# ITU-TRCSL Symposium on Cloud Computing

28 - 30 July 2015
Colombo, Sri Lanka

**SUMMARY RECORD**

## 1. INTRODUCTION

ITU-TRCSL Symposium on Cloud Computing was held from 28th to 30th July 2015 in Colombo, Sri Lanka. The event was jointly organized by the International Telecommunication Union (ITU) and Telecommunications Regulatory Commission of Sri Lanka (TRC).

The agenda of the meeting is available at:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/Final_Agenda.docx

The Symposium was attended by over 65 participants comprising of ITU & TRCSL representatives, university lectures and industrial experts. The list of participants of the ITU-TRCSL Symposium on Cloud Computing can be found at *Annexure A*.

## 2. OPENING SESSION (Tuesday, 28th July 2015, 09:30-10:30)

Following speeches were delivered in the opening session.

### 2.1 Welcome Address by Mr. M M Zuhair, Director General, TRCSL

At the outset of his speech, he warmly welcomed Mr. Sameer Sharma ITU Senior Advisor, Dr. Syed Ismail Shah Chairman, Pakistan Telecommunication Authority and the experts from Universities, Government Department and Operators to Sri Lanka.

He expressed that over the past two years, cloud computing has emerged as one of the significant platforms for innovative services and it reduces information technology (IT) barriers for small and medium-sized enterprises (SMEs), thereby allowing their rapid growth. Instead of making significant initial investments in IT infrastructure and software, SMEs are now able to adopt different models with the use of these cloud computing technologies.

Eventually he wished all success and he hoped that these deliberations would be beneficial to the participants and to all our foreign speakers.

The full text of Mr. Zuhair's address can be found in document: The document can be obtained once it is uploaded to the ITU website

### 2.2 Welcome Remarks by Dr. Syed Ismail Shah, Chairman, PTA, Pakistan

He began his speech by thanking the Director General of TRCSL for his kind remarks about the collaboration and stated that Pakistan and Sri Lanka have a lot to learn from each other. Furthermore he said that the ITU is a platform which brings us together and the collaboration must be continued between the regional countries as well as between all the countries in the world. At the end of his speech he highlighted that the success of the symposium would be to make it more interactive and expected to have a fruitful interaction with all the colleagues with their presentations.

### 2.3 Keynote Address by Mr. Sameer Sharma, Senior Advisor, ITU Regional Office, Asia Pacific

The full text of the address can be found in document:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/ITU_welcome_remarks.pdf

## 3. SESSION 1: Introduction to Cloud Computing Technologies (Tuesday, 28th July 2015, 11.00-12:30)

Session one was focused on introduction to Cloud Computing evaluation, Cloud Services, adoption and standards as follows:

- History, evolution and future of cloud computing
- Cloud actors, cloud service models and deployment models
- Cloud adoption and migration strategies
- Cloud computing standards acceleration, current focus and progress

**Moderator**: Mr. Sameer Sharma , ITU

Dr. Ruan HE from France Telecom Orange and Dr. K B N Ratnayake from University of Peradeniya, Sri Lanka delivered their speeches on following topics.

### 3.1 Introduction to Cloud Computing

In Dr. Ruan HE's speech he delivered a brief introduction about Cloud Computing technologies and Cloud Computing standards declared by the ITU-T.

Dr. Ruan's presentation is contained in the document:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S1_Ruan_He.pdf

### 3.2 Building a Cloud Infrastructure with Open Source Software

Dr. K.B.N. Rathnayake's presentation was based on the technical aspects of Cloud Infrastructure with open source software. Furthermore he explained about the topics such as Software Stacks, Virtual Machines and Openstack Architecture.

Dr. Rathnayake's presentation is available at:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S1_Nimal_Ratnayake.pdf

## Q&A

- Mr. Nilantha Herath from Dialog Axiata queried about the current level of NFV [Network Functions Virtualization] standardization when it comes to networking as a service. Furthermore, he highlighted that the big giants in the networking industry come up with their own versions and still the operator is looking for a NFV standard to move towards the next level. Dr. Ruan replied that NFV is the next step of cloud computing and also he ensured that NFV will be the key technology in 5G mobiles where most of the features in access network and core network will be virtualized in 5G architecture . He stated that ETSI - European Telecommunications Standards Institute has published some standards for NFV.

- Another participant asked about the advantage for a big company to use the private cloud than using a public cloud. Dr. Ruan answered that when the service provider makes resources such as storage and applications available to users over the Internet, then it is called a public cloud where most of the users are considered as individual users [e. g:- Users can access the Amazon web service]. Private Cloud is an enterprise computing architecture that involves a distinct and secure cloud based environment in which only the specified client can operate. [e.g.:- Banks hold their data centers and the cloud services can only be used by the employees of the bank]

- Mrs. Livera from TRCSL questioned regarding the adoption of cloud computing due to the risk caused by the security issues. Mr. Sameer Sharma replied based on regulatory and policy perspective saying that technical architectures and standards are still being developed. But in terms of regulatory framework, Regulators in the region should get together to build a regional regulatory framework for cloud computing. Mr. Ruan HE further added some supplementary information which was published by ISO/IEC with regard to security management of cloud computing [ISO/IEC 27017] commenting that technical issues are easier to handle than regulatory and policy matters.

- A participant from University of Peradeniya raised a question, Isn't it too late for the ITU to provide a formal set of standards for cloud computing because big giants in the private sector have already developed infrastructure as well as some standards. Moreover he emphasized that AWS (Amazon Web Service) has tended to become a standard since open source projects like OpenStack has started to emulate the AWS APIs. Dr. Ruan shared his experience being

a co-developer in the OpenStack project, highlighting that it is not too late to declare standards for this emerging field. When developing Open Source projects like OpenStack, the architecture of the system should be defined before as it is defined in the reference architecture document. So that it gives a clear idea about how the different building blocks interact with each other.

## 4. SESSION 2: Cloud Computing Foundation and Requirements (Tuesday, 28th July 2015, 14.00-15:30)

Session two was based on rendering an overview of cloud computing from standardization point of view along with core terms and definitions related to cloud computing. Furthermore this session described the cloud computing framework by identifying high-level requirements and concepts for cloud computing infrastructure. Additionally, the functional requirements of DaaS (Desktop as a Service), IaaS (Infrastructure as a Service) and NaaS (Network as a Service) were also discussed.

**Moderator**: Dr. Syed Ismail Shah, Chairman, PTA, Pakistan

Mr. Chris Foo the Principle Architect, Huawei and Mr. Saman Perera the Senior General Manager, Information Systems, Mobitel Pvt. Ltd. delivered their presentations on following topics.

### 4.1 Cloud Computing Foundation and Requirements

Mr. Chris Foo's presentation briefly gave an insight into Cloud Computing Foundation and Requirements.

Mr. Chris Foo's presentation is contained in the document: The document can be obtained once it is uploaded to the ITU website

### 4.2 Building a Cloud Infrastructure with Open Source Software

The second presentation for the second session was delivered by Mr. Saman Perera. He focused his speech on Cloud Computing from the user's point of view rather than from an operator's point of view.

Mr. Saman's presentation is contained in the document:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S2_Saman_Perera.pdf

## Q&A

- Dr. Syed Ismail Shah raised a question from the panel on what kind of customer service should be provided through the Cloud Computing and its new trends. Mr. Chris Foo replied that, before launching cloud services to go with the trend, it is important for the operator to understand the business model, target customers and how does the cloud services help to fulfill the customer needs. He emphasized that operator should target a particular customer segment when offering packaged services.

- A participant from SLT commented that companies across the world tend to outsource IT related functions with the introduction of Cloud Computing. Hence this is becoming a challenge for the IT professionals inside the companies. Mr. Chris replied that IT professionals are essential assets in companies to introduce more creativity for the services to address the target customers. He emerged the fact that those IT experts are significant in provision of cloud service operations and maintenance in an organization as well as to execute distinctive services [e.g.:- Security Services] with the use of their specific skill set.
  Moreover Mr. Saman illustrated that usually the IT functions in a company are carried out using a hybrid kind of method and cloud base services can't be completely outsourced. IT professionals with different set of skills must be needed in an organization to carry out functions such as managing SLAs (Service Level Agreement) [if an "Infrastructure as a Service" is chosen to be serviced], monitoring system functions, integrating the system environment with the cloud as well as to utilize cloud services fruitfully. So that the IT staff, IT technical skills and technical resources in an organization must be adjusted to face those kind of challenges which will come up with the new technologies.

- For the query from Mrs. Livera regarding the regulator's function in the Cloud Computing Eco System, Mr. Saman replied that the regulator involves in all areas of the cloud computing system in different ways highlighting the facts such as customer's data which is kept by cloud service provider should be regulated. So that, the data should be secured for a certain period of time and the data can't be shared with third parties. And also, he mentioned that global regulatory bodies like ITU must involve in establishing standards and regulations. In addition Mr. Chris Foo commented that regulators play important part in ensuring integrity of cloud services by maintaining the Quality of Services and being responsible for the privacy of country's data.

## 5. SESSION 3: Architecture, Management, Cloud Interoperability, Security and Data Protection (Tuesday, 28th July 2015, 16.00-17:30)

Session three highlighted the main achievement in technologies and standards related to Cloud Computing. Cloud reference architecture, management framework and inter-cloud framework, virtual format and management Interface was introduced in this session. Additional experiences and success stories related to implementation of these new technologies and standards were also presented.

**Moderator:** Dr. Ruan HE, France Telecom Orange

Dr. Ruan HE and the local experts Mr. M I Deen the General Manager, Enterprise Solutions, Sri Lanka Telecom, Mr. Jayaraj Sayanthan the Lead Engineering Manager IDC and Cloud, Dialog Axiata PLC delivered their presentation on the following topics.

### 5.1 Functional Reference Architecture, Inter-Cloud and Cloud Management, Security of Cloud Computing

General presentation about the reference architecture that the ITU-T defined for Cloud Computing was delivered by Dr. Ruan HE.

Dr. Ruan HE's presentation is contained in the document:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S3_Ruan_He.pdf

### 5.2 Cloud Architecture and Management

The topics such as Cloud Computing Architecture, Cloud Computing Portability, Cloud Computing Interoperability, Security and Compliance, Telco Cloud vision were clarified in Mr. M.I. Deen's speech.

Mr. M.I. Deen's presentation is contained in the document:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S3_M_I_Deen.pdf

### 5.3 Cloud Security Challenges and Solutions

Mr. Jayaraj emphasized about the cloud security concerns, ISO/IEC 27001 - Information security management standards and suitable security policies in his speech.

Mr. Jayaraj Sayanthan's presentation is contained in the document:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S2_Jayaraj_Sayanthan.pdf

## Q&A

- Mrs. Tharalika Livera from TRCSL queried about on-premise systems and whether there is an interface in the on-premise systems linked with the cloud systems. Mr. Deen replied that interfacing is done through APIs at the application level. In addition, he said that if an application is developed on-premise/off-premise and the same PaaS (Platform as a Service) is used, then the platforms will actually extend those controls basically through REST(Representational State Transfer) based APIs or SOAP(Simple Object Access Protocol).

  Another question was asked from Mr. Deen on how to distinguish the cloud apps from web apps. The answer was given, mentioning that web apps are extensible through the HTTP/HTTPS protocol whereas all the apps in the cloud should not be web apps. Those apps

could be private applications over VPNs (Virtual Private Network) that could be client-server architecture which can also have a client interface at the customer premises.

- Regarding the query whether there is any monitoring mechanism that a user can have for the conformity of data at a safer level in the cloud, Mr. Jayaraj replied that more visibility can be gained through the SIMs[System Information Management systems] only for a cooperate user and this can be considered as a preventive measure. On top of this, he stated that if the retail user is concerned, it is difficult for him to check whether the data is secured.

## 6. SESSION 4: Big Data Strategy in the Cloud and Applications (Tuesday, 29th July 2015, 9.00-10:30)

Session 4 was based on the following areas:

- Development of smart cities: optimize bus routes, time tables, traffic light systems, etc.
- Development of a national cloud for health services: Store medical reports and records, provide data for medical research, connect hospitals, etc.

**Moderator**: Mr. Yogesh Jiandani, CTO, GSP India and SAARC

Mr. Kiththi Perera, Chief Wholesale and Enterprise Officer Sri Lanka Telecom PLC and Thareendra Kalpage, Sales Leader - Microsoft Sri Lanka delivered their presentations on following topics. Presentations can be obtained by clicking on the following links.

### 6.1 Big Data Strategy in Cloud and Applications.

In his presentation the major topics such as Market Evolution Big Data vs. Data Analytics, Big Data Analytics, Big Data management with City Infrastructure Management (CIM), Big Data use Cases, Big data in healthcare were discussed.

Mr. Yogesh Jiandani, CTO, GSP SAARC, presented the document: The document can be obtained once it is uploaded to the ITU website

### 6.2 Big Data Strategy in the Cloud and Applications

Mr. Kiththi Perera's presentation provided a briefing for Cloud Computing Foundation and Requirements by illustrating the SLT's cloud computing applications which have been introduced so far.

Mr. Kiththi Perera's presentation is contained in the document: The document can be obtained once it is uploaded to the ITU website

### 6.3 Big Data Strategy in the Cloud and Applications - Smart Cities & National Cloud for Health Services:

http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S4_Thareendra_Kalpage.pdf

Mr. Thareendra Kalpage's presentation was specifically focused on smart cities and health services. During his session, a predictive search demonstration was carried out with the use of an application of big data.

## Q&A

- A participant raised a question about the Microsoft demonstration on big data analysis. He asked from Microsoft representative that whether the organization should put the relevant data on the cloud or the application itself pull data from multiple locations when indicating the results. Microsoft representative answered the question saying that though there is a resistance to put data on the cloud due to security issues, a specific technique is used. In that case, it doesn't need to put the actual data. Only the visualization is appeared through the cloud and output can be visualized on the local network as well.

- TATA remote medical consultancy solution was queried under the E-Health applications. Mr. Yogesh Jiandani highlighted that this E-Health application introduced as a co-operate business model and part of it is subsidized by the government. TATA is looking at a long term revenue model. Once they initialize the process, they have done a math to find the approximate amount of time that the patients spend during their checkup. The typical time was found as not more than around 5 minutes. These E-Health services are based at the TATA hospital in Jamshedpur and they are going to spread this service across the country over a period of time.

- Mr. Sameer Sharma raised an issue on how to make the users aware and how the cloud computing services can be delivered to them as they need to understand that what big data is, how it is useful to them and how they can radically change their use of the technologies to improve their lives. The SLT representative, Mr. Kiththi Perera replied that the service providers like us and the technology providers like Cisco and Microsoft can develop the platforms and enable the technology aspects like analytics of big data. But also he mentioned that some are not yet ready with the data to use for cloud computing services as countries or as industries or as businesses. He stated that the IOT layer is the key enabler to collect the unstructured data and it is needed to leverage on this IOT layer to get larger volumes of data which will be really useful for citizen services. Furthermore he mentioned that taking the data from the right sources and put it into right data repository is considered as a significant factor.

  Mr. Yogesh commented that it depends on the geographical way the people looking at and some countries are in an advanced state and they are willing to share data. Most of western countries are more open to share data. Some companies which are completely radical in their thought process. For instance, Yes Bank in India doesn't own a single piece of
  IT asset right from the day one as almost everything runs in the cloud. Thus the security concerns can be emerged from the people's point of view. People are looking for kind of system integration capabilities and customization capabilities of the technologies which exist in that country. Once the services are available to the users, interested users are happy to experience them.

  Then again, Mr. Sameer Sharma clarified the fact that, though the technologies still exist, users may not buy the services unless there is a usefulness attached to it. As an example, if we take the broadband usage of South Asia, less than 10% of usage is indicated even in the countries like India and Pakistan because even though the technologies exist, users may not buy broadband just because to browse internet. The skills have not been developed in them to make use of these

applications. He expressed that the awareness or the demand side stimulation efforts are an essential influence for the people. He shared his experience on Malaysian broadband development, stating the statistics. Through demand sides, stimulation, awareness & contest, users can participate ultimately that would generate a great demand for the applications such as big data. At the end Mr. Thareendra Kalpage added his comments emphasizing that it is about getting the users to adapt to using it & making it more user-friendly.

## 7. SESSION 5: How Big Data and Cloud Computing aspects can be utilized? (Tuesday, 29th July 2015, 11.00-12:30)

Session 5 covered the following topics:

- Development of a national cloud for e-learning: Processing-intensive software in the cloud can be accessed from low-cost low-power tablets; learning resources in the cloud; monitor students in a national level; allocate resources among schools in a more intelligent manner using Big Data analysis.
- Development of a national cloud for e-Agriculture services: Farmers can access to information such as crop prices, fertilizer offers, etc. through kiosks in community centers; connect to agriculture experts; data can be gathered to perform Big Data analysis on agriculture related issues, etc.

**Moderator**: Mr. Gus O' Brien, Principle Architect, Huawei

Mr. Udaka Kappagoda, Manager –IN and Data Services, Bharti Airtel Lanka (Pvt) Ltd. and Thareendra Kalpage, Sales Leader - Microsoft Sri Lanka delivered their presentations on following topics

### 7.1 How Big Data and Cloud Computing aspects can be utilized [Document:

Emerging topics such as Big Data and Big Data Analytics, Developing National Cloud and using Big Data in e-Learning, Developing National Cloud and using big data in e-Agriculture and their case studies were discussed in this session.

Mr. Gus O' Brien's presentation can be found in the document:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S5_Gus_O_Brien.pdf

### 7.2 National e-Learning & e-Agriculture Platform Enriched With Big Data Deployed On Cloud.

Mr. Udaka Kappagoda's presentation was basically based on how the big data and cloud can be utilized for the improvement of e-Agriculture.

Mr. Udaka's presentation is available at:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S5_Bharti_Airtel.pdf

### 7.3 Cloud in Education - National e-Learning Platform Enriched With Big Data Deployed On Cloud

Mr. Thareendra Kalpage's presentation was specifically focused on the Education System that we are looking for and how an e-learning system can be helpful in providing education fruitfully.

The presentation can be obtained by clicking on the following link:
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S5_Thareendra_Kalpage.pdf

## Q&A

- Mrs. Tharalika Livera queried on why the aspects such as e-Marine are missing in this discussion and how can this big data assist for the fishermen or the fishing vessels. On top of that she said that the International Union for Conservation of Nature [IUCN] in Sydney implemented a project called plot the trajectory of commercial fishing vessels using the big data, cloud computing and the satellite networks. Mr. Udaka responded to the question saying that concepts can be extended according to the applications. Cloud and big data are just considered as enablers and hence it won't bring us solutions. Besides he mentioned that any field can get the benefits from cloud computing and big data to improve the performance and also the same principals can be applied to any field such as education, agriculture and health as well as marine.

- On the query regarding the e-agriculture status in Australia and the impact on the Australian farmers, Mr. Brian replied that a tendency of adapting to these e-agriculture strategies can be seen in Australian farmer community. Moreover he said that IOT technologies can also be integrated for these e-agriculture applications to predict weather patterns and market trends in the future.

## 8. SESSION 6: Mobile Cloud Computing and Regulatory Issues (Tuesday, 29th July 2015, 14.00-15:00)

Session 6 was focused on following aspects:

- How the combination of cloud computing, mobile computing and wireless networks can bring rich computational resources to mobile users, network operators, as well as cloud computing providers.
- Introduction to wireless infrastructure cloud providers and managed services
- Understand wireless and mobile security risks
- Regulatory issues and challenges and how regulators are planning to address it

**Moderator**: Dr. Syed Ismail Shah, Chairman, Pakistan Telecommunication Authority (PTA), Pakistan

Dr. Chamitha de Alwis from Faculty of Engineering and Technology, University of Sri Jayewardenepura and Mr. Jaanaka Samarakone, Head Legal and Regulatory from Bharti Airtel Lanka (Pvt) Ltd. delivered their presentations on following topics.

The presentations of these three speakers can be obtained from the following links.

### 8.1 Dr. Chamitha de Alwis's presentation on Mobile Computing:

http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S6_Chamitha_de_Alwis.pdf

### 8.2 Mr. Jaanaka Samarakone's presentation on Mobile cloud computing and regulatory issues:

http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S6_Jaanaka_Samarakone.pdf

### 8.3 Dr. Syed Ismail Shah's presentation on Mobile Cloud Computing and Regulatory Issues:

http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S6_Ismail_Shah.pdf

### Q&A

- Participant from University of Peradeniya raised a question on issue of liability and the data protection law regarding the cloud computing aspects. He explained further that, when an end user license agreement is considered, it disclaims all the liability. Everything is built on top of the software and if the software provider disclaiming the liability, then who should the user contact. Mr. Jaanaka Samarakone answered that basically it depends on the jurisdiction and it is no question of nobody being liable. Somebody is liable according to the application.

- Then Mr. Syed commented that liability is overseen by the agreement that the user is involved with the cloud service provider. As far as the data is being hosted outside the country, people as well as the government will have apprehensions about that. European Union has come to an agreement that the data has to be within the European Union due to the apprehensions and the restrictions. Unless country to country agreements exist, probably the governments would not go into outside data hosting. Thus liabilities are covered by the agreements.

- Dr. Alwis also made his remarks on rules and regulations mentioning that they are not tight enough to protect the users. These kinds of sessions were appreciated to be more educated. Moreover he stated that stimulating competition for cloud services can be introduced as an answer for the liability and the privacy concerns.

## 9. SESSION 7: Green Cloud Computing (Tuesday, 29th July 2015, 15.30-17:00)

Session 7 provided a briefing for the following areas:

- How to operate energy efficient cloud computing systems (e.g. Green Data Centres).
- How to increase the energy efficiency and minimize carbon foot print by utilizing cloud computing technologies: cloud servers, cloud storage, etc

During this session, Dr. Syed Ismail Shah and Mr. Sameer Sharma delivered their speeches on following topics in the scope of Green Cloud Computing. The presentations can be obtained by clicking on the following links.

### 9.1 Mr. Sameer Sharma's presentation on Green Cloud Computing: Case Study Sri Lanka & Pakistan:

The document can be obtained once it is uploaded to the ITU website

In Mr. Sameer Sharma's speech, he highlighted the topics like Development of e-waste policy, Standardized Green Data Center Protocol, Reducing energy consumption through ICT and Road map Smart Grids

### 9.2 Dr. Syed Ismail Shah's presentation on Green Cloud Computing :

The document can be obtained once it is uploaded to the ITU website

In Dr. Syed's presentation, he emphasized about efficiency of data centers in terms of energy usage, Eco-friendly utilization of computer infrastructure and minimizing the energy consumption and best practices of green centers (ITU recommendations).

### Q&A

- Dr. Chamitha added his comments at the end of the session mentioning that nowadays cloud servers are distributed among different locations especially in Europe and they are running a project on splitting their servers locating inside residences. Besides, those people will get paid some money for keeping the servers inside their homes and the heat which generated by the servers is utilized by the server keepers.

## 10. SESSION 8: How to start new and innovative Cloud Computing Industries: SMEs (Tuesday, 30th July 2015, 9.00-10:30)

Session 8 discussed the following topics:

- What are cloud based apps and services that can be delivered by SMEs
- Case Studies –Sri Lankan Cloud.

**Moderator**: Mr. Mohan Jayasekera, Director Policy, International Relations & License Administration, TRCSL

Prof. Gihan Dias from Faculty of Computer Science, University of Moratuwa, Dr. Syed Ismail Shah, Chairman, Pakistan Telecommunication Authority (PTA), Pakistan and Dr. Chamitha de Alwis from Faculty of Engineering and Technology, University of Sri Jayewardenepura delivered their presentations for this session.

The presentations of these three speakers can be obtained from the following links.

**10.1 Prof. Gihan Dias's presentation on "A Sri Lankan Cloud" can be found in the document:**
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S8_Gihan_Dias.pdf

**10.2 Dr. Chamitha de Alwis's presentation on Expanding Cloud based Services among SMEs in Sri Lanka can be found in the document:**
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S8_Chamitha_de_Alwis.pdf

**10.3 Dr. Syed Ismail Shah's presentation on Use of Cloud Computing by Small and Medium Enterprises can be found in the document:**
http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2015/July-Could-Computing/S8_Ismail_Shah.pdf

## Q&A

- Representative from University of Ruhuna commented that the local operator, SLT had sponsored for ten terminals in of their research labs to experiment on Daas [Desktop as A Service] based cloud services and certain challenges were raised regarding the purchasing of license version of proprietary software for these IaaS [Infrastructure as a Service] and DaaS based cloud services due to the funding issues. Furthermore he said that even though they use open source software to the maximum extent, for the graduates they produce need to have hands on experience on proprietary software.

- Regarding question which was emerged on the tax schemes imposed by the government for the domestic telecommunication operators, Mr. Mohan Jayasekara answered that only the policy advices can be presented to the government as a regulator according to the application based on the telecommunication act and it is up to the government to accept it or reject it.

  Dr. Chamitha and Dr. Dias pointed out that regulatory bodies should regulate the issues of tax schemes rather than regulating the services indicating the fact that countries like Sealand and Ireland have the lowest tax rates for offshore internet/data center hosting facilities. Due to that reason the data centers of big companies like facebook has been established in these countries (Ireland).

## 11. SESSION 9: Expertise Sharing and Assistance (Tuesday, 30th July 2015, 11.00-12:20)

Session 9 covered the following areas:

- Role of TRCSL
- Role of Industry

- Role of International organizations e.g. ITU
- Role of Academia

Following experts participated for this discussion session.

- Prof. Gihan Dias from Faculty of Computer Science, University of Moratuwa
- Dr. Syed Ismail Shah, Chairman, Pakistan Telecommunication Authority (PTA), Pakistan
- Dr. Ruan HE, France Telecom Orange
- Dr. Chamitha de Alwis from Faculty of Engineering and Technology, University of Sri Jayewardenepura
- Mr. Sameer Sharma, Senior Advisor, ITU
- Mr. Mohan Jayasekera, Director Policy, International Relations & License Administration division of TRCSL
- Mr. R.M.R.K.P. Livera, Deputy Director, Compliance Division of TRCSL.

**11.1 Closing remarks were delivered by Mr. Sameer Sharma, Senior Advisor, ITU**

# Annexure A

## PARTICIPANT LIST: ITU-TRCSL Symposium on Cloud Computing-2015

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|---|---|---|---|---|

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