

**Seventh SG13 Regional Workshop on
“Standardization of Future Networks towards
Building a Better Connected Africa”**

**Cloud Computing standards
Where we are ?**

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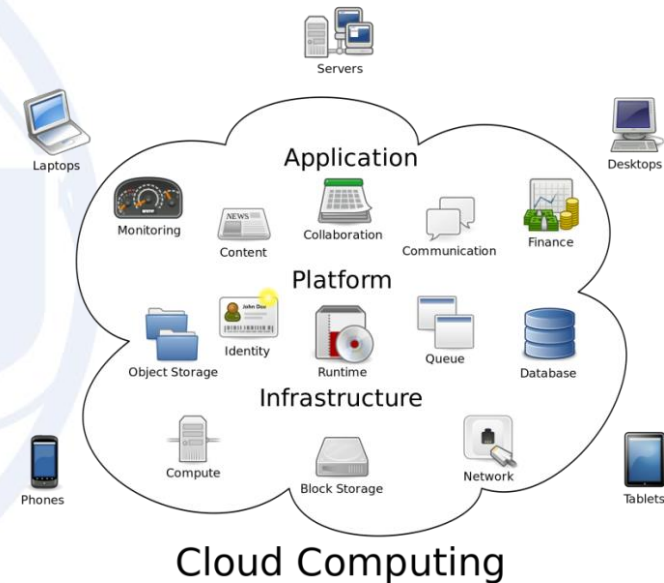
Abuja, Nigeria, 3-4 February 2020



What's the Cloud Computing



Cloud computing is a paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand.



(Source : ISO/IEC 17788 | Recommendation ITU-T Y.3500 “Information technology - Cloud computing - Overview and vocabulary”)

Cloud Computing standardization



The basic goal of cloud computing standardization is to make applications more **scalable, interoperable, and secure** in the cloud.

This involves: a cloud computing interoperability and integration standard. This refers to interoperability between different clouds and an integrated interface standard





STANDARDS

Standardization Work on Cloud Computing

Cloud Computing Standardization

Since cloud computing involves a wide range of technical and business elements, the targets of cloud computing standardization

are diverse and many standards organizations are studying cloud computing focusing on their respective areas of expertise.



Cloud Computing Standardization

The study areas can be broadly classified into:

- (i) Framework development, terminology definition, use cases, and requirements identification,
- (ii) Cloud configuration management, and
- (iii) Inter-cloud federation.



Works on Cloud Computing



Focus Group



Working
Party



Collaboration



Publication &
Workshop



Focus Group Cloud Computing

Established further to **TSAG agreement** at Geneva meeting,
8-11 February 2010



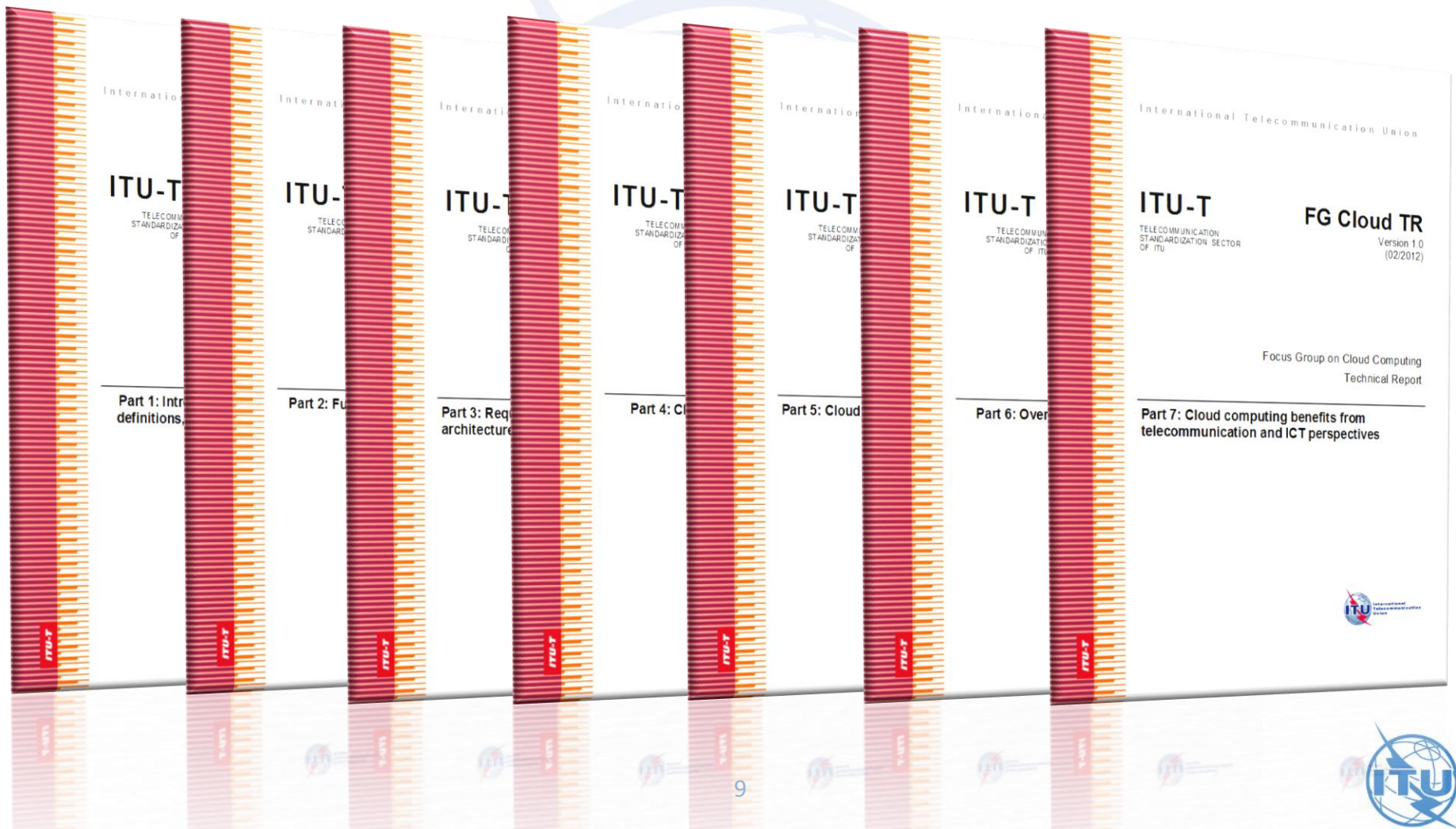
Objective

Collect and document information and concepts that would be helpful for developing Recommendations to support cloud computing services/applications from a telecommunication/ICT perspective

Focus Group concluded in **December 2011** with the publication of technical report in **7 parts**



Focus Group Cloud Computing



Focus Group

The focus group on Aviation Applications of Cloud Computing for Flight Data Monitoring (FG AC) was established further to *TSAG agreement* in *June 2014*



Objective

Identify the requirements for telecommunication standards for an aviation cloud for real-time monitoring of flight data (protection and security, data ownership and access to flight data,...)



Focus Group concluded in **February 2016** with the publication of technical report in **4 parts**



Focus Group AC



Study Group 13

Study Group 13 (SG13) was designed by
TSAG agreement in January 2012 as lead
study group on Cloud Computing



Study Group 13

SG13 - Future networks, with focus on IMT-2020, cloud computing and trusted network infrastructures

- Lead study group on future networks such as IMT-2020 networks (non-radio related parts)
- Lead study group on mobility management
- Lead study group on cloud computing
- Lead study group on trusted network infrastructures



Study Group 13

Creating of working party with **three (03)** classified questions in the area of :

- Requirements, ecosystem, Terminology...;
- Architecture ;
- Inter-cloud and management.



Working Party



The SG13 questions on cloud computing are :

Q17/13

Requirements, ecosystem, and general capabilities for cloud computing and big data

Q18/13

Functional architecture for cloud computing and big data

Q19/13

End-to-end cloud computing management, cloud security and big data governance

Question under study

Q17/13 : Requirements, ecosystem, and general capabilities for cloud computing and big data

- Cloud computing and big data definitions, overview, ecosystem, and use cases;
- Cloud computing and big data requirements, and capabilities;
- Requirements for interoperability, data portability, and exchange information in cloud computing and big data;
- Relationship between cloud computing and big data.

Cloud Recommendations

Under study on Q18

Y series : Global information infrastructure, internet protocol aspects and next-generation networks

- [Y.BaaS-reqts](#) : Cloud computing - functional requirements for blockchain as a service
- [Y.cccm-reqts](#) : Cloud Computing - Requirements for Containers
- [Y.mc-reqts](#) : Cloud Computing -Functional requirements of cloud service partner for multi-cloud
- [Y.MLaaS-reqts](#) : Cloud computing - Functional requirements for machine learning as a service

Question under study

Q18/13 : Functional architecture for cloud computing and big data

- Cloud computing functional architectures supporting cloud service categories (e.g. NaaS, IaaS, PaaS, BDaaS and XaaS);
- Cloud computing functional architectures of inter-cloud;
- Cloud computing infrastructure including cloud networking aspects (e.g. for the support of network slicing);
- Big data functional architectures including big data exchange functional architecture and cloud computing based big data architecture.

Cloud Recommendations

Under study on Q18

Y series : Global information infrastructure, internet protocol aspects and next-generation networks

- [Y.csb-arch](#) : Cloud Computing -Functional architecture for cloud service brokerage

Question under study

Q19/13 : End-to-end cloud computing management, cloud security and big data governance

- Cloud service management (in cooperation with SG2) as well as cloud infrastructure and resource management, utilizing ideally common underlying principles, best practices, fundamentals, frameworks and design, a requirement demanded by telecom operators and service developers.
- The scope includes multi-cloud management, end-to-end management scenarios for cloud services and cloud infrastructure/resources.
- Big data governance including data management, data preservation as well as lifecycle management of big data.
- Study (in cooperation with SG17) of cloud specific identity, access and security mechanisms that enable effortless trusted access to cloud resources in multi-provider scenarios, to the extent that such cloud specific scenarios do exist (not yet established)

Cloud Recommendations

Under study on Q19

Y series : Global information infrastructure, internet protocol aspects and next-generation networks

- **Y.cccsdaom-reqts** : Cloud computing - Requirements for cloud service development and operation management
- **Y.Ccecm** : Cloud Computing - Requirements of edge cloud management
- **Y.Ccfrcm** : Cloud Computing - Framework and requirements of container management in inter-cloud

Cloud Recommendations

Under study on Q19

Y series : Global information infrastructure, internet protocol aspects and next-generation networks

- [Y.Ccgmfdc](#) : Global Management Framework of Distributed Cloud
- [Y.Ccrm](#) : Cloud computing - Framework of risk management
- [Y.ccvnf-dm](#) : Cloud computing - Data model framework for NaaS OSS virtualized network function
- [Y.e2efapm](#) : Cloud Computing - End-to-end fault and performance management framework of virtual network services in inter-cloud

Question under study

An up-to-date status of work question 5 were done : *Q5/13: Applying networks of future and innovation in developing countries*



The activities of this question are to focus on **Recommendations, Technical Papers and Supplements** which study the needs of the eco-system as a whole of **developing country telecom networks** in terms of applying **IMT-2020, cloud computing, big data, trust and other emerging technologies** as they deal with the shift towards convergence of previously discrete areas, namely telecoms, data and entertainment under their own specific circumstances.





STANDARDS

Cloud Computing Recommendations

Cloud Recommendations

Y series : Global information infrastructure, internet protocol aspects and next-generation networks

- **Y.3501:** Cloud computing framework and high-level requirements
- **Y.3503:** Requirements for Desktop as a Service
- **Y.3510 :** Cloud Computing Infrastructure Requirements (2nd edition in AAP procedure)
- **Y.3511:** Framework of inter-cloud computing
- **Y.3512:** Cloud Computing -Functional requirements of NaaS

Cloud Recommendations

Y series : Global information infrastructure, internet protocol aspects and next-generation networks

- **Y.3513**: Cloud Computing -Functional requirements of IaaS
- **Y.3520** (2nd editions): framework for end to end Cloud resource management
- **Y.3521 /M.3070** : Overview of end-to-end cloud computing management (in AAP procedure)
- **Y.3600**: Big data –cloud computing based requirements and capabilities

Cloud Recommendations

X series : Data networks, open system communications and security

- **X.1601 (2nd editions)**: Security framework for cloud computing
- **X.1602**: Security requirements for SaaS (in TAP procedure)
- **X.1642**: Operational security for cloud (in TAP procedure)

Q series : Switching and signalling

- **Q.4040**: Framework and overview of cloud computing interoperability testing

Conclusion

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The **standardization** is one of the fundamental **key** to **develop** the new technology, without standards several problems happen (interoperability, security,...).

The **SG13** as leader group on **cloud computing** provide serious efforts, in **collaboration** with (government, regulator, provider, standards institutions....), in order to develop the cloud computing standards.



Conclusion

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SG13 work very closely in the African region in order to bridge the standardization gaps and enable developing countries to reap the benefits of the technology revolution.



**Thank you for your
attention**



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