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Title: LS on Invitation to update the information in the cloud computing standards roadmap

LIAISON STATEMENT

For action to: ITU-T Study Groups SG2, SG5, SG11, SG12, SG15, SG16, SG17, TM Forum, OMG, CSCC, ISMA, ISO/IEC JTC1 SCs 6, 27, 38 and 40, OASIS, MEF, OGF, DMTF, CSA, SNIA, GICTF, ATIS CSF, ETSI TC LI, IEEE Cloud Profiles Working Group, IEEE Intercloud Working Group, IETF, BBF, CEF

For comment to: -

For information to: JCA-IdM, ITU-T SG9

Approval: ITU-T Study Group 13 meeting (Geneva, 20 April - 1 May 2015)

Deadline: 30 June 2015

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In the SG13 Plenary, which was held on 20 April 2015, it was decided to terminate JCA-Cloud activity. Also, the task to update the cloud computing standards roadmap was transferred to ITU-T Study Group 13 Question 17.

The Cloud Computing standards roadmap summarizes the activities of all the relevant SDOs working in the area of Cloud Computing. Among several kinds of deliverables in the relevant SDOs, the roadmap contains deliverables officially approved in each SDOs such as Recommendation, standards, but not white papers and technical reports.

We would like to invite your Study Group, organization to review, update or to populate this roadmap.

We encourage you also to review the other activities from cloud computing perspective to give us feedback on possible cooperation and in order to avoid the overlap.

You can submit your inputs by e-mail to ITU-T SG13 secretariat (tsbsg13@itu.int) or roadmap editor (chan@etri.re.kr) using the format as in Appendix.

We would like to encourage you to provide a URL pointer to the ITU-T and SDO/Forum work item you wish to introduce into the roadmap.

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

Appendix - Cloud Computing Standards Roadmap.

Appendix. 11th Revised version of Cloud Computing Standards Roadmap

1. ITU-T SG13

Activity domain[1]	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	ITU-T SG13 Q17|JTC1 SC 38	**ITU-T Y.3500|ISO/IEC 17788** Information technology – Cloud computing – Overview and vocabulary	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 : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=12210	Recommendation | IS	September 2012	August 2014
	ITU-T SG13 Q18|JTC1 SC 38	**ITU-T Y.3502|ISO/IEC 17789** Information technology — Cloud computing - Reference architecture	This Recommendation | International Standard specifies the cloud computing reference architecture (CCRA). The reference architecture includes the cloud computing roles, cloud computing activities as well as the cloud computing functional components and their relationships. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=12209	Recommendation | IS	September 2012	August 2014
	ITU-T SG13 Q17	**ITU-T Y.3501-ed2**, Cloud Computing	This Recommendation provides a cloud computing framework by identifying high-level requirements for cloud computing. The	Recommendation	2012-06-15	May 2013

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

		Framework and high-level requirements	Recommendation addresses the general requirements and use cases for: – cloud computing; – Infrastructure as a Service (IaaS), Network as a Service (NaaS), and Desktop as a Service (DaaS) cloud services; – inter-cloud, end-to-end resource management, and cloud infrastructure. The first release of this Recommendation addresses a set of use cases and related requirements which are included in Appendix I. Next release of this Recommendation will provide an update of this set of use cases and requirements. The release concept is described in Appendix II. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=11917	2nd Edition Initiated	2015-05-01	4Q 2015
	ITU-T SG13 Q17	**ITU-T Y.3503**, Requirement of Desktop as a Service	This Recommendation provides use cases, general requirements and functional requirements for Desktop as a Service (DaaS). URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8419	Recommendation	2012-06-15	May 2014
	ITU-T SG13 Q18	**ITU-T Y.3510-ed2**, Cloud Computing Infrastructure Requirements	This Recommendation identifies requirements for cloud infrastructure capabilities to support cloud services. The scope of this Recommendation includes: - Overview of cloud infrastructure; - Requirements for compute resources; - Requirements for network resources; - Requirements for storage resources; Requirements for resource abstraction and control. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=11918	Recommendation 2nd Edition Initiated	2012-06-15 2015-05-01	May 2013 4Q 2015

	ITU-T SG13 Q18	**ITU-T Y.3511**, Framework of inter-cloud computing	This Recommendation describes the framework for interactions of multiple cloud service providers (CSPs) that is referred to as inter-cloud computing. Based on several use cases and consideration on different types of service offerings, this Recommendation describes the possible relationship among multiple CSPs; which are peering, federation, and intermediary. By introducing the concept of the primary CSP and /secondary CSPs, the Recommendation further describes CSP interactions in the cases of federation and intermediary patterns. The Recommendation also considers the network significance and its issues. Finally, relevant functional requirements are derived. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=12078	Recommendation	2012-06-15	March 2014
	ITU-T SG13 Q18	**ITU-T Y.3513**, Cloud computing - Functional requirements of Infrastructure as a Service	This Recommendation provides functional requirements and use cases of Infrastructure as a Service (IaaS), one of the representative cloud service categories. This Recommendation covers the following: – General description of IaaS; – Functional requirements of IaaS; – Typical IaaS use cases. URI: http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=12286	Recommendation	02/2013	August 2014
	ITU-T SG13 Q18	**ITU-T Y.3512**, Cloud computing - Functional requirements of Network as a Service	This Recommendation provides use cases and functional requirements of Network as a Service (NaaS), one of the representative cloud service categories. This Recommendation covers the following: – High level concept of NaaS; – Functional requirements of NaaS; – Typical NaaS use cases.	Recommendation	02/2013	August 2014

			This Recommendation provides use cases and functional requirements of NaaS application, NaaS platform and NaaS connectivity. URI:http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=12285			
	ITU-T SG13 Q19	**ITU-T Y.3520-ed2**, Cloud computing framework for end to end resource management	This Recommendation provides a framework for end-to-end cloud computing resource management. This Recommendation includes: - general concepts of end to end cloud computing resource management; - a vision for adoption of cloud computing resource management in a telecommunication rich environment; - end-to-end management of cloud resource and services across multiple platforms, i.e. management of any hardware and software used in support of the delivery of cloud services. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=11919	Recommendation 2nd Edition Initiated	2012-06-15 2015-05-01	June 2013 4Q 2015
	ITU-T SG13 Q17	**ITU-T Y.BigData-reqts** Requirements and capabilities for cloud computing based big data	This Recommendation provides approach to use cloud computing to meet challenges existing in use of big data. It addresses the following subjects: - Overview of cloud computing based big data including Introduction of big data, Big data characteristics and functionalities, Relationship between cloud computing and big data, Benefit of cloud computing based big data from telecom perspectives - Cloud computing based big data requirements; - Cloud computing based big data capabilities; - Cloud computing based big data use cases and scenarios URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=9853	Draft Recommendation	06/2013	Q2 2015
	ITU-T SG13 Q17	**ITU-T Y.DaaS-arch,** Functional architecture for Desktop as a Service	This Recommendation provides functional architecture for Desktop as a Service (DaaS) to specify the detailed functional components and their relationships based on the general and	Draft Recommendation	July 2014	Q1 2016

			functional requirements of Y.3503. It addresses the following subjects: − DaaS functionalities related with DaaS components − DaaS functional architecture; − Mapping DaaS functional architecture to the cloud computing reference architecture. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=10156			
	ITU-T SG13 Q18	**ITU-T Y.CCNaaS-arch**, Cloud computing - Functional Architecture of Network as a Service	This Recommendation specifies NaaS functional architecture, including functionalities, functional components as well as reference points and procedures, based on the functional requirements specified in Y.3512. The scope of this Recommendation consists of: − Overview of NaaS functional architecture − Functionalities of NaaS − Functional components of NaaS − Reference points between functional components of NaaS − Procedures for typical NaaS use cases URI: http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=10229	Draft Recommendation	07/2014	06/2016
	ITU-T SG13 Q18	**ITU-T Y.CCIC-arch**, Cloud computing - Functional Architecture of inter-cloud computing	This proposed Recommendation specifies inter-cloud computing functional architecture, including functionalities, functional components as well as reference points and procedures, based on the framework specified in Y.3511. The scope of this recommendation includes, but is not limited to: − Analyses of functional requirements of inter-cloud computing	Draft Recommendation	05/2015	Q4 2016

			− Overview of inter-cloud computing functional architecture − Functionalities of inter-cloud computing − Functional components of inter-cloud computing − Reference points between functional components of inter-cloud computing − Procedures for typical inter-cloud computing use cases Note - The analyses of functional requirements of inter-cloud computing will be concluded in next July 2015 meeting. URI: TBD			
	ITU-T SG13 Q18	**ITU-T Y.BDaaS-arch**, Functional architecture of Big Data as a Service	This Recommendation specifies the functional components, functional architecture, and reference points of Big Data as a Service (BDaaS). The scope of this recommendation includes: − Overview of Big Data as a Service functional architecture − The functional components of Big Data as a Service − The functional architecture of Big Data as a Service. − The reference points between functional components of BDaaS URI: TBD	Draft Recommendation	05/2015	11/2016
	ITU-T SG13 Q19	**ITU-T Y.CCTIC**, Trusted inter-cloud computing framework and requirements	This Recommendation specifies framework of trusted inter-cloud computing and relevant use cases, based on the framework specified in ITU-T Rec. Y.3511. The scope of this Recommendation includes: The scope of this Recommendation includes: − objectives of trusted inter-cloud computing, − requirements for security of trusted inter-cloud,	Draft Recommendation	05/2015	2Q 2017

			– requirements for governance of trusted inter-cloud, – requirements for resiliency of trusted inter-cloud. URI: TBD			

2. ITU-T JRG-CCM (Joint Rapporteur Group on Cloud Computing Management) of ITU-T SG13 and ITU-T SG2

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	ITU-T JRG-CCM	**ITU-T Y.e2ecslm-Req** End-to-end cloud service lifecycle management requirements	This Recommendation specifies the functional requirement of the lifecycle for service management aspects of Cloud services. The Cloud service lifecycle management involves charging events management, policy management, management of role related information, service/application provisioning, resource management, context management, and content management URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=9744	Draft Recommendation	06/2012	Q3 2015
	ITU-T JRG-CCM	**ITU-T Y.e2ecm** Common Model for End to End Cloud Computing Resource Management	This Recommendation : - Provides a model, based on SES Simple Management Interfaces (SMIs), for all layers of cloud computing reference architecture. - Demonstrate how such approach would result in development and deployment of fundamentally manageable cloud computing applications and solutions, in an end-to-end, multi-cloud environment, independent of choice of technology, run-time, programming language or tools made to develop the solutions. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=9745	Draft Recommendation	02/2013	Q3 2015
	ITU-T JRG-CCM 5	**ITU-T M. rcsm** Requirements for Cloud Service Management	The scope of this Recommendation is to define the general management requirements that support the cloud service fulfillment, delivery, operation and management, and to provide function framework for cloud services management. Also the relationship between cloud service management and cloud resource management will be described.	Draft Recommendation	2013-01-31	Q3 2015 for consent

			URI: http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=9621			
	ITU-T JRG-CCM	**ITU-T M.mivrcc** Requirements and analysis for management interface of virtualized resources in cloud computing	This Recommendation specifies the requirements and analysis for the management interface between the cloud operational support system (COSS) and the virtualized resource management (VRM) agent. This Recommendation follows the interface specification methodology described in [ITU-T M.3020]. In this Recommendation, the VRM agent stands for the management and control aspects of abstraction and control functions within resource and network layer of the cloud computing reference architecture (CCRA) [ITU-T Y.CCRA]. The COSS represents an integrated management system across a global management domain which implements operational related management capabilities required in order to manage and control the cloud services offered to customers. In this Recommendation, the functional requirements for the management interface are specified, which include configuration management, fault management, and performance management. In the analysis part, the detailed information model supporting the above functions across the management interface is provided. This Recommendation only focuses on the computing and storage related virtualized resources in cloud computing environment, such as resource pool, template, virtual machine, virtual machine image, volume, and network interface. Networking related virtualized resources such as virtualized network, virtualized link, virtualized node, and virtualized port can be derived from the corresponding Information Object Classes (IOCs) defined in [ITU-T M.3160], which is out of the scope of this Recommendation. URI: http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=9623	Draft Recommendation	2013-01-31	2017 for consent

3. ITU-T SG17

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	ITU-T SG17	**X.1601,** Security framework for cloud computing	This Recommendation analyses security threats and challenges in the cloud computing environment, and describes security capabilities that could mitigate these threats and address security challenges. A framework methodology is provided for determining which of these security capabilities will require specification for mitigating security threats and addressing security challenges for cloud computing. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=12036	Recommendation	2010-04	2014-01-24
	ITU-T SG17	**X.fsspvn,** Framework for a secure service platform for virtual network	This Recommendation defines the framework of service platform for virtual network (SPVN), which provides for establishing and managing virtual network. The service platform provides the functions of network connectivity (e.g. NAT transversal), security service (e.g. identity management in virtual network) and network management (e.g. security policy distribution, group management in virtual network). This Recommendation also describes the key technologies used in the service platform and the interfaces between the service platform and applications. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=9411	draft	2010-12	2014-01 (determination)
	ITU-T SG17	**X.goscc,** Guidelines of operational security for cloud computing	This Recommendation provides guideline of operational security for cloud computing, which includes guidance of service level agreement (SLA) and daily security maintenance for cloud computing. The target audiences of this Recommendation are cloud service providers, such as traditional telecom operators, ISPs and ICPs. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=9434	draft	2012-03	2014-01 (determination)
	ITU-T SG17	**X.idmcc,** Requirement of IdM in cloud computing	The Recommendation focuses on the harmonization of the telecommunication services in the cloud computing environment. This Recommendation starts from the use-case and requirements analysis in consideration of the existing industry efforts and it concentrates on how to harmonize the telecommunication services and the Internet	draft	2010-12	2014-01 (determination

			services based on a common identity management infrastructure in the cloud computing environment. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=9413			
	ITU-T SG17	**X.sfcse,** Security functional requirements for Software as a Service (SaaS) application environment	This Recommendation provides a generic functional description for secure service oriented Software as a Service (SaaS) application environment that is independent of network types, operating system, middleware, vendor specific products or solutions. In addition, this Recommendation is independent of any service or scenarios specific model (e.g., web services, Parlay X or REST), assumptions or solutions. This Recommendation describes a structured approach for defining, designing, and implementing secure and manageable service oriented capabilities in telecommunication cloud computing environment. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=9418	draft	2011-04	2014-01 (determination)
	ITU-T SG17 Q8	**ITU-T X.CSCdataSec** Guidelines for Cloud Service Customer Data Security	This Recommendation will provide guidelines for securing cloud service customer datacloud service customer data, in the case where the CSP is responsible for ensuring that the data being handled with appropriate security. This Recommendation specifies security controls for cloud service customer data in different stage of full data lifecycle. These specific security controls used may vary as the security needs of the cloud service customer data changes. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=10273	Draft Recommendation	2014-09	Q1 2017 for determination

4. ITU-T SG5

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	ITU-T SG5 Q19	**L.1200**: Direct current power feeding interface up to 400V	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	Recommendation		

		at the input to telecommunications and ICT equipment	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			
	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 technologies (ICT) goods, networks and services	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. - 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.	Recommendation		

			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	Minimum data set and communication interfacerequirements for DataCenter energy management URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8620	Draft Recommendation	2013-01-29	2014 for consent
	ITU-T SG5 Q17	**Rev L.1300 rev**, Best practices for green data centers (revision of L.1300)	This Recommendation specifies best practices aimed at developing green data centres. A green data centre can be defined as a repository for the storage, management, and dissemination of data in which the mechanical, lighting, electrical and computer systems are designed for maximum energy efficiency and minimum environmental impact. The construction and operation of a green data centre includes advanced technologies and strategies. The Recommendation provides a set of rules to be referred to when undertaking improvement of existing data centres, or when planning, designing or constructing new ones URI: http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8829	Draft Recommendation	10/2012	2014 for consent
	ITU-T SG5 Q19	**ITU-T L.architecture,** Architecture of DC power feeding systems	System configuration, architecture and cable distribution including feeding, lightning protection, EMC, earthing and bonding of the power feeding system URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8778	Draft Recommendation	2011-09-20	Q4 2013
	ITU-T SG5 Q19	**ITU-T L.performance,** Methodologies for evaluating the performance of energy feeding and its environmental impact	Methodologies for evaluating the performance of energy feeding and its environmental impact URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8779	Draft Recommendation	2012-10-08	2014
	ITU-T SG5 Q18	**ITU-T L.1420**, Methodology for energy consumption and greenhouse gas emissions impact	This Recommendation can be used to assess energy consumption and GHG emissions generated over a defined period of time for the following purposes: for assessment of related impact from ICT organizations or for assessment of impact from ICT related activities within non-ICT organizations.	Recommendation	2009	2012

		assessment of information and communication technologies in organizations	URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=11431			
	ITU-T SG5 Q18	**ITU-T L.1430**, Methodology for environmental impact assessment of information and communication technology greenhouse gas and energy projects	Specific guidance for Information and Communication Technology (ICT) greenhouse gas (GHG) and energy projects for quantifying and reporting their GHG emission reductions and/or removal enhancements as well as their energy consumption reductions and enhancement of energy generation and energy storage URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8781	Draft Recommendation	2009	February 7 2013 for consent
	ITU-T SG5 Q17	**ITU-T L.assDC,** Assessment of DC and TLC room Infrastructure	Assessment methodology of data center and telecommunication room infrastructure energy efficiency considering environmental conditions and running conditions. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=9653	Draft Recommendation	2013-01-29	2014 for consent
	ITU-T SG5 Q17	**L.MandM_infra** Energy efficiency metrics and measurement for power and cooling equipment for telecommunications and data centres	This Recommendation specifies principles and concepts of energy efficiency metrics and measurement methods for power feeding equipment and cooling equipment in telecommunications rooms and data centres. The methodologies defined in this Recommendation are applied at single equipment level. The efficiency of power conversion and cooling in the data centre or telecommunication facility is only partially attributed to the equipment. The architecture and organization of the space and equipment to deliver the power or cooling to the systems is as equal, if not a more significant factor to energy efficiency. Another general factor will be the interoperability, management, and response of these systems across the demand and operational range. URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=8783	Consented	2012-10-08	Consented in 2013-12-13

	ITU-T SG5 Q19	**ITU-T L.renewable**	Defining interface and architecture for injecting renewable energy and distributed power sources into an up to 400 V power system as defined in L.architecture URI : http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=10018	Agreed to initiate the work	Dec. 2013	Q4 2014 for consent

5. ITU-T SG11

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	ITU-T SG11	**ITU-T Q.FW-Cloud-iop,** The framework and overview of Cloud Computing interoperability testing	This draft Recommendation describes the framework and overview of Cloud Computing interoperability testing. The framework Recommendation includes general scenarios and kinds of testing and measurement technologies for interoperability testing of cloud computing. URI: http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=9767	Draft Recommendation	2013-02	2015-07

6. ITU-T SG16

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	ITU-T SG16 Q3	**ITU-T H.248.CLOUD,** Gateway control protocol: Cloudification of packet gateways	This Recommendation does not define any new signalling extensions for the H.248 gateway control protocol. URI: http://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=10200	Draft Recommendation	July 2014	2016

7. ISO/IEC JTC 1 SC 38

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	ITU-T SG13 Q17|JTC1 SC 38	**ITU-T Y.3500|ISO/IEC 17788** Information technology – Cloud computing – Overview and vocabulary	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 : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=12210	Recommendation | IS	September 2012	August 2014
	ITU-T SG13 Q18|JTC1 SC 38	**ITU-T Y.3502|ISO/IEC 17789** Information technology — Cloud computing - Reference architecture	This Recommendation | International Standard specifies the cloud computing reference architecture (CCRA). The reference architecture includes the cloud computing roles, cloud computing activities as well as the cloud computing functional components and their relationships. URI : http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=12209	Recommendation | IS	September 2012	August 2014
	ISO/IEC JTC 1 SC 38 WG 3	**ISO/IEC 19086-1**, Cloud Computing - Service Level Agreement (SLA) Framework – Part 1 : Overview and Concepts	This international standard specifies: an overview of Service Level Agreements (SLA)s for cloud services, identification of the relationship between the master service agreement and the SLA, cloud SLA concepts that can be used to build SLAs, and terms commonly used in SLAs for cloud services. This standard is for the benefit and use for providers and customers. This standard does not provide a standard structure that would be used for cloud SLA contracts. Contracts are highly customized items between providers and customers so this standard seeks to establish a set of common cloud SLA building blocks (concepts, terms, definitions, contexts) that can then be used to create cloud SLAs that will help avoid confusion and	WD (3 November 2014 for CD ballot submission)	2013-02-23	Sept 2016

			facilitate common understanding between the cloud service providers and the cloud service customers. This international standard does not supersede any legal requirement. URI: http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=67545			
	ISO/IEC JTC 1 SC 38 WG 3	**ISO/IEC 19086-2** Information Technology - Cloud Computing – Service Level Agreement (SLA) Framework – Part 2 : Metrics	This international standard specifies a model and metrics for describing and measuring properties of the concepts and components in 19086. This standard is for the benefit and use for both provider and customer. This standard does not provide a standard structure that would be used for cloud SLA contracts. URI: http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=67546	WD	2014-10-06	Mar 2017
	ISO/IEC JTC 1 SC 38 WG 3	**ISO/IEC 19086-3** Information Technology - Cloud Computing – Service Level Agreement (SLA) Framework – Part 3 : Core Conformance Requirements	This international standard specifies: core conformance requirements for Service Level Agreements (SLA)s for cloud services for ISO/IEC 19086. This standard is for the benefit and use for providers and customers. This standard does not provide a standard structure that would be used for cloud SLA contracts. URI: http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=67547	WD	2014-10-06	Mar 2017
	ISO/IEC JTC 1 SC 38 WG 4	**ISO/IEC 19941** Information Technology - Cloud Computing –	This international standard specifies: cloud computing interoperability and portability types, the relationship and interactions between these two aspects, and common terminology and concepts used to discussing interoperability and portability and particularly relating to cloud services.	WD	Oct 2014	Oct 2017

		Interoperability and Portability	URI: http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=66639			
	ISO/IEC JTC 1 SC 38 WG 5	**ISO/IEC 19944** Information Technology - Cloud Computing - Data and their Flow across Devices and Cloud Services	This International Standard provides the structure for transparency about data in portable devices and cloud services ecosystem and specify an expanded reference architecture for this ecosystem. URI: http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=66674	WD	Oct 2014	Oct 2017

8. DMTF

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	DMTF	**DSP0263**, Cloud Infrastructure Management Interface (CIMI) Model and REST Interface over HTTP – Version 1.0.1	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	Published		January 2012

			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_1.0.1.pdf			
	DMTF	**DSP8009**, CIMI XML Schema – Version 1.0.1	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_1.0.1.xsd	Published		January 2012
	DMTF	**DSP0264**, Cloud Infrastructure Management Interface - Common Information Model (CIMI-CIM) – Version 1.0.0	This document makes use of the common meta-model used by CIM, the Common Information Model to describe the CIMI logical model. This is defined in DSP004, CIM Infrastructure Specification 2.6 URI : http://dmtf.org/sites/default/files/standards/documents/DSP0264_1.0.0b.pdf	Published		January 2013
	DMTF	**DSP0243**, Open Virtualization Format Specification - Version 1.1	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.	Published DMTF Standard INCITS 469-2010 ISO/IEC 17203:2011		January 2012

			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			
	DMTF	**DSP0243**, Open Virtualization Format Specification - Version 2	OVF 2 Features: - Support for Network Ports - Scaling at deployment time - Support for basic placement policies - Encryption of OVF packages - Disk sharing at runtime - Advanced Device Boot Order - Advanced Data Transfer to Guest OS - Support for Improved Internationalization - I18N - Support of HASH Improved - Updated CIM schema URI : http://dmtf.org/sites/default/files/standards/documents/DSP0243_2.0.0.pdf	Published	January 2012	December 2012
	DMTF	DSP8023 OVF Envelope XSD - Version 2.0	This document defines an XML schema for representing DMTF Open Virtualization Format for OVF Envelope 2.0 sections as defined in DMTF DSP1001 1.1. XML instance documents using this XML schema represent DMTF management profiles in a "machine-readable" form. This XML schema uses the "Venetian Blind" design pattern: Only the XML elements intended to	Published		2012-01-01

			be used as root elements are declared as global elements in the XML schema, and all relevant XML types are declared as global types. URI : http://schemas.dmtf.org/ovf/envelope/2/dsp8023_2.0.0.xsd			

9. TM Forum

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	TM Forum	TMF061 Release 1.0 Service Delivery Framework (SDF) Reference Architecture, Release 1.0	The SDF RA Release 1 defines the scope and characteristics of the essential elements which constitute the patterns that the SDF architecture must support. URI : http://www.tmforum.org/TechnicalSpecifications/TMF061ServiceDelivery/39341/article.html	Published		2009-07-28

10. ETSI

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date

11. ATIS

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	ATIS Cloud Services Forum	**ATIS-0200005**, Cloud Framework for Telepresence Service	This specification establishes a foundation for continuing ATIS work efforts on Unified Visual Communications. The specification explores a provider-agnostic and product-agnostic implementation. It will consider two primary aspects of the telepresence service. The first is	Published		2012-02

			use cases such as immersive telepresence that are deployed today. The second are future cases resulting from the application of the cloud and service evolution in the future. URI : http://www.atis.org/docstore/product.aspx?id=26079			
	ATIS Cloud Services Forum	**ATIS-0200008**, Trusted Information Exchange (TIE)	This document describes the Trusted Information Exchange as an aggregated service and lists the high level requirements. URI : http://www.atis.org/docstore/product.aspx?id=26798	Published		2012-10
	ATIS Cloud Services Forum	**ATIS-0200009**, Cloud Service Lifecycle Checklist	The Cloud Service Lifecycle checklist establishes a baseline of expectations between providers who are interoperating cloud services. The document will also be referenced in cloud service standards to provide a reference model for requirements development. Each enterprise has an existing governance model. The lifecycle checklist provides a way to extend the process model between participating companies. URI : http://www.atis.org/docstore/product.aspx?id=27854	Published		2012-11
	ATIS Cloud Services Forum	**ATIS-0200006**: Virtual Desktop Requirements	This document addresses hosted virtual desktop services for medium and large enterprises. It specifies a federation framework to allow service providers to support high-performance virtual desktops beyond their normal coverage areas. The document also identifies an initial set of infrastructure-service interfaces and related requirements. This is a logical basis for the work on cloud infrastructure federation. URI : http://www.atis.org/docstore/product.aspx?id=26147	Published		2012-05
	ATIS Cloud Services Forum	**ATIS-0200010:** CDN Interconnection Use Cases and Requirements in a Multi-Party Federation Environment	ATIS Standard ATIS-0200003 provided initial use cases and requirements for Content Distribution Network (CDN) Interconnection between two CDN providers via Cache-based Unicast delivery method. ATIS Standard ATIS-0200004 developed use cases and requirements for content distribution via Multicast-based delivery. This standard, ATIS-0200005, extends the use cases and requirements for an environment involving multiple CDN providers joining together to form a CDN Federation. The interconnection lifecycle use cases and requirements developed in the previous two ATIS standards are re-examined for the impact arising from a federation of multiple CDN providers. Additional emphasis is placed on the interconnection domain functionality such that guidance on the eventual development	Published		2012-12

			of network-network interconnect (NNI) architectures and supporting protocol requirements can be derived. URI : http://www.atis.org/docstore/product.aspx?id=27860			
	ATIS Cloud Services Forum	**ATIS-0200011**, Multicast Delivery of Content to Mobile End User Devices	This document extends previous ATIS work on multicast-based content delivery methods to mobile End User devices. Three Use Cases describe potential situations where such devices can receive multicast-based broadcasts of specific live events/video content via the 3GPP Evolved Multimedia Broadcast Multicast System (eMBMS). Delivery processes, assumptions, Content Delivery Network interconnection implications, and supporting requirements are also provided. URI : https://www.atis.org/docstore/product.aspx?id=28155	Approved		2014-02

12. Broadband Forum

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	Broadband Forum	WT-302: Framework for Cloud Services in Broadband Networks	WT-302 describes use cases for Cloud Services in context with previous work at BBF and elsewhere, in order to help position potential future Multi Service Broadband Network (MSBN) features. Use cases and related gap analysis identify where additional work to support Cloud Services in the BBF defined MSBN may be required. Analysis determines implications on areas of MSBN architecture, network functionalities including interfaces, service model, security, billing and operations. URI : http://www.broadband-forum.org/	Draft	3Q2012	4Q2013

13. Metro Ethernet Forum

Activity domain	Entity	Title of deliverable	Scope of deliverable	Current status	Starting date	Target date
	MEF	Carrier Ethernet Services for Cloud Use Cases	- Includes both Single and Multiple Ethernet Cloud Carrier Domain cases - Part1: for Cloud Provider Interconnect (CP to CP) - Part2: for Enterprise Access to CP URI : TBD	Working Drafts	March 2012	April 2014
	MEF	Carrier Ethernet Services for Cloud Management Interface Profile	- Identify relevant Protocol Neutral MEF 7.x objects (and attributes) - Operational Use Cases and information requirements for CP to ECC management interface. - Focus on reconfiguration of specific Service Attributes (e.g., CIR) - Phase 1 approach: Changes to Service Attributes occur only when EVC/OVC is inactive or during a Maintenance Interval - Explore scheduled reconfiguration, and configuration durations. - Provide Interface Operational Requirements: Number of changes allowed over time (how long change should last); lead time for request fulfillment. - Describe SLSs for management interactions (performance metrics) URI : TBD	Working Drafts	March 2012	April 2014