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TELECOMMUNICATION STANDARDIZATION SECTOR

STUDY PERIOD 2009-2012

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Title: Invitation to contribute to the cloud computing roadmap population

LIAISON STATEMENT

For action to: ITU-T Study Groups SG 2, SG 5, SG 11, SG 12, SG 13, SG 15, SG 16, SG 17, CT-CCVOCAB, CT-CCRA, TMForum, OMG-CSCC, ISMA, ISO/IEC JTC1 SCs 6, 7, 27 and 38, OASIS, MEF, OGF, DMTF, CSA, SNIA, GICTF, ISACA, ATIS CSF, ETSI TC Cloud, ETSI TC LI, IEEE Cloud Profiles Working Group, IEEE Intercloud Working Group, IETF, BBF

For comment to:

For information to: JCA-IdM, ITU-T SG 9

Approval: Agreed to at JCA-Cloud meeting (Geneva, 31 October 2012)

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Contact: Monique Morrow
Cisco Systems
Tel: +41 44 878 9412
Email: mmorrow@cisco.com

Kangchan Lee
ETRI
Korea (Republic of),
Roadmap editor
Tel: +82 42 860 6659
Fax: +82 42 861 5404
Email: chan@etri.re.kr

The JCA-Cloud at its meeting in June 2012 launched a project called Cloud Computing standards roadmap. This Cloud Computing standards roadmap is supposed to summarize the activities of all the relevant SDOs working in the area of Cloud Computing. The goal of Cloud Computing standards roadmap is to be a tool to support JCA-Cloud coordination on Cloud Computing related activities of ITU-T SGs and other SDOs. To this end, JCA-Cloud started collecting all the available information from the ITU-T and other SDOs with regards to any relevant work on Cloud Computing.

The following URL will direct you to the initial draft of this roadmap

https://extranet.itu.int/sites/itu-t/Roadmaps/SitePages/JCA-Cloud-Standard.aspx

To access it in *read* mode please use your TIES account with log in name in a format username@ties.itu.int. If you do not have TIES account, please create a guest account for yourself at http://www.itu.int/ITU-T/services/ then log in. For any problems with this working tool please contact JCA-Cloud secretariat at tsbsg13@itu.int.

We would like to invite your Study Group, organization to populate this roadmap. For accessing the draft roadmap in a *write* mode please use the entry Submit my input to the Roadmap of the tool.

Else, you can submit your inputs by e-mail to secretariat or roadmap editor. In this case please follow the format of Attachment B.

Once the roadmap will be populated it will go public and live.

We thank you in advance for your active participation in this project.

Appendix A. Changes of Cloud Computing Standards Roadmap

Appendix B. Revised version of Cloud Computing Standards Roadmap

Appendix A. Changes of Cloud Computing Standards Roadmap

No.	Entity	Title	Changes
1	ITU-T SG13 Q26	**ITU-T Y.ccecо**, Cloud computing: ecosystem, use cases, and general requirements	-
2	ITU-T SG13 Q26	**ITU-T Y.DaaS**, Requirement and Reference Architecture of Desktop as a Service	-
3	ITU-T SG13 Q27	**ITU-T Y.ccinfra**, Cloud Computing Infrastructure Requirements	-
4	ITU-T SG13 Q27	**ITU-T Y.ccic**, Framework of Inter-cloud for Network and Infrastructure	-
5	ITU-T SG13 Q28	**ITU-T Y.e2eccrmr**, End to End Cloud Computing Resources Management Requirements	-
6	DMTF	**DSP0263**, Cloud Infrastructure Management Interface (CIMI) Model and REST Interface over HTTP – Version 1.0.0	New from Web site (29th September, Mark Carlson)
7	DMTF	**DSP8009**, CIMI XML Schema – Version 1.0.0	New from Web site (29th September, Mark Carlson)
8	DMTF	**DSP0264**, Cloud Infrastructure Management Interface - Common Information Model (CIMI-CIM) – Version 1.0.0	New from Web site (29th September, Mark Carlson)
9	DMTF	**DSP2028**, Cloud Auditing Data Federation (CADF) Use Case White Paper – Version 1.0.0	New from Web site (29th September, Mark Carlson)
10	DMTF	**DSP-IS0301**, Software Identification and Entitlement Usage Metrics	New from Web site (29th September, Mark Carlson)
11	DMTF	**DSP0243**, Open Virtualization Format Specification - Version 1.1.0	New from Web site (29th September, Mark Carlson) + Editor's changes
12	DMTF	**DSP0243**, Open Virtualization Format Specification - Version 2	New from Web site (29th September, Mark Carlson) + Editor's changes
13	DMTF	Virtualization Management	New from Web site (29th September, Mark Carlson) + Editor's changes
14	CT-CCV	Cloud Computing Overview and Vocabulary	New from CT meeting result, it needs LS response from CT
15	CT-CCA	Cloud Computing Reference Architecture	New from CT meeting result, it needs LS response from CT
16	ITU-T SG5 Q19	**L.1200**: Direct current power feeding interface up to 400V at the input to telecommunications and ICT equipment	New from LS response of ITU-T SG5 (DOC 47)

17	ITU-T SG5 Q17	**ITU-T L.1300**, Best practices for green data centers	New from LS response of ITU-T SG5 (DOC 47)
18	ITU-T SG5 Q18	**ITU-T L.1410**, Methodology for environmental impact assessment of information and communication technologies (ICT) goods, networks and services	New from LS response of ITU-T SG5 (DOC 47)
19	ITU-T SG5 Q17	**L.DC_minimum set**, Minimum data set for data center energy management	New from LS response of ITU-T SG5 (DOC 47)
20	ITU-T SG5 Q17	**Rev L.1300**, Best practices for green data centers	New from LS response of ITU-T SG5 (DOC 47)

Appendix B. Revised version of Cloud Computing Standards Roadmap

Activity domain[1]	Entity[2]	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	ITU-T SG13 Q26	**ITU-T Y.ccecо**, Cloud computing: ecosystem, use cases, and general requirements	The scope of this Recommendation is to provide an introduction and general requirements about to the cloud ecosystem, focusing on the integration and support of the cloud computing model and technologies in telecommunication/ICT environment. The Recommendation addresses: - Cloud computing related definitions and taxonomies based on the current state of the art - Actors and roles in the cloud ecosystem - A set of relevant telecommunication-centric use cases - High-level requirements for cloud services, cloud architecture, cloud infrastructure, and cloud-related security URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8418	Draft Recommendation	2012-06-15	Q1 2013 for consent
	ITU-T SG13 Q26	**ITU-T Y.DaaS**, Requirement and Reference Architecture of Desktop as a Service	The objective of this Recommendation is to specify requirements and reference architecture in terms of service and functionality for DaaS(Desktop as a Service). The use of standard interfaces of DaaS will ensure relevant service reusability, as well as accessibility and interoperability by DaaS application providers and/or developers. This Recommendation describes requirements and DaaS service framework. The scope of this Recommendation includes: DaaS general requirements, DaaS functional requirements, and DaaS reference architecture URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8419	Draft Recommendation	2012-06-15	Q4 2013 for consent

[1] for use of editors. After the gathering of cloud activity, this column provides the category of deliverables

[2] Question numbers are subject to change after WTSA-12.

	ITU-T SG13 Q27	**ITU-T Y.ccinfra**, Cloud Computing Infrastructure Requirements	This draft Recommendation provide requirements of cloud computing infrastructure, which mainly which provides essential capabilities for computing, storage and network resources, as well as functions of resource orchestration, virtualization, pooling and sharing. It also identifies high level functional requirements for power management, in cloud computing environments. URI :http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8421	Draft Recommendation	2012-06-15	Q1 2013 for consent
	ITU-T SG13 Q27	**ITU-T Y.ccic**, Framework of Inter-cloud for Network and Infrastructure	This Recommendation gives the framework for inter-cloud. interface (ICLI) between inter-cloud functions (ICFs) of multiple cloud service providers (CSPs). Based on the generic requirements, architecture, resource and security managements for cloud services, this Recommendation describes the possible relationship among multiple cloud service providers (CSPs) and functional components to perform intercloud. This Recommendation focuses on inter-cloud scenarios, IaaS and NaaS provisioning, and network resource data modelling. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8422	Draft Recommendation	2012-06-15	Q4 2013 for consent
	ITU-T SG13 Q28	**ITU-T Y.e2eccrmr**, End to End Cloud Computing Resources Management Requirements	The Recommendation includes an overview of general concepts of end to end Cloud Computing Resource Management Requirements, a vision for adoption of Cloud Resource management in a telecom rich environment, the requirements for multi-cloud, end-to-end management for cloud services and resources, i.e. management of any hardware and software used in support of the delivery of cloud services. The scope of this Recommendation includes an overview of general concepts of end to end Cloud Computing Resource Management Requirements, a vision for adoption of Cloud Resource management in a telecom rich environment, the requirements for multi-cloud, end-to-end management for cloud services and resources, i.e. management of any hardware and software used in support of the delivery of cloud services. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8423	Draft Recommendation	2012-06-15	Q1 2013 for consent

	DMTF	**DSP0263**, Cloud Infrastructure Management Interface (CIMI) Model and REST Interface over HTTP – Version 1.0.0	This specification describes the model and protocol for management interactions between a cloud Infrastructure as a Service (IaaS) Provider and the Consumers of an IaaS service. The basic resources of IaaS (machines, storage, and networks) are modeled with the goal of providing Consumer management access to an implementation of IaaS and facilitating portability between cloud implementations that support the specification. This document specifies a Representational State Transfer (REST)-style protocol using HTTP. However, the underlying model is not specific to HTTP, and it is possible to map it to other protocols as well. CIMI addresses the management of the lifecycle of infrastructure provided by a Provider. CIMI does not extend beyond infrastructure management to the control of the applications and services that the Consumer chooses to run on the infrastructure provided as a service by the Provider. Although CIMI may be to some extent applicable to other cloud service models, such as Platform as a Service ("PaaS") or Storage as a Service ("SaaS"), these uses are outside the design goals of CIMI. URI : http://dmtf.org/sites/default/files/standards/documents/DSP0263_1.0.0.pdf	Published		January 2012
	DMTF	**DSP8009**, CIMI XML Schema – Version 1.0.0	The XML Schema for the XML serialization of the CIMI model can be found at: http://schemas.dmtf.org/cimi/1/DSP8009.xsd The schema provided does not intend to reflect every single modeling constraint and requirement specified in the model. This schema is designed to apply more broadly to any model-related serialized material found in Consumer requests as well as in Provider responses, and is intended to provide a preliminary, non-exhaustive syntactic check on these. URI : http://schemas.dmtf.org/cimi/1/DSP8009.xsd	Published		January 2012
	DMTF	**DSP0264**, Cloud Infrastructure	This document makes use of the common meta-model used by CIM, the Common Information Model to describe the CIMI logical model.	Draft		December 2012

		Management Interface - Common Information Model (CIMI-CIM) – Version 1.0.0	This is defined in DSP004, CIM Infrastructure Specification 2.6 URI : http://dmtf.org/sites/default/files/standards/documents/DSP0264_1.0.0b.pdf			
	DMTF	**DSP2028**, Cloud Auditing Data Federation (CADF) Use Case White Paper – Version 1.0.0	This document is intended to provide a set of real-world use cases representing certain auditing considerations of cloud based resources. These considerations include the types of data, resources and interactions expected by entities responsible for auditing the compliance of systems, applications, and data hosted in cloud deployments. These entities include data and application administrators, corporate security and compliance officers and corporate auditors, and service and tool vendors in the cloud auditing ecosystem. The use cases in this document represent the use cases proposed by the companies or individuals who submitted them. They may use terminology or semantics which is not consistent with the specification being developed. The use cases in the document will guide the development of a CADF specification and is intended to help ensure the specification meets real-world cloud auditing needs. However, during the development of the specification, the CADF WG reserves the right to choose to modify, extend, deliberately ignore, or add to the use cases contained in this document. URI : http://dmtf.org/sites/default/files/standards/documents/DSP2028_1.0.0a.pdf	Draft		December 2012
	DMTF	**DSP-IS0301**, Software Identification and Entitlement Usage Metrics	This white paper outlines the technical aspects required to address the requirements, use cases, scenarios and solutions identified. For example: - The representation of the identity of a licensable product (i.e. virtual machine instance, on premise product, etc.)	Published		January 2012

			- How it is associated with a running instance or a particular operating system - Who and what (device) are assessing that instance, and - The ability to discover if and where the product instance is running. URI : http://dmtf.org/sites/default/files/standards/documents/DSP-IS0301_1.0.0.pdf			
	DMTF	**DSP0243**, Open Virtualization Format Specification - Version 1.1.0	DMTF's Open Virtualization Format (OVF) is a packaging standard designed to address the portability and deployment of virtual appliances. OVF enables simplified and error-free deployment of virtual appliances across multiple virtualization platforms. OVF is a common packaging format for independent software vendors (ISVs) to package and securely distribute virtual appliances, enabling cross-platform portability. By packaging virtual appliances in OVF, ISVs can create a single, pre-packaged appliance that can run on customers' virtualization platforms of choice. The Open Virtualization Format (OVF) Specification describes an open, secure, portable, efficient and extensible format for the packaging and distribution of software to be run in virtual machines. URI : http://dmtf.org/sites/default/files/standards/documents/DSP0243_1.1.0.pdf	Published DMTF Standard INCITS 469-2010 ISO/IEC 17203:2011		January 2012
	DMTF	**DSP0243**, Open Virtualization Format Specification - Version 2	This version of the specification (2.0) is intended to allow OVF 1.x tools to work with OVF 2.0 descriptors 209 in the following sense: - Existing OVF 1.x tools should be able to parse OVF 2.0 descriptors - Existing OVF 1.x tools should be able to give warnings/errors if dependencies to 2.0 features are 213 required for correct operation URI : http://dmtf.org/sites/default/files/standards/documents/DSP0243_2.0.0	Draft	January 2012	

			d.pdf			
	DMTF	Virtualization Management	DMTF's Virtualization Management (VMAN) standard that includes a set of specifications that address the management lifecycle of a virtual environment. VMAN's Open Virtualization Format (OVF) specification provides a standard format for packaging and describing virtual machines and applications for deployment across heterogeneous virtualization platforms, while VMAN's profiles standardize many aspects of the operational management of a heterogeneous virtualized environment. URI : http://dmtf.org/standards/vman	Draft	January 2012	
	CT-CCV	Cloud Computing Overview and Vocabulary	[Editor's Note on Oct 2012] JTC 1 URI, and scope should be verified by CT This Recommendation | International Standard provides an overview of cloud computing along with a set of terms, definitions and concepts. It is a terminology foundation for the cloud computing standardization work. This Recommendation | International Standard is applicable to all types of organization (e.g. commercial enterprises, government agencies, not-for-profit organizations). URI : JTC 1 URI should be verified by CT http://www.iso.org/iso/catalogue_detail.htm?csnumber=60544 (ISO Project Portal : http://isotc.iso.org/pp/project/details.action?project=60544&nav=NAVIGATION_DEFAULT) http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8417	Committee Draft | Working Draft	September 2012	Q4 2013 for consent
	CT-CCA	Cloud Computing Reference Architecture	This International Standard|Recommendation specifies the cloud computing reference architecture. The reference architecture includes an overview of the general concepts and characteristics of Cloud Computing, the Cloud Computing components|functions and roles and their capabilities and inter-relationships	Working Draft	September 2012	Q4 2013 for consent

			URI : http://www.iso.org/iso/catalogue_detail.htm?csnumber=605445 (ISO Project Portal : http://isotc.iso.org/pp/project/details.action?project=60545&nav=NAVIGATION_DEFAULT) http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8420			
	ITU-T SG5 Q19	**L.1200**: Direct current power feeding interface up to 400V at the input to telecommunications and ICT equipment	This Recommendation specifies the direct current (DC) interface between the power feeding system and ICT equipment connected to it. It also describes normal and abnormal voltage ranges, and immunity test levels for ICT equipment to maintain the stability of telecommunication and data communication services. The specified interface is operated from a DC power source of up to 400 V to allow increased power consumption and equipment power density, in order to obtain higher energy efficiency and reliability with less material usage than using a lower voltage such as -48 VDC or AC UPS power feeding solutions. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=11638	Recommendation		
	ITU-T SG5 Q17	**ITU-T L.1300**, Best practices for green data centers	Recommendation ITU-T L.1300 describes best practices aimed at reducing the negative impact of data centers on the climate. It is commonly recognized that data centers will have an ever-increasing impact on the environment in the future. The application of the best practices defined in this document can help owners and managers to build future data centers, or improve existing ones, to operate in an environmentally responsible manner. Such considerations will strongly contribute to a reduction in the impact of the Information and Communication Technology (ICT) sector on climate change. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=11429	Recommendation		
	ITU-T SG5 Q18	**ITU-T L.1410**, Methodology for environmental impact assessment of information and communication	Recommendation ITU-T L.1410 deals with the assessment of the environmental impact of information and communication technology (ICT) goods, networks and services. It is organized in two parts: - Part I (clause 5) – ICT life cycle assessment: framework and guidance.	Recommendation		

		technologies (ICT) goods, networks and services	- Part II (clause 6) – Comparative analysis between ICT and a reference product system (baseline scenario); framework and guidance. Part I deals with the life cycle assessment (LCA) methodology applied to ICT goods, networks and services (ICT GNS). Part II deals with comparative analysis based on LCA results of an ICT GNS product system and a referenced product system. This Recommendation provides specific guidance on energy and greenhouse gas (GHG) impacts. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?id=11430			
	ITU-T SG5 Q17	**L.DC_minimum set**, Minimum data set for data center energy management	This recommendation established a minimum data set necessary to manage in an environmental conscious manner Data Center. The Recommendation defines the parameter to be communicated depending on the "infrastructure or general service equipment considered like power system (AC/DC UPS, energy distribution), cooling system and ICT equipment. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8620	Draft Recommendation	10/2012	12/2013
	ITU-T SG5 Q17	**Rev L.1300**, Best practices for green data centers	Revision of published version of L.1300 including specific issue related to Cloud Computing data center, integrated control of ICT devices and air-conditioning equipment. In terms of energy efficiency and GHG emission reduction. URI: http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8648	Draft Recommendation	10/2012	12/2013