me to use this interface
- Egg: There are no clients/customers asking for this support
- What are some of the ways we can “cross this chasm”?
 - ◆ Open Source Reference Implementations (code the Chicken)
 - ◆ Conformance Test Suites and Programs
 - ◆ Plug-fests to work out interoperability issues
- And ... Roadmapping Efforts by Major Customers (i.e, Govt's)
- Require Implementation of the Standard by
 - ◆ “Show it on your road map”

➤ Road Map of Standards Adoption

- ◆ “Wait and see” approach is hit and miss
- ◆ What Standards are available in what timeframe?
- ◆ What programs are in place to drive their adoption?
- ◆ Criteria for a “hard” requirement: Must implement or I won’t buy
 - 2 or 3 available implementations that meet other requirements for my use?

➤ Example: European FP7 project: SIENA

- ◆ Involvement of standards organizations right up front
- ◆ Involvement of **European Commission** representatives
- ◆ Involvement of stakeholder projects
- ◆ Developing Roadmap of standards adoption and when project require

<http://www.sienainitiative.eu>

Developing Grid and Cloud Standards on a Global Basis

Alan Sill, VP of Standards, Open Grid Forum



National Institute of Standards and Technology
Information Technology Laboratory

Cloud Computing Forum
and Workshop II

Nov. 4-5, 2010
Gaithersburg, MD

OGF Mission



- OGF is an open community committed to driving the rapid evolution and adoption of applied distributed computing. OGF exists to provide a vehicle for development of open standards of practical utility in such infrastructures.
- Our contributors and members consist of representatives of the largest-scale grid and cloud providers, with an emphasis on meeting the needs of participants from high transaction rate, high throughput and large-scale high performance computing projects.
- We are committed to an *Open, Community-Based* and *Democratic* process for standards development and organizational operations.

OGF Enjoys Support From Many Organizational Members and Sponsors



Emerald Sponsors
(OGF 30):



(Partial list as of
10/2010)

OGF Is Already Active In The Cloud!



- Over the past decade, OGF has developed a large number of standards in compute-, data-, and job management related areas that enjoy a high degree of adoption. (Summary at <http://www.ogf.org/standards/>)
- We have also produced related standards in cloud computing that are rapidly becoming the dominant ones in their categories, including
 - DFDL - Data Format Definition Language
 - OCCI - Open Cloud Computing Interface
- In total there are over *a dozen working implementations* of the above standards already in place!

Overview of Standards Areas



Applications	Architecture
Compute	Data
Infrastructure	Liaison
Management	Security

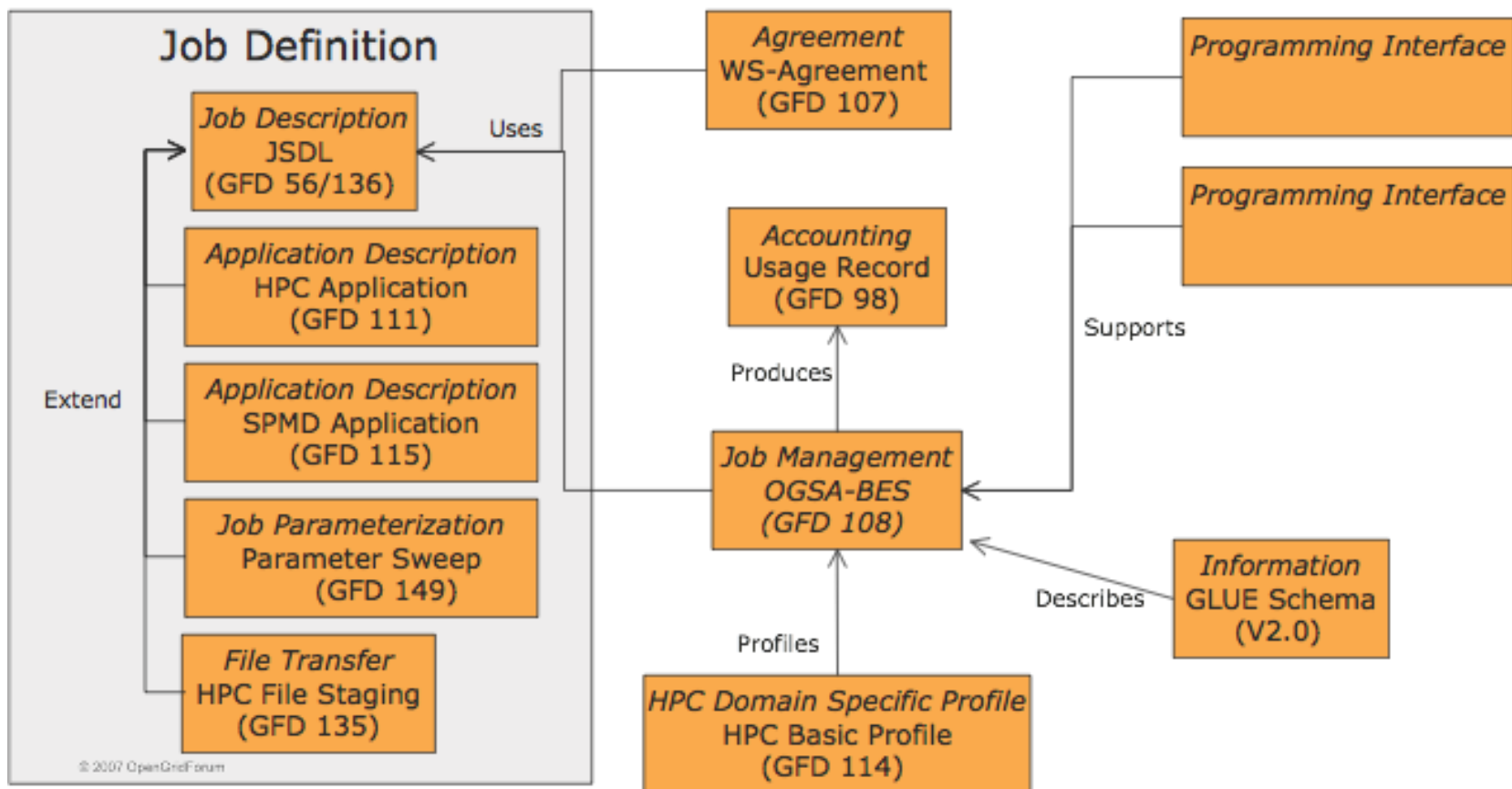
OGF Compute-Related Standards



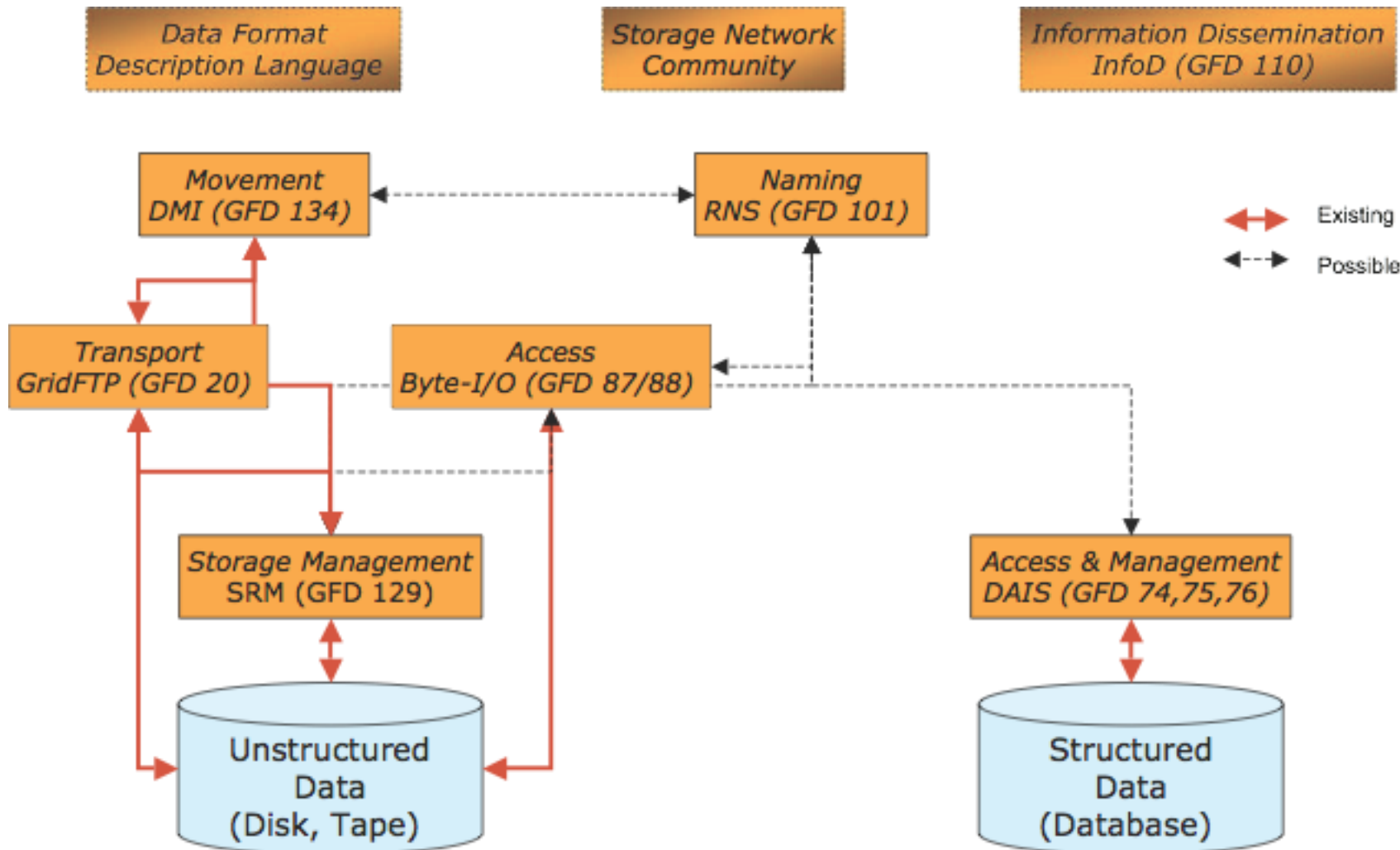
Architecture
OGSA EMS Scenarios
(GFD 106)

Use Cases
Grid Scheduling Use Cases
(GFD 64)

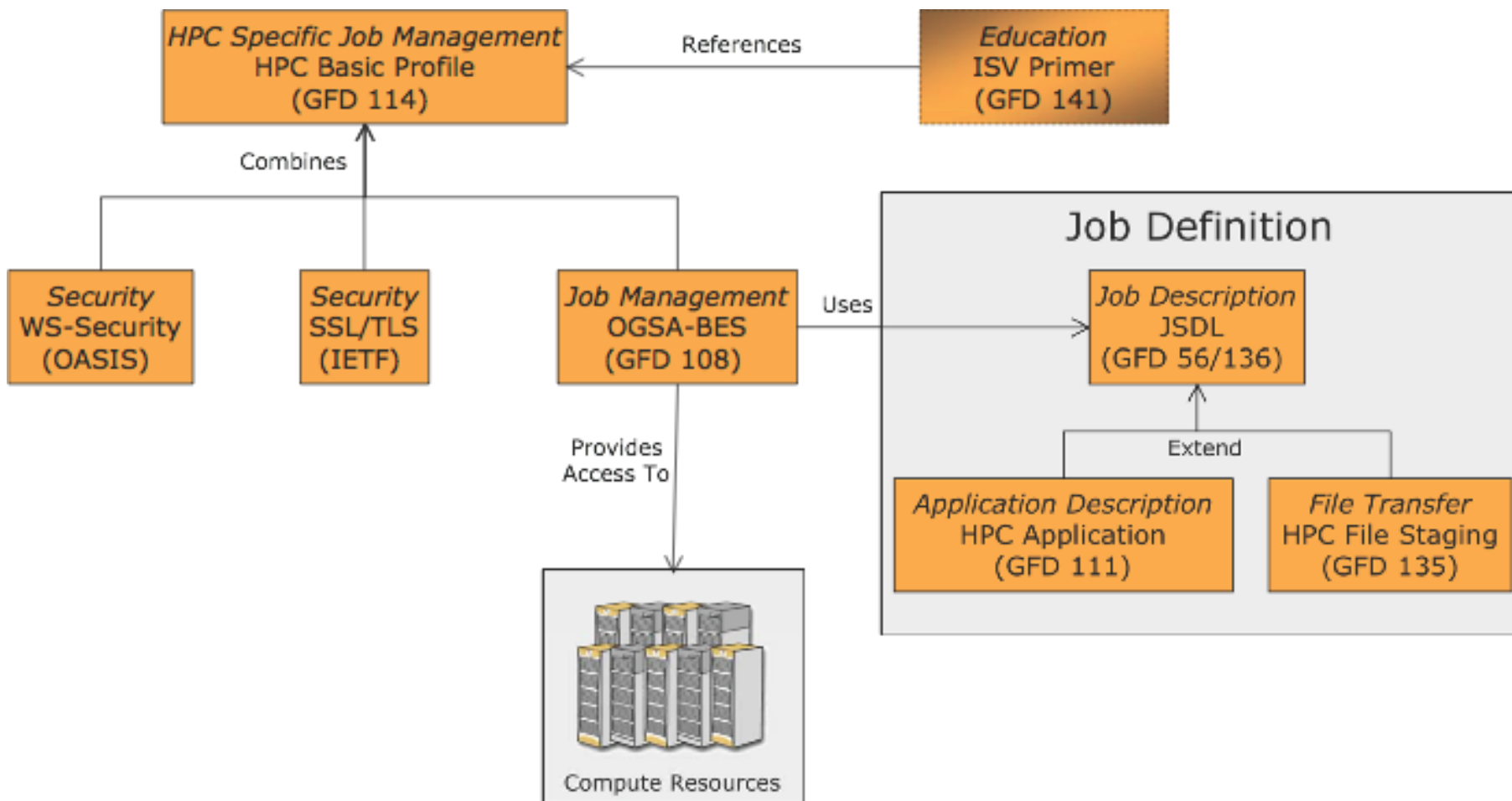
Education
ISV Primer
(GFD 141)



OGF Data-Related Standards



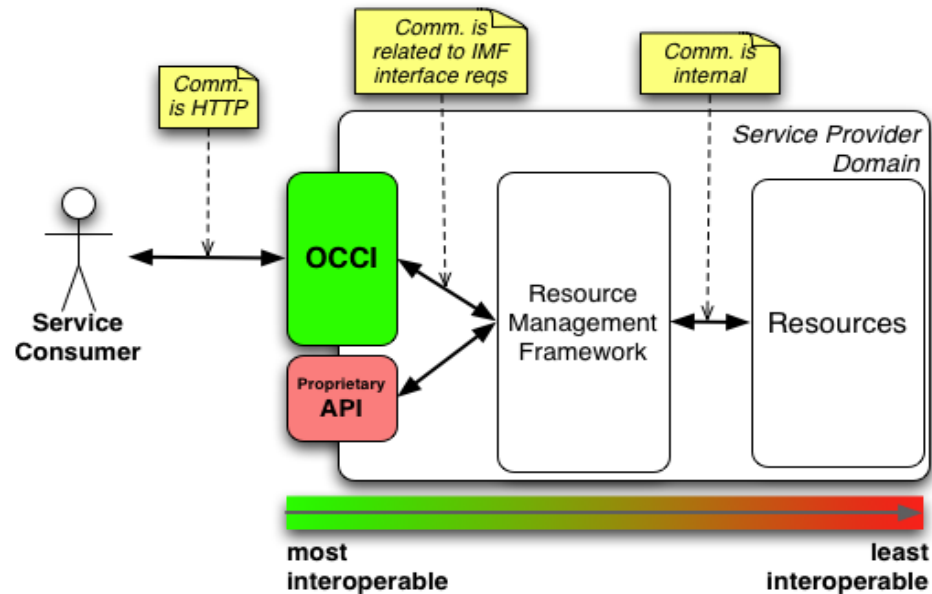
OGF HPC Basic Profile



Open Cloud Computing Interface®



Open Cloud Computing Interface



OCCL® by OGF

- OCCL is an **API** and **Protocol**
 - Sits on the **boundary** of a Service Provider and Service Consumer
 - **No assumptions** about the boundary
- Over 11 implementations!**

OGF and International Standards



- OGF views its mission as integrally tied to the creation and implementation of practical standards of use across a wide variety of boundaries.
- Interoperability and utility for implementation across multiple projects and across international boundaries on a global basis are among the principal goals.
- It is natural for OGF to serve in a connecting role to communicate needs and inputs to standards for such efforts among and between governments, regional and large-scale international projects. (Examples: Worldwide Large Hadron Collider Grid, Cancer Bioinformatics Grid, Open Geospatial Grid, etc.)
- International Grid Trust Federation already the worldwide standard for strong authentication for grids.
- Now extending these efforts to cloud computing.

SIENA European Roadmapping Effort (Oct. 27, 2010 Workshop)



www.sienainitiative.eu | info@sienainitiative.eu

Extensive multi-project involvement!



Support and participation from EC cabinet level

SIENA 1st Roadmap Workshop

European Roadmap on grid and cloud standards for e-science and beyond



(Executive Summary available)

Other OGF outreach efforts to Canada, South America, Asia-Pacific region underway; IGTF extending its authentication efforts to cover authorization, portal standards, etc.

Summary



- OGF stands ready to be a vehicle for effective creation, dissemination, implementation encouragement and promotion of cross-cutting practical standards useful in cloud and grid computing and communication of these across international boundaries.
- Our more than 10-year long track record has already produced dozens of widely adopted standards across many fields.
- Involvement in cloud computing standards is already well established for OGF groups.

USG Mandate

USG law and policy requires Federal agencies to use international, voluntary consensus standards in their procurement and regulatory activities, except where inconsistent with law or otherwise impractical.

Questions for the Standards Panel

- Do existing public and private clouds use de facto or voluntary consensus standards?
- Are existing voluntary consensus standards sufficient for ensuring USG interoperability, portability and security in cloud computing?
- What voluntary consensus standards are still needed for broader acceptance of cloud computing?
- When will such emerging voluntary consensus standards be available and implemented in the marketplace?

Questions for the Standards Panel

- Are there any roadmaps being developed for cloud computing standardization?
- What are your priorities in the development of cloud computing standards?
- Are there national or regional approaches to cloud computing standards that support or inhibit the development and acceptance of international voluntary consensus standards?
- How should clouds be assessed for conformity to voluntary consensus standards (e.g., Supplier's Declaration, Second or Third Party Testing, Certification)?